CLASS 315, ELECTRIC LAMP AND DISCHARGE DEVICES: SYSTEMS

SECTION I - CLASS DEFINITION

This is a restricted class which includes assembled patents on the special types of electric lamp and electric space discharge device systems set forth in the following sections:

A. Structural Combinations With Circuit Elements;

B. Structural Combinations With Heating And/Or Cooling Means;

C. Cathode-Ray Tubes;

D. Lamps and/or Discharge Devices as Sole Load Devices;

E. Lamps;

F. Electric Space Discharge Devices

G. Gas or Vapor Discharge Devices;

H. High Vacuum-Type Discharge Devices, and Gas or Vapor-type Discharge Devices Claimed Broadly;

I. Plural Load Device Systems;

J. Art Uses and Combinations With Art Devices;

K. Testing Electric Lamps and Discharge Devices; and

L. Operating a Lamp or a Gas or Vapor Discharge Device.

SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS

A. STRUCTURAL COMBINATIONS WITH CIRCUIT ELEMENTS:

Electric lamps and electric space discharge devices of any type (including cathode-ray tubes) with or without a discharge control device, combined with other circuit elements all of which (other than a mere source of current and/or potential supply if claimed) are structurally combined therewith to form a unitary device. Such structurally combined circuit elements may be in either or both the input or output circuit of a discharge device, or in neither circuit, and may be used for any purpose. Such means appear in this class (see Subclass References to the Current Class, below). If any circuit element is not structurally combined as stated above, the patent is treated as stated in the following sections. See the sections F-4; and G; and H, especially.

B. STRUCTURAL COMBINATIONS WITH HEATING AND/OR COOLING MEANS:

The subject matter of section A, combined with means for heating and/or cooling the lamp or discharge device structure, which heating and/or cooling means is either structurally combined with the lamp or discharge device, or with an electrical circuit element, or forms an electrical circuit element. All electrical circuit elements (except a mere source of current and/or potential supply, if claimed) which are not structurally combined with the lamp or discharge device must be structurally combined with the heating and/or cooling means; see Subclass References to the Current Class, below. If any circuit element is not structurally combined as stated in this and the preceding section (A), the patent is treated as stated in the following sections (see section H-2-d for other temperature-modifying combinations).

C. CATHODE-RAY TUBES:

Combined with an electric system for the supply and control of current and/or potential thereto as the ultimate load on the system. Sections A and B, above, deal with other special cathode-ray tube systems in this class. Such means appear in this class (315). See Subclass References to the Current Class, below.

D. LAMPS AND/OR DISCHARGE DEVICES AS SOLE LOAD DEVICES:

1. With an electric system for supplying current and/or potential thereto. If there is any other type of electric load device, as either the sole ultimate load device or in addition to the lamp and/or discharge device load, the patent is in some other appropriate class. The load may be constituted by one or more lamps alone, by one or more discharge devices alone, or by any combination therebetween subject to the limitations noted below in this section and in the following sections. Discharge devices having a claimed output circuit are in this class only in the special cases set forth in paragraphs A, B, and F.

2. Where systems are provided with an impedance in the supply circuit of the lamp or discharge device, and the sole function of the impedance is to regulate current

flow to the lamp or discharge device, the impedance is not considered a load device.

3. Systems wherein an impedance is substituted in the circuit when a lamp or discharge device is removed therefrom so that the impedance provides a substitute load on the system are included in this class, see Subclass References to the Current Class, below.

E. LAMPS:

With an electric system for supply and control of current and/or potential thereto as the ultimate load on the system.

F. ELECTRIC SPACE DISCHARGE DEVICES:

1. Combined with an electric system for the supply and/or control of current and/or potential supplied thereto, the discharge device being the ultimate load in the system, where the system of supply and/or control is to result as its sole function in either or both: a. causing a discharge to take place or b. mere regulation of the discharge.

2. In this type of system, the output circuit may be claimed if it is claimed so broadly as to be in effect the mere completion of the circuit so that a discharge may take place.

3. This type of system is included even though the type of current flowing in the anode-cathode circuit is specified as being different from the supply current (as, for example, d.c. and a.c., respectively, as in the mercury arc type of discharge device).

4. Due to differences in operating characteristics between: a. gas or vapor discharge devices, and b. high vacuum discharge devices. Systems limited to these two different types have been treated differently, see sections G and H, below.

5. The preceding limitations cause exclusion from this class of: a. The regulation and/or control of the current and/or potential in a circuit by means of a discharge device, even though no load device in the regulated and/or controlled circuit is claimed, and the discharge device is under the terms of the claim the ultimate load device; b. Those systems having one or more discharge devices constituting the ultimate load on the system, where the system includes means which limit the system to use for purposes other than, or in addition to, section F, Electric Space Discharge Devices, 1 (a) or (b) above (e.g., to amplify, modulate, etc.).

G. GAS OR VAPOR DISCHARGE DEVICES:

1. combined with an electric system as defined in section F are included in this class when the claims are restricted to discharge devices of the gas or vapor type, and: a. where they are only principal electrodes, b. where there are one or more discharge control electrodes in addition to the principal electrodes which do not function to retain control of the discharge after it is initiated to regulate the same, c. where there is an electromagnetic discharge control device (other than or in addition to electrodes as in (a) or (b) even though it controls the discharge after it is initiated.

2. Where there is a discharge control electrode of any kind, or a nonelectrode discharge control device other than electromagnetic, and the system is so designed that the discharge control device or electrode retains control of the discharge after it is initiated to regulate the same (continuous control type), the patent is excluded from this class.

3. Where the discharge device in the system is disclosed as being of the gas or vapor type, but the claims are not so limited (the device being claimed broadly as a discharge device), the patent is not classified in this class, but in some other class appropriate to the subject matter claimed, except in the particular instances set forth in section H.

H. HIGH VACUUM-TYPE DISCHARGE DEVICES, AND GAS OR VAPOR-TYPE DISCHARGE DEVICES CLAIMED BROADLY:

Combined with an electric system as defined in section F, Electric Space Discharge Devices, above, are included in this class only in the following particular situations (being in all other instances excluded):

1. Structural combinations as defined in sections A and B, above, with or without discharge control means;

2. Where the only electrodes claimed are the principal electrodes (no discharge control device of any kind being claimed) and the patent is classifiable in one of the following art areas: a. having means to automatically substitute a second source of current and/or potential supply, b. having means to automatically substitute a second discharge device for an operating discharge device when it fails to operate properly, c. having means to supply current to the cathode or cathode heater of the discharge device, d. having means to modify the temperature of the discharge device, either the tempera-

ture modifying medium being automatically controlled or the discharge device supply circuit being controlled by the temperature modifying medium (see section B. on other temperature modifying combinations). (See Subclass References to the Current Class, below, for a map of these art areas.)

I. PLURAL LOAD DEVICE SYSTEMS:

Circuits are classified in this class as being plural load device systems where they have any one or any combination of the following, and in any circuit relationship, including where one is in a control circuit of another: a. where the circuit claimed includes two or more lamps; b. where the circuit claimed includes two or more discharge devices, at least two being limited in the claims to the gas or vapor type; c. where the circuit claimed includes at least one lamp and at least one discharge device limited in the claims to the gas or vapor type.

J. ART USES AND COMBINATIONS WITH ART DEVICES:

Only to the following limited extent, the lamp and/or discharge device system claimed is subject to all of the limitations of parts A through J of this definition. The must be no classification in any other class on the basis of the art use or combination with the particular article, device or apparatus claimed. There mere designation of a lamp by an art name (as an ultraviolet or other special ray generator) or the mere designation of a discharge device or one or more of the principal electrodes thereof by an art name (as a spark plug, igniter, naming a principal electrode as work to be heated or welded) will not exclude the patent from this class in the absence of further art limitations. For further details of the lines with particular arts, see the notes appended to the main class definition and to the definitions of the subclasses for combinations with particular articles, devices, or apparatus. See Subclass References to the Current Class, below.

K. TESTING ELECTRIC LAMPS AND DISCHARGE DEVICES:

Where the system is designed to operate the lamp or discharge device as a load device and the system includes means to indicate some condition thereof, the system is classified with the systems of operation in this class. This Class provides for such operating systems combined with signal, indicator, or alarm (see Subclass References to the Current Class, below). Electrical circuits, apparatus, and methods which are limited in their use to testing the operativeness or determining the characteristics of electric lamps or electric discharge devices of any type and which are limited in their use to the sole purpose of such testing are classified elsewhere, even though the system includes an electric lamp or discharge device as the means for indicating the operativeness or characteristics of the device under test. (See References to Other Classes, below.)

L. OPERATING A LAMP OR A GAS OR VAPOR DISCHARGE DEVICE:

Patents which claim a method of operating a lamp or a gas or vapor discharge device are classified in this class (315). The patent is classified in the subclass which provides for the system which is required to operate the device. For example, a claim which recites a method of operating a lamp by first passing a current of one magnitude through the lamp and in then increasing the current flow through the lamp would be classified in this class as a system having regulating means in the system (see Subclass References to the Current Class, below).

FURTHER NOTES:

Lamp And Discharge Device Structure:

Patents claiming an electric lamp or discharge device structure and means broadly to supply electric energy or potentials thereto are classified elsewhere as a lamp or discharge device structure. If the relative magnitude or relationship of the electric energy or potential is specified in the claims, the patent is classified as an electrical system and cross-referenced for the lamp or discharge device structure. Where two or more lamps and/or discharge devices are structurally combined to form a unitary device (there being no circuit element in addition to such structure), the structural combination is classified in the classes noted below even though the electrodes thereof are interconnected, except in the following particular instances: the combination of an incandescent filament lamp and a discharge device structurally combined to form a unitary structure, the filament connected to form a circuit impedance or heater for the discharge device load. (For these, see Subclass References to the Current Class, below.)

For other structures and structural combinations, see References to Other Classes, below.

Space Discharge Igniters:

This class provides for systems for supplying electric energy to one or more discharge devices of the “spark plug” or “ignition” type when the claims are limited to a

discharge device. Where the claims are not so limited, being drawn to an ignition device broadly (not limited to a discharge device, spark plug, or spark gap), the patent is placed in the appropriate igniter classification and cross-referenced to this class. Also ignition systems, even though limited to a discharge device, when claimed in combination with fuel burning apparatus, are classified with the type of fuel burning apparatus, (see also main class definition, section J).

For such ignition device systems and combinations, see References to Other Classes, below.

Load Devices Other Than or in Addition to Lamps and/or Discharge Devices:

See section D, above. Where the system claimed includes a load device other than a lamp and/or discharge device, even though lamps and/or discharge devices constitute a part of the system, either as additional load devices or as part of the system of regulation and/or control of such other load device, the patent is excluded from this class, and will be found in the class appropriate to the type of load device or combined load devices.

Class 315 provides for electrical systems limited to supplying electric current and/or potential to one or more electronic tubes of of the gas or vapor type. Many of these systems inherently convert A.C. to D.C. or D.C. to A.C. Some are inherently oscillation generators. Where the system is limited by claimed subject matter to supplying a load circuit, it is excluded from Class 315. Merely claiming the circuit necessary to connect the anode to the cathode as a load circuit is not sufficient to exclude the system from Class 315. Claiming a load device, either specifically or broadly in the output circuit will exclude the system from Class 315. Claiming subject matter which would not be provided unless the system were to be used for supplying a load device is sufficient to exclude the system from Class 315. For example, reciting means in the output circuit responsive to overload conditions in output circuit to control the system will exclude the system from Class 315. See References to Other Classes, below.

SECTION III - SUBCLASS REFERENCES TO THE CURRENT CLASS

SEE OR SEARCH THIS CLASS, SUBCLASS:

1+, for supplying electric current and/or potential to cathode-ray tubes, and/or cathode-ray tubes combined with a circuit element which is structurally combined with the cathode-ray tube so as to form a unitary device.

3+, for subject matter in which cathode-ray tubes are combined with circuit elements, all of which are structurally combined therewith to form a unitary device, see main class definition, sections (A) and (B).

32, and indented subclasses for electrical circuit elements (except a mere source of current and/or potential supply, if claimed) which are not structurally combined with the lamp or discharge device must be structurally combined with the heating and/or cooling means.

32+, for subject matter under the class definition, sections (A) and (B), Structural Combinations With Circuit Elements and Structural Combinations With Heating And/Or Cooling Means.

46, and indented subclasses and subclass 49 for the combination of an incandescent filament lamp and a discharge device structurally combined to form a unitary structure, the filament connected to form a circuit impedance or heater for the discharge device load.

76, and indented subclasses for combinations with particular articles, devices, or apparatus.

86+, for means to automatically substitute a second source of current and/or potential supply

88+, for means to automatically substitute a second discharge device for an operating discharge device when it fails to operate properly,

94+, for means to supply current to the cathode or cathode heater of the discharge device,

112+, for means to modify the temperature of the discharge device, either the temperature modifying medium being automatically controlled or the discharge device supply circuit being controlled by the temperature modifying medium, (see Lines With Other Classes and Within This Class, section B, above, on other temperature modifying combinations).

119, and indented subclasses for systems wherein an impedance is substituted in the circuit when a lamp or discharge device is removed therefrom so that the impedance provides a substitute load on the system.

120+, for operating systems combined with signaling means, or indicator means, or alarm means operated by some part of the load device or the electrical circuits therefor to indicate some condition in the load device or the circuits therefor.

120, and 129+ provides for supply systems for lamps and gas or vapor discharge devices

which include a signal to indicate the condition of the load device or the circuit.

291, a claim which recites a method of operating a lamp by first passing a current of one magnitude through the lamp and then increasing the current flow through the lamp would be classified in this subclass as a system having regulating means in the system.

SECTION IV - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

40, Card, Picture, or Sign Exhibiting, subclasses 541+ for illuminated signs in combination with the systems for supplying electric current to the lamps.

84, Music, subclass 464 for electric lamp systems combined with musical instruments for providing color or light effect.

96, Gas Separation: Apparatus, subclasses 80+ for electrostatic precipitators having voltage supply means or circuitry for applying electrical potential thereto.

99, Foods and Beverages: Apparatus, subclass 483 for methods and apparatus for subjecting foods and beverages to an electric space discharge.

123, Internal-Combustion Engines, subclasses 147 and 594+. (Lines With Other Classes and Within This Class, "Space Discharge Igniters.")

200, Electricity: Circuit Makers and Breakers, appropriate subclasses for electric switches. Some types of electric switches are closely analogous in structure to some types of electric space discharge devices. This is especially true with respect to the type of electric space discharge device where the electrodes of the discharge device are normally in contact under open circuit conditions, the electrodes being separated from each other when the current is applied to the circuit, the space discharge being established by separating or drawing apart the electrodes. An electric switch of the thermostatic type where the contacts of the switch are normally open when no current is applied to the circuit which includes the switch, the switch including means to establish an electric space discharge between the contacts, the space discharge heating the thermostat so that the thermostat moves the switch contacts into circuit closing position to establish a conductive path for the current through the contacts and to short-circuit or extinguish the space discharge, is closely analogous in structure to space discharge devices of the type which is classified in this class (315) in subclasses 56+ as a combined switch and discharge device. The distinction between electric switches and space discharge devices, therefore, depends in some cases principally upon the disclosed purpose of the structure claimed by the patent. Where the space discharge is only an incident to the separating of the switch contacts and the purpose of the structure is to open or close a circuit, the device will be considered an electric switch for the purpose of classification. Where the purpose of the claimed structure is to establish an electric space discharge by contacting the electrodes with each other, the device is considered to be an electric space discharge device. This class (315) includes, in subclasses 56+, combined space discharge devices and electric switch structures where the device claimed includes electrodes other than the switch electrodes, their supports, or lead-in means for establishing an electric space discharge. To be classified in Class 315, the device claimed must include at least one electrode which has no purpose other than to operate as an electric space discharge electrode. Where the only discharge electrodes are also switch means, the patent will be classified in Class 200. For switches which are somewhat analogous in structure to space discharge devices, see subclass 144, where the switch is provided with means to separate the switch contacts from each other to open the circuit, the switch structure including means to extinguish the space discharge formed when the switch contacts are opened; subclasses 182+, for mercury and other liquid contact switches which are closely analogous in structure to mercury vapor and other liquid electrode lamps and discharge devices.

204, Chemistry: Electrical and Wave Energy, subclasses 155+, 164+, 192.1+, and 298.01+ for methods for subjecting materials to electric space discharges for performing chemical changes and analogous purposes. See Class 422, Chemical Apparatus and Process Disinfecting, Deodorizing, Preserving, or Sterilizing, subclasses 186+ for apparatus for subjecting reactants to electromagnetic wave energy (other than visible light) or corpuscular

radiation; e.g. radioactive particles, for initiating or perfecting a reaction.

219, Electric Heating, subclasses 50+, especially indented subclasses 121.11+ for systems for supplying electrical energy to arc welding and/or heating apparatus. Class 315 provides electric systems for supplying electric current to an electric arc where the arc is specified by name only as a welding and/or heating arc. The patent will not be excluded from Class 315 even though one of the electrodes is named as the material or object broadly defined, such as "the work to be welded and/or heated". Where the claimed subject matter is limited to the welding and/or heating art, such as, for example, by claiming the means for holding, handling, feeding, and/or moving the work to be welded and/or heated, the patent is classified in Class 219.

250, Radiant Energy, is the generic class for electric discharge systems. In this class, subclasses 200+ is the generic place for photoelectric device circuits. Class 315 provides for systems wherein the ultimate load device in the system is either a lamp or gas or vapor discharge device, and the system includes means for controlling the operation of the load device by means of radiant energy. In Class 315, the load device may be a radiant energy sensitive device; that is a lamp or discharge device whose operation is altered when subjected to radiant energy, or the system may include a radiant energy sensitive device such as a photocell which controls the operation of the load device. Subclass 251 provides for devices for producing and propagating a unidirectional stream of neutral molecules or atoms through a vacuum, usually with thermal velocity. Subclasses 281+ provides for methods and apparatus for the ionic separation or analysis of a material utilizing the mass to electric charge ratio of ionic particles of the material. Subclasses 324+ has methods and apparatus of irradiating material by corona radiation. Subclasses 432+ is the place for irradiating fluent material which is contained, supported, or transferred from one place to another. Subclasses 440.11+ is for a supported object subjected to charged particles used to inspect the object for a radiant source, and subclasses 454.11+ in addition to an irradiated object support, includes a support for a radiation source. Subclasses 458.1+, is the generic place for methods and apparatus to irradiate fluorescent or phosphorescent devices including self-luminous articles particularly those used as signalling alignment or indicating devices. Subclasses 492.1+ is the generic place for the irradiation of material or objects by wave or particles of energy of the nuclear or electromagnetic wave type. Where not elsewhere classified, Class 315 includes systems provided with a load device of the con fined gas or vapor type with means regulating the gas or vapor pressure in the confined space, or systems having a discharge device load with means to supply fluent material to the outer electrode discharge space, or systems having a load device and provided with means to supply fluent material to the load device to modify the temperature of the discharge device, only when the disclosed or claimed purpose of the fluent material supply is to modify the operation of the discharge device. Where the purpose of the claimed subject matter is to treat the fluent material either with rays generated by the discharge, or to subject the material to the influence of the discharge, the patent is classified in Class 250 or other appropriate class which provides for the particular art.

290, Prime-Mover Dynamo Plants, subclasses 13, 26, 33, 35, 37, and 41 for such plants having an internal combustion engine provided with ignition means of the discharge device type (spark plugs). (Lines With Other Classes and Within This Class, "Space Discharge Igniters.")

307, Electrical Transmission or Interconnection Systems, subclasses 11+for plural load circuit systems; 43+ for plural supply circuits or sources, particularly subclasses 48+ and 66+ in which one of the sources of electrical current is a storage battery (see the class of Electricity: Battery or Capacitor Charging or Discharging, below, for battery charging and/or discharging systems); and 154+ for systems for supplying one or more particular load devices not elsewhere classifiable but particularly subclass 157 in which the load is a lamp or discharge device. (Lines With Other Classes and Within This Class, "Load Devices Other Than or in Addition to Lamps, and/or Discharge Devices.")

313, Electric Lamp and Discharge Devices, appropriate subclasses for the structure of electric lamps and discharge devices, per se. See subclasses 1+ for a plurality of discharge devices (including discharge device lamps) or a discharge device and an incandescent lamp which are structurally combined to form a unitary

device. (Lines With Other Classes and Within This Class, "Lamp and Discharge Device Structure.")

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 7 provides for systems for supplying such type discharge device and another type discharge device or lamp. (Lines With Other Classes and Within This Class, "Load Devices Other Than or in Addition to Lamps, and/or Discharge Devices.")

314, Electric Lamp and Discharge Devices: Consumable Electrodes, appropriate subclasses for electric lamps and discharge devices of the consumable electrode type, and such devices in combination with the electric system for supplying current or potential to the device.

314, Electric Lamp and Discharge Devices: Consumable Electrodes, which class takes such structures, even though combined with lamp and/or discharge devices of other types. (Lines With Other Classes and Within This Class, "Lamp and Discharge Device Structure.")

320, Electricity: Battery or Capacitor Charging or Discharging, appropriate subclass for a battery or capacitor charging or discharging system. (Lines With Other Classes and Within This Class, "Load Devices Other Than or in Addition to Lamps, and/or Discharge Devices.")

323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 and the subclasses specified in the notes to the definitions of those subclasses for systems for controlling the magnitude of the current and/or voltage in a single circuit having a discharge device as the control means. The discharge device may be either a vacuum tube or a gas or vapor tube. The systems in Class 323 include more than the mere circuit for supplying electric current or potential to the discharge device for merely causing a discharge to take place within the tube or for regulating the discharge within the tube. Many of the systems in Class 323 are closely analogous to the systems in this class. See Lines With Other Classes and Within This Class, in the class definition of Class 323 for the line between this class (315) and Class 323. (Lines With Other Classes and Within This Class, "Load Devices Other Than or in Addition to Lamps, and/or Discharge Devices.")

324, Electricity: Measuring and Testing, subclasses 403+ for electrical circuits, apparatus, and methods which are limited in their use to testing the operativeness or determining the characteristics of electric lamps or electric discharge devices of any type and which are limited in their use to the sole purpose of such testing. (See Lines With Other Classes and Within This Class, "Testing Electric Lamps and Discharge Devices," above.)

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, for miscellaneous electron discharge device circuits.

329, Demodulators, for amplitude, frequency, phase, or pulse demodulator which may include an electron discharge device as a demodulating element (315).

330, Amplifiers, appropriate subclasses for amplifier systems including gas tubes, cathode-ray tubes, traveling wave tubes, magnetrons, etc., which are of the type of tubes in circuits classified in this class.

331, Oscillators, is the generic class for electrical oscillators. Many systems using electric lamps of the gaseous or vapor discharge type inherently generate oscillations during operation. Class 315, therefore, provides for all systems for merely supplying electric current or potential to gaseous or vapor discharge devices whether the system is claimed as an oscillation generator or merely as a lamp circuit provided that the system is not limited by claimed subject matter to use as an oscillation generator, such as, for example, means to transfer the oscillating electric energy to another circuit or means to use the oscillating energy.

337, Electricity: Electrothermally or Thermally Actuated Switches, appropriate subclasses for thermal switches which are combined with space discharge devices.

340, Communications: Electrical, appropriate subclasses for electric signals and signaling systems wherein an electric lamp is used as the signal means, and for miscellaneous signaling systems which include discharge devices as a part thereof. Merely defining the lamp as a signal will not exclude the patent from Class 315, even though the circuit of the amp is controlled in accordance with the operated or nonoperated condition of some device. Class 315 provides for supply systems for lamps and gas or vapor discharge devices which include a signal to indicate the condition of the load device or the circuit (see Subclass References to the Current Class, above).

345, Computer Graphics Processing and Selective Visual Display Systems, appropriate subclasses for selective control of data presenta-

tion on a display device, especially subclasses 74.1-75.2 for display elements arranged in matrix having cathodoluminescent type.

361, Electricity: Electrical Systems and Devices, subclasses 247+ for the detonation of an explosive charge. (Lines With Other Classes and Within This Class, "Space Discharge Igniters.")

362, Illumination, generic class for illuminating devices provided with means to modify and/or distribute the illumination, and/or with protective means, such as casings, globes, or guards, and for the supports and holders for lamps (other than mere sockets) and such electric lamp illuminating devices when claimed in combination with the source of supply for the lamp.

363, Electric Power Conversion Systems, appropriate subclasses for various conversion systems including electronic tubes and their control. The systems of Class 363 are closely analogous to the systems of this class (315). In many cases, the distinction between a Class 363 system and a Class 315 system will be significant claiming of a load circuit or load device. Many of the systems of Class 315 will inherently operate as a current convertor because of the basic property of many electronic tubes to conduct current in one direction only. In such cases, the inclusion of the load circuit or load device may be determinative as to whether the system as claimed relates to a conversion system. The following subclasses of Class 363 are of particular interest. See subclasses 50+ for protective systems for electronic tube current convertors; subclasses 74+ for current conversion systems with automatic voltage and/or current magnitude control which may include electronic tube control; subclasses 83, 94, and 99 for current conversion systems with electronic tube line circuit control means; subclasses 111+ for electronic tube current conversion systems; subclass 151 for electronic tube phase conversion systems; subclasses 166+ for electronic tube frequency conversion systems. For the line between this class (315) and Class 363, see Lines With Other Classes and Within This Class in the class definition of Class 363.

363, Electric Power Conversion Systems, subclasses 74+ for rectifying and derectifying systems with automatic voltage and/or current magnitude control wherein the control means may be an electronic tube having a discharge control means. Many of the systems in Class 363 are closely analogous to the systems in this class (315). See Lines With Other Classes and Within This Class in the class definition of Class 363 for the line between this class (315) and Class 363. (Lines With Other Classes and Within This Class, "Load Devices Other Than or in Addition to Lamps, and/or Discharge Devices.")

373, Industrial Electric Heating Furnaces, subclasses 60+ for electric arc furnaces. Class 315 provides for systems for supplying electric current to arc furnaces provided that the arc furnace is included by name only. Where the claims include significant furnaces structure, or are otherwise limited to the furnaces art, the patent is classified in Class 373.

378, X-Ray or Gamma Ray Systems or Devices, appropriate subclasses, particularly subclasses 91+ for circuits for energizing or controlling X-ray tubes. (Lines With Other Classes and Within This Class, "Load Devices Other Than or in Addition to Lamps, and/or Discharge Devices.")

417, Pumps, subclasses 48+ for pumps utilizing a space discharge. See Class 417, subclass 49 for a statement of the line.

422, Chemical Apparatus and Process Disinfecting, Deodorizing, Preserving, or Sterilizing, subclasses 22+ for processes of disinfecting, deodorizing, preserving, or sterilizing using an electric space charge device.

431, Combustion, subclasses 264+ for a spark electrode in front of or adjacent the fuel discharge of a burner. (Lines With Other Classes and Within This Class, "Space Discharge Igniters.")

708, Electrical Computers: Arithmetic Processing and Calculating, subclass 540 for the use of a CRT in digital arithmetical operations, and subclass 849 for the use of CRT in function generation.

SECTION V - GLOSSARY

AUXILIARY DISCHARGE ELECTRODE

An electrode which is connected in the circuit so that the discharge is initiated between it and one of the principal electrodes, the auxiliary discharge conditioning the discharge space between the principal electrodes so that a discharge between the principal electrodes can be established.

DISCHARGE CONTROL DEVICE

Any means associated with the discharge device (for example only, an electromagnet, a control grid or an auxiliary discharge electrode) intended to be used to control or influence the discharge between the principal electrodes of the discharge device.

DISCHARGE CONTROL ELECTRODE

Any electrode which is designed to influence or control the discharge between the principal electrodes. It may be a control grid or an auxiliary discharge electrode. It may depend for its effect on either its electro-static effect or on the current flow thereto.

ELECTRIC SPACE DISCHARGE DEVICES

The shorter expression "DISCHARGE DEVICES" is used in these definitions, are defined for the purpose of classification in this class as including any device which is intended to have an electrical current flow between two spaced electrodes, at least part of the path followed by the discharge being constituted by a gas, vapor, or vacuum.

GAS OR VAPOR DISCHARGE DEVICE

Any type of electric space discharge which, as claimed, depends upon ionization of a gas or vapor for its operation. Discharge devices which have their discharge electrodes in an unconfined (non-enclosed) atmosphere as well as those having their discharge electrodes in a confined (enclosed) atmosphere are included in this definition.

HIGH-VACUUM TUBE

A vacuum tube evacuated to such a degree that its electrical characteristics are essentially unaffected by gaseous ionization.

LAMPS

Are defined for the purpose of classification in this class as including a device designed for converting electrical energy into ray energy, regardless of whether the ray energy is within the visible or invisible part of the spectrum, but excluding (1) generators of X-rays, and (2) generators designed primarily to generate infrared rays. Lamps may be in the form of electric space discharge devices, for which see the next paragraph.

LOAD DEVICE

The device to which the system supplies electrical energy and which, as claimed, constitutes the final or ultimate device for utilizing the electrical energy of the system.

PRINCIPAL ELECTRODES

The "two spaced electrodes" referred to in the definition of electric space discharge devices, between which the discharge current is primarily intended to flow.

SUBCLASSES

1 CATHODE RAY TUBE CIRCUITS:
This subclass is indented under the class definition. Subject matter for supplying electric current and/or potential to cathode-ray tubes, and/or cathode-ray tubes combined with a circuit element which is structurally combined with the cathode-ray tube so as to form a unitary device.

(1) Note. Cathode-ray tubes are defined for the purpose of classification in this subclass as an electric space discharge device which is provided with means to form the electric space discharge into a restricted beam or ray, usually pencil like.

(2) Note. Where a system includes the cathode-ray tube system as a part thereof, the patent is excluded and will be found with the particular art which provides for the complete system.

(3) Note. These subclasses do not include systems which are limited by claimed subject matter to using the cathode-ray tube for controlling the current and/or potential supplied to a load device other than a cathode-ray tube, for which see the class appropriate to the load device. Where the output circuit claimed includes more circuit elements than is necessary for the mere current and/or potential supply for the cathode-ray tube, the system is considered to be limited to use for supplying and/or controlling the current and/or potential to load device

and, therefore, excluded from these subclasses.

(4) Note. Systems which include a cathode-ray tube having either a discharge intensity modulating means or a discharge focusing means and discharge deflecting means are excluded from these subclasses where the claims include significant features of the circuits for supplying the controlling currents and/or potentials to the modulating means or focusing means and the deflecting means from the controlling source. For example, a system which includes means for separating the video or image and synchronizing signals from each other and applying them to the cathode-ray tube is classified with the art to which the system relates; i.e., television if the purpose of the system is to reproduce an optical image.

Included in these subclasses are systems which recite broadly means for applying current and/or potential to the intensity control means or the focusing means and to the deflecting electrodes as well as patents which claim systems for controlling the discharge intensity or the focusing solely in dependence upon conditions in the cathode-ray tube current or potential supply system, such as, for example, applying a control potential to the intensity control means or focusing means in dependence upon the rate of ray deflection or in dependence upon the direction of ray deflection (blackout circuits).

(5) Note. Merely claiming either the source of signal potential for controlling the discharge intensity control means, the focusing means, or the discharge deflecting means will not exclude the patent from these subclasses as long as the source of signal potential is claimed broadly so that it could be any source of potential. Where the system claimed includes a source of signal potentials and means to separate the potentials and to apply one to the vertical sweep means, and the other to the horizontal sweep means, the patent is not excluded from these subclasses as long as the source of signal potential is claimed broadly and is no more than a source of periodic potentials. Where such synchronizing circuit for the ray deflecting means is claimed in addition to significant features of the ray modulating circuit, the patent is excluded.

(6) Note. Merely claiming the source of signals to control the start of the ray deflecting circuit as a synchronizing potential will not exclude the patent from these subclasses as long as the source of ray deflecting control potential is claimed broadly and is only the control potential for the ray deflecting means.

(7) Note. These subclasses do not include the combination of a cathode-ray tube and mechanical or optical devices, such as lenses, mirrors, et cetera, which are used with the cathode-ray tube even if the system of supply for the cathode-ray tube is claimed. Merely using a voltage to deflect a cathode-ray beam so as to form a scale upon the screen of the cathode-ray tube will not exclude the patent from Class 315.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 281+ for methods and apparatus for the ionic separation or analysis of materials utilizing the mass to electric charge ratio of ionic particles of the material.

313, Electric Lamp and Discharge Devices, subclass 2.1 for the structural combination of a cathode-ray tube combined with an electric space discharge device or an electric lamp so as to form a unitary device, and subclasses 364+ for cathode-ray tube structures.

324, Electricity: Measuring and Testing, subclass 88 for devices for indicating the phase relations of electric quantities, which devices comprise cathode-ray tubes, and subclass 121 for cathode-ray galvanometers. Where the system claimed includes means for applying a current or potential under examination, or an unknown current or voltage, to the cathode-ray tube, the system is not excluded from Class 315

unless some means is claimed to enable the desired information to be derived other than merely observing the trace of the ray on an uncharted luminous screen, or unless the cathode-ray tube is claimed in combination with significant features of the circuit to be investigated. Merely naming the circuit to be investigated as a source of pulsating or alternating current will not be sufficient to exclude the patent from Class 315.

329, Demodulators, for demodulators which may include an electron discharge device.

330, Amplifiers, subclasses 43 and 44+ for amplifier systems including electron beam tubes.

346, Recorders, appropriate subclass for cathode-ray devices in combination with photographic recording means. Class 346 provides for such combinations where the system for operating the cathode-ray tube is claimed when the system is of general application and not otherwise classified.

348, Television, 284, 325-331, 377-378, 379, 380-382, and 805-835 for television systems which include a cathode-ray tube.

358, Facsimile and Static Presentation Processing, subclasses 409 through 424 for synchronizing in facsimile systems which include a cathode-ray tube. See Notes (4), (5), and (6) above for the line between Class 358, subclasses 409-424 and these subclasses (1.1-1.18).

378, X-Ray or Gamma Ray Systems or Devices, subclasses 91+ for X-ray tube circuits.

386, Motion Video Signal Processing for Recording or Reproducing, subclass 342 for cathode-ray tubes in combination with optical means, such as lenses, mirrors, etc., used for television recording.

3 Combined cathode ray tube and circuit element structure:

This subclass is indented under subclass 1. Subject matter in which cathode-ray tubes are combined with circuit elements, all of which are structurally combined therewith to form a unitary device, see main class definition, sections (A) and (B).

(1) Note. The circuit element may be mounted within or on the base or envelope of the cathode-ray tube.

(2) Note. These subclasses include the combination of a cathode-ray tube load device and a circuit element where the tube and the circuit element are formed of separable parts, but are provided with means for fastening or assembling the parts together to form a unitary device.

(3) Note. Examples of devices considered to be circuit elements are electric switches, resistances, capacities, inductors, transmission lines of the distributed parameter type (e.g., coaxial lines), waveguides, antennas, transformers, structures formed so as to act as if possessed of distributed inductance and capacitance (e.g., resonators) and any other circuit element.

(4) Note. The circuit combined with the cathode-ray tube need not be a circuit element to be used in the circuit of the cathode-ray tube load device, but may be provided with separate terminals so as to be usable in any desired relation.

(5) Note. This and the indented subclasses include cathode-ray tubes wherein the electrodes and/or the electrode leads are formed so as to function as inductances. This and the indented subclasses do not include cathode-ray tubes wherein the electrodes are formed of resistive material and no other circuit element is combined with the cathode-ray tube.

(6) Note. Patents claiming a cathode-ray tube in combination with a separable socket receptacle or connector for the cathode-ray tube, the socket receptacles or connector including a circuit element, are not classified in these subclasses, but will be found either in subclass 1 or in the other subclasses under subclass 1.

SEE OR SEARCH THIS CLASS, SUBCLASS:

32, and indented subclasses for other types of electric discharge devices and for electric lamps combined with circuit elements, all of which are structurally combined to form a unitary device.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 365+ provides for cathode-ray tubes which have a photosensitive electrode. Included in these subclasses in Class 313 are cathode-ray tubes where the photosensitive electrode is not in physical contact with a conductive supporting base or where the conductive supporting base is of high resistance material. No effort has been made to separate the cathode-ray tubes with photosensitive electrodes such as mosaic electrodes from each other on the basis of whether or not the electrode has a capacitor effect, a resistance effect, or is conductively connected to its lead-in conductor. All such cathode-ray tube structure has been placed in subclasses 365+ of Class 313.

3.5 Traveling wave tube with delay-type transmission line:

This subclass is indented under subclass 3. Subject matter in which a transmission line or device arranged to propagate a traveling electromagnetic wave is constructed and arranged to have a wave component the velocity of which is reduced in comparison to the wave velocity in free space; and in conjunction therewith are means for generating an electron beam whose path is in such proximity to the path of said traveling wave component as to permit an exchange of energy between such beam and the traveling wave propagated along the transmission path.

(1) Note. Transmission line or device is defined to include any device which is used to guide or constrain electrical wave energy and to convey the energy from one place to another. Included are conductors and waveguides.

(2) Note. The transmission device may be constructed as a spiral or helix so that the wave has an axial velocity component along the helix which is lower than the free space velocity of the wave, or the transmission device may be loaded as by inductive members to reduce the velocity of the traveling wave.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3, for cathode-ray tubes of the traveling wave type not included in this subclass or subclasses 4+.

4+, for other cathode-ray tubes which have structurally combined therewith an inductive or distributed parameter-type inductive structure (e.g., waveguide, coaxial cable, or parallel wire transmission line). See subclasses 5+ for traveling wave-type cathode-ray tubes having a hollow transmission line (e.g., waveguide) for a traveling wave, and having an electron beam means which is transverse to the transmission line so that energy may be exchanged between the beam and the traveling wave.

39.3, for other traveling wave-type electronic tubes having a velocity reducing-type transmission line but which do not have the space discharge path focussed or otherwise shaped into a beam.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclass 600 for miscellaneous circuits with particular beam tube structure.

330, Amplifiers, subclass 43 for amplifier systems having traveling wave tubes. See Lines With Other Classes and Within This Class and References to Other Classes in the Class Definition of Class 330.

331, Oscillators, subclass 82 for oscillation generating systems using beam tubes of the traveling wave type.

332, Modulators, especially subclasses 134, 147+, and 165+ for modulator systems using traveling wave tubes of the type classified in this subclass.

333, Wave Transmission Lines and Networks, subclass 22 for transmission lines of the distributed parameter type (e.g., waveguides, long lines) having dissipating terminations, subclasses 138+ for delay networks, subclasses 32+ for impedance matching networks for transmission lines, subclass 81 for transmission lines of the long line with an attenuator means, and attenuators especially designed for use over a frequency band or for use in transmission lines of the distributed parameter type, and subclasses 236+ for the structure of transmission lines of the distributed parameter type.

3.6 Line with plural characteristics or plural lines:

This subclass is indented under subclass 3.5. Subject matter which is provided with a plurality of transmission lines or devices, or which has the transmission line or device constructed so as to have a section which has different characteristics from another section.

(1) Note. For example, the device may have a plurality of beams and a plurality of transmission lines, or a single beam with a plurality of transmission lines arranged parallel to each other or in series relation along the path of the beam, or may have the transmission line arranged to have different retarding times along its length or have portions provided with coatings or other means to provide different attenuation at different portions of the line.

(2) Note. This subclass does not include subject matter under subclass 3.5 where the transmission line or device is only provided with impedance matching means designed to facilitate the coupling of the transmission line or device to an input or output coupling means (even though such impedance matching means involves differences in structure in the transmission line or device such as changing the spacing of the turns of a spiral transmission line). Such subject matter is classified in subclass 3.5 in the absence of other structure, causing classification in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.16+, 5.27, 5.28, and 5.39+, for traveling wave tubes having a plurality of hollow transmission lines (e.g., waveguides), at least one line being designed to propagate a traveling wave, and having means producing an electron beam transverse to the transmission lines so that energy may be exchanged between the beam and the energy in the transmission lines.

SEE OR SEARCH CLASS:

333, Wave Transmission Lines and Networks, subclass 22 for transmission lines of the distributed parameter type having dissipating terminators, subclass 81 for transmission lines and devices with an attenuator means and attenuators especially designed for use with transmission lines and devices of the distributed parameter type, and subclasses 236+ for the structure of transmission lines and devices of the distributed parameter type.

4 Inductor or distributed parameter-type inductive structure:

This subclass is indented under subclass 3. Subject matter wherein the circuit element structurally combined with the cathode-ray tube is an inductor or a structure formed so as to act as if it possessed inductance with or without capacitance.

(1) Note. The inductive circuit structure may be a waveguide, a coaxial line, a hollow resonator, or a parallel wire transmission line or any other structure having or acting as if it had inductance or inductance and capacitance.

SEE OR SEARCH THIS CLASS, SUBCLASS:

39+, for other discharge devices which have structurally combined therewith a waveguide, coaxial cable, or other

transmission line having distributed inductance and capacitance.

39.51+, for magnetrons which have an electrode with a portion formed to provide both distributed inductance and capacitance and a magnetic means for influencing the space discharge.

40, for other discharge devices having an electrode formed as an inductor or as a structure having inductive impedance.

62, and the subclasses specified in the notes to the definition of that subclass, for other discharge devices which are structurally combined with an inductive impedance.

SEE OR SEARCH CLASS:

333, Wave Transmission Lines and Networks, subclasses 219+ for electric resonators of the distributed parameter type, per se, and subclasses 236+ for other transmission line structure having distributed inductance and capacitance such as waveguides, coaxial cables, etc.

336, Inductor Devices, appropriate subclasses for the structure of transformers and inductive reactors.

5 Ray passes in or through a hollow distributed parameter device:

This subclass is indented under subclass 4. Subject matter wherein the inductor or inductive and capacitive device constitutes a substantially closed hollow conductive structure having, or acting as if it had distributed inductance and/or capacitance, the ray traversing at least part of the hollow space, and usually passing through the conductive structure by openings provided in the conductive structure.

(1) Note. The conductive structure may be a waveguide, cavity resonator, or coaxial line. An electromagnetic field usually exits in the hollow space, energy being transferred between the ray and the field. A parallel wire Lecher-type line with the ray passing between the wires is not, in itself, a hollow distributed parameter device for classification here, but rather is classified in subclass 4 above. However, where the Lecher line has added portions to provide a hollow space or includes holes in its wires for passage of the ray, classification is in these subclasses (5+).

(2) Note. For classification here the ray may originate within the device and either pass beyond or terminate within the device; or the ray may originate beyond the device and either pass through or terminate within the device. Where the ray merely passes across an opening in the hollow distributed parameter device without entry, classification is in subclass 4 above, even though a coupling exists between the ray and the electromagnetic field within the device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3.5+, for traveling wave tubes with delay-type transmission lines, which may have distributed parameters.

14+, for other cathode-ray tube systems wherein a plurality of means are provided accelerating and/or decelerating the electrons in the cathode-ray.

39.51+, and 40, for other discharge devices having an electrode formed as an inductive impedance or inductive structure.

41+, for other electric discharge devices having an inductive impedance which is structurally combined with the discharge device connected between two of the electrodes of the discharge device.

SEE OR SEARCH CLASS:

330, Amplifiers, subclasses 45+ for amplifiers having an electron beam tube coupled to cavity resonator, including those of types classified in this and indented subclasses.

331, Oscillators, subclasses 81+ for electrical oscillators using a beam tube wherein the beam of charged particles passes through or into a hollow distributed parameter device, particularly indented subclass 83 wherein the beam passes through plural cavities. See also the reference to Class 331 under “SEARCH CLASS” in the class definition.

332, Modulators, especially subclasses 131+, 147+, and 165+ for electron bunching-type modulators. See also (3) Note under the Class Definition.

5.11 With a secondary emission stage:

This subclass is indented under subclass 5. Subject matter including a secondary emission electrode on which the ray impinges to produce another ray or to augment the impinging ray.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.14+, for a hollow distributed parameter device having a plurality of rays passing through or in.

12.1, for cathode-ray tube circuits generally with secondary emission.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 399+ for cathode-ray tubes, per se, having a secondary emission electrode.

5.12 Secondary emission passes through or in the hollow device:

This subclass is indented under subclass 5.11. Subject matter wherein the ray passing through or in the hollow device impinges on a secondary emission electrode to produce another ray which passes through or in the same device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.18+, for a hollow distributed parameter device having a ray passing through or in, and returning to the device by other than secondary emission means.

5.13 With a magnetron:

This subclass is indented under subclass 5. Subject matter including a magnetron, the hollow device through which the ray passes constituting the resonator of the magnetron.

(1) Note. The subject matter of this subclass usually is a magnetron having an additional cathode projecting a ray through the magnetron resonator for tuning purposes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.14+, for a hollow distributed parameter device having a plurality of rays passing through or in.

5.53+, for a hollow distributed parameter device having a ray passing through or in and involving tuning.

39.51, for distributed parameter resonator type magnetrons, and especially subclass 39.57 for such magnetrons with variable tuning by electron emission in or adjacent the resonator space, no means being included to form the emission into a restricted beam or ray.

5.14 Plural rays pass through or in the hollow device:

This subclass is indented under subclass 5. Subject matter wherein each of a plurality of distinct rays pass through or in a single hollow device.

(1) Note. A plurality of rays exit as when projected from separate or distinguishable cathodes. When a single cathode projects a ray which is broken into a plurality of pencil rays as by an apertured mask or other dividing structure, these pencil rays are not considered plural for purposes of classification in this subclass. When two distinct cathodes produce each a ray which merges over at least a part of the ray path, classification is not barred from this subclass. See especially indented subclass 5.15. A mere plurality of structures each having a hollow distributed parameter device with a ray passing therethrough is not classified here, but elsewhere under subclass 5.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.12, for a hollow distributed parameter device with a ray passing through or in, and a second ray also passing through or in and produced by the first ray through secondary emission.

5.13, for magnetrons having a ray passing through or in the hollow distributed parameter portion.

5.18+, for a hollow distributed parameter device, where the ray, after passing through or in, returns to the hollow device, and especially indented subclass 5.23 where the device is thermally tuned as by a cathode-ray.

13.1, for plural ray cathode-ray tube circuits generally.

5.15 Rays merged at the hollow device:

This subclass is indented under subclass 5.14. Subject matter wherein the plurality of rays are projected along the same path, at least during passage in or through the hollow device.

(1) Note. Mere intersection in the hollow device of two rays projected in different directions is not sufficient for classification here, but rather in subclass 5.14 above.

5.16 Plural hollow devices:

This subclass is indented under subclass 5.14. Subject matter together with an additional hollow distributed parameter device, the plurality of rays passing through or in the additional device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.27, and 5.28, for plural hollow distributed parameter devices having a ray passing through or in, which ray is deflected or reflected.

5.39+, for plural hollow distributed parameter devices generally having a ray passing through or in.

5.17 Feedback by ray:

This subclass is indented under subclass 5.16. Subject matter wherein one of the rays is projected in a reverse direction from the other ray or rays through the respective hollow devices, to constitute a feedback coupling from the output to the input device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.44+, for plural hollow distributed parameter devices having a ray passing through or in, and a feedback connection between the devices.

5.18 Ray returns to the hollow device; e.g., reflex type:

This subclass is indented under subclass 5. Subject matter wherein substantially all of the ray passes from the interior of the hollow device and beyond the exterior of the device, and then returns to the interior of the device.

(1) Note. The ray may return to the hollow device by the same path as it leaves the device as a result of reflection, or the ray may follow a curved path as a result of deflection, or the ray may follow a straight path, the device being formed to intercept the ray after the ray passes out of the device.

(2) Note. For classification in this and the indented subclasses, it is necessary that the ray return to the interior of the device. When the ray merely returns to engage the exterior of the device, classification is in subclasses 5.24+ or 5.33.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.12, for a hollow distributed parameter device with a ray returning thereto as a result of secondary emission.

5.24+, for a hollow distributed parameter device whose ray passing through or in is deflected or reflected. See (2) Note above.

SEE OR SEARCH CLASS:

331, Oscillators, subclass 84 for electric wave generating systems utilizing a charged particle or electron beam tube of the reflex type.

5.19 By same path and/or to same aperture:

This subclass is indented under subclass 5.18. Subject matter wherein the ray in returning to the hollow device retraces the path followed in leaving the device, and/or wherein the ray reenters the hollow device through the same aperture as it left the device.

5.21 Device tunable:

This subclass is indented under subclass 5.19. Subject matter wherein the hollow device is resonant at a particular frequency, together

with structure for changing or permitting change in the resonant frequency.

(1) Note. Reflex klystrons whose frequency is controlled by variation of the repeller voltage are not classified here, but in subclass 5.19, if otherwise within the scope of subclass 5.19.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.46+, for plural tunable hollow distributed parameter devices having a ray passing through or in.

5.53+, for single tunable hollow distributed parameter devices generally having a ray passing through or in.

5.22 Device has a flexible wall:

This subclass is indented under subclass 5.21. Subject matter, wherein the hollow device has a flexible wall to adjust the shape or a dimension of the device, usually for varying the width of the gap in the device across which the cathode-ray travels.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.48, for plural hollow distributed parameter devices having a ray passing through or in, at least one of the devices having a flexible wall for tuning purposes.

5.54, for a single plural hollow distributed parameter device having a ray passing through or in, and having a flexible wall for tuning purposes.

5.23 Thermally controlled:

This subclass is indented under subclass 5.22. Subject matter including structure which is connected to or part of the flexible wall for moving this wall in response to a temperature change induced in the structure, or for compensating for movement of this wall due to temperature effects.

5.24 Deflecting or reflecting the ray:

This subclass is indented under subclass 5. Subject matter wherein structure is provided for changing the path of substantially the entire ray from a first direction to a second direction.

(1) Note. Only patents are classified here the entire cross section of whose ray is deflected from a first to a second direction. Focusing, concentrating, dispersing, and velocity sorting the ray are classified elsewhere. See for example subclasses 5.34+ and 5.38.

(2) Note. The deflection may be greater than 90° and may even be 180° to constitute a complete reflection of the ray. However, see subclasses 5.18+ for subject matter under subclass 5 where the ray is reflected or deflected to return to the device.

(3) Note. The deflected ray may also be rotated, as for example, in a conical path.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.11+, for a hollow distributed parameter device with a ray passing through or in, whose effective direction is changed by a secondary emission grid.

5.18+, for a hollow distributed parameter device wherein the ray after passing through or in is deflected or reflected to return to the device. See also (2) Note above.

5.34+, for a hollow distributed parameter device with a ray passing through or in which is focused or concentrated. See also (1) Note above.

5.38, for a hollow distributed parameter device with a ray passing through or in, and including an anode which disperses or scatters the ray therein.

364+, for cathode-ray tube circuits generally, wherein the cathode is deflected.

SEE OR SEARCH CLASS:

331, Oscillators, subclass 80 for electric wave generating systems utilizing a charged particle or electron beam tube with beam sweeping or deflecting means.

5.25 Ray sweeps over an aperture or slot in the hollow device:

This subclass is indented under subclass 5.24. Subject matter wherein the hollow device is provided with an opening in its wall, the ray sweeping between the opening and the wall to be alternately passed and blocked.

5.26 Device deflects the ray:

This subclass is indented under subclass 5.24. Subject matter wherein the hollow device deflects the ray passing through or in.

5.27 Plural hollow devices:

This subclass is indented under subclass 5.26. Subject matter including a plurality of hollow distributed parameter devices through or in which a single ray passes, at least one of the hollow devices deflecting the ray.

(1) Note. The hollow devices may be arranged to successively deflect the ray passing through or in or one device may be arranged to deflect the ray while the other device collects the deflected ray.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.16+, for plural hollow distributed parameter devices wherein each of a plurality of rays passes through all the devices.

5.28, for plural hollow distributed parameter devices having a single ray passing through or in, the ray being deflected by structure other than the device.

5.39+, for plural hollow distributed parameter devices in general having a single ray passing in or through.

5.28 Plural hollow devices:

This subclass is indented under subclass 5.24. Subject matter, including a plurality of hollow distributed parameter devices having a single ray passing through or in.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.16+, for plural hollow distributed parameter devices, wherein each of a plurality of rays passes through all the devices.

5.27, for plural hollow distributed parameter devices having a single ray passing through or in, wherein at least one of the devices deflects the ray.

5.39+, for plural hollow devices in general having a single ray passing in or through.

5.29 Ray has appreciable transverse electrical dimension and/or significant shape:

This subclass is indented under subclass 5. Subject matter wherein the ray has a cross sectional dimension which is significantly related to and an appreciable part of the wavelength of signal energy in the cathode-ray tube, and/or wherein the ray has a significant shape; the dimension and/or shape usually persisting over the entire path of the ray, and at least during passage through the device.

(1) Note. The patents in this main subclass (5.29) usually have a flat weblike ray.

(2) Note. The particular shape and/or dimension is usually produced by a cathode of particular shape and/or dimension; e.g. elongated, annular, or cylindrical cathode.

(3) Note. Subject matter including grids of distributed parameter devices which have openings peculiarly adapted to pass rays of a particular transverse shape or dimension are classified in this subclass, the ray or the means producing the ray being recited in the claim.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.14+, for a hollow distributed parameter device with plural rays passing through or in, the rays having a particular transverse dimension and/or shape.

5.24+, for a hollow distributed parameter device with a ray passing through or in, wherein the deflection of the ray provides a ray path having a particular shape or dimension, such as a particular bent or spiral ray.

5.37, for a distributed parameter device with a ray passing through or in, wherein the grids have a particular shape or dimension not related to the transverse shape or dimension of the ray. See (2) Note above.

5.31 Hollow ray:
This subclass is indented under subclass 5.29. Subject matter, wherein the ray is formed as a hollow tube with the cathode at one end, which ray may be circular or rectangular in cross section.

5.32 Disk-shaped ray:
This subclass is indented under subclass 5.29. Subject matter, wherein the ray is formed as a flat disk with the cathode positioned in a plane of the disk, and at the center of the disk or coaxial with the center of the disk.

5.33 Device also a ray anode or cathode:
This subclass is indented under subclass 5. Subject matter wherein the hollow device also constitutes a ray anode or cathode, or wherein the ray anode or cathode is an integral part of the hollow device, or wherein the ray anode or cathode is mounted in a wall of the hollow device and has an appreciable portion within the interior space of the hollow device.

(1) Note. Where the ray anode or cathode is integral with the hollow device, but entirely external to the hollow space and separated from the hollow space by a grid, classification is not in this subclass, but in subclasses 5.37 or 5.38 below.

SEE OR SEARCH THIS CLASS, SUBCLASS:
5.38, for a hollow distributed parameter device with a ray passing in or through, and including a particular anode or collector structure.

5.34 Focusing and/or concentrating the ray:
This subclass is indented under subclass 5. Subject matter wherein the cathode-ray tube is provided with means for focusing and/or concentrating the cathode-ray.

(1) Note. Concentrating or focusing the cathode-ray is used in this definition to mean either to reduce the cross section area of the cathode-ray across its width or to bring the ray to a focus; that is, the ray is either converged toward a point, or is diverged as if it had originated at a point.

SEE OR SEARCH THIS CLASS, SUBCLASS:
5.24+, for a hollow distributed parameter device wherein the entire cross section of the ray passing through or in is substantially uniformly deflected in one direction.
5.41, for hollow distributed parameter devices wherein the ray passing through or in is accelerated or decelerated uniformly over its cross sectional area.
14+, for cathode-ray tube circuits generally with plural concentrating, accelerating, and/or decelerating stages.
382, for cathode-ray tube circuits generally including means for focusing or concentrating the ray.

5.35 By magnetic field:
This subclass is indented under subclass 5.34. Subject matter, wherein the focusing or concentrating means provides a magnetic field in a direction to focus or concentrate the ray.

(1) Note. This focusing means may be a permanent magnet, or a conducting coil or loop with or without a magnetic core or yoke.

5.36 Device removable from its grids:
This subclass is indented under subclass 5. Subject matter wherein the hollow device and its electrodes are readily separable.

(1) Note. The patents classified here usually disclose disc electrodes projecting through the envelope of a tube, and a cavity resonator or waveguide having its opposite walls secured to the respective electrodes, as by screw or spring clamping.

5.37 Device has particular grid structure:
This subclass is indented under subclass 5. Subject matter wherein the hollow device is provided with a grid and significant ray reacting details of this grid are claimed.

(1) Note. The grids of this subclass are only those which are associated with the device at its gap, and through which the ray passes. Accelerating or focusing

grids disposed along the ray path but not an intimate part of the hollow device, are not within the scope of this subclass. Subclasses 5.34+ and 5.41, respectively, provide for ray focusing and concentrating and ray accelerating between hollow devices generally within the scope of subclass 5.

(2) Note. A hollow device provided with a mere plurality of grids is not considered to be a significant grid detail for classification here. A particular relationship between the plurality of grids must be claimed or significant details must be claimed for classification in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.11+, for a hollow distributed parameter device having a ray passing through or in together with a secondary emission grid.

5.24+, for a hollow distributed parameter device wherein a grid deflects the ray passing through or in.

5.29+, for a hollow distributed parameter device with a ray of a particular transverse shape or electrical dimension passing through or in, the grids of the device having openings shaped to pass a ray of such shape or dimension.

5.34+, for a hollow distributed parameter device wherein grids generally focus or concentrate the ray passing through or in. See also (1) Note above.

5.36, for a hollow distributed parameter device through or in which a ray passes, the device being removable from its grids.

5.41, for hollow distributed parameter devices with a grid for accelerating or decelerating the ray between the devices. See also (1) Note above.

5.38 With particular collector or anode structure:

This subclass is indented under subclass 5. Subject matter including an anode or collector, significant details of the anode or collector being claimed.

(1) Note. The anode or collector as here used is the electrode which the ray strikes after passing into or through the last hollow device, and where the particles forming the ray are removed.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.33, for a hollow distributed parameter device with a ray passing through or in which is also a ray anode or collector.

5.39 Plural hollow devices:

This subclass is indented under subclass 5. Subject matter including a plurality of hollow distributed parameter devices with the ray passing through or in at least two of the devices.

(1) Note. For classification here the ray must pass through or in at least two of the devices. A system of two devices with the ray passing through or in only one device, the other device being merely coupled to the ray as by being connected to the cathode and control grid, without the ray passing through or in the other device is not classified here, but elsewhere under subclasses 5+.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.14+, for one or more hollow distributed parameter devices with a plurality of rays passing through or in and especially indented subclasses 47+ for a plurality of such devices.

5.27, for plural hollow distributed parameter devices, one of which deflects the ray passing through or in.

5.28, for plural hollow distributed parameter devices, where the ray passing through or in is deflected.

5.33, for plural distributed parameter devices, one of the devices being a ray anode or cathode.

5.51, for a hollow distributed parameter device with the ray passing through or in, the device having a plurality of gaps.

SEE OR SEARCH CLASS:

331, Oscillators, subclasses 6+ and 83 for electric wave generating systems utilizing a charged particle or electron beam tube wherein the beam passes through plural hollow resonators (e.g., Klystron).

5.41 Accelerating or decelerating the ray between the hollow devices:

This subclass is indented under subclass 5.39. Subject matter including structure for increasing or decreasing the velocity of the ray particles uniformly over the cross-section area of the ray during their passage between the hollow devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.34+, for hollow plural distributed parameter devices with structure for focusing or concentrating the ray between the devices, which may involve accelerating or decelerating the beam differently over its cross section.

5.37, for hollow distributed parameter devices with particular grid structure which may accelerate or decelerate the ray particles.

5.42, for plural hollow distributed parameter devices wherein the devices are excited from a common source for accelerating the ray during passage across the gaps of the respective devices.

14+, for cathode-ray tube circuits generally with a plurality of means for accelerating and/or decelerating the cathode-ray.

5.42 Devices excited to accelerate the ray across their gaps; e.g., synchrotrons:

This subclass is indented under subclass 5.39. Subject matter wherein the interiors of the hollow devices are excited directly from a common source, the phase of the energy as applied to the interiors of the respective devices being such as to accelerate the ray during passage across the gaps of the respective devices, whereby the ray is progressively accelerated during passage through the devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.41, for plural distributed parameter devices wherein the ray is accelerated or decelerated between the devices.

5.43 Devices of different resonance frequency:

This subclass is indented under subclass 5.39. Subject matter wherein at least two of the hollow devices are tuned to different resonant frequencies.

(1) Note. Usually the resonant frequencies are harmonically related, and devices so related may be used in frequency multipliers.

5.44 Feedback connection between the hollow devices:

This subclass is indented under subclass 5.39. Subject matter wherein an electrical connection exists between the interiors of the hollow devices to transmit electrical energy between the devices, but in a direction opposite to that which the ray transmits.

(1) Note. The feedback connection may be either regenerative, degenerative, or sufficient to produce oscillations. If the feedback connection is a ray, in addition to the ray normally passing through the devices, classification is in subclass 5.17 above.

(2) Note. If the claims recite even broadly a load or output fed by the cathode-ray tube circuit herein classified, the load or output being disclosed as external to the envelope of the cathode-ray tube, classification is in Class 327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, appropriate subclasses, or in Class 331, Oscillators, appropriate subclasses, depending whether the energy fed back is insufficient or sufficient respectively to sustain oscillation. However, a coupling probe or loop to abstract energy from the output device is not sufficient to preclude classification here (5.44), even though designated as an output or load.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.17, for devices with a feedback connection therebetween, the connection being by a ray in addition to the ray normally passing through the devices. See also (1) Note above.

SEE OR SEARCH CLASS:

330, Amplifiers, subclasses 45+ for amplifiers having electron beam tubes coupled to cavity resonators, including those with feedback circuits.

331, Oscillators, appropriate subclasses for electrical oscillators utilizing positive feedback to generate oscillations. See also (2) Note above.

5.45 Three hollow devices:

This subclass is indented under subclass 5.44. Subject matter including three or more hollow distributed parameter devices through which the ray passes with an electrical connection between at least two of the devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.49, for three or more hollow distributed parameter devices in general through which a ray passes.

5.46 Device tunable:

This subclass is indented under subclass 5.39. Subject matter, wherein at least one of the hollow devices is resonant at a particular frequency together with structure for changing or permitting change in the resonant frequency.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.13, for a magnetron having a ray passing in or through its resonator for tuning purposes.

5.21+, for a tunable hollow distributed parameter device wherein the ray returns to the device after passing through or in it.

5.53+, for a single hollow distributed parameter device having a ray passing through or in, and which is tunable.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclass 250 for wave meters utilizing tunable coupling networks or adjustable long line sections as resonators.

333, Wave Transmission Lines and Networks, subclasses 219+ for resonators of the distributed parameter type whose resonant frequency may be adjusted, and which are adpated for passage of a cathode-ray through or in.

334, Tuners, appropriate subclasses for tuned networks for use in wave energy apparatus and comprising inductance and capacitance elements in circuit arrangement and in which structure is provided for adjusting one or both of these elements for changing the mean resonant frequency of the circuit.

5.47 Gang tuned hollow devices:

This subclass is indented under subclass 5.46. Subject matter wherein at least two of the hollow resonant devices include frequency changing structure and wherein the frequency changing structures of the respective devices are linked together; e.g., mechanically or electrically, so that the resonance frequencies of the respective devices are changed simultaneously.

(1) Note. Two such devices whose tuning is independently adjustable but which may each be adjusted together to change the resonant frequencies as by manual manipulation are not classified in this subclass. For classification here, there must be a positive linkage between the devices to produce simultaneous frequencies change, although independent frequency change may also be present in addition.

SEE OR SEARCH CLASS:

74, Machine Element or Mechanism, subclasses 1, 10+, and 20 through 110 for mechanical structure for tuning a plurality of distributed parameter devices.

5.48 Device has a flexible wall:

This subclass is indented under subclass 5.46. Subject matter wherein at least one of the hollow devices has, for tuning purposes, a flexible wall to adjust the shape of a dimension of the device, usually for varying the width of the gap in the device across which the cathode-ray travels.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.22+, for a hollow distributed parameter device with a flexible wall, wherein the ray returns to the device after passing through or in.

5.47, for a plurality of hollow distributed parameter devices having flexible walls, which are linked together for simultaneous adjustment of the tuning of the devices.

5.54, for a single hollow distributed parameter device through or in which a ray passes, the device having a flexible wall.

5.49 Three hollow devices:

This subclass is indented under subclass 5.39. Subject matter including at least three hollow distributed parameter devices with the ray passing through or in at least three of the devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.45, for at least three hollow distributed parameter devices as above defined with feedback coupling between at least two of the devices.

5.51 Plural gaps in the hollow device:

This subclass is indented under subclass 5. Subject matter wherein the hollow device has a plurality of gaps displaced along the path of the ray, each gap providing an interaction between the ray and the interior of the device.

(1) Note. Usually the gaps are formed by a drift tube between the gaps and by reentrant portions surrounding the ray between the gaps and the walls of the device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.44+, for plural hollow distributed parameter devices with the ray passing through each device and feedback coupling between the devices.

5.52, for a hollow distributed parameter device with the ray passing through or in and having a reentract portion surrounding the ray.

5.52 Device has a re-entrant portion surrounding the ray:

This subclass is indented under subclass 5. Subject matter wherein the hollow device has a portion of its wall extending inwardly towards an opposing wall, the portion surrounding the cathode-ray as it enters or leaves the device.

(1) Note. The purpose of the reentrant portion is to shorten the gap coupling the cathode-ray to the device, to shield the cathode-ray, and to increase the capacity of the device. Two reentrant portions are often provided, extending toward each other from opposing walls to provide the gap therebetween.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.51, for a hollow distributed parameter device with plural gaps, and having a reentrant portion surrounding the ray passing through the device.

5.53 Device tunable:

This subclass is indented under subclass 5. Subject matter wherein the hollow device is a resonator having an adjustable shape or dimension to permit variation of the resonant frequency, or wherein the device includes or is combined with structure which varies the resonant frequency.

(1) Note. The width of the resonator gap across which the cathode-ray travels may be varied to alter the capacity shunting the resonator, thus changing the resonator frequency.

(2) Note. The structure which varies the resonant frequency may be another resonator. See subclasses 5.39+ for plural

resonators where the ray passes through the plurality of resonators.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.13, for a magnetron having a ray passing through or in the hollow distributed parameter device for tuning purposes.

5.14+, for a hollow distributed parameter device having an additional ray passing through or in for tuning purposes.

5.21+, for a tunable hollow distributed parameter device having a ray passing through or in, the ray returning to the device.

5.46+, for a plurality of hollow distributed parameter devices at least on being tunable and a single ray passing through each.

39, for a discharge device load generally (noncathode-ray tube) with a distributed parameter line, which is tunable.

39.55+, for distributed parameter resonator type magnetrons with variable tuning.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclass 250 for wave meters utilizing tunable coupling networds or adjustable long line sections as resonators.

330, Amplifiers, subclass 45 for amplifier systems having electron beam tubes coupled to cavity resonators including those having subject matter of the type classified in this subclass.

333, Wave Transmission Lines and Networks, subclasses 219+ for resonators of the distributed parameter type whose resonant frequency may be adjusted, and which are adpated for passage of a cathode-ray therethrough.

334, Tuners, appropriate subclasses for tuned networks for use in wave energy apparatus and comprising inductance and capacitance elements in circuit arrangements and in which structure is provided for adjusting one or both of these elements for changing the mean resonant frequency of the circuit.

5.54 Device has a flexible wall:

This subclass is indented under subclass 5.53. Subject matter wherein the hollow device has a flexible wall to adjust the shape or a dimension of the device, usually for varying the width of the gap in the device across which the cathode-ray travels.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.22+, for a hollow distributed parameter device having a ray passing through or in, which ray returns to the device, the device having a flexible wall to adjust the tuning.

5.48, for a plurality of tunable hollow distributed parameter devices and a single ray passing through each, and at least one of the devices having a flexible wall for tuning.

7 Connected to the deflecting electrodes:

This subclass is indented under subclass 4. Subject matter wherein the cathode-ray tube is provided with a pair of electrostatic deflecting electrodes and an inductive impedance or structure is connected to the deflecting electrodes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

364+, for other cathode-ray tube circuits provided with means for periodically deflecting the cathode-ray by pulsating and/or alternating current.

8 Compensating for stray deflecting fields:

This subclass is indented under subclass 1. Subject matter wherein the system is provided with means, or where there is shielding means for part of the system to prevent stray electromagnetic fields from deflecting the cathode-ray from the desired path.

(1) Note. Where the patent claims the source of interference, as a transformer, etc., but does not claim its connection in its own circuit, the patent is included in this subclass. Where the device causing the interference is claimed as connected in its own system, the patent is classified with the art which provides for the combination of a cathode-ray tube system

and the system which includes the source of interference. If the interfering device is in the circuit of the cathode-ray tube, the patent is classified in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

85, for other systems under the class definition wherein the system includes means, or where there is shielding means for part of the system, to prevent radiation of electromagnetic waves to and/or from the system or some part thereof.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 364+ for cathode-ray tubes provided with shielding means for the tube and subclass 313 and the subclasses specified in the Notes thereto for miscellaneous discharge devices provided with shielding means.

8.51 Pulse storing:

This subclass is indented under subclass 1. Subject matter wherein the cathode-ray tube system accumulates or stores pulse energy for later retrieval.

SEE OR SEARCH THIS CLASS, SUBCLASS:

84.51+, for electrical pulse storage systems of the gaseous discharge tube type.

SEE OR SEARCH CLASS:

178, Telegraphy, subclass 17.5 for telegraph transmitters having means for accumulating information in advance of actual transmission.

324, Electricity: Measuring and Testing, subclasses 111+ for electrical systems having means for storing electrical energy for measuring purposes.

341, Coded Data Generation or Conversion, subclass 12 for a cathode-ray tube digital pattern reading-type coded data convertor or generator.

365, Static Information Storage and Retrieval, subclasses 118 and 128 for reading/writing of information by means of an electron beam.

708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 100+ and 800+, respectively, for digital or analog calculators with electrical means for storing numerical data in electric pulse form for a later retrieval.

8.61 Plural cathode-ray tubes or ray-type tubes:

This subclass is indented under subclass 8.51. Subject matter wherein the system comprises two or more cathode-ray tubes or which system utilizes a cathode-ray tube having two or more cathode-rays.

SEE OR SEARCH THIS CLASS, SUBCLASS:

9, for cathode-ray tube systems in general having a plurality of cathode-ray tubes connected in the system.

13.1, for cathode-ray tube systems in general wherein the cathode-ray tube is provided with means for forming a plurality of separate cathode-ray beams.

9 Plural cathode-ray tubes in the circuit:

This subclass is indented under subclass 1. Systems having a plurality of cathode-ray tube devices connected in the system.

(1) Note. One of the cathode-ray tubes may be in the supply circuit or control circuit of the other cathode-ray tube, or both cathode-ray tubes may constitute load devices in the circuit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

8.61, for plural cathode-ray tube systems utilized in storing or code translation systems.

13.1, for cathode-ray tube systems wherein the cathode-ray tube is provided with a plurality of cathode-ray beams.

324, and indented subclass, and the subclasses specified in the notes to the definitions of those subclasses for systems under the class definition having plural discharge device loads.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclass 2.1, for structures which include a plurality of cathode-ray tubes which are structurally combined so as to form a unitary device (e.g., such as being enclosed within a common envelope) and subclasses 409+ for cathode-ray tubes which are provided with a plurality of cathodes. See subclasses 409+ where the cathode-ray tube has means to form a plurality of cathode-ray beams.

377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclass 99 for plural cathode-ray tube systems utilized in pulse counting.

10 With radiant energy sensitive control means:

This subclass is indented under subclass 1. Subject matter wherein the system includes means for controlling the operation of the cathode-ray device by means of radiant energy.

(1) Note. The cathode-ray tube may include a radiant energy ray sensitive electrode, that is, the operation of the cathode-ray device is altered when subjected to radiant energy, or the system may include a radiant energy sensitive device, such as a photocell, which controls the operation of the cathode-ray tube when subjected to radiant energy.

(2) Note. The term "radiant energy" as used in these definitions includes radiant energy of any type, such as X-ray, light rays whether within the visible or invisible spectrum, Hertzian waves and other radiant electrical energy excepting the electrons emitted from the cathode-ray tube electrodes, and emanations from radioactive substances.

(3) Note. This subclass does not include the combination of a cathode-ray tube and an optical device, such as a lens or mirror, etc., which is used with the cathode-ray tube for directing radiant energy to the sensitive element or generated radiant energy from the tube, even if the system of supply for the cathode-ray tube is claimed, the patent being classified with the art appropriate to the combination.

SEE OR SEARCH THIS CLASS, SUBCLASS:

149, and indented subclasses for other systems under the class definition wherein the system includes means for controlling the operation of the load device by means of radiant energy.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 200+ for photocell circuits and apparatus. Indented subclass 549 includes a cathode-ray tube device which illuminates a photocell and is controlled by said photocell while indented subclass 214 contains cathode-ray device of the image convertor or light amplifier type.

313, Electric Lamp and Discharge Devices, subclasses 365+ for cathode-ray tube structures which are photosensitive.

348, Television, subclasses 162+ for television systems responsive to radiant energy in the invisible spectrum and subclass 325 for television systems using a photoelectric controlled cathode-ray tube.

11 With secondary emission stage in the cathode-ray tube:

This subclass is indented under subclass 10. Subject matter wherein the cathode-ray tube is provided with a secondary emissive electrode.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12.1, for other cathode-ray tube systems wherein the cathode-ray tube is provided with a secondary emissive electrode.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclass 379 for cathode-ray tube structures which are photosensitive and which have a secondary emissive electrode.

11.5 Color convergence controlled by photodetector:

This subclass is indented under subclass 10. Subject matter including a light-responsive device which controls the convergence in response to a characteristic of an image or pattern produced on the screen.

SEE OR SEARCH THIS CLASS, SUBCLASS:

368.11+, for color convergence control circuitry for a cathode-ray tube, absent photodetector control.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclass 549 for radiation responsive control circuitry for a cathode-ray tube including pre-photocell optical structure.

12.1 With secondary emission stage in the cathode- ray tube:

This subclass is indented under subclass 1. Subject matter wherein the cathode-ray tube is provided with a secondary emissive electrode.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.11+, for cathode-ray tube circuits wherein a cathode-ray passes through a hollow distributed parameter device, the ray impinging on a secondary emission electrode to produce another ray or to augment the impinging ray.

11, for cathode-ray tube systems wherein the system includes means for controlling the operation of the cathode-ray tube by means of radiant energy, the cathode-ray tube being provided with a secondary emissive electrode.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 379 and 399 for cathode-ray tube structures which include a secondary emissive electrode.

329, Demodulators, appropriate subclasses for demodulators with secondary emission.

330, Amplifiers, subclass 42 for amplifier systems having a tube containing a secondary emissive electrode.

13.1 Plural ray-type tube:

This subclass is indented under subclass 1. Subject matter wherein the cathode-ray tube is provided with means for forming a plurality of separate cathode-ray beams.

(1) Note. The cathode-ray tube may be provided with a plurality of cathodes or a single cathode with means for separating the emission from the cathode into a plurality of rays.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.14+, for cathode-ray tube circuits wherein a plurality of rays passes through or in a hollow distributed parameter device.

8.61, for plural beam cathode-ray tubes utilized in pulse counting, storing, or code translation systems.

9, for cathode-ray tube systems under subclass 1 which include a plurality of cathode-ray tubes in the system.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 409+ for cathode-ray tube structures which are provided with means to form a plurality of cathode-ray beams.

13.11 Storage tubes:

This subclass is indented under subclass 13.1. Subject matter wherein changeable information is stored in the form of charged or uncharged areas of the screen of the cathode-ray tube.

14 Plural concentrating, accelerating, and/or de-accelerating stages:

This subclass is indented under subclass 1. Subject matter wherein the cathode-ray tube is provided with a plurality of means for either concentrating, accelerating and/or de-accelerating the cathode-ray, and the system includes means for supplying electric current and/or potential to such means.

(1) Note. The concentrating, accelerating, and/or de-accelerating means may be electrostatic, electromagnetic, or both.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5+, for cathode-ray tube circuits wherein the ray passes through or in a hollow distributed parameter device, the ray being accelerated or decelerated while so passing, and especially subclasses 5.16+, 5.27, 5.28, and 5.41 where the ray passes through a plurality of such devices; and subclasses 5.34+ where structure is included for concentrating the ray.

13.1, for cathode-ray tube systems wherein the cathode-ray tube is provided with means for forming a plurality of cathode-ray beams in the tube, each of the beams being provided with concentrating, accelerating, and/or de-accelerating means.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 441+ for cathode-ray tube structures which have a plurality of electrodes between the cathode and the target (e.g., a plurality of accelerating and/or decelerating electrodes, and/or concentrating electrodes, and/or modulating electrodes).

15 Three or more stages:

This subclass is indented under subclass 14. Subject matter, wherein the cathode-ray tube is provided with three or more means for concentrating, accelerating, and/or de-accelerating the cathode-ray.

16 Intermediate stage at lower potential:

This subclass is indented under subclass 15. Subject matter wherein the current and/or potential applied to the concentrating, accelerating, and/or de-accelerating means which forms the intermediate stage is less than the current and/or potential applied to the concentrating, accelerating, and/or de-accelerating means which form the stages on either side of such intermediate stage.

17 With ray-deflecting stage interposed between plural concentrating or accelerating and/or de-accelerating stage or co-extensive with one such stage:

This subclass is indented under subclass 14. Subject matter wherein the cathode-ray tube is provided with ray deflecting means, the ray deflecting means being positioned so as to deflect the ray between two of the concentrating, accelerating, and/or de-accelerating stages, or to cause the ray to be deflected in one of the concentrating, accelerating, and/or de-accelerating stages.

(1) Note. The ray deflecting means may be mounted within one of the concentrating, accelerating, and/or de-accelerating electrodes or means, or may be interposed between two such means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.27, and 5.28, for cathode-ray tube circuits including a plurality of hollow distributed parameter devices with the ray passing through or in, the ray being reflected or deflected.

364+, for other cathode-ray tube systems wherein the cathode-ray tube is provided with ray deflecting means.

30 Ray modulation:

This subclass is indented under subclass 1. Subject matter wherein the cathode-ray tube is provided with ray modulating means, and the circuit includes means to apply potential and/or current to the ray modulating means.

(1) Note. Ray modulating means is defined as being any means for varying the number of electrons in the cathode-ray beam, and to exclude focusing, concentrating, and ray accelerating means.

(2) Note. This subclass does not include systems wherein the only ray control means is a means which is supplied with current and/or potential to maintain a constant accelerating and/or de-accelerating field for the cathode-ray.

SEE OR SEARCH THIS CLASS, SUBCLASS:

14, and the indented subclasses and the subclasses specified in the notes to the definition of these subclasses for other

systems wherein the cathode-ray tube is provided with a plurality of accelerating and/or de-accelerating stages.

349, and the indented subclasses and the subclasses referred to in the notes to the definition of these subclasses for systems under the class definition which include a gas or vapor discharge device which is provided with a discharge control means.

364+, where the cathode-ray tube is provided with ray sweep means, and the system includes means for supplying current and/or potential to the sweep means and to the discharge intensity control means.

380+, where the system includes means for applying suitable potential and/or current to the ray intensity control means to prevent the ray from being projected upon the ray receiving anode or target when the ray sweep circuit becomes inoperative to continue the ray sweeping.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 446+ and the subclasses specified in the Notes thereto for cathode-ray tube structures which have a ray modulating means.

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, appropriate subclasses for miscellaneous systems which include a discharge device provided with a discharge control means.

32 COMBINED LOAD DEVICE OR LOAD DEVICE TEMPERATURE MODIFYING MEANS AND ELECTRICAL CIRCUIT DEVICE STRUCTURE:

This subclass is indented under the class definition. Subject matter, sections (A) and (B).

(1) Note. If any circuit element is not structurally combined with the discharge device structure or the heating and/or cooling means, the patent is classified in the class which provides for the claimed system. Where the claimed system is classified in this class, the patent is classified in this or the indented subclasses, and cross-referenced to the appropriate succeeding subclass. Their mere recitation of the source of potential for the discharge device will not exclude the patent from these subclasses. For the classes which provide for such systems as are excluded from these subclasses, search Class 327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems and the classes and subclasses specified in the main class search notes to that class.

(2) Note. The circuit element may be mounted within or on the base or envelope of the load device where the load device is an electric lamp or electric discharge device designed to operate in a vacuum, or an atmosphere of confined gas or vapor.

(3) Note. Mere electrical heaters which are used only to heat the load device and which are not used as impedances in any circuit other than the heater circuit are not included in this or the indented subclasses.

(4) Note. This and the indented subclasses include the combination of a load device or the load device temperature modifying means and a circuit element where the load device or the temperature modifying means and the circuit element are formed of separable parts, but are provided with means for fastening or assembling the parts together to form a unitary structure. However, this and the indented subclasses do not include combinations of a load device with a separable socket or connector which may include a circuit element in the socket or connector. See (8) Note below.

(5) Note. Examples of electrical devices considered to be circuit elements are electric switches, resistances, capacities, inductances, transmission lines, antennas, transformers, and any other circuit elements.

(6) Note. The circuit element combined with the load device need not be a circuit element to be used in the circuit of the load device, but may be provided with

separate terminals so as to be usable in any desired relation.

(7) Note. This and the indented subclasses include load devices wherein the electrodes and/or the electrode leads are formed so as to function as inductances. This or the indented subclasses do not include load devices wherein the electrodes are formed of resistive material, and no other circuit impedance is combined with the discharge device, except (1) where a discharge device load and an incandescent filament lamp are structurally combined in one device, or (2) where a discharge device load is provided with a resistance heatable cathode or an electric resistance cathode heater device, the incandescent filament or the cathode resistance, or the heater resistance being connected with the discharge device so as to function as an impedance device in the discharge device circuit. This or indented subclasses do not include discharge devices having the only condenser effect formed by the inter-electrode or inter-electrode lead capacity. Such load devices will be found in the classes which provide for electric lamp and discharge device structures.

(8) Note. This and the indented subclasses do not include patents wherein the load device is claimed in combination with a separable socket, receptacle, or connector for the load device, the socket, receptacle, or connector including a circuit element. Such patents are classified as a system in the appropriate system class. Where the load device and the socket or other connector are constructed and arranged with respect for each other, so that the contacts on the load device and socket may be used as switch contacts, the patent is classified in this or the indented subclasses. This and the indented subclasses do not include the combination of a load device and a transmission line or waveguide where the transmission line or waveguide is designed to have an electrical connection with the load device and no part of the transmission line or waveguide is within the envelope or otherwise an integral part of the load device.

(9) Note. The line between this and the indented subclasses and the classes which provide for the structural combination of a plug, socket, or other connector which has structurally combined therewith an electric circuit element is that where the connector is claimed as a part of a lamp or discharge device, such as the base, and the lamp or discharge device is recited by name only, the patent is classified in the appropriate class which provides for the combined connector and circuit element. For sockets, receptacles, and connectors structurally combined with circuit elements, see the Search Class notes, below.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3, and indented subclasses for cathode-ray tubes which are combined with other circuit elements, all of which are structurally combined therewith to form a unitary device.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclass 51 and indented subclasses and the other subclasses specified in the notes to subclass 51 where the circuit element is an electric switch. (See (9) Note, above.)

314, Electric Lamp and Discharge Devices: Consumable Electrodes, appropriate subclasses for electric discharge devices of the consumable electrode type which are structurally combined with a circuit element.

336, Inductor Devices, subclass 107 and the Notes thereto, for the structural combination of a connector and a transformer or an inductive reactor.

338, Electrical Resistors, subclasses 68+ for mechanically variable electrical resistors, and especially subclasses 70+ for such variable resistors in or on a lamp socket, and subclass 219 for fixed resistors in or on a lamp socket or base. (See (9) Note, above.)

361, Electricity: Electrical Systems and Devices, subclasses 139+ where the circuit element is an electromagnetic devices and subclasses 271+ where the circuit element is a condenser. (See (9) Note, above.)

33 Portable self-contained:

This subclass is indented under subclass 32. Subject matter wherein the combined structure includes a source of potential and the other circuit elements necessary to operate the load device so that the combined structure forms a self-contained device which may be transported from one place to another.

(1) Note. The device need not be designed to be carried about by a person.

(2) Note. This subclass includes only those self-contained devices which are not otherwise provided for in other classes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

55, for other load devices structurally united with a generator of current and/or potential.

SEE OR SEARCH CLASS:

40, Card, Picture, or Sign Exhibiting, appropriate subclasses for portable, self-contained, illuminated signs.

43, Fishing, Trapping, and Vermin Destroying, subclasses 16 and 17 for portable, self-contained, illuminated signaling devices for fishing apparatus, and subclasses 17.5+, for portable, self-contained, illuminated bait.

310, Electrical Generator or Motor Structure, subclass 50 for portable generators or motors.

313, Electric Lamp and Discharge Devices, subclass 48 for space discharge devices, per se, which are provided with a handle. The devices in Class 313 do not include any circuit element in addition to the space discharge device. For example, if the structure includes a resistance, a switch, or other circuit element, the patent is classified in this subclass of Class 315.

322, Electricity: Single Generator Systems, subclass 1 for portably mounted generator systems.

362, Illumination, appropriate subclasses, for articles such as firearms, canes, etc., which include an electric lamp and the source of potential therefor to make a self-contained, illuminated article, and especially subclasses 157+ for portable self-contained electric lamps, such as flashlights.

368, Horology: Time Measuring Systems or Devices, subclasses 67 and 227, for illuminated clocks.

441, Buoys, Rafts, and Aquatic Devices, subclasses 13+ for illuminated buoys.

455, Telecommunications, subclass 346 and 351 for portable radio sets.

34 With antenna:

This subclass is indented under subclass 32. Subject matter having an antenna combined with the structure of the load device.

SEE OR SEARCH CLASS:

342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), appropriate subclasses for radio apparatus and Class 343, Communications: Radio Wave Antennas, subclasses 700+ for antennas, per se, and particularly subclass 701 for antennas having an electric space discharge device, whose space discharge forms part of the antenna or its coupling network, and not otherwise classified.

455, Telecommunications, subclasses 269+ for radio receivers provided with antenna.

35 Plural discharge device loads:

This subclass is indented under subclass 32. Subject matter, wherein (1) a plurality of electric discharge device loads are each structurally combined with the same circuit element, or (2) a plurality of discharge device loads are each provided with means to cool and/or heat at least part of the discharge device loads, the cooling means being either structurally combined with or forming an electrical circuit element.

(1) Note. This subclass includes load devices having an enclosing envelope, the envelope enclosing a plurality of discharge devices, the circuit element being mounted either within the enclosing envelope, or within the base or connector, or otherwise structurally combined with the discharge device.

(2) Note. Where a plural discharge device system is claimed which is within the class definition, and the discharge devices are structurally combined in a single device, but no circuit element is combined with the discharge device structure, the patent is classified as a plural discharge device system in one of the other appropriate subclasses of this class.

(3) Note. This subclass includes two or more load devices, each supplied with a cooling fluid from a common source of coolant, the cooling conduits being either formed as circuit impedances or structurally combined with a circuit impedance.

(4) Note. Patents claiming two or more discharge devices which are structurally united, such as being within the same envelope or enclosure, and having the electrodes of the respective discharge devices connected together, but not claiming any circuit element other than the conductive connector, are not included in this or the indented subclasses, see Class 313, Electric Lamp and Discharge Devices, subclasses 1+.

36 Series connected discharge devices:
This subclass is indented under subclass 35. Subject matter, wherein the discharge device loads are connected in electrical series relation with respect to each other and the source of discharge current for the discharge devices.

(1) Note. This subclass includes, for example, a load device which includes in structural combination a circuit element a rectifying discharge device, and a discharge device load connected to the rectifier so as to be supplied with discharge current by a source of current supply through the rectifier.

SEE OR SEARCH THIS CLASS, SUBCLASS:
189, and indented subclass and the subclasses specified in the notes to the definition of these subclasses, for other series connected discharge device systems under the class definition.

SEE OR SEARCH CLASS:
314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 8, for plural series connected consumable electrode discharge devices and the system therefor, subclass 33, for consumable electrode discharge devices provided with three or more series connected discharge electrodes, and the system therefor.

37 Cathode-anode circuit connected to the discharge control electrode of another discharge device load (e.g., cascade):
This subclass is indented under subclass 35. Subject matter wherein at least one of the load devices is a discharge device provided with a discharge control electrode, and the cathode-anode circuit of one of the discharge devices includes means to impress a potential on such control electrode.

(1) Note. Some of the patents in this subclass are multiple stage discharge devices having the discharge device units connected in cascade relation.

38 Corresponding electrodes connected by a circuit impedance (e.g., push-pull):
This subclass is indented under subclass 35. Subject matter , wherein at least two of the discharge device loads each have at least one electrode connected either to the opposite terminals of a circuit impedance or to similar impedances which are connected together at their terminals which are not connected to the electrodes, the electrode of each of the discharge device units which is connected to the circuit impedance being similar in its function to the electrode of the other discharge device unit which is connected to the circuit impedance.

(1) Note. This subclass includes, for example, a device containing two discharge device loads and a circuit impedance, the anodes of the discharge devices being connected to opposite ends of the impedance.

(2) Note. Some of the patents in this subclass are multiple unit discharge devices having the discharge device units connected in push-pull relation.

39 Discharge device load with distributed parameter-type transmission line (e.g., wave-guide, coaxial cable):

This subclass is indented under subclass 32. Subject matter having an electric discharge device load structurally combined with an electric wave transmission device or line having or acting as if it had distributed inductance or capacitance.

(1) Note. See (8) Note to subclass 32.

(2) Note. The transmission device or line may be a waveguide, a coaxial line or a parallel wire transmission line.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3.5+, and 4+, for this subject matter where the discharge device includes means to focus or otherwise shape the electron stream into a beam. See subclasses 3.5+ where the transmission line or device includes means to exhibit a wave component of a traveling wave, the velocity of which is reduced in comparison to the wave velocity in free space.

SEE OR SEARCH CLASS:

174, Electricity, Conductors and Insulators, subclass 28 and indented subclass, and subclass 102 and indented subclasses for coaxial cables, subclasses 27 and 113 for parallel wire cables.

331, Oscillators, subclasses 5, 6+, 79+, 86+, 93, and 96+ for electrical oscillation systems wherein a space discharge device is combined with a distributed parameter impedance device.

333, Wave Transmission Lines and Networks, particularly subclass 13 for resonator type breakdown discharge systems; e.g., T-R or R-T systems, the tube and resonant device being combined in a separable and nonintegral manner, subclasses 219+ for resonant parallel transmission lines, per se, subclasses 236+ for long lines in general, subclasses 239+ under subclass 236 for electric waveguides, per se, particularly adapted for propagating electrical waves having an electric or magnetic field component extending in the direction of propagation, and subclasses 243+ under subclass 236 for coaxial cables, per se, whose distributed electrical parameters determine the wave propagating characteristics of the cable.

39.3 Traveling wave type with delay-type transmission line:

This subclass is indented under subclass 39. Subject matter in which the transmission line with distributed parameters incorporated in the tube structure is arranged to propagate a traveling electro-magnetic wave and is constructed and arranged to have a wave component the velocity of which is reduced in comparison with the wave velocity in free space; and in conjunction therewith are means for generating an electron stream whose path is in proximity to the path of said traveling wave component so as to permit an exchange of energy between the electron stream and the traveling wave propagated along the transmission path.

(1) Note. The transmission line or waveguide may be constructed as a spiral or helix so that the wave has an axial velocity component along the helix which is lower than the free space velocity of the wave, or the transmission line or waveguide may be loaded as by inductive members to reduce the velocity of the traveling wave. Another type included is a transmission line formed by an electrode having a plurality of resonant cavities formed in the electrode adjacent to an along the path to be taken by the electron stream, the structure being such that a traveling wave may be

propagated along the length of the structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

1+, for miscellaneous discharge device systems using tubes such as are classified in this subclass.

3.5+, for this subject matter where the discharge device includes means to focus or otherwise shape the electron stream into a beam.

39.51+, 40 and 41+, for other discharge devices which have structurally combined therewith an inductor or which have an electrode formed so as to act as if it possessed inductance, with or without a capacitive impedance combined with or inherent in the structure. The devices in these subclasses are distinguished from the devices in subclass 39.3 primarily in that the distributed parameter structure in these subclasses is not a transmission line arranged to propagate a traveling wave.

SEE OR SEARCH CLASS:

330, Amplifiers, subclass 43 for amplifier systems which include traveling wave tubes. See Lines With Other Classes and Within This Class and References to Other Classes in the Class Definitions of Class 330.

332, Modulators, especially subclasses 131+, 147+ and 165+ for modulator systems having tubes of the type here classified.

333, Wave Transmission Lines and Networks, subclass 22 for transmission lines of the distributed parameter type (e.g., waveguides, long lines) having dissipating terminations, subclasses 138+ for delay networks, subclasses 32+ for impedance matching networks for transmission lines, subclass 81 for transmission lines of the long line with an attenuator means, and attenuators especially designed for use over a frequency band or for use in transmission lines of the distributed parameter type, and subclasses 236+ for the structure of transmission lines of the distributed parameter type.

39.51 Distributed parameter resonator-type magnetron:

This subclass is indented under subclass 32. Subject matter wherein the device is a discharge device having an electrode or a portion thereof formed so as to provide structure having distributed impedance parameters and having or acting as if it had inductance and capacitance, and which are provided with means for subjecting the discharge space to an electromagnetic field, the device being designed to operate so that there is interaction between the space discharge and the distributed impedance structure.

(1) Note. Included in this and the indented subclasses are discharge devices which are known as magnetrons and which have an electrode formed so as to have distributed inductance and capacitance, or having an electrode formed with a resonant cavity, or having an electrode with interleaved fingers arranged to form a resonant structure (e.g., interdigital anode), or having an electrode formed as a flat strip, or spiral, or perforated so as to form a structure having distributed inductance and capacitance (e.g., a resonator). Note that subclasses 40 and 42 also contain certain types of “magnetrons”.

(2) Note. The devices in this subclass are designed for use with a magnetic field. For similar devices where the electrodes are formed so as to provide a structure having distributed inductance and capacitance or where an electrode is formed as an inductor and which do not have electromagnetic means for influencing the space discharge, see this class, subclass 40. Also see subclass 40 for devices where an electrode is formed as an inductor and a separate capacitor is used to form a resonant or tuned circuit, with or without a magnetic field means. See (1) Note, above.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3.5+, for traveling wave cathode-ray circuits with delay type transmission lines.

5.13, for a cathode-ray tube circuit with a distributed parameter resonator type magnetron, the cathode-ray passing through or in the resonator of the magnetron.

35+, for devices under subclass 32 wherein there are two separate magnetron devices within the envelope.

39+, for discharge devices of this type wherein the device includes a transmission line having distributed parameters (e.g., a waveguide, a coaxial cable or a parallel wire transmission line). See (1) Note, above. Note especially that subclass 39.3 provides for devices very similar to the devices in this and the indented subclasses where the structure having the distributed parameters is formed as a transmission line arranged to propagate a traveling wave.

40, see (2) Note, above.

42, for discharge devices under subclass 32 having an inductor connected to an electrode of the discharge device. The device may also include a capacitance so as to form a tuned or resonant circuit. The devices in subclass 42 may include a magnetic means for influencing the space discharge (e.g., one type of magnetron). See (1) Note, above.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 153+ for miscellaneous discharge devices which are provided with an electromagnet for subjecting the discharge space to a magnetic field. These subclasses in Class 313 provide for so-called magnetrons when the structure of the electrode or other portion which is formed to have the distributed impedance structure is not claimed.

330, Amplifiers, subclasses 47+ for amplifier systems using magnetrons including those of the type classified in this and indented subclasses.

331, Oscillators, subclasses 5 and 86+ for oscillator systems of the magnetron type.

332, Modulators, especially subclasses 132, 147+ and 166 for modulating systems using magnetrons of the type classified in this subclass.

333, Wave Transmission Lines and Networks, subclasses 219+ for resonators of the distributor parameter type. See subclasses 227+ for the cavity or waveguide type.

39.53 With output-coupling means:

This subclass is indented under subclass 39.51. Devices provided with means for coupling oscillating electrical energy to or extracting oscillatory electrical energy from the distributed impedance structure of the discharge devices.

(1) Note. Many of the patents in this subclass show the combination of a magnetron with a coupling loop or other coupling means for transferring energy to or from the distributed impedance structure (e.g., resonator) of the discharge device. Where the coupling means includes significant transmission line structure, such as a coaxial cable, a parallel wire transmission line or a waveguide, the patent is classified in subclass 39 and cross-referenced to this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

39, see (1) Note, above.

SEE OR SEARCH CLASS:

333, Wave Transmission Lines and Networks, subclass 24 for coupling networks for transferring oscillatory electrical energy to or from a structure or circuit of the long line or distributed parameter type.

39.55 Variable tuning:

This subclass is indented under subclass 39.51. Devices which are provided with means to change the tuning or the impedance of the distributed impedance structure of the discharge device.

(1) Note. The variable tuning means may be provided for maintaining the impedance or tuning of the device constant (e.g.,

such as compensating for changes caused by temperature conditions in the impedance structure) or it may be for the purpose of varying the impedance of the device.

(2) Note. This subclass does not include structure such as strapping which is utilized to cause all of the distributed impedance structures or parts to have a common impedance value such as magnetrons having a plurality of cavity resonators and straps between selected anode segments so that all of the resonators operate at the same frequency. For such excluded subject matter, see subclass 39.69, below.

(3) Note. The means for tuning or varying the impedance of the distributed impedance structure may be means for varying the geometrical configuration of the distributed impedance structure or means for creating or changing the space charge in the distributed impedance structure as by the use of an electric space discharge to project electrons into or adjacent to a resonant space or by the use of a movable tuning element. Where the means for changing the tuning or impedance includes an input or output coupling means, the search should be in subclass 39.53.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.13, for a distributed parameter resonator type magnetron, with a cathode-ray passing through or in the resonator of the magnetron for tuning purposes.

39.53, see (3) Note.

39.71, for devices under subclass 39.51 which are provided with a magnetic field generating means and means for varying the strength or orientation of the magnetic field.

SEE OR SEARCH CLASS:

331, Oscillators, subclass 5 for magnetron oscillators wherein the generator frequency is controlled by an automatic frequency stabilization control loop, and subclass 90 for magnetron type oscillators with frequency adjusting means.

333, Wave Transmission Lines and Networks, subclass 235 for resonant structures of the distributed parameter type which are provided with tuning means, see subclasses 227+ for the cavity or waveguide type, and subclasses 236+ for long lines with means for varying the impedance of the line, see subclasses 239+ for waveguides and subclasses 243+ for coaxial cables.

334, Tuners, appropriate subclasses for variable tuners, per se, and especially subclasses 41+ for resonant line tuners of the distributed parameter type.

336, Inductor Devices, appropriate subclasses for variable inductors, per se.

39.57 Electron emission type:

This subclass is indented under subclass 39.55. Devices in which an electron emissive means is provided to project electrons into or adjacent the space formed by the distributed impedance structure to change the tuning or impedance of the distributed impedance structure.

(1) Note. The electron emissive means must be in addition to the cathode of the device in order to be classified in this subclass. It may be a secondary electron emissive means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5.23, for cathode-ray tube circuits including a hollow distributed parameter device having a flexible wall adjustable for tuning purposes, and wherein the ray passes through or in and returns to the device, the flexible wall being thermally controlled.

39.63, for other discharge devices under subclass 39.51 which are provided with an auxiliary anode, or cathode, or control electrode or secondary emitter electrode.

39.59 Thermal or magnetic actuator:

This subclass is indented under subclass 39.55. Devices which have a movable element for varying the tuning or impedance of the distributed impedance structure, the movable element

being actuated by a thermal or magnetic motor means.

(1) Note. The thermal motor means may be a thermostat. The magnetic motor means may be an electromagnet.

(2) Note. The thermal or magnetic motor means may vary the position of one portion of the distributed impedance structure with respect to some other portion or a tuning element may be moved into proximity to or away from some portion of the impedance structure.

SEE OR SEARCH CLASS:
313, Electric Lamp and Discharge Devices, subclass 151 for miscellaneous discharge devices which are provided with a movable electrode or shield where the means for moving the electrode or shield is a thermal motor means, and subclass 152 for miscellaneous discharge devices having a movable electrode or shield which is moved by a magnetically actuated means.
336, Inductor Devices, subclasses 30+ for inductors which are provided with thermally or magnetically actuated means to vary the inductive impedance.

39.61 Movable tuning element (e.g., slug):
This subclass is indented under subclass 39.55. Devices which are provided with a movable tuning element which may be moved to and from or within the distributed impedance structure to vary the tuning or impedance.

(1) Note. This subclass does not include magnetrons where the only movable structure is a part of the distributed impedance structure. For example, in a cavity resonator if only the dimensions of the structure forming the cavity are varied, the patent is excluded from this subclass. If a tuning element is inserted into or near the cavity to vary the tuning, the patent is included in this subclass. The excluded subject matter will be found in subclasses 39.55 or 39.57.

SEE OR SEARCH THIS CLASS, SUBCLASS:
39.55, see (1) Note.
39.59, for this subject matter where the means for moving the tuning element is a thermal or magnetic actuator.

SEE OR SEARCH CLASS:
313, Electric Lamp and Discharge Devices, subclasses 146+ for miscellaneous discharge devices which have a movable electrode or shield.
336, Inductor Devices, subclasses 20, 30+, 45, 75+, and 130+ for inductors which are provided with a movable element other than the coil structure for varying the inductive impedance.

39.63 With control electrode, secondary emitter, or auxiliary anode or cathode:
This subclass is indented under subclass 39.51. Devices which are provided with a control electrode, an auxiliary anode, an auxiliary cathode or a secondary emitter electrode.

(1) Note. The secondary emitter electrode may be upon the same support as the primary cathode. The auxiliary electrode need not be formed so as to provide a portion of the distributed impedance structure.

(2) Note. This subclass includes either as originals or as cross-references substantially all magnetrons which are provided with more than two electrodes.

SEE OR SEARCH THIS CLASS, SUBCLASS:
39.55, for magnetrons under subclass 39.51 which have an electrode designed for use in tuning or varying the reactance of the distributed impedance of the structure.
39.57, for devices under subclass 39.51 which are provided with an auxiliary cathode for use in tuning the distributed impedance structure.

SEE OR SEARCH CLASS:
313, Electric Lamp and Discharge Devices, subclasses 103+ for miscellaneous discharge devices which are provided

with a secondary emissive electrode, subclasses 293+ for miscellaneous discharge devices which are provided with a control electrode interposed in the discharge space between the cathode and the anode, subclass 306 for miscellaneous discharge devices having three or more electrodes (e.g., plural anodes or plural cathodes), and subclass 308 for miscellaneous discharge devices which are provided with a discharge control electrode.

331, Oscillators, subclass 89 for electric wave generation systems utilizing a magnetron-type device with a secondary emissive electrode.

39.65 Having diverse size resonators:

This subclass is indented under subclass 39.51. Devices wherein an electrode or portion thereof is formed so as to provide a plurality of distributed impedance structures, the geometrical configuration or the inductance and the capacitance of at least one of the structures being substantially different from the geometrical configuration or the inductance and capacitance of another of the structures.

(1) Note. The different distributed impedance structures may be designed to operate at different frequencies, or to eliminate undesired modes of operation, or for other purposes.

(2) Note. This subclass does not include such distributed impedance structures which are only incidentally of different size or which operate at different undesired frequencies and which may be provided with strapping or other means to make all the structures operate at the same frequency or to reduce undesired modes of operation. For such excluded subject matter, see the other subclasses under subclass 39.51, especially subclass 39.69 for the devices with strapping.

(3) Note. This subclass includes the structure of the electrode, per se, which is provided with the distributed impedance structures of different impedances.

SEE OR SEARCH THIS CLASS, SUBCLASS:

39.61, for devices under subclass 39.51 which have a movable tuning element which may be moved to and from or within the distributed impedance structures to vary the parameters of the structure.

39.67 Tubular anode with eccentric or axially displaced cathode:

This subclass is indented under subclass 39.51. Devices which are provided with a tubular anode having the distributed impedance structure as a part thereof and which have a cathode disposed within the anode so as not to be at the center of the anode or which has the cathode disposed on the axis of the anode but axially displaced so it is not centrally located within the ends of the anode.

39.69 With strapping for resonant structure:

This subclass is indented under subclass 39.51. Devices which have a plurality of distributed impedance structures and which have the structures interconnected by straps or wires which are located so as to be adjacent and electrically coupled to the plurality of structures so as to tend to restrict the structures to operation at a common frequency or tend to constrain the structures to operation in one or more particular modes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

39.55, for devices under subclass 39.51 which are provided with variable tuning or impedance varying means for the distributed impedance structure means.

39.71 Magnetic field generating and pole structure:

This subclass is indented under subclass 39.51. Devices which are provided with significantly claimed magnetic field generating or magnetic pole structure.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 156+ for other discharge devices which are provided with similar magnetic field generating and pole

structure. The subclass in Class 313 provides for similar magnetic field and pole structure when the device is not claimed as being a magnetron.

39.73 Interdigital electrode:
This subclass is indented under subclass 39.51. Devices wherein the electrode has a resonant structure formed by interleaved finger-like segments, alternate segments being connected together at one end, other segments being connected together at the opposite end.

(1) Note. This subclass includes the structure of the electrode, per se, which is provided with the interdigital structure.

39.75 Anode with plural cavities:
This subclass is indented under subclass 39.51. Devices in which the anode is provided with a cavity which due to its geometry and its electrical properties, is resonant.

(1) Note. The anode may be a circular block having therein a resonant cavity, or it may be a circular structure formed with vanes, the space between the vanes forming a resonant cavity.

(2) Note. This subclass includes magnetrons with the specified type of electrode, and also the electrode, per se.

SEE OR SEARCH CLASS:
313, Electric Lamp and Discharge Devices, subclass 356 for miscellaneous anodes which are of tubular or hollow sleeve form.

39.77 With resonant cavity coupled to anode:
This subclass is indented under subclass 39.51. Devices which are provided with a resonant cavity coupled to the anode structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:
39, where a discharge device has structurally combined therewith a waveguide.
39.73, for this subject matter where the anode structure is formed so as to provide an interdigital electrode.
39.75, where the anode structure includes a resonant cavity.

40 Electrode formed as inductive impedance:
This subclass is indented under subclass 32. Subject matter having an electrode of the load device formed so as to function as an inductance.

(1) Note. The devices in this subclass may include a separate capacitor to form a resonant or tuned circuit, and may include a magnetic field generating means (the device may be a magnetron). Where an electrode is formed so as to provide distributed inductance and capacitance (e.g., cavity resonator) and the device is designed to operate in a magnetic field, see subclasses 39.51+. This subclass (40) includes somewhat similar devices having an electrode formed so as to provide distributed inductance and capacitance and where the device is not designed to operate in a magnetic field. See subclass 42 where the device has separate inductor connected between different anodes or different cathodes with or without a capacitor (e.g., to form a resonant circuit) or a magnetic field producing means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
4+, for cathode-ray tubes having a part thereof formed so as to function as an inductance or as an inductance and capacitance (e.g., hollow resonator, waveguide).
39+, for this subject matter where the device having the distributed inductance is a transmission line having distributed parameters (e.g., waveguide, coaxial cable, etc.).
39.51, for this subject matter where an electrode is formed to provide a structure having distributed inductance and capacitance (e.g., a resonator) and an electromagnetic device is provided for subjecting the discharge space to a magnetic field (e.g., magnetrons). See (1) Note, above.
42, for discharge devices which are provided with a plurality of anodes or a plurality of cathodes and a separate inductor connected between at least

two of the anodes or between at least two of the cathodes. See (1) Note, above.

62, and the subclasses specified in the notes to the definition of that subclass, for other patents wherein an inductive impedance is structurally combined with a discharge device.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclass 155 for lamps and discharge devices which have an electrode designed to generate a magnetic field.

41 Inductive impedance connected between electrodes of a discharge device load:

This subclass is indented under subclass 32. Subject matter, wherein the circuit element which is structurally combined with the load device is an inductive impedance, the load device being a discharge device and having the inductive impedance electrically connected between two of the electrodes of the discharge device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

4, and indented subclasses, for cathode-ray tubes having structurally combined therewith an inductive impedance which is connected between two of the electrodes of the cathode-ray device.

39+, for discharge devices which have structurally combined therewith a transmission line having distributed parameters (e.g., a waveguide, coaxial cable, etc).

59, for discharge device loads having impedances other than inductive impedances connected between the electrodes of the discharge device.

SEE OR SEARCH CLASS:

336, Inductor Devices, appropriate subclasses for the structure of transformers and inductive reactors.

42 Connected to plural anodes or plural cathodes:

This subclass is indented under subclass 41. Subject matter, wherein the discharge device is provided with a plurality of anodes or a plurality of cathodes, and the inductive impedance is electrically connected between (1) at least two of such anodes, or (2) at least two of such cathodes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

39.51+, and 40, for discharge devices which have an electrode formed so as to function as an inductive impedance, or as a combined inductance and capacitance, see subclass 39.51 where the electrode is formed to provide distributed inductance and capacitance and an electromagnet is provided for subjecting the discharge space to a magnetic field. Subclasses 39.51+, 40 and 42 all include magnetrons, those in subclasses 39.51+ having an electrode formed to provide distributed inductance and capacitance (e.g., resonator), those in subclass 40 having an electrode formed to provide only an inductive impedance (a separate capacitor being used), and those in subclass 42 having both a separate inductor and capacitor. Subclass 40 also provides for the devices where the electrode is formed to provide both distributed inductance and capacitance, but which are not designed to operate in a magnetic field.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 153+ for discharge devices which are provided with magnetic means for influencing the space discharge.

43 Connected to control electrode:

This subclass is indented under subclass 41. Subject matter, wherein the discharge device load is provided with a discharge control electrode and the inductive impedance is electrically connected between the control electrode and another electrode of the discharge device.

44 With capacitive impedance connected to the control electrode:

This subclass is indented under subclass 43. Subject matter, provided also with a capacitive impedance which is structurally combined with

the discharge device structure, the capacitive impedance being electrically connected between the control electrode and another electrode of the discharge device load.

SEE OR SEARCH THIS CLASS, SUBCLASS:

45, for other discharge devices structurally combined with a plurality of impedances one of which is an inductive impedance which is connected between two of the electrodes of the discharge device and the other being a different type of impedance.

45 With diverse-type impedance:

This subclass is indented under subclass 41. Subject matter, wherein an impedance, in addition to the inductive impedance, and of some other type, is structurally combined with the discharge device structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

4+, for cathode-ray tubes which have structurally combined therewith an inductive impedance or a structure formed so as to provide both inductance and capacitance, (e.g., resonator).

44, where an inductive impedance and a capacitive impedance are structurally combined with the discharge device load, both of these impedances being connected between the control electrode and another electrode of the discharge device.

53, for other discharge device loads having structurally combined therewith a plurality of diverse type impedances.

46 Filament, electric heater, or resistance in shunt with the discharge electrodes of a discharge device load:

This subclass is indented under subclass 32. Subject matter, wherein the load device is a discharge device having structurally combined therewith a filament, or an electric resistance heater element, or a resistance, the filament, heater or resistance being electrically connected in shunt with the discharge electrodes of the discharge device.

(1) Note. The filament or electric heater may be the cathode element or the cathode heater element of the discharge device.

(2) Note. In some of the devices in this subclass the filament is designed to emit light either while the discharge device is operating or before the electric discharge is initiated between the discharge electrodes. This subclass includes therefore combined discharge lamps and incandescent lamps where the lamp filament is connected in shunt to the discharge electrodes. In some of the devices in this subclass, the filament or heater merely vaporizes material and/or acts as an auxiliary cathode until the principal discharge can be established.

SEE OR SEARCH THIS CLASS, SUBCLASS:

49, for discharge devices having a filament or electric heater connected in electrical series with the discharge device load.

94, and indented subclasses, for systems under the class definition wherein a discharge device load is provided with a cathode made of resistance material, or having the cathode heated by an electrical resistance heater, and the system includes means to supply electric current to the cathode or heater.

115, and indented subclass, for systems under the class definition wherein the load device is provided with an electric heater for heating the load device and the system includes means to supply electric current to the heater.

182, for miscellaneous systems under the class definition which include a discharge device load and another diverse type load device.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 1+ for the structural combination of a discharge device and an incandescent lamp which are combined so as to form a unitary device where the incandescent lamp filament is not connected either in shunt or in

series with the discharge electrodes, subclasses 15+ for discharge devices which are provided with an electric resistance heater for the discharge device which is not connected either in shunt or in series with the discharge electrodes, and subclass 310 and the subclasses specified in the Notes thereto for discharge devices having an indirectly heated cathode, the cathode heater element not being connected either in shunt or in series with the discharge electrodes.

47 Automatic switch in the shunt circuit:

This subclass is indented under subclass 46. Subject matter, having an electric switch connected in the shunt circuit which includes the filament, heater or resistance, the switch being provided with means for automatically operating the switch in response to some condition affecting the operation of the device.

(1) Note. In some of the devices in this subclass, the switch is designed to open the shunt circuit of the filament, heater or resistance when the discharge device or the cathode have become heated sufficiently to establish a discharge between the electrodes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

107, and the subclasses specified in the notes to the definition of that subclass, for other discharge device loads under the class definition provided with a cathode or cathode heater, and an automatically operating electric switch in the cathode or cathode heater circuit.

48 Cathode or cathode heater in the shunt circuit:

This subclass is indented under subclass 46. Subject matter, wherein (1) the cathode heater is connected in electrical shunt to the discharge electrodes, or (2) having the filament which is connected in electrical shunt designed to function as a cathode in the operation of the device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

47, for this subject matter when an automatic switch is included in the shunt circuit.

49 Filament or electric heater in series with a discharge device load:

This subclass is indented under subclass 32. Subject matter wherein the load device is a discharge device having structurally combined therewith a filament or an electric heater, the filament or heater being connected in electrical series with the discharge electrodes of the discharge device.

(1) Note. The filament or heater may be the cathode element or the cathode heater element of the discharge device.

(2) Note. In some of the devices in this subclass, the filament is designed to emit light while the discharge device is operating. This subclass therefore includes combined discharge lamps and incandescent lamps where the lamp filament is connected in series with the discharge electrodes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

46, for discharge devices having a filament or electric heater connected in electrical shunt relation with the discharge device load.

58, and indented subclasses, for a mere resistance having no other function even though in electrical series relation with the discharge electrodes.

94, and indented subclasses for systems wherein a discharge device load is provided with a cathode made of resistance material or having the cathode heated by an electric resistance heater, and the system includes means to supply electric current to the cathode or heater.

115, and indented subclass for systems under the class definition wherein the load device is provided with an electric heater for heating the load device and the system includes means to supply electric current to the heater.

179, and indented subclasses for miscellaneous systems under the class definition having a plurality of diverse type load devices electrically connected in series in the system.

SEE OR SEARCH CLASS:
313, Electric Lamp and Discharge Devices, subclasses 1+ for the structural combination of a discharge device and an incandescent lamp which are combined so as to form a unitary device where the incandescent lamp filament is not connected either in shunt or in series with the discharge electrodes, subclasses 15+ for discharge devices which are provided with an electric resistance heater for the discharge device which is not connected either in shunt or in series with the discharge electrodes and subclass 310 and the subclasses specified in the Notes thereto, for discharge devices having an indirectly heated cathode, the cathode heater element not being connected either in shunt or in series with the discharge electrodes.

50 Load device temperature-modifying means combined with or forming circuit impedance means:

This subclass is indented under subclass 32. Subject matter, wherein the load device is provided with means for heating and/or cooling at least part of the load device structure, such means being either combined with, or forming an electrical impedance element.

(1) Note. In many of the patents in this subclass, the conduit for supplying cooling fluid to the load device is coiled and forms an inductive impedance element.

(2) Note. Mere electrical heaters which are used only to heat the load device and which are not used as impedances in any circuit other than the heater circuit are not included in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:
46, and indented subclasses, for discharge device loads having an electrical heater structurally combined with the discharge device and connected in electrical shunt to the discharge electrodes.
49, for discharge device loads having an electrical heater structurally combined with the discharge device and connected in electrical series with the discharge electrodes.
112, for other systems under the class definition wherein the load device is provided with temperature modifying means.

SEE OR SEARCH CLASS:
313, Electric Lamp and Discharge Devices, subclasses 11+ for lamp structures and discharge device structures provided with means for modifying the temperature of the lamp or discharge device.

51 Plural circuit elements:

This subclass is indented under subclass 32. Subject matter, having a plurality of circuit elements structurally combined with the load device structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:
33, for portable self-contained devices which include a source of potential and the other circuit elements necessary to operate the load device structure.
34, where one of the circuit elements is an antenna.
47, where the load device is a discharge device having a filament, electric heater or resistance in shunt to the discharge electrodes and an automatically operating electric switch is included in the shunt circuit.

SEE OR SEARCH CLASS:
327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, appropriate subclasses for systems having two or more circuit elements which are of general application and not otherwise classified.

52 Plural impedance elements:
This subclass is indented under subclass 51. Subject matter, having a plurality of impedance elements structurally combined with the load device structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:
44, and 45, where one of the impedances is an inductance which is electrically connected between two electrodes of a discharge device load.

53 Diverse types of impedances:
This subclass is indented under subclass 52. Subject matter, wherein one of the impedance elements is of a diverse type with respect to another of the impedance elements.

(1) Note. Impedance elements differing only in size, value, or in the manner of connection to the load device are not considered to be of diverse types. Examples of impedance elements considered to be of diverse types with respect to each other are resistances, condensers and inductances.

SEE OR SEARCH THIS CLASS, SUBCLASS:
44, where there is an inductance and a condenser structurally combined with a discharge control discharge device, the inductance and the impedance each being connected between the control electrode and another electrode of the discharge device.
45, where one of the impedances is an inductance which is electrically connected between two electrodes of a discharge device load.

54 Plural inductive impedances:
This subclass is indented under subclass 52. Subject matter, having a plurality of inductive impedances structurally combined with the load device structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:
62, and the subclasses specified in the notes to the definition of that subclass, for other load devices which have an inductive impedance structurally combined with the load device structure.
289, and indented subclass, and the subclasses specified in the notes to the definition of that subclass, for other load device systems under the class definition provided with an inductive impedance in the circuit.

55 Electric generator or piezoelectric device:
This subclass is indented under subclass 32. Subject matter, wherein the circuit element which is structurally combined with the load device structure is either an electric current generator or a piezoelectric device.

(1) Note. Some of the current generators in the combinations in this subclass are thermoelectric devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:
33, for portable, self-contained devices and apparatus which include a source of potential and the other circuit elements necessary to operate the load device structure.

SEE OR SEARCH CLASS:
136, Batteries: Thermoelectric and Photoelectric, appropriate subclasses, for electric current generating batteries.
310, Electrical Generator or Motor Structure, appropriate subclasses for miscellaneous electric current generators and subclass 339 for piezoelectric devices.
429, Chemistry: Electrical Current Producing Apparatus, Product, and Process, appropriate subclasses for electrochemical batteries.

56 Discharge device load:
This subclass is indented under subclass 32. Subject matter, wherein the load device is a space discharge device.

SEE OR SEARCH THIS CLASS, SUBCLASS:
33, for portable, self-contained apparatus which includes a discharge device load.

34, for discharge devices combined with an antenna.

35, and indented subclasses, for plural discharge devices structurally combined with a circuit element.

39+, for other discharge devices which have structurally combined therewith a transmission line of the distributed parameter type (e.g., waveguide, coaxial cable, etc.).

39.51, for discharge devices which have an electrode formed so as to provide both inductive and capacitive impedance (e.g., resonator) and which are provided with an electromagnet for subjecting the discharge space to a magnetic field.

40, for discharge devices having an electrode formed as an inductive impedance or formed to provide both inductance and capacitance (e.g., a resonator).

41, and indented subclasses, for discharge devices combined with an inductive impedance connected between two or more electrodes of the discharge device.

46, and indented subclasses, for discharge device combined with a filament, heater, or resistance in shunt with the discharge electrodes.

49, for discharge devices combined with an electric heater or filament in electrical series with the discharge electrodes.

50, for discharge devices combined with temperature modifying means, the temperature modifying means being either designed to function as a circuit element or combined with the circuit element.

51, and indented subclasses, for discharge devices combined with plural circuit elements.

55, for discharge devices combined with an electric current generator or piezoelectric device.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, appropriate subclasses for consumable electrode discharge devices which have structurally combined therewith an electric circuit element.

337, Electricity: Electrothermally or Thermally Actuated Switches, appropriate subclasses especially subclasses 22+ for fluorescent lamp starting devices, 28+ for thermally actuated switches combined with space discharge devices, 108 for bimetallic switch operating means with spark gap heating means for the element.

57 Discharge device and transformer:

This subclass is indented under subclass 56. Discharge devices, having structurally combined therewith an electric transformer.

(1) Note. The transformer may be designed to be connected to the cathode heater or cathode circuit, merely to supply current to heat the cathode, or it may be connected to any of the other electrodes of the discharge device. The patent need not specify the connection of the transformer for classification in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

70, for other load devices having a transformer structurally combined with the load device.

SEE OR SEARCH CLASS:

336, Inductor Devices, appropriate subclasses for the structure of transformers and inductive reactors. See especially subclasses 105+ and the notes thereto for transformers and inductive reactors combined with other structure.

378, X-Ray or Gamma Ray Systems or Devices, subclasses 91+ and 119+ for combined X-ray tube and transformer units.

58 Discharge device and circuit impedance:

This subclass is indented under subclass 56. Discharge devices, having structurally combined therewith an electric circuit impedance.

SEE OR SEARCH THIS CLASS, SUBCLASS:

33, where the discharge device is combined with other circuit elements so as

to constitute a portable, self-contained apparatus.

35, and indented subclasses, for plural discharge devices combined with a circuit impedance.

39.51, and 40, for discharge devices which have an electrode formed to provide inductance, see subclass 39.51 where the electrode has distributed inductance and capacitance (e.g., a resonator) and which are provided with an electromagnet for subjecting the discharge space to the magnetic field, and subclass 40 for discharge devices for having an electrode formed as an inductor or as a structure having inductance and capacitance (e.g., resonator).

41, for discharge devices combined with an inductance which is connected between two of the electrodes of the discharge device.

46, and indented subclasses for discharge devices combined with a filament, electric heater or resistance in shunt with the discharge electrodes.

50, for discharge devices combined with temperature modifying means, the temperature modifying means being either designed to function as a circuit impedance, or combined with a circuit impedance.

56, for discharge devices combined with an electric heater or filament in series with the discharge electrodes.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 132, and the subclasses specified in the notes to the definition of that subclass, for consumable electrode discharge devices which have structurally combined therewith an electric impedance.

59 Impedance connected between two electrodes:

This subclass is indented under subclass 58. Discharge devices, having the impedance electrically connected between two electrodes of the discharge device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

39+, for other discharge devices which have structurally combined therewith a transmission line of the distributed parameter type (e.g., a waveguide, coaxial cable, etc.).

41, and indented subclasses, for discharge device loads, combined with an inductive impedance which is electrically connected between two of the electrodes of the discharge device.

SEE OR SEARCH CLASS:

336, Inductor Devices, appropriate subclasses for the structure of transformers and inductive reactors.

338, Electrical Resistors, appropriate subclasses, for electrical resistors, per se.

361, Electricity: Electrical Systems and Devices, subclass 271 for electric condenser structure.

60 Impedance connected to an auxiliary starting electrode:

This subclass is indented under subclass 59. Subject matter, wherein the discharge device is provided with a principal anode and a principal cathode and an auxiliary discharge electrode, the impedance being electrically connected between the auxiliary discharge electrode and one of the principal electrodes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

234, for systems under the class definition which include an auxiliary starting electrode discharge device load having a condenser connected between the auxiliary electrode and one of the principal electrodes.

263, for systems under the class definition which include an auxiliary starting electrode discharge device load the discharge device being supplied with pulsating or alternating current and having an inductance connected in the auxiliary electrode circuit.

264, for systems under the class definition which include an auxiliary starting electrode discharge device load, having an impedance connected in the auxiliary electrode circuit, the dis-

charge device being supplied with pulsating or alternating current.

335, for miscellaneous systems under the class definition with discharge device load having an auxiliary starting electrode.

61 Discharge control discharge device:

This subclass is indented under subclass 59. Discharge devices wherein the discharge device is provided with discharge control means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

39.63, for discharge devices which are provided with control electrode, and an electrode formed to provide distributed inductance and capacitance (e.g., a resonator) and which have an electromagnet for influencing the discharge between the electrode for influencing the space discharge (e.g., magnetrons).

42, for other discharge devices having structurally combined therewith an inductive impedance which is connected between either a plurality of anodes or a plurality of cathodes, the discharge device being provided with an electromagnet for influencing the discharge between the electrodes.

63, for other discharge control discharge devices structurally combined with an electric circuit element.

335, and indented subclass and the subclasses specified in the notes to the definition thereof, for systems under the class definition wherein the load device is a discharge device provided with an auxiliary discharge electrode.

344, and indented subclasses and the subclasses specified in the notes to the definition thereof for systems under the class definition wherein the load device is a discharge device provided with an electromagnet for influencing the discharge between the electrodes.

349, and indented subclasses and the subclasses specified in the notes to the definition thereof, for systems under the class definition wherein the load device is a discharge control discharge device.

62 Inductive impedance:

This subclass is indented under subclass 58. Discharge devices, wherein the impedance element is an inductive impedance.

SEE OR SEARCH THIS CLASS, SUBCLASS:

39+, for discharge devices which have structurally combined therewith a transmission line of the distributed parameter type, (e.g., waveguide, coaxial cable, etc.).

39.51+, for discharge devices having an electrode formed as to provide distributed inductance and capacitance (e.g., resonator and which are provided with an electromagnet for influencing the space discharge (e.g., magnetrons).

40, for discharge devices having an electrode formed as an inductive impedance.

41, and indented subclasses, for discharge devices combined with an inductive impedance which is connected between two electrodes of the discharge device.

54, for discharge devices combined with a plurality of inductive impedances.

223, where the discharge device is connected to the secondary circuit of a current supply transformer, the primary circuit of the transformer including an inductance and a periodic switch.

242, and 244, where the supply circuit of the discharge device includes an inductance and a condenser.

263, for discharge device systems wherein the discharge device is provided with an auxiliary starting electrode and an inductance is included in the auxiliary electrode circuit and the discharge device is supplied with alternating current.

283, and indented subclasses, and the subclasses specified in the notes to the definition of these subclasses, for discharge device systems which are connected to a source of alternating current supply and which are provided with an inductance in the supply circuit.

289, and indented subclass, for miscellaneous systems under the class definition provided with an inductance in the supply circuit.

SEE OR SEARCH CLASS:

336, Inductor Devices, appropriate subclasses for the structure of transformers and inductive reactors.

63 Discharge control discharge load:

This subclass is indented under subclass 56. Discharge devices, wherein the discharge device is provided with discharge controlling means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

39.63, for discharge devices which have a control electrode, an electrode formed to provide distributed inductance and capacitance and which are provided with an electromagnet for influencing the space discharge (e.g., magnetrons).

42, for this subject matter where there is an inductive impedance connected between either a plurality of cathodes or a plurality of anodes of the discharge device, the discharge device being provided with electromagnet means for influencing the discharge.

61, for this subject matter where the discharge device is a discharge control discharge device and an impedance is connected between two electrodes of the discharge device.

335, and indented subclass and the subclasses specified in the notes to the definition thereof, for systems under the class definition wherein the load device is a discharge device provided with an auxiliary discharge electrode.

344, and the subclasses specified in the notes to the definition thereof for systems under the class definition wherein the load device is a discharge device provided with an electromagnet for influencing the discharge between the electrodes.

349, and indented subclasses and the subclasses specified in the notes to the definition thereof, for systems under the class definition wherein the load device is a discharge control discharge device.

64 Multiple filament load devices:

This subclass is indented under subclass 32. Subject matter, wherein the load device is provided with a plurality of filaments.

(1) Note. Where a multiple filament load device system within the class definition is claimed, but no circuit element is combined with the load device structure, the patent is classified as a plural load device system in one of the other appropriate subclasses of this class.

SEE OR SEARCH THIS CLASS, SUBCLASS:

35, for multiple unit discharge devices having combined therewith a circuit element.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclass 51.03 and indented subclass and 51.05 and indented subclass, for electric connectors, such as plugs, sockets, etc., combined with either single or plural switch means in a unitary structure or which are capable of functioning as a switch and which may be operated so as to open or close a selected part only of a plurality of circuits under control of the switch means.

313, Electric Lamp and Discharge Devices, subclass 310 and subclasses specified in the Notes thereto for discharge devices which are provided with a plurality of filaments (e.g., filamentary cathodes or filamentary cathode heaters), and subclass 316 and the subclasses specified in the Notes thereto for multiple filament incandescent lamps.

65 Automatic substitution of the filament:

This subclass is indented under subclass 64. Multiple filament load devices, provided with means for maintaining one of the filaments in nonoperating connection with respect to the current supply circuit while another of the filaments is maintained in operative relation with respect to the supply circuit, means being pro-

vided which operate automatically (1) in response to either the failure of the operatively connected filament to operate properly or its failure to operate at all, or (2) when excessive voltage or current conditions prevail which would tend to damage the operating filament, to connect the nonoperating filament in operative relation to the supply circuit and to disconnect the operating filament from the supply circuit whereby one filament is substituted for the other.

SEE OR SEARCH THIS CLASS, SUBCLASS:

87, and 88, and indented subclasses for other systems under the class definition for automatically substituting one electrode or load device for another when the first operated electrode or load device fails or is subjected to excessive current or voltage.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclass 236, for electric lamps and discharge devices which have a plurality of similar electrodes and which are provided with means so that one electrode can be used to the exclusion of another, and the excluded electrode can be substituted for the first operated electrode when such electrode becomes defective.

66 Series connected filaments:

This subclass is indented under subclass 64. Multiple filament load devices, wherein the filaments are connected in electrical series relation with respect to each other.

(1) Note. Some of the devices in this subclass provide switch means for connecting one only of the filaments to the supply circuit or to connect a plurality of the filaments in series with respect to the supply circuit. Some of the devices provide switch means to connect the filaments in either series or parallel relationship with respect to the supply circuit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

185, and indented subclasses, and the subclasses specified in the notes to the definition of these subclasses, for other series connected load devices under the class definition.

67 Diverse resistance filaments:

This subclass is indented under subclass 64. Multiple filament load devices, wherein the filaments have different resistances with respect to each other.

SEE OR SEARCH THIS CLASS, SUBCLASS:

178, and indented subclasses for other systems under the class definition which include a plurality of load devices of different resistances.

68 Three or more controlled filament circuits:

This subclass is indented under subclass 64. Multiple filament load devices provided with three or more filaments and with means for connecting all or a selected number only of the total number of filaments to the supply circuit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

317, and indented subclasses for miscellaneous load device systems under the class definition provided with switch means for controlling the circuits of three or more load devices.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclass 51.03 and indented subclass and subclass 51.06, for electric coupling devices, such as plugs, sockets, et cetera, combined with either single or plural switch means in a unitary structure, or which are capable of functioning as a switch, and which may be operated so as to open or close a selected part only of three or more circuits under control of the switch means.

69 Plural filaments energized in parallel:
This subclass is indented under subclass 64. Multiple filament load devices, provided with means for connecting a plurality of filaments in electrical parallel relation with respect to the supply circuit.

SEE OR SEARCH THIS CLASS, SUBCLASS:
312, and indented subclasses for miscellaneous plural load device systems under the class definition, especially subclass 313, and indented subclasses, for plural load device systems provided with an electric switch in the supply circuit.

SEE OR SEARCH CLASS:
200, Electricity: Circuit Makers and Breakers, subclass 51.03 and indented subclass, and 51.05 and indented subclass, for connectors, such as plugs and sockets, combined with switch means, or which are capable of functioning as a switch, and which may be operated so as to open or close a selected part only of a plurality of circuits under control of the switch means.

70 Load device and transformer:
This subclass is indented under subclass 32. Subject matter having an electric transformer structurally combined with the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:
57, for discharge device loads structurally combined with a transformer.
276, and the indented subclasses and the subclasses specified in the notes to the definition of those subclasses for systems under the class definition having a transformer in the circuit of the load device.

SEE OR SEARCH CLASS:
336, Inductor Devices, appropriate subclasses for the structure of transformers and inductive reactors.

71 Load device and impedance:
This subclass is indented under subclass 32. Subject matter having an electric circuit impedance structurally combined with the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:
41, and indented subclasses for this subject matter, where the load device is a discharge device having an inductive impedance connected between the electrodes.
52, and indented subclasses for this subject matter, where there are a plurality of impedances structurally combined with the load device.
58, and indented subclasses, for this subject matter, where the load device is a discharge device.

SEE OR SEARCH CLASS:
314, Electric Lamp and Discharge Devices: Consumable Electrodes, appropriate subclasses, especially subclass 132, for consumable electrode discharge devices structurally combined with an impedance.
336, Inductor Devices, appropriate subclasses for the structure of transformers and inductive reactors.
338, Electrical Resistors, appropriate subclasses for electrical resistors, per se.
361, Electricity: Electrical Systems and Devices, subclasses 271+ for the structure of capacitors.

72 Load device and periodic electric switch:
This subclass is indented under subclass 32. Subject matter having an electric periodic switch structurally combined with the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:
209, and indented subclasses and the subclasses specified in the notes to the definition of those subclasses, for systems under the class definition provided with a periodic switch in the supply circuit.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclasses 19.01+ for periodic switches including those which are structurally combined with an electric connector, such as a plug or socket.

335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclasses 87+ for electromagnetically operated periodic switches.

73 Electric switch inside evacuated or gas filled envelope:

This subclass is indented under subclass 32. Subject matter wherein the load device is provided with an envelope, bulb or enclosure for providing a confined atmosphere of gas, vapor or vacuum about the electrodes of the load device and having an electric switch structurally united therewith, the switch being mounted inside of the envelope, bulb, or enclosure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

56+, for electric space discharge devices which have an electric switch structurally combined therewith, including such combinations where the switch is within the envelope of the device.

74 Automatic shunt circuit closing or cut-out switch:

This subclass is indented under subclass 32. Subject matter, wherein the electric switch is structurally connected with the load device so as to complete an electrical circuit in shunt about the load device or some part thereof, and/or to open the load device current supply circuit, the switch being designed to automatically operate (1) when the load device becomes nonconductive or fails to operate properly, or (2) when the supply voltage and/or current becomes too high or too low for the proper operation of the load device, or (3) when more than a desired number of load devices are connected to the supply circuit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

119, and indented subclasses for other systems under the class definition provided with an automatic shunt or cut-out for the load device.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 10 and indented subclasses for consumable electrode discharge devices having an automatic shunt circuit closing means or cutout means structurally combined with the discharge device.

335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclasses 6+ for automatically operated electromagnets circuit interrupting devices.

337, Electricity: Electrothermally or Thermally Actuated Switches, subclasses 15+ for thermal current shunt circuit closing switches.

75 Shunt circuit closing:

This subclass is indented under subclass 74. Subject matter, wherein the electric switch is connected to complete an electric circuit in shunt about the load device or some part thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:

125, and indented subclass, and the subclasses specified in the notes to that subclass, for other systems under the class definition provided with an automatic shunt for the load device.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 11, and indented subclasses, for consumable electrode discharge devices having an automatic shunt circuit closing means structurally combined with the discharge device.

337, Electricity: Electrothermally or Thermally Actuated Switches, subclasses 15+ for thermal current shunt circuit closing switches.

76 SPECIAL APPLICATION:

This subclass is indented under the class definition. Systems limited to use with particular articles, devices, or apparatus and which are not provided for in other classes.

(1) Note. In most of the systems included in this and the indented subclasses, one or more of the circuit elements of the system are combined with some part of a particular article, device, or apparatus, such as, for example, having the switch which controls the supply of current to the load device operated by the brake pedal of an automobile.

(2) Note. See the notes to the main class definition for other classes which provide for the combination of particular articles, device and apparatus, which include a discharge device system.

(3) Note. For illuminated devices and articles and the electrical systems for supplying electric current to the illuminating means therefor, see the appropriate art classification of the particular device or article which is illuminated. See search class notes below.

SEE OR SEARCH CLASS:

40, Card, Picture, or Sign Exhibiting, for illuminated cards, pictures and signs combined with particular articles or devices.

340, Communications: Electrical, appropriate subclasses for illuminated signals combined with particular articles and devices. Note particularly subclasses 468+, 691.1+, and 870.07+.

362, Illumination, appropriate subclasses for illuminating devices combined with particular articles and devices.

77 Vehicle:

This subclass is indented under subclass 76. Systems limited to use with a vehicle.

(1) Note. The word “vehicle”, as used in this and the indented subclasses, includes ships, boats, aircraft, elevators, and other conveyances.

(2) Note. Included in this and the indented subclasses are lighting systems for controlling the supply of electric current to lamps in the vehicle. Such systems are included even though the lights are claimed as “head lights” “tail lights”, “side lights”, “spot lights”, or any similar named light as long as the claims do not include any mounting of the lamp or illuminating structure used with the lamp, but claim the lamp by name only. The mere statement that the lamp is mounted at the rear, side, front, or at another part of the vehicle or ship will not exclude the patent from the subclass. This and the indented subclasses include patents, event though no particular vehicle structure is claimed, where the lights are claimed as head lights, tail lights, side lights, spot lights, etc. For a complete search for all systems for supplying and/or controlling the supply of electric current to one or more electric lamps, the search should include the other appropriate subclasses of this class.

(3) Note. For vehicles, ships, and boat structure, see search class notes below.

SEE OR SEARCH CLASS:

40, Card, Picture, or Sign Exhibiting, appropriate subclasses, for illuminated pictures and signs combined with vehicle, ship, or boat structure.

114, Ships, for ship structure.

180, Motor Vehicles, for vehicle structure.

187, Elevator, Industrial Lift Truck, or Stationary Lift for Vehicle, for vehicle structure.

191, Electricity: Transmission to Vehicles, appropriate subclasses for systems and structure for transmitting electricity to vehicles.

200, Electricity: Circuit Makers and Breakers, appropriate subclasses indented under subclass 52 for electric switches combined with vehicle, ship, or boat structure.

244, Aeronautics, for pertinent subclass(es) as determined by schedule rewiew.

280, Land Vehicles, for vehicle structure.

293, Vehicle Fenders, subclass 115 for vehicle grille and bumper combinations which may provide openings therein permitting light radiation therethrough from vehicle-attached lamps.

296, Land Vehicles: Bodies and Tops, for vehicle structure.

301, Land Vehicles: Wheels and Axles, for vehicle structure.

305, Wheel Substitutes for Land Vehicles, for vehicle structure.

307, Electrical Transmission or Interconnection Systems, subclasses 9.1+ for electrical systems mounted on vehicles.

320, Electricity: Battery or Capacitor Charging or Discharging, appropriate subclass for a charging system for a vehicular battery used to supply energy to an electric lamp.

322, Electricity: Single Generator Systems, subclass 1 for portably mounted generator systems.

340, Communications: Electrical, subclasses 945+ and 984+ for illuminated signals combined with vehicle, ship or boat structure.

362, Illumination, subclasses 459+ and indented subclasses for illuminating devices combined with vehicle structure.

78 Vehicle motor or vehicle motion driven generator:

This subclass is indented under subclass 77. Systems provided with a magneto-electric current generator for supplying electric current to the load device, the magneto-electric generator being driven by either the motor which propels the vehicle or by some driving means which is actuated when the vehicle is moving.

(1) Note. Systems having the generator driven by one of the vehicle wheels or the vehicle axle are here.

SEE OR SEARCH THIS CLASS, SUBCLASS:

302, and indented subclasses for systems under the class definition provided with means for regulating the supply of electric current to the load device by regulating the operation of the current generator, subclass 303 having regulation by prime mover control.

SEE OR SEARCH CLASS:

290, Prime-Mover Dynamo Plants, for motor-driven magnetoelectric generators, and systems of general application including such motor driven generators.

310, Electrical Generator or Motor Structure, appropriate subclasses for generators, per se.

320, Electricity: Battery or Capacitor Charging or Discharging, appropriate subclass for charging a vehicular battery from an energy source powered by the vehicle.

322, Electricity: Single Generator Systems, appropriate subclasses for systems for regulating the current output of generators.

362, Illumination, subclass 193 for illuminating devices adapted for use on bicycles and similar vehicles provided with an electric lamp and having a wheel driven generator for supplying current to the lamp.

79 Vehicle or engine speed controlled:

This subclass is indented under subclass 77. Systems provided with means responsive to the speed of either the motor which propels the vehicle or the speed of the vehicle for controlling the supply of electric current to the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

78, for systems under the class definition where the generator which supplies the current to the load device is driven by the vehicle motor or by some driving means actuated by the vehicle's motion.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclasses 488+ for a speed responsive device, per se.

123, Internal-Combustion Engines, subclasses 146.5+ for spark ignition systems for internal combustion engines which include a periodic switch driven by some part of the engine for

timing the spark with reference to the engine cycle.

200, Electricity: Circuit Makers and Breakers, subclass 80 for centrifugal switches.

80 Load device controller combined with vehicle controller:

This subclass is indented under subclass 77. Systems having a means which controls the operation of the load device combined with and operated by a device which controls the operation of the vehicle.

(1) Note. The means controlling the operation of the load device may be an electric switch or current regulating means or any other means affecting the operation of the load device.

(2) Note. The vehicle operation controlling means may be the means by which the vehicle is steered, or the means for starting or stopping the vehicle or its motor, or any other means affecting the operation of the vehicle.

(3) Note. This subclass does not include load device controllers which are only mounted on the vehicle controller, but are not operated thereby.

SEE OR SEARCH THIS CLASS, SUBCLASS:

78, for systems having the load device current generator driven by the vehicle motor or some means driven by the motion of the vehicle.

79, for systems having the load device controlled by either the speed of the vehicle or of the vehicle motor.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, appropriate subclasses indented under subclass 52, particularly subclasses 61.27+, 61.54+ and 61.87 to 61.91 for electric switches combined with vehicle controller structure; see also subclass 332.2.

81 Steering mechanism controlled:

This subclass is indented under subclass 80. Systems, wherein the load device control means is combined with and operated by the steering mechanism of the vehicle.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclasses 61.27+, 61.54+, and 61.87 to 61.91 for electric switches controlled by lever or wheel shafts such as steering wheels; see also subclass 332.2.

362, Illumination, subclass 36 for structural combinations of vehicle illuminating means and means to energize the light source upon turning of the vehicle, and subclasses 37+, respectively, for structural combinations of vehicle illuminating means and means to shift the position of the illuminating means upon turning of the vehicle.

82 Head light systems:

This subclass is indented under subclass 77. Systems wherein the load device is stated to be a vehicle head light.

(1) Note. This subclass includes patents wherein one or more of the load devices is stated to be a head light, but no structure of the head light is claimed, the head light being claimed by name only. To make a complete search for all means for controlling one or more head lights, the search must include the other appropriate subclasses of this class.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 200+, and the classes and subclasses specified in the Notes thereto for photocell controlled electric circuits and photocell apparatus, in which the photocell may respond to light from the headlights of a vehicle.

362, Illumination, subclasses 257+ for the structure of vehicle head lights.

83 Alternate circuit closing:

This subclass is indented under subclass 82. Systems wherein there are two or more lamps in the head light or the head light lamp includes

two or more filaments, the system including means for supplying operating current to one or the other of the lamps or filaments from the source of supply.

SEE OR SEARCH THIS CLASS, SUBCLASS:

64, and indented subclasses for multiple filament lamps having combined therewith an electric circuit element, such as an electric switch.

294, and indented subclasses of this class, especially subclass 296 for systems for regulating the supply of current to two or more load devices so that one load device will receive more current than another.

317, and indented subclasses and 322 for systems provided with an electric switch for connecting one or the other of a plurality of load devices to the source of supply.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclass 316 and the subclasses specified in the Notes thereto for multiple filament lamps.

84 Door or closure controlled load device:

This subclass is indented under subclass 76. Systems, having a means which controls the operation of the load device operated by a door or other closure member.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclass 61.62 and subclasses 61.69 to 61.83, for door or sash operated electric switches.

84.51 PULSE STORING SYSTEMS OF THE GASEOUS DISCHARGE TUBE TYPE:

This subclass is indented under the class definition. Subject matter wherein a gaseous space discharge device system is designed to respond to discrete electrical pulses and which system accumulates or stores electrical pulse energy for later retrieval.

SEE OR SEARCH THIS CLASS, SUBCLASS:

8.51+, for pulse storing or systems employing cathode-ray tubes.

SEE OR SEARCH CLASS:

178, Telegraphy, subclass 17.5 for telegraph transmitters having means for accumulation information in advance of actual transmission.

324, Electricity: Measuring and Testing, subclasses 111+ for electrical systems having means for storing electrical energy for measuring purposes.

377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclass 103 for counting chains using gas filled tubes.

84.61 With plural cathode or anode tube:

This subclass is indented under subclass 84.51. Subject matter wherein the gaseous space discharge tube system comprises space discharge means having two or more cathodes or two or more anodes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

334+, and the subclasses referred to in the Notes to the definitions of these subclasses, for other systems under the class definition provided with a plural cathode or anode discharge device load.

SEE OR SEARCH CLASS:

377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclass 100 for counting means using multicathode gas discharge tubes.

85 WITH ELECTROMAGNETIC WAVE RADIATION PREVENTING OR SHIELDING MEANS:

This subclass is indented under the class definition. Systems wherein the system is provided with means, or where there is shielding means for part of the system, to prevent radiation of electromagnetic waves from and/or to the system or some part thereof.

(1) Note. For electrical systems provided with anti-inductive means, search the appropriate system class. See search class notes, below.

SEE OR SEARCH CLASS:

123, Internal-Combustion Engines, subclass 146.5 and indented subclasses, for internal combustion engines with shielded ignition system.

174, Electricity: Conductors and Insulators, subclass 32, and indented subclasses for anti-inductive conductors and conductor arrangements, subclass 50 and indented subclasses for electrical boxes, receptacles and containers, subclass 78 for terminal end structure of conduits, cables and conductors provided with means to connect a ground wire thereto.

178, Telegraphy, subclasses 49 and 69.

307, Electrical Transmission or Interconnection Systems, subclasses 89+.

313, Electric Lamp and Discharge Devices, subclasses 239+ for electric lamps and electric space discharge devices which are provided with shielding means to shield the electrodes or some part of the device and significant supporting and/or spacing structure for the shielding means is claimed. Subclass 313 (of Class 313) provides for other electric lamps and electric space discharge devices which are provided with shielding means. (See (1) Note, above.)

333, Wave Transmission Lines and Networks, particularly subclass 12 for transmission line inductive or radiation interference reduction systems, and subclasses 243+ for transmission lines of the shielded type.

340, Communications: Electrical, subclasses 288+ and 500+ for electric signaling systems combined with other electric signaling or nonsignaling systems.

343, Communications: Radio Wave Antennas, subclasses 841+ for antennas with an electrical shield; subclass 851 for antennas with a coupling network having a radiation suppressor; and subclass 905 for antennas combined with a shielded transmission line.

379, Telephonic Communications, subclasses 392 through 392.01, 394, 398, 402-405, 406.01-406.16, and 415.

455, Telecommunications, subclasses 300+ for shielding in a radio receiver. (See (1) Note, above.)

86 AUTOMATIC SUBSTITUTION OF THE POWER SUPPLY:

This subclass is indented under the class definition. Systems provided with at least two sources of electrical energy and at least one load device, and provided with means for supplying energy to operate a load device from one of the sources of electrical energy while the other source of electrical energy is maintained in a nonsupplying condition, and having means which operate automatically in response to some condition affecting the operation of the system to connect the nonsupplying source of energy in the system so that it can become operative to supply energy to either the same load device or a different load device than the load device supplied by the first operated source of electrical energy.

(1) Note. The condition which causes the second operated source of energy to be connected in the system may be any one or any combination of (1) the failure of the first operated source of energy to deliver sufficient energy to a load device, (2) an abnormal rise in voltage or current output of the first operated source of energy, (3) when the second operated source of energy has attained a sufficient voltage and current output to supply the load device with energy, (4) any other condition affecting the operation of the system which makes it desirable that a source of energy other than the first operated source of energy be used to supply a load device.

(2) Note. This and the indented subclass are not restricted to gas or vapor discharge devices or electric lamps as the load device, but includes all discharge device systems provided with means to automatically substitute another source of current supply for the source of current supply which is first used to supply current, excepting such systems in which the discharge device load is a discharge control type gas or vapor discharge device and the system includes means to

supply current and/or potential to the discharge control means.

(3) Note. This subclass does not include systems wherein the one source of energy is a storage battery designed to be charged from the other source of energy, and to be connected to supply the load device when the other source of energy becomes inactive. Such systems are considered to be systems which include the battery as a load device and will be found for the most part in Class 307, Electrical Transmission or Interconnection Systems, subclasses 46, 48+ and 66+, and Class 320, Electricity: Battery or Capacitor Charging or Discharging, having a battery charging and/or discharging, per se, many patents disclosing, but not claiming an additional lamp or discharge device load.

SEE OR SEARCH THIS CLASS, SUBCLASS:

119, and indented subclasses for systems under the class definition provided with means automatically operating to either complete a shunt circuit about the load device or to open the circuit of the load device, the automatically operating means being operated in response to some condition which prevents further normal operation of the load device.

160, and indented subclasses for other systems under the class definition provided with two or more sources of current supply.

SEE OR SEARCH CLASS:

307, Electrical Transmission or Interconnection Systems, see (3) Note.

87 With load device or electrode substitution:
This subclass is indented under subclass 86. Systems, having in addition subject matter as defined in subclass 88 and the notes thereto.

(1) Note. In many of the systems in this subclass, the first operated source of electrical energy is connected to the first operated load device or electrode, the automatically operating means being operative to connect the second operated source of electrical energy to the second operated load device to thereby substitute a different source of electric energy and a different load device for the first operated source of energy and load device. The respective sources of supply and load devices or electrodes may constitute separate circuits except for the control of the substituted circuit in response to the condition of the first operated circuit.

88 AUTOMATIC SUBSTITUTION OF THE LOAD DEVICE OR ELECTRODE:
This subclass is indented under the class definition. Systems having (1) a nonoperating load device connected in the circuit in addition to a load device connected in operating condition in the circuit, or (2) a load device connected in the system which has at least one nonoperating electrode in addition to the electrode or electrodes which are connected in operating relation in the circuit; the system being arranged to operate the operating load device or electrode while the nonoperating load device or electrode is maintained in a nonoperative condition until the first operated load device either fails to operate properly, or is subjected to such excessive voltage or current conditions as would tend to damage the operating load device or electrode, the system being provided with means which operate automatically in response to either such failure of the first operated device or electrodes, or in response to such excessive voltage or current conditions to connect the nonoperating load device or electrode in operative relation in the system whereby such nonoperating load device or electrode is substituted for the first operated device or electrodes.

(1) Note. In systems provided with an incandescent lamp as the load device, the filament or other incandescent body is considered to be an electrode within the meaning of this subclass.

(2) Note. This subclass includes systems wherein the load device is a discharge device having a plurality of cathodes and/or anodes, one of the cathodes or anodes and its corresponding electrode being connected in operative relation in the circuit until one of these electrodes

fails or is subjected to excessive voltage or current when the automatically operating means connects the nonoperated electrode in operative condition in the circuit so as to substitute the such electrode for the first operated electrode.

(3) Note. This and the indented subclasses are not restricted to gas or vapor discharge device or electric lamps as the load device, but include all discharge systems which are provided with means to automatically substitute another discharge device for the operating discharge device when the operating discharge device fails to operate properly excepting such systems in which the discharge device load is a discharge control discharge device other than the discontinuous control type gas or vapor discharge device and the system includes means to supply current and/or potential to the discharge control means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

65, for multiple filament load devices which have structurally combined therewith automatically operating means to substitute a second filament for the first operated filament when the first operated filament fails to operate properly.

87, for this subject matter where the system also includes automatically operated means to substitute a second source of power supply for the first operated source of power supply.

129, and indented subclasses, for systems having a signal, indicator, or alarm which may be a lamp or discharge device, and see the reference to this subclass (88) in the notes to the definition of subclass 129 for the line between this subclass (88) and subclass 129.

312, and the subclasses specified in the notes to the definition of that subclass for other plural load device systems under the class definition.

334, and indented subclasses and the subclasses specified in the notes to the definition of those subclasses for other plural cathode and anode discharge device loads.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 1 and indented subclasses for consumable electrode discharge devices and the systems therefor, provided with (1) automatic means, for substituting another consumable electrode discharge device or other discharge device or lamp for the first operated consumable electrode discharge device, or (2) automatic means for substituting a consumable electrode discharge device for a first operated discharge device or lamp, or (3) automatic means for substituting another electrode for the first operated electrode of the consumable electrode discharge device.

362, Illumination, subclass 254 and indented subclass for illuminating devices provided with an electric lamp, device including means for substituting another light source for the light source in use in event the light source in use is destroyed or extinguished.

363, Electric Power Conversion Systems, subclasses 50+ for electronic tube current conversion systems having protective means responsive to dangerous or undesirable conditions within the electronic convertor for correcting the condition or disabling the convertor.

89 Plural substitution of load devices or electrodes:

This subclass is indented under subclass 88. Systems in which two or more substitute load devices or electrodes are provided for successive substitution as required.

90 Plural load devices with selective substitution of load device or electrode:

This subclass is indented under subclass 88. Systems provided with a plurality of first to be operated load devices or electrodes and a nonoperating load device or electrode, the nonoperating load device or electrode being connected in the system so that it may be auto-

matically substituted for any one of the first operated load devices or electrodes which either fail or are subjected to excessive voltage or current conditions.

91 Over-voltage or over-current controlled substitution:

This subclass is indented under subclass 88. Systems provided with means for automatically substituting the nonoperating load device or electrode for the first to operate load device or electrode in response to excessive voltage or current conditions as would tend to damage the first to operate load device or electrode.

(1) Note. This subclass includes systems provided with an electric discharge gap connected in electrical parallel with the source of supply and the load device, the spark gap being adapted to ionize and to dissipate any voltage or current surge and thereby protect the load device from such surge. It also includes similar systems wherein the discharge gap is designed to replace the load device when the load device fails, the spark gap becoming ionized due to the increase in voltage in the circuit caused by the failure of the load device.

SEE OR SEARCH CLASS:

361, Electricity: Electrical Systems and Devices, subclasses 1+ for systems of general application. Note indented subclasses 117+ for lightning arresters.

92 Diverse-type load device or electrode substituted:

This subclass is indented under subclass 88. Systems wherein the load device or electrode which is substituted for the first operated load device or electrode is of a diverse type.

(1) Note. To be considered diverse type load devices, or electrodes, the devices or electrodes must differ in some electrical characteristic. Mere difference in color or shape is not enough to make the load devices of different characteristics within the meaning of this subclass. Discharge devices containing different gases, or having different starting or operating characteristics, or a different number or types of electrodes are considered to be of diverse types. Load devices having different impedances are considered to be of diverse types.

SEE OR SEARCH THIS CLASS, SUBCLASS:

87, for this subject matter where the system also includes automatically operating means to substitute a second source of current supply for the first operated source of current supply.

178, and the indented subclasses and the subclasses specified in the notes to the definition of those subclasses for other plural load device systems under the class definition provided with a plurality of load devices of diverse types.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 1 and indented subclasses for similar systems if either the first operated device or the substituted device is a consumable electrode discharge device.

93 With current shifting switch:

This subclass is indented under subclass 88. Systems having an electric switch which is automatically operated in response to the failure of the first operated load device or electrode to complete the circuit to the second operated load device or electrode.

SEE OR SEARCH THIS CLASS, SUBCLASS:

65, for multiple filament load devices which are structurally combined with an automatically operated electric switch for substituting a second filament, for a first operated filament.

87, for this subject matter where the system also includes automatically operating means to substitute a second source of power supply for the first operated source of power supply.

92, for this subject matter where the substituted device is of a different type than the first operated device.

119, and indented subclasses for systems provided with an automatically oper-

ating electric switch for completing an electrical circuit in shunt about the load device, such switch means being automatically operated in response to some condition which prevents further normal operation of the load device.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, appropriate subclasses for electric switches of general application.

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 2 for consumable electrode discharge devices, and the systems therefor, provided with an automatically operating current shifting switch to substitute (1) another discharge device, or lamp for the first operated electrode discharge device or lamp if either the first operated or substituted device is a consumable electrode discharge device, or (2) another electrode for the first operated electrode of the consumable electrode device, the switch means being automatically operated in response to some condition which prevents further normal operation of the load device.

335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclasses 2+ for electromagnetically operated switches of general application.

337, Electricity: Electrothermally or Thermally Actuated Switches, subclasses 14+ for electrothermally actuated switches.

94 WITH CATHODE OR CATHODE HEATER SUPPLY CIRCUIT:

This subclass is indented under the class definition. Systems having a load device connected in the system, the load device being a discharge device provided with (1) a thermionic cathode adapted to be heated by electric current other than the discharge current flowing through the cathode, or (2) a cathode of the indirectly heated type, that is, a thermionic cathode which is heated by the heat generated in an electric heater element adjacent the cathode, the system being provided with electric circuit means to apply electric current to the cathode or the cathode heater element.

(1) Note. The subclass does not include patents wherein the claims merely state that the load device in the system is provided with a heated thermionic cathode or an indirectly heated cathode and no significant features of the cathode or heating circuit supply are claimed. Such patents are in the other appropriate subclasses of the class.

(2) Note. This and the indented subclasses are not restricted to gas or vapor discharge devices or lamps as the load devices, but include all discharge device systems wherein the discharge device includes a thermionic cathode adapted to be heated by electric current other than the discharge current, or an indirectly heated cathode provided with an electric heater element, the system including circuit means to supply current to the cathode or heater element, excepting such systems in which the discharge device load is a discharge control discharge device other than the discontinuous control type gas or vapor discharge device and the system includes means to supply current and/or potential to the discharge control means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

112, for systems in which the load device is provided with means for modifying the temperature of the load device.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclass 310 and the subclasses specified in the Notes thereto for discharge device structures where the discharge device is provided with an indirectly heated cathode or a resistance heated cathode.

323, Electricity: Power Supply or Regulation Systems, subclass 227 and 291, for systems for controlling the current and/or voltage magnitude by means of an electronic tube wherein the control of the electronic tube is by cathode element control. A usual cathode ele-

ment control is cathode temperature control.

329, Demodulators, appropriate subclasses for demodulators with significant power supply circuitry.

330, Amplifiers, subclass 113 for amplifier systems including those with polyphase power supplies which may supply the tube heaters; subclass 115 for amplifiers including unrectified a.c. supply to vacuum tube filamentary cathodes; subclass 127 for vacuum tube amplifier systems including those having means to control the power supply of a filamentary cathode or cathode heater; subclasses 201, 205, and 206 for vacuum tube amplifiers including power supply to filamentary cathodes.

363, Electric Power Conversion Systems, subclass 113 for electronic tube current conversion systems wherein the control of the electronic tube convertor is by cathode element control. A usual cathode element control is cathode temperature control.

95 Plural load device systems:

This subclass is indented under subclass 94. Systems having a plurality of discharge device load devices connected in the system.

(1) Note. Where the circuit has a single discharge device with a supply circuit in which there is a second discharge device which is limited in the claims to being of the gas or vapor type, the patent is classified as a plural discharge device load system even though the second discharge device is in controlling relation to the first, see the main class definition section (9). Conversely where the second discharge device is claimed broadly (not being limited in the claims to being of the gas or vapor type) it is not treated as a second load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

113, for plural load device systems provided with means for modifying the temperature of the load devices.

324, and the subclasses specified in the notes to the definition of that subclass, for other plural discharge device load device systems.

96 Series connected cathodes or heaters:

This subclass is indented under subclass 95. Systems having the cathodes and/or the cathode heaters of a plurality of discharge device load devices connected in electrical series relation with respect to each other and the source of cathode or heater current supply.

SEE OR SEARCH THIS CLASS, SUBCLASS:

99, and indented subclass for systems under subclass 94 wherein a load device in the system is provided with a plurality of cathodes and/or cathode heaters which are connected in electrical series relation with respect to each other.

185, and indented subclasses for systems provided with a plurality of load devices connected in electrical series relation with respect to each other.

97 Pulsating or A.C. supply to the cathode or heater circuit:

This subclass is indented under subclass 95. Systems, wherein the cathode or cathode heater current supply circuit is supplied with pulsating or alternating current.

(1) Note. This subclass includes plural load device systems wherein the cathode or heater circuit includes a rectifier for rectifying alternating current, the rectified current being supplied to the cathode or heater circuit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

101, for other systems under subclass 94 provided with a rectifier and/or an electric space discharge device in the cathode supply circuit.

105, and indented subclass for other systems under subclass 94 having the cathode or heater circuit supplied with pulsating or alternating current.

250, and indented subclasses for systems provided with a plurality of load devices and a source of pulsating or alternating current supply for the load device.

98 Plural cathodes or heaters in the load device:

This subclass is indented under subclass 94. Systems, wherein the load device in the system is provided with a plurality of thermionic cathodes or cathode heaters.

SEE OR SEARCH THIS CLASS, SUBCLASS:

334, and indented subclasses for systems wherein the load device is an electric discharge device provided with a plurality of cathodes and/or a plurality of anodes.

99 Series connected cathodes or heaters:

This subclass is indented under subclass 98. Systems wherein a plurality of the cathodes and/or cathode heaters are connected in electrical series relation with respect to each other and the source of cathode or heater current supply.

SEE OR SEARCH THIS CLASS, SUBCLASS:

96, for systems under subclass 94 having a plurality of load devices connected in the system, the cathodes and/or heaters of two or more of the load devices being connected in electrical series relation with respect to each other.

100 Thermostatic switch in the series circuit:

This subclass is indented under subclass 99. Systems provided with a thermostatic electric switch connected in the electrical series circuit which includes the plurality of cathodes and/or cathode heaters, the thermostatic switch being connected in the circuit to open and close the series circuit.

(1) Note. In most of the systems in this subclass, the cathodes and/or heaters are connected in series relation until they have become heated to the operating temperature, the thermostatic switch then opening the series circuit so that the cathodes and/or heaters and the source of current supply are no longer in series relation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

99, for corresponding systems having other than thermostatic switches.

SEE OR SEARCH CLASS:

337, Electricity: Electrothermally or Thermally Actuated Switches, subclass 14 for electrothermally actuated switches.

101 Discharge device and/or rectifier in the cathode or heater circuit:

This subclass is indented under subclass 94. Systems having a discharge device and/or an electric current rectifier connected either in electrical shunt relation or electrical series relation with the cathode or the cathode heater and the source of cathode or cathode heater current supply.

SEE OR SEARCH THIS CLASS, SUBCLASS:

200, and indented subclasses, for systems provided with a space discharge device and/or an electric current rectifier connected in the current supply circuit for the load device.

102 Delayed application of the discharge potential:

This subclass is indented under subclass 94. Systems provided with means in the system to delay the application of the discharge maintaining potential to the discharge electrodes until the cathode has reached its operating temperature.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclasses 33+ for retarded (time delay) electric switches, per se.

323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 for electronic tube regulators.

335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclasses 59+ for electromagnetically operated switches, per se.

363, Electric Power Conversion Systems, subclass 115 for current conversion systems having an electronic tube convertor including means to delay

the application of discharge potential to the electronic tube until the cathode has reached its operating temperature. The systems in Class 363, subclass 115, are closely analogous to the systems in this and indented subclasses. See section VI, 7 of the class definition of Class 363 for the line between this class (315) and Class 363.

103 With surge generator in the discharge circuit:

This subclass is indented under subclass 102. Systems provided with means for generating a surge of potential which is higher than the potential of the source of supply and for applying the potential surge to the discharge electrodes after the cathode has reached its operating temperature.

SEE OR SEARCH THIS CLASS, SUBCLASS:

263, and 289+, for other systems under the class definition provided with means for impressing a potential surge on the discharge electrodes to initiate a discharge in the discharge device.

104 Thermostatic controlled delaying means:

This subclass is indented under subclass 102. Systems wherein the means for delaying the application of the discharge potential to the discharge electrodes is controlled by thermostatic means.

(1) Note. The heat to operate the thermostat may be supplied from the cathode or the cathode heater or from an electrical heating element other than the cathode or the cathode heater connected in the system.

SEE OR SEARCH CLASS:

337, Electricity: Electrothermally or Thermally Actuated Switches, subclasses 14+ for electrothermally actuated switches and subclass 298 for thermally controlled switches.

105 Pulsating or A.C. supply to the cathode or heater circuit

This subclass is indented under subclass 94. Systems wherein the cathode or the cathode heater current supply circuit is supplied with pulsating or alternating current.

SEE OR SEARCH THIS CLASS, SUBCLASS:

97, for this subject matter where there are a plurality of load devices in the system.

101, for systems under subclass 94 wherein the system includes an electric current rectifier in the cathode or cathode heater circuit to rectify the current supplied to the cathode or heater.

SEE OR SEARCH CLASS:

330, Amplifiers, subclasses 113 and 115 for amplifier systems including a polyphase power supply and a.c. power supply, respectively.

106 Automatic cut-out or voltage regulator in the cathode or heater circuit:

This subclass is indented under subclass 105. Systems provided with (1) means to open the cathode or the cathode heater circuit, or (2) means to regulate the current supplied to the cathode or the cathode heater circuit, such means being automatically operated in response to some condition.

(1) Note. The condition causing the opening of the cathode circuit may be (1) when the cathode or cathode heater supply voltage and/or current becomes too low or too high for proper operation of the load device, or (2) when more or less than the desired electrical impedance is present in the cathode or cathode heater circuit or (3) when the load device fails to operate in the desired manner, or (4) any condition affecting the operation of the load device. The current supplied to the cathode may be regulated automatically in response to any condition affecting the operation of the load device, such as, the temperature of the load device or the surrounding atmosphere, or the variations of potential of the source of supply.

SEE OR SEARCH THIS CLASS, SUBCLASS:

99+, for systems under subclass 98, wherein the discharge device is provided with a plurality of cathodes or cathode heaters being connected in series relation until they have reached their operating temperature, the series connection then being automatically opened so that the main discharge may be initiated.

107, for other systems under subclass 94 provided with means for automatically opening the cathode or cathode heater circuit or for automatically regulating the current supplied to the cathode or cathode heater.

114, and 116, for systems under the class definition having electrical means to heat the load device, the circuit supplying electric current to the heating means being provided with an automatic cutout or voltage regulator.

119+, for systems provided with means for automatically opening the circuit of the load device in response to some condition affecting the operation of the load device.

307+, for systems under the class definition provided with means for automatically regulating the current and/or potential supplied to the load device in response to some condition affecting the operation of the load device.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 220 through 354, for miscellaneous systems for controlling the magnitude of the current and/or potential in a single circuit.

107 Automatic cut-out or voltage regulator in the cathode or heater circuit:

This subclass is indented under subclass 94. Systems provided (1) with means to open the cathode or the cathode heater circuit, or (2) means to regulate the current supplied to the cathode, or the cathode heater circuit, such means being automatically operated in response to some condition.

(1) Note. The condition causing the opening of the cathode circuit may be (1) when the cathode or cathode heater supply voltage and/or current becomes too low or too high for proper operation of the load device, or (2) when more or less than the desired electrical impedance is present in the cathode or cathode heater circuit or (3) when the load device fails to operate in the desired manner, or (4) any condition affecting the operation of the load device. The current supplied to the cathode may be regulated automatically in response to any condition affecting the operation of the load device, such as, the temperature of the load device or the surrounding atmosphere, or the variations of potential of the source of supply.

SEE OR SEARCH THIS CLASS, SUBCLASS:

99+, for systems under subclass 98, wherein the discharge device is provided with a plurality of cathodes or cathode heaters being connected in series relation until they have reached their operating temperature, the series connection then being automatically opened so that the main discharge may be initiated.

106, for this subject matter where the current supply for the cathode or cathode heater circuit is pulsating and/or alternating current.

114, and 116, for systems under the class definition having electrical means to heat the load device, the circuit supplying electric current to the heating means being provided with an automatic cutout or voltage regulator.

119+, for systems under the class definition provided with means for automatically opening the circuit of the load device in response to some condition affecting the operation of the load device.

307+, for systems under the class definition provided with means for automatically regulating the current and/or potential supplied to the load device in response to some condition affecting the operation of the load device.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 220 through 354, for miscellaneous systems for controlling the magnitude of the current and/or potential in a single circuit.

108 CONFINED GAS OR VAPOR-TYPE LOAD DEVICE WITH PRESSURE REGULATING MEANS:

This subclass is indented under the class definition. Systems wherein the load device is of the type which operates in a confined atmosphere of gas or vapor and includes (1) means for evacuating the gas or vapor, and/or (2) means for admitting gas or vapor into the interior of the enclosure of the load device, the system including means to cause such pressure regulating means to become operative when the gas pressure deviates from normal.

SEE OR SEARCH CLASS:

53, Package Making, subclasses 79+ and 403+ for methods of and apparatus for gas filling and/or evacuating of lamps or discharge devices combined with closing.

141, Fluent Material Handling, With Receiver or Receiver Coacting Means, subclasses 4, 8, and 65+ for methods of and apparatus for inducing a gas or vapor into or evacuating the envelope of an electric lamp or space discharge device.

250, Radiant Energy, subclasses 281+ for methods and apparatus for the ionic separation or analysis of materials utilizing the mass to electric charge ratio of ionic particles of the material.

313, Electric Lamp and Discharge Devices, subclass 7, for the structure of an electric lamp or discharge device which has combined therewith an evacuating pump designed to be used during the operation of the lamp or discharge device (as distinguished from such a combination designed only for use during the manufacture of the lamp or discharge device) and subclasses 545 to 566 for lamp and discharge device structures which are provided with a getter, a gas or vapor generating means or other pressure regulating means.

378, X-Ray or Gamma Ray Systems or Devices, subclass 123 for X-ray tubes with vacuum control means.

445, Electric Lamp or Space Discharge Component or Device Manufacturing, subclasses 9+, for processes of generating a gas or vapor from a material within the envelope of an electric lamp or discharge device and subclass 55 and the subclasses specified in the notes to the definitions of those subclasses for processes of gettering electric lamps or discharge devices.

109 Auxiliary discharge type:

This subclass is indented under subclass 108. Systems, wherein the load device is a space discharge device provided with at least one auxiliary electrode in addition to the principal discharge electrodes, the discharge between such auxiliary electrode and another electrode when the gas pressure in the enclosure deviates from normal controlling the operation of the gas or vapor regulating means, the auxiliary electrode being either (1) connected in a control circuit so that the flow of current in the auxiliary electrode circuit controls the operation of the gas pressure regulating means or (2) the auxiliary electrode being composed of or containing a material which when heated by the auxiliary discharge releases or absorbs the required gas or vapor to maintain the desired pressure in the enclosure.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 558+ and 566 for the structure of space discharge devices which have an electrode or electrode support containing or coated with a getter material, or a gas or vapor generating material.

110 Valve controlled:

This subclass is indented under subclass 108. Systems wherein the load device is connected to the pressure regulating device by a conduit which includes a valve, the system including means to operate the valve when the gas pressure deviates from normal.

SEE OR SEARCH CLASS:

137, Fluid Handling, subclasses 455+ for valves which are responsive to a change in line condition, such as pressure.

313, Electric Lamp and Discharge Devices, subclass 545, for lamps and discharge device structure which include a valve so that the lamp or discharge device may be either evacuated or have gas or vapor introduced into the lamp or discharge device.

111.01 DISCHARGE DEVICE LOAD WITH FLUENT MATERIAL SUPPLY TO THE DISCHARGE SPACE:

This subclass is indented under the class definition. Subject matter wherein, the load device in the system is a discharge device, means being provided to supply a fluent material to the discharge area.

(1) Note. This subclass includes systems in which the supply of fluent material is (a) for supplying a stabilizing ionizable or combustible gas to the discharge area, (b) for the purpose of extinguishing the discharge, (c) for deflecting the discharge from the path it would normally take, or (d) for any other purpose not otherwise provided for in some particular art area.

(2) Note. This subclass includes induction-type discharge load devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:

108+, for systems under the class definition wherein the load device is of the type which operates in a confined atmosphere of gas or vapor and includes means for regulating the pressure of the gas or vapor in the interior of the load device enclosure, the systems including means to cause the pressure regulating means to become operative when the pressure deviates from normal.

112+, for systems under the class definition wherein the load device is provided with means for heating and/or cooling at least part of the load device structure.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclass 251 for devices for producing and propagating a unidirectional stream of neutral molecules or atoms through a vacuum, usually with thermal velocity; subclasses 281+ for methods and apparatus for the ionic separation or analysis of materials utilizing the mass to electric charge ratio of ionic particles of the materials, the apparatus sometimes used including means to subject a gas or vapor to electron or ionic bombardment for the purpose of charging the particles; subclasses 306+ for methods and apparatus for the inspection of solids or liquids by charged particles; subclasses 324+ for methods and apparatus for subjecting materials to corona radiation; subclasses 432+ for an irradiating source and a fluent material containment, support, or transfer means to permit the irradiation of the fluent material; and subclasses 492.1+ for the irradiation of objects or materials. Search the classes specified in the Class 250 notes for other classes and the appropriate subclasses which provide for other apparatus for either supplying a fluent material to an electrical discharge or for subjecting a fluent material to an electrical discharge.

313, Electric Lamp and Discharge Devices, subclasses 545 through 552 for the structure of discharge devices which are provided with an envelope and with means for regulating the pressure of the gas, vapor, or vacuum within the envelope; subclasses 231.01+ for discharge devices which are provided with means to supply fluent material to the discharge space; and subclasses 359.1+ for means for generating and accelerating positive or negative ions.

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclasses 21+ for consumable electrode discharge devices, and the systems therefor, where the consumable electrode discharge device is provided

with means to supply a material, which may be fluent material, to the discharge area between the electrodes.

335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclass 210 for ion or electron beam deflecting magnets per se and the search notes thereto for combinations including such magnet means.

376, Induced Nuclear Reactions: Processes, Systems, and Elements, subclasses 100+ for devices and methods utilizing a plasma where the disclosed or claimed intent is to effect nuclear fusion reactions.

111.11 With tangential fluent material supply:
This subclass is indented under subclass 111.01. Subject matter including means for directing the fluent material in a direction which is tangential to the discharge space.

111.21 Plasma generating:
This subclass is indented under subclass 111.01. Subject matter including means for producing a plasma.

(1) Note. Usually plasmas have a neutral net charge, but not necessarily so.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclass 231.31 for discharge devices, per se, which produce a plasma.

111.31 With extraction electrode:
This subclass is indented under subclass 111.21. Subject matter including means for removing ions of one charge from the plasma or discharge space.

111.41 With magnetic field:
This subclass is indented under subclass 111.21. Subject matter including means for generating a magnetic field.

111.51 Induction type:
This subclass is indented under subclass 111.41. Subject matter wherein the discharge is sustained by a high intensity magnetic field.

111.61 Acceleration:
This subclass is indented under subclass 111.41. Subject matter wherein the means for producing a magnetic field accelerates the plasma.

111.71 Plasma containment:
This subclass is indented under subclass 111.41. Subject matter wherein the magnetic field confines the plasma.

111.81 Electron or ion source:
This subclass is indented under subclass 111.01. Subject matter including means for producing electrons or ions.

(1) Note. Included here are electron sources of general utility.

111.91 Gas ionization type (e.g., ion pump or gauge source):
This subclass is indented under subclass 111.81. Subject matter wherein the fluent material is bombarded by electrons or ions to produce ions.

(1) Note. Included here are ion sources for ion pumps and ionization gauges.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 359.1+ for ion sources with means to accelerate the ions.

417, Pumps, subclass 49 for ion pumps.

112 WITH LOAD DEVICE TEMPERATURE MODIFIER:
This subclass is indented under the class definition. Systems wherein the load device in the system is provided with means for heating and/or cooling at least part of the load device structure.

(1) Note. This and the indented subclasses are not restricted to gas or vapor discharge devices and lamps as load devices or vapor, but include all discharge device systems wherein the discharge device is provided with means for heating and/or cooling the discharge devices, and the system includes means automatically operated in response to some condition affecting the operation of the load device

to control the operation of the load device, or the system includes means controlled by the temperature modifying medium for altering the operation of the discharge device excepting such systems in which the discharge device load is a discharge control discharge device other than the discontinuous control type gas or vapor discharge device and the system includes means to supply current and/or potential to the discharge control means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

50, for discharge devices or lamps under the class definition which are combined with means for heating and/or cooling the lamp or discharge device structure, either the lamp or discharge device, or the heating and/or cooling means being structurally combined with an electric circuit element to form a unitary device, or the heating and/or cooling means forming an electrical circuit element, the lamp or discharge device, and the heating and/or cooling means, being structurally united to form a unitary device.

94, and indented subclasses for systems wherein the load device in the system is a discharge device provided with either (1) a thermionic cathode adapted to be heated by an electric current flowing through the cathode, or (2) a cathode of the indirectly heated type, the system including means to apply electric current to the cathode or the cathode heater element.

108, and indented subclasses, for systems having the load device in the system provided with gas or vapor pressure regulating means, the gas or vapor pressure regulating means being responsive to heat. For example, such systems wherein the load device is provided with a material which either vaporizes, or releases, or absorbs gas, when the material is heated.

111.01, for systems under the class definition where the load device is a discharge device, means being provided to supply fluent material to the discharge area between the electrodes.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 11+ for the structure of discharge devices and electric lamps which are provided with means for heating and/or cooling at least part of the discharge device or lamp.

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 26 and indented subclasses, for consumable electrode discharge devices provided with temperature modifying means, and the electrical systems therefor.

113 Plural load device systems:

This subclass is indented under subclass 112. Systems having a plurality of load devices connected in the system.

SEE OR SEARCH THIS CLASS, SUBCLASS:

312, and the subclasses specified in the notes to the definition of that subclass, for other plural load device systems within the class definition.

114 Electric heater for the load devices:

This subclass is indented under subclass 113. Systems wherein the load devices are provided with electrical heating means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

95, and indented subclasses, for systems under the class definition provided with a plurality of discharge device load devices, the discharge devices having either thermionic cathodes designed to be heated by the passage of an electric current or indirectly heated cathodes, the system including means to supply electric current to the cathode or the cathode heater element.

115 Electric heater for the load device:

This subclass is indented under subclass 112. Systems wherein the load device is provided with electrical heating means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

46, and indented subclasses, for discharge devices which have structurally combined therewith so as to form a unitary device, a filament, electric heater, or resistance, the filament, heater, or resistance being connected in electrical shunt to the discharge electrodes.

49, for discharge devices which have structurally combined therewith, so as to form a unitary device, a filament or electric heater, the filament or heater being connected in electrical series with the discharge device.

94, and indented subclasses, for systems having a discharge device load device, the discharge device having either a thermionic cathode designed to be heated by the passage of an electric current or an indirectly heated cathode, the system including means to apply electric current to the cathode or the cathode heater element.

114, for this subject matter where there are a plurality of load devices in the system.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 15+, for the structure of discharge devices and electric lamps which are provided with an electrical heating means for heating the lamp or discharge device.

116 Automatic cut-out or voltage regulator for the heater circuit:

This subclass is indented under subclass 115. Systems provided with (1) means to open the current supply circuit for the heating means, or (2) means to regulate the current supplied to the heating means, such means being automatically operated in response to some condition.

(1) Note. The condition causing the opening of the heater circuit or the operation of the regulating means may be (1) when the load device current and/or voltage becomes too high or too low, or (2) the temperature of the load device, or (3) any other condition affecting the operation of the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

106, and 109, for systems provided with a discharge device load device of the type having either a thermionic cathode designed to be heated by the flow of current there through or an indirectly heated cathode, the system including an automatic cutout or voltage regulator in the cathode or cathode heater current supply circuit.

114, for this subject matter where there are a plurality of load devices in the system.

117, for systems under subclass 112 provided with means other than electric heating means for modifying the temperature of the load device, such temperature modifying means being automatically controlled in response to some condition affecting the operation of the load device.

119, and indented subclasses, for systems provided with an automatic cutout for the load device.

307, and indented subclasses, for systems provided with automatic regulating means to regulate the supply of current to the load device.

117 Automatic control of the temperature modifier:

This subclass is indented under subclass 112. Systems provided with means for controlling the operation of the heating and/or cooling means, such means being automatically controlled in response to some condition affecting the operation of the load device.

(1) Note. The condition controlling the temperature responsive means may be (1) the amount of current flow through the load device, or (2) the temperature of the load device, or (3) any other condition affecting the operation of the load device.

(2) Note. See note (1) to the definition of subclass 112.

SEE OR SEARCH THIS CLASS, SUBCLASS:

114, and 116, for this subject matter where the heating means is an electrical heater.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclass 429 for apparatus or methods for subjecting fluent materials to radiant energy rays or emanations, the apparatus being provided with means to control the flow of fluent material. Some of the apparatus in subclass 429 of Class 250 includes electrical systems which are closely analogous to the systems in this subclass. Where the fluent material is disclosed merely as a temperature modifying medium for the lamp or discharge devices, classification is in Class 315. Where the fluent material is disclosed as a material being treated, classification is in Class 250.

313, Electric Lamp and Discharge Devices, subclass 13, for electric lamps and discharge devices which are combined with means for modifying the temperature of the discharge device or lamp and which have means for controlling the operation of the temperature modifier in the apparatus. In Class 313 no electrical system for the lamp or discharge device is provided nor is there any electrical control system for controlling the operation of the temperature modifier. The excluded systems are found in this class (315) and not in Class 313.

118 Load device circuit controlled by the temperature modifying medium:

This subclass is indented under subclass 112. Systems provided with means controlled by the temperature modifying medium for altering the operation of the load device.

(1) Note. The control exercised over the load device may be to open the circuit of the load device, to regulate the current supply to the load device, or any other control necessary for either the protection or the proper operation of the load device in view of the condition of the temperature modifying medium.

(2) Note. The temperature modifying means may control the load device in response to (1) the temperature of the temperature modifying medium, or (2) the rate of flow of the temperature modifying medium, or (3) any other condition which would affect the operation of the load device.

(3) Note. See note (1) to the definition of subclass 112.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 429 and 430 for methods and apparatus for subjecting fluent materials to radiant energy rays or emanations, the apparatus being provided with means controlled by the fluent material being treated to control the operation of the radiant energy ray generator. Some of the apparatus in subclasses 430 and 453.11+ of Class 250 includes electrical systems which are closely analogous to the systems in this subclass. Where the fluent material is disclosed merely as a temperature modifying medium for the lamp or discharge device, classification is in Class 315. Where fluent material is disclosed as a material being treated, classification is in Class 250.

119 WITH AUTOMATIC SHUNT AND/OR CUTOUT:

This subclass is indented under the class definition. Systems provided with means to complete an electrical circuit in shunt about a load device or some part thereof, and/or to open the load device current supply circuit, such means being automatically operated (1) when the load device becomes nonconductive or fails to operate properly, or (2) when the supply voltage and/or current becomes too low or too high for the proper operation of the load device or (3) when more than a desired number of load devices are connected to the supply circuit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

74, for lamps and discharge devices which have structurally combined therewith, so as to form a unitary device, an automatically operating electric switch which is connected with the lamp or discharge device so as to either open the circuit or close a shunt circuit about the lamp or discharge device when it fails to operate properly.

88, and indented subclasses, for systems provided with (1) two or more load devices, or (2) a load device of the electric discharge type having a plurality of cathodes and/or anodes, or (3) an electric lamp provided with two or more filaments, and provided with means for automatically substituting for (a) one of the load devices, another of the load devices, or (b) the first operated electrode, another electrode, or (c) the first operated filament, another filament, when the first operated device, electrode, or filament fails to operate properly.

106, and 107, for systems under the class definition wherein the load device is a discharge device having a thermionic cathode heated by the passage of electric current or an indirectly heated cathode, the cathode or cathode heater circuit including means to automatically open the cathode or the cathode heater circuit in response to some condition affecting the operation of the load device.

114, and 116, for systems wherein the load device is provided with electric heating means, the current supply circuit for the heating means being provided with an automatic cutout.

118, for systems under the class definition wherein the load device is provided with a temperature modifying means, the temperature modifying means controlling the operation of a cutout switch for the load device.

129, and indented subclasses, for systems provided with signal means, indicating means, and/or alarm means operated by some means responsive to a condition of the load device to indicate such condition.

340, for other systems under the class definition wherein the load device is a discharge device and the system includes means in the cathode-anode circuit for interrupting or extinguishing the flow of electric discharge current between the cathode and the anode.

360, for systems provided with a time controlled means for (1) supplying a current to the load device for a predetermined time, or (2) interrupting the supply of current to the load device after a predetermined time lapse.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 10 and indented subclasses, for consumable electrode discharge devices, and the systems therefor, provided with an automatic shunt circuit closing means or an automatic cutout means.

120 Combined with signal, indicator, or alarm:

This subclass is indented under subclass 119. Systems having combined therewith signaling means, or indicator means, or alarm means operated by some part of the load device or the electrical circuits therefor to indicate some condition in the load device or the circuits therefor.

(1) Note. The condition indicated in the systems in this subclass is usually the condition which causes the shunt circuit closing means or the cutout means to operate.

SEE OR SEARCH THIS CLASS, SUBCLASS:

129, and indented subclasses, for other systems under the class definition provided with signaling means, or indicator means, or alarm means.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclass 10, for the structure of electric lamps and discharge devices which are provided with a tempera-

ture indicator, and subclasses 323+ for lamps and discharge devices which have combined therewith a signaling means, indicator means or alarm means. In the devices of Class 313 there is no electrical system for supplying current to the lamp or discharge device and there is no electrical system for controlling the signal indicator or alarm. The excluded systems are in this class (315) and not in Class 313.

324, Electricity: Measuring and Testing, subclasses 403+ for apparatus or methods for electrically testing electric lamps or space discharge devices.

340, Communications: Electrical, subclasses 635+ for electrical signal or alarm systems responsive to or controlled by some condition of some electrical apparatus.

121 Plural load device systems:

This subclass is indented under subclass 119. Systems, having a plurality of load devices connected in the system.

(1) Note. The automatic shunt or cutout means may operate to complete a shunt circuit about and/or to cutout only one of the plurality of load devices, or its supply circuit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

312, and the subclasses specified in the notes to the definition of that subclass, for other plural load device systems within the class definition.

122 Series connected load devices:

This subclass is indented under subclass 121. Systems wherein two or more of the load devices are connected in electrical series relation with respect to each other.

SEE OR SEARCH THIS CLASS, SUBCLASS:

179, and indented subclasses, for other systems having plural diverse type load devices connected in series relation and without an automatic shunt and/or cutout.

185, and indented subclasses, for miscellaneous series connected load devices without an automatic shunt and/or cutout.

123 Plural shunts and/or cut-outs:

This subclass is indented under subclass 119. Systems having (1) a plurality of automatic shunt circuit closing means, (2) a plurality of automatic cutouts, or (3) both an automatic shunt circuit closing means and an automatic cutout means connected in the system.

124 Auxiliary electrode controlled:

This subclass is indented under subclass 119. Systems wherein the load device is provided with an auxiliary electrode, the operation of the shunt circuit closing means and/or of the cutout means being controlled by the current and/or potential in the circuit which includes the auxiliary electrode.

(1) Note. In some of the systems in this subclass, the load device is an incandescent filament lamp having an auxiliary electrode mounted in proximity to the filament, the auxiliary electrode being connected in the system so that when the filament is broken, the resultant arc contacts the auxiliary electrode and the shunt circuit closing means or the cutout means is operated in response to the current flow in the auxiliary electrode circuit.

(2) Note. This subclass includes systems in which the load device is a discharge device having an auxiliary starting or keep-alive electrode, the automatic shunt circuit closing means or cut-out means being operated in response to the current flow conditions in the auxiliary electrode circuit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

335, and the indented subclass and the subclasses specified in the notes to the definition of those subclasses for other systems under the class definition in which the load device is a discharge device provided with an auxiliary electrode.

125 Shunt circuit closing:

This subclass is indented under subclass 119. Systems wherein the electrical circuit in shunt is completed about the load device or some part thereof.

(1) Note. The shunt circuit may be of lower or higher resistance than the resistance of the load device and/or the part around which it is completed, and is often a "short-circuit".

SEE OR SEARCH THIS CLASS, SUBCLASS:

75, for lamps and discharge devices which have structurally combined therewith, so as to form a unitary device, an automatically operated electric switch connected to the lamp or discharge device so as to complete an electrical shunt about the lamp or discharge device when it fails to operate properly.

122, for this subject matter where the system includes a plurality of series connected load devices.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 11 and indented subclasses, for consumable electrode discharge devices, and the systems therefor, provided with an automatic shunt circuit closing means.

361, Electricity: Electrical Systems and Devices, subclass 70 for miscellaneous systems having means to restore the circuit by closing a shunt circuit about a load device.

126 With compensating impedance:

This subclass is indented under subclass 125. Systems provided with an electrical impedance in the shunt circuit.

(1) Note. This subclass includes systems wherein an electro-responsive switch, such as an electromagnetic or thermostatic switch, is utilized to close the shunt circuit, and the switch operating means, such as the electromagnet coil, or the heater for the thermostat, is included in the shunt circuit so as to hold the switch in operated condition as long as the supply voltage is maintained.

SEE OR SEARCH THIS CLASS, SUBCLASS:

122, for this subject matter where the system includes a plurality of series connected load devices.

306, for systems provided with a current and/or voltage regulator for the load device connected in shunt relation to the load device.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 13, and indented subclass, for consumable electrode discharge device systems provided with an automatic shunt circuit closing means for connecting a compensating impedance in shunt to the discharge device.

127 Supply circuit current and/or potential actuated switch:

This subclass is indented under subclass 119. Systems provided with an electrically operated switch to control the circuit of the discharge device, the switch being operated by means of the current and/or potential changes in the supply circuit of the load device.

(1) Note. This subclass includes systems provided with a fuse.

SEE OR SEARCH THIS CLASS, SUBCLASS:

120, for this subject matter where the system includes signal means, an indicator, or an alarm.

121, and indented subclass, for this subject matter where there are a plurality of load devices in the system.

123, for this subject matter where the system includes a plurality of shunts and/or cutouts.

124, for this subject matter where the electrically operated switch is controlled by an auxiliary electrode in the load device.

125, and indented subclass, for this subject matter where the switch closes a shunt circuit about the load device.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 15 and indented subclass, for consumable electrode discharge devices, and the systems therefor provided with an electrically operated switch operated by means of current changes in the circuit of the discharge device to complete a shunt circuit about the discharge device, and subclass 18 and indented subclass for such systems for cutting out or opening the circuit of the discharge device.

335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclasses 2+ for electromagnetically actuated switches of general application.

337, Electricity: Electrothermally or Thermally Actuated Switches, subclasses 14+ for electrothermally responsive electric switches of general application.

128 Plural switch operating means:

This subclass is indented under subclass 127. Systems wherein the electrical switch is provided with a plurality of operating means.

(1) Note. The switch may be provided with two or more electromagnet coils, or may be a combined thermostatic and electromagnet switch or be provided with any other kind of plural operating means.

(2) Note. The switch may be arranged so that either of the switch operating means may actuate the switch, or the switch may be arranged so that the switch will be actuated only when both of the actuating means are at a predetermined condition, or the switch may be arranged so that one of the means furnishes a biasing force against or for actuation, the other switch operating means completing the actuation of the switch.

SEE OR SEARCH CLASS:

335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclasses 177+ for electromagnetically operated switches having plural operating magnet means and subclass 266 for electromagnets with armature utilizing plural coils or magnets.

129 WITH SIGNAL, INDICATOR, OR ALARM:

This subclass is indented under the class definition. Systems provided with signaling means, or indicator means, or alarm means operated by some part of the load device or the electrical circuits therefor to indicate some condition in the load device or the circuits therefor.

(1) Note. The condition indicated may be the operative or inoperative condition of the load device or the circuit therefor, or the time that the load device has been operated, or the degree of heat of some part of the discharge device, or any other desired condition.

(2) Note. This and the indented subclasses do not include systems where a lamp or gas or vapor discharge device is the sole signal or indicator means to show some condition in system except where the casing or mounting for the signal lamp or discharge device which is used as a signal is claimed. Patents excluded are cross-referenced to this or the indented subclasses and are cross-referenced to this or the indented subclasses and are classified either as a plural load device system or in subclasses 88+ where the signal lamp or discharge device is operative only on failure of a first operated lamp or discharge device to operate properly. See the reference to subclasses 88+ under “Search This Class, Subclass”, below. Where one of the lamps or discharge devices is claimed broadly as a signaling means, the patent is placed in this or the indented subclasses and cross-referenced to the other appropriate subclasses in this class.

SEE OR SEARCH THIS CLASS, SUBCLASS:

88, and indented subclasses, where the system includes two load devices and the system is arranged so that one of the load devices is energized only after the first load device fails to oper-

ate, even though the second operated load device is disclosed and claimed as a signal for the first operated load device, excepting where the casing or mounting for the load device which is used as a signal is claimed when the patent is placed in this subclass (129) or the indented subclasses and cross-referenced to subclass 88, and indented subclasses.

119, and indented subclasses, for systems under the class definition provided with automatically operating means to complete an electrical circuit in shunt about the discharge device or some part thereof, and/or to open the electric circuit of the discharge device or some part thereof, such means being automatically operated in response to some condition of the discharge device which prevents further operation of the discharge device in the normal manner, especially subclass 120 where the system also includes automatically operating means to open the circuit and/or close a shunt circuit about the load device when the load device fails to operate properly.

SEE OR SEARCH CLASS:

116, Signals and Indicators, appropriate subclasses, for nonelectrical signals and indicators of general application.

313, Electric Lamp and Discharge Devices, subclass 10, for the structure of electric lamps and discharge devices which are provided with a temperature indicator and subclasses 323+ for lamps and discharge devices which have combined therewith a signaling means, indicator means or alarm means. In the devices in Class 313 there is no electrical system for supplying current to the lamp or discharge device and there is no electrical system for controlling the signal indicator or alarm. The excluded systems are in this class (315) and not in Class 313.

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 9, for consumable electrode discharge devices, and the systems therefor provided with signaling means, or indicator means, or alarm means.

324, Electricity: Measuring and Testing, subclasses 403+ for apparatus or methods for electrically testing electric lamps or space discharge devices.

340, Communications: Electrical, subclasses 500+ for electric signaling systems automatically responsive to a condition, particularly subclasses 641+ for a signalling light condition responsive indicating system.

130 Plural load device systems:

This subclass is indented under subclass 129. Systems having a plurality of load devices connected in the system.

(1) Note. The signal, indicator, or alarm means may indicate the condition of only one of the plurality of load devices, or of its supply circuit.

(2) Note. Where a single lamp or a single discharge device is the ultimate load device, and the system includes an additional lamp and/or discharge device in the circuit which is connected in the circuit so as to control and/or modify the current and/or potential supplied to such single ultimate load device, the patent is classified as a plural load device system if (a) the controlling and/or modifying device is a lamp, or (b) the controlling and/or modifying device is limited in the claims to being a gas or vapor discharge device. Conversely, such a system is not classified as a plural load device system where the controlling and/or modifying device is claimed broadly as a discharge device even though it is disclosed as a gas or vapor discharge device.

The controlling and/or modifying device may be connected in the control circuit of the discharge device where the ultimate load device is a discharge control discharge device, and the same basis of classification is used as is set forth above.

131 Selective indication of the load device:
This subclass is indented under subclass 130. Systems having the signal, indicator, or alarm means so arranged that the condition of any one of two or more of the load devices or of their supply circuits will be indicated by the signal, indicator or alarm means.

132 Plural signals, indicators, or alarms:
This subclass is indented under subclass 131. Systems provided with a plurality of signaling means, or indicator means, or alarm means.

(1) Note. Each of the signal, indicator, or alarm means may indicate the condition of only one of the load devices or its supply circuit, or there may be a plurality of signal, indicator, or alarm means, one of which may be arranged to indicate the condition of two or more of the load devices, or their supply circuits.

SEE OR SEARCH THIS CLASS, SUBCLASS:
133, for plural signals, indicators, or alarms associated with single load devices.

133 Plural signals, indicators, or alarms:
This subclass is indented under subclass 129. Systems provided with a plurality of signaling means, or indicator means, or alarm means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
132, for plural load device systems under the class definition provided with a plurality of signal, indicator, or alarm means for selectively indicating the condition of a plurality of load devices or their supply circuits.

134 Radiant energy responsive control type:
This subclass is indented under subclass 129. Systems provided with a device sensitive to the radiant energy generated by the load device for controlling the operation of the signal, indicator, or alarm means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
149, and indented subclasses, for systems not having indicators, etc., provided with a radiant energy sensitive device for controlling the operation of the load device.

SEE OR SEARCH CLASS:
250, Radiant Energy, subclasses 200+ and the classes and subclasses specified in the Notes thereto for photocell control electric circuits and photocell apparatus.
337, Electricity: Electrothermally or Thermally Actuated Switches, subclasses 298+ for thermally responsive electric switches.

135 Discharge device and/or rectifier in the signal circuit:
This subclass is indented under subclass 129. Systems provided with a discharge device or rectifier connected in the circuit of the signal, indicator or alarm means, the signal, indicator or alarm means being controlled by the current flowing through the discharge device or the rectifier.

(1) Note. Where the discharge device in the signal, indicator, or alarm means circuit is of the type defined in the class definition as being included as a load device in this class, the patent is classified as a plural load device system in subclass 130 and indented subclasses above even though the discharge device is not disclosed or claimed as anything more than a means for controlling the current flow to the signal, indicator, or alarm means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
200, and indented subclasses, for systems provided with a discharge device or rectifier connected either in electrical series relation or electrical shunt relation to the load device and the source of current supply for the load device.

136 Electrically operated switch controlling the signal circuit:
This subclass is indented under subclass 129. Systems having an electrical signal, indicator, or alarm means, the circuit of the electrical signal, indicator, or alarm means being controlled by an electrically operated electric switch

which is actuated in response to some condition of the load device or its supply circuit.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, particularly subclass 12 and indented subclass.

335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclasses 2+ for electromagnetically operated switches of general application.

337, Electricity: Electrothermally or Thermally Actuated Switches, appropriate subclasses.

340, Communications: Electrical, subclasses 500+ for electric signaling systems automatically responsive to a condition.

137 POLYPHASE A.C. SUPPLY:

This subclass is indented under the class definition. Systems provided with (1) means for supplying electrical energy from a source of polyphase alternating currents to one or more load devices, or (2) a source of polyphase alternating current and means for converting the polyphase alternating currents to current of another character which is supplied to one or more load devices.

(1) Note. In the systems of (1) above, the source of current may be either a direct or single phase alternating current, the system including means to convert the current to polyphase alternating currents which are supplied to one or more load devices.

(2) Note. In the system of (2) above, the polyphase alternating currents may be converted to either single phase alternating current or direct current which is supplied to one or more devices.

(3) Note. Where a single lamp or a single discharge device is the ultimate load device, and the system includes an additional lamp and or discharge device in the circuit which is connected in the circuit so as to control and/or modify the current and/or potential supplied to such single ultimate load device, the patent is classified as a plural load device system if (a) the controlling and/or modifying device is a lamp, or (b) the controlling and/or modifying device is limited in the claims to being a gas or vapor discharge device. Conversely, such a system is not classified as a plural load device system where the controlling and/or modifying device is claimed broadly as a discharge device even though it is disclosed as a gas or vapor discharge device.

The controlling and/or modifying device may be connected in the control circuit of the discharge device where the ultimate load device is a discharge control discharge device, and the same basis of classification is used as is set forth above.

SEE OR SEARCH THIS CLASS, SUBCLASS:

160, and indented subclasses, for systems provided with a plurality of sources of current supply, not especially indented subclass 174, for such systems having a plurality of alternating current supplies of diverse types.

194, and indented subclasses, for systems wherein the discharge device is provided with discharge controlling means, such as a grid electrode, and the discharge control circuit includes means to shift the phase of the control current or potential with respect to the pulsating and alternating current in the cathode-anode circuit of the discharge device. In the systems of subclass 194 and indented subclasses, the source of supply current for the load device need not be a pulsating or alternating current. Where the source of supply current is pulsating or alternating, and the control means is claimed as an auxiliary starting electrode, the patent is classified in this subclass (137) or the indented subclasses and cross-referenced to subclass 194 and indented subclasses. Where the claims only recite a control device even though an auxiliary starting electrode is disclosed, the patent is classified in subclass 194 and indented subclasses.

SEE OR SEARCH CLASS:

307, Electrical Transmission or Interconnection Systems, subclasses 13+ for polyphase circuits of general application.

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 31, for consumable electrode discharge devices in combination with means for supplying polyphase alternating currents to the discharge device.

323, Electricity: Power Supply or Regulation Systems, appropriate subclasses, for polyphase alternating current systems having a single input and a single output circuit and provided with means for controlling the voltage and/or current and/or phase of the polyphase alternating current.

363, Electric Power Conversion Systems, appropriate subclasses for conversion systems which are supplied with polyphase alternating currents, particularly subclasses 1+ for combined or plural conversions systems; subclasses 13+ for current conversion (e.g., rectification, decertification) systems; subclasses 148+ for systems for converting an input alternating current having one number of phases into alternating current having a different number of phases; and subclasses 157+ for frequency conversion systems which may be supplied with polyphase alternating current.

138 M phase to N phase (e.g., phase splitters):
This subclass is indented under subclass 137. Systems provided with (1) a source of single phase alternating current and means to convert the single phase current to polyphase alternating currents, or (2) a source of polyphase alternating currents and means to convert the polyphase currents to either single phase currents or polyphase alternating currents of a different number of phases.

(1) Note. Systems under the class definition provided with a single phase source of supply and "phase splitting" means for supplying the load device with polyphase currents are in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

194, and indented subclasses, for systems under the class definition wherein the load device is a discharge control discharge device having discharge control means, and the control circuit includes means to shift the phase of the control current or voltage with respect to the current flowing in the cathode-anode circuit of the load device. For the line between this subclass (138) and subclass 194 and indented subclasses, see the notes to the definition of subclass 137.

SEE OR SEARCH CLASS:

363, Electric Power Conversion Systems, subclasses 2+ and the subclasses mentioned in the notes thereto, for systems for converting an alternating current having one number of phases into alternating current having another number of phases either alone or in combination with current and/or frequency conversion.

139 Polyphase supply circuit:
This subclass is indented under subclass 138. Systems wherein the source of supply is a source of polyphase alternating currents.

140 Phase multiplying:
This subclass is indented under subclass 139. Systems provided with means for converting the polyphase alternating currents of the supply source to polyphase alternating currents of a greater number of phases which are supplied to the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

138, for systems under the class definition for converting single phase alternating currents to polyphase alternating currents.

141 Transformer in the supply circuit:
This subclass is indented under subclass 137. Systems provided with transformer means connected between the source of supply and the load device for supplying electric current to the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

140, for this subject matter where the system includes phase multiplying means.

276, and indented subclasses, and the subclasses specified in the notes thereto for other systems in this class provided with a transformer in the supply circuit.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclass 361, for miscellaneous polyphase transformer systems.

336, Inductor Devices, subclasses 5+ for the structure of polyphase transformers and inductive reactors.

142 With interphase transformer in the supply circuit:

This subclass is indented under subclass 141. Systems wherein the transformer means includes at least two sets of transformer windings, each of the sets of transformer windings including a plurality of windings connected to a common connecting point, the two common connecting points being connected together by means of an inductive winding which either constitutes, or is a part of, an interphase transformer.

(1) Note. One of the more common types of transformer means included in the subclasses is the type wherein the secondary of the transformer is provided with two star connected polyphase windings, the neutral points being connected together by means of an inductance, the star connected windings being connected to either (1) a plurality of discharge devices or (2) to the anodes of a plural cathode and/or anode discharge device, the common return conductor from the plural discharge devices or the return conductor from the cathode of the plural cathode and/or anode discharge device being connected to the midpoint of the inductance so that the inductance functions as an interphase autotransformer.

143 Convertible transformer connections:

This subclass is indented under subclass 141. Systems in which the transformer means is provided with a plurality of phase coils, and means are provided for connecting the phase coils in different manners with respect to each other.

(1) Note. One of the more common types of transformer means included in this subclass is the type in which the primary or secondary phase coils may be connected either in star or delta.

144 Plural load devices:

This subclass is indented under subclass 141. Systems having a plurality of load devices connected to the transformer.

SEE OR SEARCH THIS CLASS, SUBCLASS:

138, and indented subclasses, for this subject matter where there is a phase changing transformer in the supply circuit of the plurality of load devices, especially indented subclass 140, where the transformer means is a phase multiplying means.

146, for other plural load device systems under subclass 137 where there are a plurality of discharge control discharge device load devices in the system.

145 Plural cathode and/or anode load device:

This subclass is indented under subclass 141. Systems in which the load device which is connected to the transformer is a discharge device having two or more cathodes and/or two or more anodes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

147, and indented subclass, for other systems under subclass 137 wherein the load device is a plural cathode and/or anode discharge device.

260, and indented subclasses, for other alternating current systems under the class systems wherein the load device is a plural cathode and/or anode discharge device.

334, and indented subclasses, and the subclasses specified in the notes to the

definition of those subclasses, for other systems under the class definition wherein the load device is a plural cathode and/or anode discharge device.

146 Plural discharge control discharge device load devices:

This subclass is indented under subclass 137. Systems having a plurality of discharge device load devices in the system, the discharge devices being provided with a discharge controlling means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

195, and indented subclasses, for systems wherein there are a plurality of discharge control discharge device load devices, the system including phase shifting means to vary the phase of the discharge controlling current and/or potential with respect to the current flow in the cathode-anode circuit of the discharge device.

252, and see the notes thereto for other alternating current systems which include a plurality of discharge control discharge device load devices.

325, and the subclasses specified in the notes to the definition of that subclass, for other systems which include a plurality of discharge control discharge device load devices.

147 Plural cathode and/or anode discharge device load:

This subclass is indented under subclass 137. Systems in which the load device is a discharge device having two or more cathodes and/or two or more cathodes and/or two or more anodes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

145, for this subject matter where the system includes a transformer in the supply circuit of the load device.

260, and indented subclasses, for other systems under the class definition wherein a plural cathode and/or anode load device is supplied with alternating current.

334, and indented subclasses, and the subclasses specified in the notes to the definition of those subclasses, for other plural cathode and/or anode load device systems.

148 Discharge control discharge device:

This subclass is indented under subclass 147. Systems in which the discharge device is provided with a discharge controlling means.

(1) Note. Systems under subclass 147 in which the discharge device is provided with an auxiliary discharge electrode are classified in this subclass. The auxiliary electrode may be supplied with alternating current which is out of phase with the current supplied to the principal electrode, or the principal electrodes may be connected to a polyphase system and the auxiliary electrode may be supplied with current of any character.

SEE OR SEARCH THIS CLASS, SUBCLASS:

146, for polyphase systems which include two or more discharge device loads, having a discharge controlling means.

261, and indented subclasses, subclass 267, and subclass 268 and indented subclasses, for nonpolyphase alternating current systems having a discharge device load with a discharge controlling means; subclass 261 and indented subclasses, for plural cathode and/or anode type with an auxiliary starting electrode, subclass 267, for those with an electromagnet control means, and subclass 268 and indented subclasses for those with miscellaneous control means.

335, and indented subclass, subclass 339, subclass 341 and indented subclasses, subclass 344 and indented subclasses, and subclass 349 and indented subclasses, for nonalternating current systems having a discharge device load with a discharge controlling means; and subclass 335 and indented subclass, and subclass 339, for plural cathode and/or anode type, subclass 335, with an auxiliary starting electrode and subclass 339 with miscellaneous discharge controlling means; subclass 341 and indented subclasses, for devices having plural discharge

control means; subclass 349 and indented subclasses, for devices having miscellaneous discharge control means.

149 WITH RADIANT ENERGY SENSITIVE CONTROL MEANS:

This subclass is indented under the class definition. Systems wherein the system includes means for controlling the operation of the load device by means of radiant energy.

(1) Note. The load device may be a radiant energy sensitive device, that is, a load device whose operation is altered when subjected to radiant energy, or the system may include a radiant energy sensitive device, such as a photocell, which controls the operation of the load device when subjected to radiant energy.

(2) Note. The term "radiant energy" as used in this subclass and the indented subclasses includes radiant energy of any type, such as X-ray, light rays whether within the visible spectrum or not, Herztian waves and other radiated electrical energy, and emanations from radioactive substances.

SEE OR SEARCH THIS CLASS, SUBCLASS:

10, and indented subclass, for cathode-ray tube loads with radiant energy sensitive control means.

34, for structurally combined load devices and antenna.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 200+ and the classes and subclasses specified in the Notes thereto for photocell controlled electric circuits and photocell apparatus.

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 63, for consumable electrode discharge device systems provided with a radiant energy ray device for controlling the operation of the consumable electrode device.

340, Communications: Electrical, subclasses 12.22, 12.5-12.53, and 13.24-13.26 are generic subclasses for the control of apparatus and devices at a distance by means of wireless or radio wave energy.

150 Radiant energy responsive load device:

This subclass is indented under subclass 149. Systems wherein the load device is a radiant energy sensitive device, that is, a load device whose operation is altered when subjected to radiant energy rays.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 523+ and the subclasses specified in the Notes thereto for radiant energy sensitive electric lamps and discharge device structures, per se.

151 Load device irradiating the radiant energy responsive device:

This subclass is indented under subclass 149. Systems having the radiant energy sensitive device arranged with respect to the load device so that radiant energy generated by the load device is applied to the radiant energy sensitive device.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclass 205, for similar systems where the system is provided with means for supplying output current to a device other than a lamp or gas or vapor type electronic tube or when the system includes significant apparatus, such as supporting or mounting means for the lamp or gas or vapor tube, which is excluded from this class (315) by the class definition.

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 63, for consumable electrode discharge device systems, having the spacing of the discharge electrodes with respect to each other controlled by a radiant energy sensitive device which is subjected to the radiant energy generated by the discharge between such electrodes.

152 Plural load devices:
This subclass is indented under subclass 149. Systems having a plurality of load devices connected in the system.

(1) Note. Where a single lamp or a single discharge device is the ultimate load device, and the system includes an additional lamp and/or discharge device in the circuit which is connected in the circuit so as to control and/or modify the current and/or potential supplied to such single ultimate load device, the patent is classified as a plural load device system if (a) the controlling and/or modifying device is a lamp, or (b) the controlling and/or modifying device is limited in the claims to being a gas or vapor discharge device. Conversely, such a system is not classified as a plural load device system where the controlling and/or modifying device is claimed broadly as a discharge device, even though it is disclosed as a gas or vapor discharge device.

The controlling and/or modifying device may be connected in the control circuit of the discharge device where the ultimate load device is a discharge control discharge device, and the same basis of classification is used as is set forth above.

SEE OR SEARCH THIS CLASS, SUBCLASS:
312, and indented subclasses, and the subclasses referred to in the notes to the definition for other plural load device systems under the class definition.

153 Selective energization of the load devices:
This subclass is indented under subclass 152. Systems wherein one or more of the load devices may be energized separately from the other load device in the system, the selection of the load device or devices to be energized being controlled by the radiant energy sensitive means.

154 Selective electric switch controlled by the radiant energy responsive device:
This subclass is indented under subclass 153. Systems wherein the means for selecting the load device or devices to be energized is an electrically operated switch whose operation is controlled by the radiant energy sensitive means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
313, and indented subclasses, for other plural load device systems under the class definition provided with selective switching means.

SEE OR SEARCH CLASS:
361, Electricity: Electrical Systems and Devices, subclasses 173+ for photocell controlled relay circuits.

155 Plural radiant energy responsive devices:
This subclass is indented under subclass 149. Systems having a plurality of radiant energy sensitive devices connected in the system.

156 Radiant energy control of an electric discharge device in the supply circuit of the load device:
This subclass is indented under subclass 149. Systems having a discharge device connected either in electrical series relation or electrical shunt relation to the source of current supply for the load device and the load device the operation of the discharge device being controlled by the radiant energy sensitive means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
200, and indented subclasses, and the subclasses referred to in the notes to the definition, for other systems under the class definition provided with a discharge device or rectifier in the supply circuit of the load device.

SEE OR SEARCH CLASS:
250, Radiant Energy, subclasses 206+, for miscellaneous electric circuits which are controlled by a photocell.

157 Discharge control discharge device load controlled by the radiant energy responsive device:

This subclass is indented under subclass 149. Systems wherein the load device is a discharge device having a discharge controlling means, and the system includes means for applying an electric current and/or potential to the discharge control means, the application of the discharge controlling current and/or potential being controlled by the radiant sensitive means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

335, and indented subclass and the subclasses specified in the notes to the definition of these subclasses, for discharge device loads having an auxiliary starting electrode.

339, and subclass 341 and indented subclasses, and the subclasses specified in the notes to those subclasses for discharge device loads provided with a plurality of discharge control means.

344, and indented subclasses, and the subclasses specified in the notes to those subclasses, for discharge device loads when the discharge control means is an electromagnet.

349, and the subclasses specified in the notes to those subclasses, for other discharge device loads provided with discharge control means.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 206+, for miscellaneous electric circuits which are controlled by a photocell.

158 Radiant energy controlled regulation of the current supply for the load device:

This subclass is indented under subclass 149. Systems provided with means to regulate the current or voltage supplied to the load device, the regulating means being controlled by the radiant energy sensitive devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:

151, for this subject matter where the system includes means to subject the radiant energy sensitive device to the radiant energy generated by the load device the radiant energy device controlling the regulating means.

291, and indented subclasses for other systems provided with means to regulate the current and/or voltage supplied to the load device.

159 Electric switch controlled by the radiant energy responsive device:

This subclass is indented under subclass 149. Systems provided with an electrically operated circuit controlling switch whose operation is controlled by the radiant energy sensitive means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

313, and indented subclasses, and subclass 362, and the subclasses specified in the notes to the definition of those subclasses for other systems which include a switch in the supply circuit of the load device.

SEE OR SEARCH CLASS:

361, Electricity: Electrical Systems and Devices, subclasses 173+ for photocell controlled relay circuits.

160 PLURAL POWER SUPPLIES:

This subclass is indented under the class definition. Systems provided with two or more sources of current supply.

(1) Note. The sources of current supply may be of the same or diverse types and each of the sources may supply current to the same load device either simultaneously or alternately or each of the sources may supply current to a separate load device.

(2) Note. To be diverse type current supplies, the current supplies must differ in some electrical characteristics. Alternating currents of different frequencies, a source of current of constant potential and a source of current of varying potential, a rectified alternating current and a source of direct current, are examples of diverse type current supplies. Where the circuit for supplying the load device with current includes a current modifying means which may be used at selected

intervals to modify the current flowing in the supply circuit so that the load device is sometimes supplied with one type of current from the source of supply and is at other times supplied from the same source of supply with the modified current, the system is not included in this subclass or the indented subclasses, but will be found in the appropriate subclasses below.

(3) Note. This subclass does not include systems wherein one source of energy is a storage battery or similar device designed to be charged at least at times from either the other source of supply or from an independent source of current supply. Such systems are considered to include a load device other than a discharge device or lamp and therefore not within the definition of this class and will be found for the most part in Class 307, Electrical Transmission or Interconnection Systems, subclasses 46, 48+, 66+, and 155+, and Class 320, Electricity: Battery or Capacitor Charging or Discharging, having battery charging and/or discharging, per se, many patents disclosing, but not claiming, an additional lamp or discharge device load.

SEE OR SEARCH THIS CLASS, SUBCLASS:

86, for systems including means to supply a load device with current from one source and automatically operated means to substitute a second source of current supply when the first source fails to operate properly, including substitution of a second diverse source.

SEE OR SEARCH CLASS:

307, Electrical Transmission or Interconnection Systems, see (3) Note above.

161 Plural load devices:

This subclass is indented under subclass 160. Systems having a plurality of load devices in the system.

(1) Note. Where a single lamp or a single discharge device is the ultimate load device, and the system includes an additional lamp and/or discharge device in the circuit which is connected in the circuit so as to control and/or modify the current and/or potential supplied to such single ultimate load device, the patent is classified as a plural load device system, if (a) the controlling and/or modifying device is a lamp, or (b) the controlling and/or modifying device is limited in the claims to being as a gas or vapor discharge device. Conversely, such a system is not classified as a plural load device system where the controlling and/or modifying device is claimed broadly as a discharge device, even though it is disclosed as a gas or vapor discharge device.

The controlling and/or modifying device may be connected in the control circuit of the discharge device where the ultimate load device is a discharge control discharge device, and the same basis of classification is used as is set forth above.

SEE OR SEARCH THIS CLASS, SUBCLASS:

312, and indented subclasses, and the subclasses specified in the notes to the definition of that subclass for other plural load device systems under the class definition.

162 Diverse type load devices:

This subclass is indented under subclass 161. Systems wherein at least one of the load devices is of a different type from that of another of the load devices.

(1) Note. To be considered diverse type load devices, the load devices must differ in some electrical characteristics.

SEE OR SEARCH THIS CLASS, SUBCLASS:

87, for systems under the class definition wherein the system includes a plurality of diverse type load devices and a plurality of sources of current supply of diverse types, the system including means to supply current to one of the load devices from one of the sources of current supply and automatically

operated means to substitute another diverse type load device and diverse type current supply for the first operated load device and current supply when they fail to operate properly.

178, and indented subclasses, and see the notes to the definitions thereof for other systems having plural load devices of diverse types.

163 Simultaneous application of diverse type current supplies to a load device:

This subclass is indented under subclass 162. Systems wherein at least two of the sources of current supply are of diverse types and at least one of the load devices is supplied with current from each of the two diverse current supplies simultaneously.

(1) Note. The types of current supplies which are considered to be diverse types are defined in the notes to the definition of subclass 160.

SEE OR SEARCH THIS CLASS, SUBCLASS:

166, for systems having plural load devices of the same type and a plurality of diverse type current sources which simultaneously supply current to at least one load device.

176, for single load device systems which include a plurality of diverse type current sources which simultaneously supply current thereto.

164 Series connected current supplies:

This subclass is indented under subclass 161. Systems wherein at least two sources of current supply are connected in electrical series relation with respect to each other.

SEE OR SEARCH THIS CLASS, SUBCLASS:

170, for single load device systems provided with a plurality of series connected current supply sources.

165 Diverse type current supplies:

This subclass is indented under subclass 161. Systems wherein at least two sources of current supply are of diverse types.

(1) Note. The types of current supplies which are considered to be diverse types are defined in the notes to the definition of subclass 160 of this class.

SEE OR SEARCH THIS CLASS, SUBCLASS:

162, for this subject matter where there are a plurality of diverse type load devices in the system.

175, and indented subclasses, and the subclasses specified in the notes to the definitions thereof, for other systems wherein at least two of the sources of current supply are of diverse types.

166 Simultaneous application to a load device:

This subclass is indented under subclass 165. Systems wherein at least one of the load devices is supplied with current from each of two diverse current supplies simultaneously.

SEE OR SEARCH THIS CLASS, SUBCLASS:

163, for this subject matter where there are plural load devices of diverse types.

164, and 170, where the sources of current supply are connected in electrical series relation with respect to each other.

176, for this subject matter where there is a single load device.

167 Plural cathode and/or anode load device:

This subclass is indented under subclass 160. Systems wherein the load device is a discharge device which has two or more cathodes and/or two or more anodes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

334, and indented subclasses, and the subclasses specified in the notes thereto for other plural cathode and/or anode load device systems.

168 Diverse type current supplies to auxiliary and principal electrodes:

This subclass is indented under subclass 167. Systems wherein the discharge device is provided with at least one principal anode and at least one principal cathode and an auxiliary discharge electrode, the discharge device being

connected in the system with one source of supply connected between a principal cathode and a principal anode and another source of supply of a diverse type connected between the auxiliary discharge electrode and one of the principal electrodes.

(1) Note. The type of current supplies which are considered to be diverse types are defined in note (2) to the definition of subclass 160.

SEE OR SEARCH THIS CLASS, SUBCLASS:

169.1+, for other systems wherein different electrodes of a plural cathode and/or anode load device are supplied with diverse types of current.

335, and indented subclass, and the subclasses specified in the notes to the definition of these subclasses, for other discharge device systems wherein the discharge device is provided with an auxiliary starting electrode.

169.1 Diverse-type energizing or bias supplies to different electrodes:

This subclass is indented under subclass 167. Subject matter in which the discharge device is connected so that the discharge path between one anode and cathode is supplied with energizing or bias current from one source of supply and a different discharge path between another anode and cathode path is supplied with current from another source of supply of a diverse type.

(1) Note. Distinction should be made between subject matter claiming energizing or bias potentials which may turn on a display either entirely or in a nonimage mode, classifiable here, and subject matter claiming selective energizing, pulsing or other input responsive signaling which results in a display producing a light image or message which subject matter is classifiable in Class 345.

(2) Note. The type of current (energizing or bias) supplies which are considered to be diverse are defined in Note (2) of the definition of subclass 160. Other examples of diverse current sources may be lines carrying different "phases" of a clock pulse source, or lines carrying different time based pulses.

SEE OR SEARCH THIS CLASS, SUBCLASS:

168, for this subject matter where the discharge device is provided with an auxiliary discharge electrode, one source of current being connected to the principal cathode and the principal electrode and one of the principal electrodes.

337, for systems wherein the load device is a plural cathode and/or anode discharge device, the discharge device being supplied with current for the different anodes or cathodes from a single source of supply and means being provided so that different potentials are maintained at different anodes or cathodes.

169.2 Including shifting of register, counter, or display:

This subclass is indented under subclass 169.1. Subject matter in which the effect of the energizing currents is to make the discharge path in the discharge device move from one position to a next position.

(1) Note. Such discharge path movement or shifting may be a subcombination of pulse input into a register, and added count in a counter, or the input of display array control signals into a gas panel display. Caveat: Where "writing", "erasing", data responsive, or other selective structure or function is recited, such a claim to the combination of display panel and selective control is classified in Class 345.

SEE OR SEARCH CLASS:

365, Static Information Storage and Retrieval, for magnetic registers for data storage, subclasses 185.01+ for floating gate memory storage (e.g., flash memory).

377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, for pertinent subclass(es) determined by schedule rewiew.

169.3 Electroluminescent device:
This subclass is indented under subclass 169.1. Subject matter in which the discharge device includes electroluminescent material.

169.4 Gas display panel devices:
This subclass is indented under subclass 169.1. Subject matter in which the discharge device is a gas or plasma panel.

170 Series connected current supplies:
This subclass is indented under subclass 160. Systems, wherein at least two sources of current supply are connected in electrical series relation with respect to each other.

SEE OR SEARCH THIS CLASS, SUBCLASS:
164, for this subject matter where there are a plurality of load devices in the system.

171 Discharge device and/or rectifier in one of the supply circuits:
This subclass is indented under subclass 160. Systems provided with a discharge device or an electric current rectifier connected either in electrical series relation or electrical shunt relation to the load device and one of the sources of current supply.

SEE OR SEARCH THIS CLASS, SUBCLASS:
200, and indented subclasses, for other systems provided with a rectifier or a discharge device in the supply circuit of the load device.

172 Periodic switch in one of the supply circuits:
This subclass is indented under subclass 160. Systems having a periodic switch connected in at least one of the current supply circuits so as to periodically interrupt or vary the flow of current to the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:
209, and indented subclasses for other systems provided with a periodic switch connected in the supply circuit of the load device.

173 Condenser in one of the supply circuits:
This subclass is indented under subclass 160. Systems having a condenser connected either in electrical series relation or electrical shunt relation to the load device and one of the sources of current supply.

SEE OR SEARCH THIS CLASS, SUBCLASS:
227, and indented subclasses, for other systems provided with a condenser in the supply circuit of the load device.

174 Plural diverse pulsating or A.C. supplies:
This subclass is indented under subclass 160. Systems wherein at least two of the sources of supply are pulsating and/or alternating current sources, the current sources being of a diverse type with respect to each other.

(1) Note. The types of current supplies which are considered to be diverse types are defined in note (2) to the definition of subclass 160 of this class.

SEE OR SEARCH THIS CLASS, SUBCLASS:
246, and indented subclasses, for other systems wherein the load device is connected to a source of alternating current supply.

175 Diverse-type current supplies:
This subclass is indented under subclass 160. Systems wherein two of the sources of current supply are of diverse types.

(1) Note. The type of current supplies which are considered to be diverse types are defined in note (2) to the definition of subclass 160, of this class.

SEE OR SEARCH THIS CLASS, SUBCLASS:
86, and indented subclass for systems wherein means are provided to operate the load device from one source of supply while a second source of the same or diverse type is maintained in nonoperating condition, and the system includes means which operate automatically in response to some condition affecting the operation of

the system, such as a failure of the current supply source, to connect the nonoperating source of energy in operative relation in the system to supply current to the load device.

176 Simultaneous application to the load device:
This subclass is indented under subclass 175. Systems wherein a load device is supplied with current from each of the two diverse current supplies simultaneously.

SEE OR SEARCH THIS CLASS, SUBCLASS:
- 163, for this subject matter where there are plural diverse type load devices.
- 164, where the current supply sources are connected in electrical series relation and there are plural load devices of the same type.
- 166, for this subject matter where there are plural load devices of the same type.
- 168, and 169, for this subject matter where the load device is a plural cathode and/or anode discharge device.
- 170, where there is a single load device and the current supplies are connected in electrical series relation.
- 174, for this subject matter in which there are diverse pulsating and/or alternating current supplies.

177 LOAD DEVICE IN THE PRIMARY AND SECONDARY CIRCUIT OF THE SUPPLY TRANSFORMER:
This subclass is indented under the class definition. Systems provided with a transformer connected between the source of supply and a load device for supplying electric current and/or potential to the load device, the system also including a load device connected in the primary circuit of the transformer.

(1) Note. Where a single lamp or a single discharge device is the ultimate load device, and the system includes an additional lamp and/or discharge device in the circuit which is connected in the circuit so as to control and/or modify the current and/or potential supplied to such single ultimate load device, the patent is classified as a plural load device system if (a) the controlling and/or modifying device is a lamp, or (b) the controlling and/or modifying device is limited in the claims to being a gas or vapor discharge device. Conversely, such a system is not classified as a plural load device system where the controlling and/or modifying device is claimed broadly as a discharge device even though it is disclosed as a gas or vapor discharge device.

The controlling and/or modifying device may be connected in the control circuit of the discharge device where the ultimate load device is a discharge control discharge device, and the same basis of classification is used as is set forth above.

SEE OR SEARCH THIS CLASS, SUBCLASS:
- 200, and indented subclasses and the subclasses referred to in the notes to the definitions thereof for other systems provided with a discharge device or rectifier in the supply circuit of a load device.
- 254, and the subclasses specified in the notes to the definition of these subclasses, for other plural load device systems having a transformer connected in the supply circuit.
- 276, and indented subclasses, and the subclasses specified in the notes to these subclasses for other single load device systems having a transformer connected in the supply circuit of the load device.

SEE OR SEARCH CLASS:
- 323, Electricity: Power Supply or Regulation Systems, subclasses 355 through 363, for miscellaneous transformer systems.

178 PLURAL DIVERSE-TYPE LOAD DEVICES:
This subclass is indented under the class definition. Systems having two or more load devices connected in the system, at least one of the load devices being of a different type from another of the load devices.

(1) Note. To be considered diverse type load devices, the load devices must differ in some electrical characteristic.

Mere difference in color or shape is not enough to make the load devices of different characteristics within the meaning of the definition of this subclass. Discharge devices containing different gases, or having different starting or operating characteristics, or having a different number or types of electrodes are considered to be of diverse types. Load devices having different impedances are considered to be diverse types.

(2) Note. Where a single lamp or a single discharge device is the ultimate load device, and the system includes an additional lamp and/or discharge device in the circuit which is connected in the circuit so as to control and/or modify the current and/or potential supplied to such single ultimate load device, the patent is classified as a plural load device system if (a) the controlling and/or modifying device is a lamp, or (b) the controlling and/or modifying device is limited in the claims to being a gas or vapor discharge device. Conversely, such a system is not classified as a plural load device system where the controlling and/or modifying device is claimed broadly as a discharge device even though it is disclosed as a gas or vapor discharge device.

The controlling and/or modifying device may be connected in the control circuit of the discharge device where the ultimate load device is a discharge control discharge device, and the same basis of classification is used as is set forth above.

SEE OR SEARCH THIS CLASS, SUBCLASS:

46, for an incandescent lamp filament and a discharge device which are structurally combined in one envelope with the filament connected in shunt relation with the discharge electrodes.

67, for multiple filament lamps having structurally combined therewith an electric circuit element such as a switch, the filaments being of different resistance.

87, and subclass 88 and indented subclasses, for systems provided with two or more load devices, of the same or different types, one of which is maintained in nonoperating condition until the first operated fails to operate properly, the system being provided with means to automatically substitute the nonoperated load device for the load device which fails to operate properly.

162, and indented subclass, where there is a plurality of load devices and a plurality of sources of current supply.

177, where one of the load devices is in the primary circuit of the current supply transformer, and the other is in the secondary circuit.

200, and indented subclasses, for systems provided with a discharge device or rectifier which is not a diverse load device in the supply circuit of the load device.

349, and indented subclasses and the subclasses referred to in the notes to the definition of those subclasses for systems provided with a discharge device which is not a diverse load device in the discharge control circuit of the discharge device load.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 7, where one of the load devices is a consumable electrode discharge device.

179 Series connected diverse-type load devices: This subclass is indented under subclass 178. Systems having two or more different type load devices connected in electrical series relation with respect to each other.

SEE OR SEARCH THIS CLASS, SUBCLASS:

49, for devices which include an electric filament lamp and a discharge device which are structurally combined into a single unitary device, the filament and the discharge device being connected in electrical series relation.

177, for systems provided with a load device in the secondary circuit of he the supply transformer and a load

device in the primary circuit of the transformer.

185, and indented subclasses, for systems provided with a plurality of similar type load devices connected in electrical series relation.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 8, where one of the series connected devices is a consumable electrode discharge device.

180 Plural diverse discharge device load:

This subclass is indented under subclass 179. Systems wherein at least two of the series connected load devices are electric space discharge devices which are each of a different type from that of the other load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

36, for devices which include a plurality of discharge device units and an electrical circuit which are all structurally combined in a single unitary structure, the discharge device units being connected in electrical series relation.

189, and indented subclass, for systems which include a plurality of series connected electric discharge devices which are of a similar type.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 8, where one of the series connected discharge devices is a consumable electrode discharge device.

181 Asymmetrical discharge device load:

This subclass is indented under subclass 180. Systems wherein at least one of the series connected discharge devices is of the type which conducts more current in one direction of current flow between the principal discharge electrodes than is conducted in the other direction of current flow between the principal discharge electrodes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

190, for systems provided with a plurality of series connected asymmetrical discharge devices which are of similar types.

182 Electric discharge device load:

This subclass is indented under subclass 178. Systems wherein at least one of the load devices in the system is a discharge device.

SEE OR SEARCH CLASS:

378, X-Ray or Gamma Ray Systems or Devices, subclass 92 for circuits for plural X-ray sources.

183 Plural diverse discharge device loads:

This subclass is indented under subclass 182. Systems wherein there are at least two discharge device loads which are of different types.

SEE OR SEARCH THIS CLASS, SUBCLASS:

180, and indented subclass, where the diverse type discharge devices are connected in electric series relation.

324, and indented subclass, and the subclasses referred to in the notes to the definitions thereof for other plural discharge device loads.

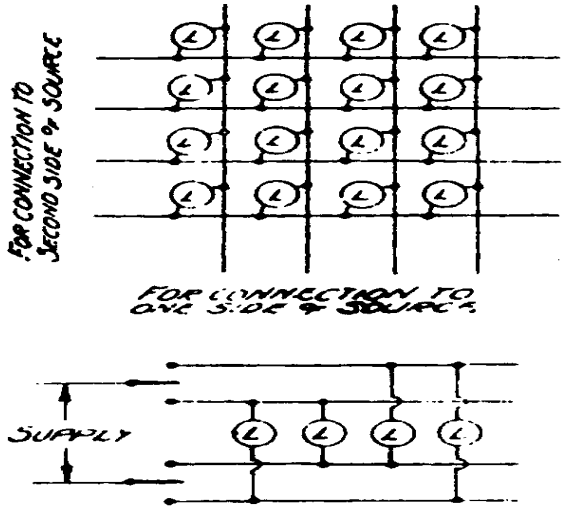
SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 7 and indented subclass, where one of the discharge devices is a consumable electrode discharge device.

184 THREE OR MORE LOAD DEVICES CONNECTED BETWEEN DIVERSE PAIRS OF PAIRED CONDUCTORS:

This subclass is indented under the class definition. Systems wherein each side of the supply circuit consists of at least a pair of conductors, the conductors on one side of the supply circuit being adapted to be connected to one pole of the source of supply, the conductors on the other side of the supply circuit being adapted to be connected to the opposite pole of the source of supply, at least three load devices being con-

nected between these two pairs of conductors, at least one conductor of each pair of conductors on each side of the supply circuit having at least two load devices connected thereto, each of these two load devices being connected to different conductors of the pair of conductors on the other side of the supply circuit, so that by connecting one conductor on each side of the supply circuit to the source of supply, a selected one of the load devices may be supplied with current, for example:



185 PLURAL SERIES CONNECTED LOAD DEVICES:

This subclass is indented under the class definition. Systems having two or more load devices connected in electrical series relation with respect to each other.

SEE OR SEARCH THIS CLASS, SUBCLASS:

36, for devices having a plurality of discharge device units and an electrical circuit element structurally combined in a single unitary device, the discharge devices being connected in electrical series relation.

49, for devices having a filament lamp and a discharge device structurally combined in a single unitary structure, the lamp and discharge device being connected in electrical series relation.

66, for multiple filament lamps structurally combined with a circuit element, such as a switch, the filaments being adapted to be connected in electrical series relation.

96, and subclass 99 and indented subclass, for series connected cathodes or heaters.

122, where an automatic shunt or cut-out means is provided to open the circuit of, or to close a shunt about, the circuit of at least one of the series connected load devices when the load device fails to operate properly.

177, for systems provided with a load device in the secondary of a supply transformer, and another load device in the primary circuit of the supply transformer.

179, for the subject matter of this subclass where the series connected load devices are of diverse types.

256, for systems under the definition of subclass 363, wherein a transformer is connected in the supply circuit of two or more nonseries connected load devices, the primaries of the transformers being connected in electrical series relation with respect to each other.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 8, for systems provided with a plurality of series connected consumable discharge devices.

363, Electric Power Conversion Systems, subclasses 65+ for systems wherein a single current conversion is attained by plural convertors which may be electronic tubes connected in series.

186 Periodic switch in the supply circuit:

This subclass is indented under subclass 185. Systems having a periodic switch connected in the current supply circuit so as to periodically interrupt or vary the flow of current to at least one of the load devices.

(1) Note. The periodic switch may be connected in shunt to a load device so as to periodically interrupt or vary the flow of current to the load device by completing a shunt circuit about the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

119, and indented subclasses, for systems having automatic means to close a shunt circuit about a load device.

210, and indented subclasses, and the subclasses referred to in the notes to the definitions thereof for other plural load device systems with a periodic switch in the circuit.

187 Condenser in the supply circuit:

This subclass is indented under subclass 185. Systems provided with a condenser connected either in electrical series relation or electrical shunt relation to at least one of the series connected load devices and the source of supply for the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

228, and indented subclasses and the notes to the definitions thereof for other plural load device systems with a condenser in the supply circuit.

188 Condenser in shunt to load and supply:

This subclass is indented under subclass 187. Systems wherein the condenser is connected in electrical shunt relation with respect to at least one of the load devices and the source of supply.

SEE OR SEARCH THIS CLASS, SUBCLASS:

232, for other plural load device systems having a condenser connected in shunt to a load device.

241, and indented subclasses, for single load device systems having a condenser connected in shunt to the load device.

189 Discharge device loads:

This subclass is indented under subclass 185. Systems wherein the series connected load devices are discharge devices.

(1) Note. Where a single lamp or a single discharge device is the ultimate load device, and the system includes an additional lamp and/or discharge device in the circuit which is connected in the circuit so as to control and/or modify the current and/or potential supplied to such single ultimate load device, the patent is classified as a plural load device system, if (a) the controlling and/or modifying device is a lamp, or (b) the controlling and/or modifying device is limited in the claims to being a gas or vapor discharge device. Conversely, such a system is not classified as a plural load device system where the controlling and/or modifying device is claimed broadly as a discharge device even though it is disclosed as a gas or vapor discharge device.

The controlling and/or modifying device may be connected in the control circuit of the discharge device where the ultimate load device is a discharge control discharge device, and the same basis of classification is used as is set forth above.

SEE OR SEARCH THIS CLASS, SUBCLASS:

36, for devices which include a plurality of discharge device units and an electrical circuit element structurally combined in a single unitary structure, the discharge devices being connected in electrical series relation.

180, and indented subclass, for systems under the class definition which include a plurality of series connected diverse type discharge device loads.

187, and indented subclass, for systems under subclass 185 provided with a plurality of discharge device loads and having a condenser connected in shunt to at least one of the load devices.

324, and indented subclass, and the subclasses referred to in the notes to those subclasses, for other plural discharge device load systems under the class definition.

190 Asymmetrical discharge device loads:

This subclass is indented under subclass 189. Systems wherein the series connected load devices are of the type which conduct more current in one direction of current flow between the principal discharge electrodes than is conducted in the other direction of current

flow between the principal discharge electrodes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

181, for this subject matter where the series connected asymmetrical discharge devices are of diverse types.

SEE OR SEARCH CLASS:

363, Electric Power Conversion Systems, subclasses 65+ for systems wherein a single current conversion is attained by plural convertors which may be unidirectionally conductive electronic tubes connected in series.

191 Convertible to parallel connected:

This subclass is indented under subclass 185. Systems wherein the system includes means for changing the connection of at least two of the load devices from electrical series relation to electrical parallel relation with respect to each other.

SEE OR SEARCH THIS CLASS, SUBCLASS:

66, for multiple filament lamps structurally combined with electric circuit means, such as an electric switch and having the filaments connected to the circuit means so that the filaments may be energized either in electrical series or parallel relation.

192, for systems under subclass 185 having combined with the series connected load devices, a load device connected in parallel with respect to at least one of the series connected load devices.

192 Combined with parallel connected load device:

This subclass is indented under subclass 185. Systems having a load device connected in electrical parallel relation with at least one of the series connected load devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:

191, for systems under subclass 185 having means to change the series connection of at least one of the load devices to a parallel connection.

193 Electric switch controlled load device:

This subclass is indented under subclass 185. Systems having an electrical circuit maker and breaker connected in the system for controlling the supply of current to at least one of the series connected load devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:

64, and indented subclasses, for multiple filament lamps structurally combined with an electric switch.

186, for series connected load device systems having a periodic switch.

313, and indented subclasses and the subclasses referred to in the notes to those subclasses, for other plural load device systems provided with an electric switch.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, appropriate subclasses, for electric switches, per se.

194 REGULATION OF THE CONTROL CURRENT AND/OR POTENTIAL APPLIED TO DISCHARGE CONTROL DISCHARGE DEVICE LOADS BY PHASE SHIFTING MEANS:

This subclass is indented under the class definition. Systems having a load device which is a discharge device provided with a discharge control means, such as a grid electrode, an electromagnet for influencing the space discharge, or an auxiliary starting electrode, the discharge device being either (1) supplied with a pulsating and/or alternating current and/or (2) the cathode-anode circuit of the discharge device being so connected in the system that a pulsating and/or alternating current flows therein; the system including means to apply current and/or potential to the control means, the circuit controlling the application of the control potential including phase shifting means, so that the control current and/or potential may be applied to the control means in time phase relation to the pulsating and/or alternating current in the supply circuit and/or in the cathode-anode of the load device.

(1) Note. Neither the current and/or potential applied to the discharge device nor

the control means need be a pulsating and/or alternating current and/or potential. For example, the load device may be supplied with discharge current from a source of unidirectional current with the system so arranged that a circuit connecting the cathode-anode of the discharge device has a pulsating current flowing therein, the control means being supplied with unidirectional current, the system being provided with circuit elements including phase shifting means responsive to the pulsating current in the cathode-anode circuit to control the time of application of the unidirectional current and or potential to the control means.

(2) Note. When the current supply for the discharge device is an alternating or pulsating current, and the discharge device is provided with an auxiliary starting electrode which is supplied with pulsating or alternating current which is out of phase with the alternating current in the discharge supply circuit, the patent is classified as a polyphase supply system in subclass 137 and indented subclasses, note especially subclasses 145 and 147. Where the system includes means to supply the auxiliary starting electrode with pulsating current from the supply circuit, and the auxiliary electrode circuit includes phase shifting means to shift the phase of the alternating current in the auxiliary electrode circuit with respect to the current in the supply circuit, the patent is classified in subclass 140 as a phase multiplying system. Where the claims only recite a control device for the discharge device, even though an auxiliary starting electrode is disclosed, the patent is classified in this subclass (194) or the indented subclasses.

(3) Note. Where the discharge device is supplied with discharge current from a source of pulsating and/or alternating current and the control means is supplied with a pulsating and/or alternating current and/or potential, the current and/or potential in the control circuit need not have its phase shifted with respect to the supply current, but the phase shifting means may only determine the time of application of the control current and/or potential to the control means with respect to the current wave of the supply current.

(4) Note. Systems wherein the current and/or potential supplied to the control means is merely varied in magnitude, the magnitude of the control current and/or potential with respect to the supply current for the load device determining the time at which the control means becomes effective to alter the operation of the discharge device are not included. For such systems, see the subclasses under "SEARCH THIS CLASS, SUBCLASS" below.

SEE OR SEARCH THIS CLASS, SUBCLASS:

137, see note (2) above.
140, see note (2) above.
145, see note (2) above.
147, see note (2) above.
335, and indented subclass, and the subclasses specified in the notes to the definitions of these subclasses, where the discharge control means for the discharge device load device is an auxiliary starting electrode, the system including means to vary the magnitude of the current and/or potential supplied to the auxiliary starting electrode,
341, and indented subclasses, and the subclasses specified in the notes to the definition of those subclasses, where the discharge device load device is provided with a plurality of discharge control means, the system including means to vary the magnitude of the control current and/or potential supplied to at least one of the control means.
344, and indented subclasses, and the subclasses specified in the notes to the definition of those subclasses where the discharge device load device is provided with an electromagnet for influencing the discharge, and the system includes means to vary the magnitude of the current supplied to the electromagnet.

349, and indented subclasses and the subclasses specified in the notes to the definition of those subclasses for miscellaneous systems under the class definition wherein the load device is a discharge control discharge device and the system includes means to vary the magnitude of the current and/or potential supplied to the load device.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 237, 300, and 320, for systems for controlling the magnitude of the current or voltage in a single circuit by means of a discharge device having a discharge control device (e.g., grid), the discharge device circuit including means for shifting the phase of the potential in the discharge control device circuit with respect to the potential in the output circuit.

363, Electric Power Conversion Systems, subclass 118 and the subclasses mentioned in the notes thereto, for electronic tube current conversion systems wherein the control of the electronic tube includes phase control of potential applied to the discharge control means. The systems in Class 363 are very closely analogous to the systems in this and the indented subclasses. For the line between Class 363 and this class (315), see Lines With Other Classes and Within This Class in the class definition of Class 363.

195 Plural load device systems:

This subclass is indented under subclass 194. Systems, wherein the system includes two or more discharge control discharge device loads.

(1) Note. Where a single lamp or a single discharge device is the ultimate load device, and the system includes an additional lamp and/or discharge device in the circuit which is connected in the circuit so as to control and/or modify the current and/or potential supplied to such single ultimate load device, the patent is classified as a plural load device system, if (a) the controlling and/or modifying device is a lamp, or (b) the controlling and/or modifying device is limited in the claims to being a gas or vapor discharge device. Conversely, such a system is not classified as a plural load device system where the controlling and/or modifying device is claimed broadly as a discharge device even though it is disclosed as a gas or vapor discharge device.

The controlling and/or modifying device may be connected in the control circuit of the discharge device where the ultimate load device is a discharge control discharge device, and the same basis of classification is used as is set forth above.

SEE OR SEARCH THIS CLASS, SUBCLASS:

325, and the subclasses referred to in the notes to the definition of that subclass for other systems having plural discharge control discharge device loads.

196 Inverse parallel connected asymmetric load devices:

This subclass is indented under subclass 195. Systems wherein the discharge control discharge device loads are of the type which conduct more current in one direction of current flow between the cathode and anode electrodes than is conducted in the other direction of current flow therebetween, at least two of the discharge devices each having its anode connected to the cathode of the other load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

251, for other systems provided with a plurality of inversely parallel connected discharge control discharge device loads.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 for electronic tube regulators. See Lines With Other Classes and Within This Class, “Electronic Tube Systems,” in the class definition of Class 323.

197 Discharge control discharge device in the control circuit:

This subclass is indented under subclass 196. Systems having a discharge device provided with discharge control means connected in the control circuit of the discharge control discharge device loads.

SEE OR SEARCH THIS CLASS, SUBCLASS:

198, and 199, for other plural load device systems, wherein there is a discharge control discharge device in the control circuit of the discharge device load.

204, 272, and 352, for other systems under the class definition provided with a discharge control discharge device in the control circuit; subclass 204 where the discharge control means of the load device is an auxiliary starting electrode, subclass 272 and indented subclass where the discharge device load is supplied with alternating current, and subclass 352 and indented subclass for miscellaneous systems of this type.

198 Discharge control discharge device in the control circuit:

This subclass is indented under subclass 195. Systems having a discharge device provided with discharge control means connected in the control circuit of the discharge control discharge device load.

SEE OR SEARCH THIS CLASS, SUBCLASS:

197, and see the notes to the definition thereof.

199 Discharge control discharge device in the control circuit:

This subclass is indented under subclass 194. Systems having an electric space discharge device provided with discharge control means connected in the control circuit of the discharge control discharge device load.

SEE OR SEARCH THIS CLASS, SUBCLASS:

197, and see the notes to the definition thereof.

200 DISCHARGE DEVICE AND/OR RECTIFIER IN THE SUPPLY CIRCUIT:

This subclass is indented under the class definition. Systems provided with a discharge device or an electric current rectifier connected either in electrical series relation or electric shunt relation to the load device and the source of current supply for the load device.

(1) Note. Patents claiming systems under the class definition which only have two or more lamps or electric space discharge devices limited in the claims to the gas or vapor type which are included as load devices in this class are not classified in this subclass or the indented subclasses, even though one of the devices is disclosed and claimed only as a means for controlling and/or modifying the current flow to one of the devices which is the ultimate load device. Such patents are classified in the other appropriate subclasses in this class as a plural load device system. This subclass and the indented subclasses include only systems under the class definition wherein the system includes a rectifier and or a discharge device of the type which is not included as a load device in this class.

(2) Note. Where the only discharge device and/or rectifier is in the discharge control circuit of a discharge control discharge device load, the patent is not classified in this or the indented subclasses, unless the discharge control means is an auxiliary starting electrode, for which see subclass 203 and indented subclass. For systems under the class definition having a discharge device, a rectifier in the discharge control circuit of a discharge control discharge device load, see subclass 352 and indented subclass and the subclasses specified in the notes to the definition of those subclasses.

SEE OR SEARCH THIS CLASS, SUBCLASS:

36, for a plurality of series connected discharge devices combined with an electric circuit element, all of which are structurally combined to form a unitary device.

46, for a discharge device and a filament which are structurally combined to form a unitary device, the filament being connected in electrical shunt to the discharge electrodes.

49, for a discharge device and a filament which are structurally combined to form a unitary device, the filament being in electrical series with the discharge device.

101, for systems wherein the load device is a discharge device provided with a thermionic cathode heated by the passage of electric current, or an indirectly heated cathode, the cathode or the cathode heater circuit having a discharge device and/or an electric current rectifier connected either in electrical series relation or electrical shunt relation with respect to the cathode or cathode heater and the source of supply.

171, for systems where there are a plurality of sources of current supply, one of the supply circuits having a discharge device or rectifier therein.

179, for systems having a plurality of diverse type load devices which are connected in electrical series relation, one of the load devices being a discharge device.

189, for systems where there are a plurality of series connected discharge device loads.

324, and indented subclass and the subclasses referred to in the notes to the definition of that subclass for systems under the class definition which include a plurality of discharge device loads.

352, see note (2) above.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 64, for consumable electrode discharge device systems which include a space discharge device for controlling the operation of the electrode feeding mechanism.

323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291, for miscellaneous systems having one or more discharge devices for controlling the magnitude of the current and/or voltage in a single circuit.

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, appropriate subclasses for miscellaneous circuits utilizing a discharge device to control the flow of current or potential to a load device.

363, Electric Power Conversion Systems, subclasses 74+ for rectifying or derectifying systems with automatic voltage and/or current magnitude control; subclasses 83, 94, and 99 for rectifying or derectifying systems with line circuit control by means of an electronic tube; and subclasses 111+ for rectifying or derectifying systems wherein the convertor is an electronic tube.

378, X-Ray or Gamma Ray Systems or Devices, subclass 104 for X-ray tube power supplies with specific rectifier.

201 Plural load device systems:

This subclass is indented under subclass 200. Systems having two or more load devices in the system.

(1) Note. See note (1) to the definition of subclass 200 of this class.

202 Plural cathode and/or anode discharge device load:

This subclass is indented under subclass 200. Systems wherein the load device in the system is an electric space discharge device which has two or more cathodes and/or two or more anodes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

334, and indented subclasses and the subclasses referred to in the notes to the definition of these subclasses, for other systems under the class definition provided with a plural cathode and/or anode discharge device load.

203 Discharge device or rectifier in the auxiliary starting electrode circuit:

This subclass is indented under subclass 202. Systems wherein the discharge device is provided with at least one principal anode and at least one principal cathode and an auxiliary

discharge electrode, the discharge device and/or the rectifier being included in the circuit which supplies current or potential to the auxiliary electrode.

(1) Note. Where the system includes a plurality of discharge devices, one of which is connected in the control circuit of the discharge device which is the load in the circuit, the patent is classified as a plural load device system in the subclasses above where the discharge device in the control circuit is claimed as a discharge device whose operation depends upon gas or vapor ionization even though the system is claimed as only having one ultimate load device. Where the controlling discharge device is claimed merely as a discharge device even though it is disclosed as a gaseous ionization discharge device, the system is not considered to be a plural load device system for the purpose of classification.

SEE OR SEARCH THIS CLASS, SUBCLASS:

335, and indented subclass, and the subclasses referred to in the notes to the definition of these subclasses, for other systems provided with a discharge device load having an auxiliary discharge electrode.

352, and indented subclass, for other systems under the class definition provided with a discharge control discharge load and having an electric discharge device in the control circuit, where the discharge control device is other than an auxiliary starting electrode.

204 Discharge control discharge device in the auxiliary electrode circuit:

This subclass is indented under subclass 203. Systems wherein the discharge device which is connected in the auxiliary electrode circuit is provided with discharge control means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

197, 198, and 199, for systems under the class definition wherein the load device is provided with discharge control means, which may be an auxiliary starting electrode, and the control circuit includes a discharge control discharge device and means to shift the phase of the pulsating and/or alternating current or potential in the control circuit with respect to the pulsating and/or alternating current in the cathode-anode circuit.

208, for other systems under subclass 200 provided with a discharge control discharge device in the supply circuit of the load device.

205 Plural discharge devices and/or rectifiers in the supply circuit:

This subclass is indented under subclass 200. Systems provided with either (1) two or more discharge devices or rectifiers, or (2) a rectifier and a discharge device in the supply circuit of the load device.

(1) Note. Where the system includes a plurality of discharge devices, the output of one controlling only the electric discharge control means, such as the grid, of another discharge device (cascade connected) and the load device is connected in the circuit with the cathode-anode circuit of only one of the space discharge devices, the patent is excluded from this subclass and will be found in one of the other subclasses under subclass 200.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291, for miscellaneous systems having a plurality of discharge devices for controlling the magnitude of the current and/or voltage in a single circuit.

206 Discharge device and/or rectifier in the primary circuit of the supply transformer:

This subclass is indented under subclass 200. Systems provided with a transformer connected between the source of supply and the load device for supplying electric current or potential to the load device and having this discharge device and/or the rectifier connected in the primary circuit of the transformer.

SEE OR SEARCH THIS CLASS, SUBCLASS:

276, and indented subclasses and the subclasses specified in the notes to those subclasses, for other systems under the class definition provided with a transformer in the supply circuit of the load device.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291, for miscellaneous systems having one or more discharge devices in the primary circuit of a transformer for controlling the magnitude of the current and/or voltage in a single circuit.

363, Electric Power Conversion Systems, subclasses 83, 94, and 99 for rectifying or derectifying systems with line circuit control by means of an electronic tube.

207 Discharge device and/or rectifier in shunt to the load device:

This subclass is indented under subclass 200. Systems having the discharge device or rectifier connected in electrical shunt relation to the source of supply and the load device.

208 Discharge control discharge device in the supply circuit:

This subclass is indented under subclass 200. Systems having a discharge device which is provided with discharge control means such as a grid electrode, connected in the supply circuit of the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

204, for this subject matter where the discharge control discharge device is in the auxiliary electrode circuit.

352, and indented subclass and the subclasses specified in the notes to the definition of those subclasses for systems under the class definition where the load device is a discharge control discharge device, and the control circuit includes a discharge device.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 and the subclasses specified in the notes to the definition of those subclasses, for miscellaneous systems having a discharge device which is provided with a discharge control device for controlling the magnitude of the current and/or voltage in a single circuit.

363, Electric Power Conversion Systems, subclasses 111+ and the subclasses mentioned in the notes thereto, for current conversion systems wherein either the convertor or a control device comprises an electronic tube having discharge control means (e.g., grid).

209 PERIODIC SWITCH IN THE SUPPLY CIRCUIT:

This subclass is indented under the class definition. Systems having a periodic switch connected in the current supply circuit for the load device so as to periodically interrupt or vary the flow of current to the load device.

(1) Note. The periodic switch may be connected in shunt to the load device so as to periodically interrupt or vary the flow of current to the load device by completing a shunt circuit about the load device.

(2) Note. Some of the systems in this and the indented subclasses are ignition systems for supplying electrical energy to spark gaps of the spark plug type. For the line between this class and Class 123, Internal-Combustion Engines, subclass 146.5, Sparkers, see the notes to the class definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

72, for electric lamps having a periodic switch structurally combined therewith so as to form a unitary device.

172, where there are two sources of current supply for the load device, one of the supply circuits including a periodic switch.

186, where there are a plurality of load devices connected in series relation and the system includes a periodic switch.

246, and indented subclasses, for systems having no periodic switch wherein alternating or pulsating current is supplied to the load device. Note especially subclass 287 for systems where the source of supply may be direct current and a voltage regulator which periodically increases and decreases the current supplied to the load device is included in the supply system.

SEE OR SEARCH CLASS:

123, Internal-Combustion Engines, see Note (2) above.

200, Electricity: Circuit Makers and Breakers, subclasses 19.01+ for periodic electric switches.

307, Electrical Transmission or Interconnection Systems, subclasses 96+ for circuit interrupting regulators.

322, Electricity: Single Generator Systems, subclasses 69+, for periodic interruption of generator field circuit and subclass 94 for interruption of generator armature circuit.

335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclasses 87+ for periodic electromagnetically operated switches.

337, Electricity: Electrothermally or Thermally Actuated Switches, subclass 51 for periodically operated electrothermally actuated switches and subclasses 302+ for periodically operated thermal switches.

361, Electricity: Electrical Systems and Devices, subclasses 1+ for circuit interruption systems utilized for safety purposes.

363, Electric Power Conversion Systems, subclasses 106+ and subclass 177 for conversion systems wherein the convertor comprises a periodic switch.

210 Plural load device systems:

This subclass is indented under subclass 209. Systems having two or more load devices in the system.

SEE OR SEARCH THIS CLASS, SUBCLASS:

312, and indented subclasses, and the subclasses specified in the notes to these subclasses, for other plural load device systems under the class definition.

211 Distributor type periodic switch means:

This subclass is indented under subclass 210. Systems wherein (1) two or more periodic switches are provided in the circuit, or (2) the periodic switch is a multiple circuit multiple-contact switch, the supply circuit of each of two or more of the load devices including one of the periodic switches or one of the contacts of the multiple contact switch, such switch means being arranged to open and close the circuits in sequence so that current is supplied to the load devices in time sequence.

(1) Note. Some of the patents in this and the indented subclasses are ignition systems for supplying electrical energy to a plurality of spark gaps (plugs) in timed sequence. For the line between this class and Class 123, Internal Combustion Engines, subclass 146.5, Sparkers, see the notes to the main definition.

SEE OR SEARCH THIS CLASS, SUBCLASS:

226, for single load device systems under subclass 209 provided with a plurality of periodic switches or a multiple contact periodic switch in the supply circuit of the load device.

SEE OR SEARCH CLASS:

123, Internal-Combustion Engines, see note (1) above.

200, Electricity: Circuit Makers and Breakers, subclasses 19.06+ and indented subclasses for multiple contact periodic switches.

212 Transformer in the supply circuit:

This subclass is indented under subclass 211. Systems provided with a transformer connected between the source of supply and at least one of the load devices for supplying electric current and/or potential to the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

219, and indented subclasses, for single load device systems under subclass 209 provided with a transformer in the supply circuit of the load device and having a periodic switch in the primary circuit of the transformer.

254, and indented subclasses, for other plural load device systems provided with a transformer in the supply circuit of at least one load device.

276, and indented subclasses and the subclasses specified in the notes to the definition of those subclasses for other systems provided with a transformer in the supply circuit of the load device.

213 Distributor switch means in the primary circuits of plural transformers:

This subclass is indented under subclass 212. Systems wherein the system includes a plurality of transformers, the secondaries of each of the transformers being connected to one or more of the load devices, the primaries of the transformers being connected to the periodic distributing switch means so that the primary circuits of the transformers are energized in timed sequence with respect to each other, thereby energizing the load devices in timed sequence with respect to each other.

SEE OR SEARCH THIS CLASS, SUBCLASS:

220, for single load device systems under subclass 209 provided with a plurality of transformers in the supply circuit of a load device, a periodic switch being included in the primary circuit of at least one transformer.

255, and indented subclass, for other plural load device plural transformer systems, each transformer secondary including a load device.

214 With additional periodic switch in the primary circuit:

This subclass is indented under subclass 212. Systems having a periodic switch (in addition to the distributor switch means) in the primary circuit of the transformer so as to periodically interrupt the primary circuit, the distributor type periodic switch means being in the secondary circuit of the transformer.

SEE OR SEARCH THIS CLASS, SUBCLASS:

213, for plural load device systems under subclass 212, where a distribution type periodic switch is included in the primary circuits of the transformer.

215, for additional periodic switches in circuits having no transformer.

222, for single load device systems under subclass 209 wherein there is a transformer in the supply circuit of the load device, and the primary and secondary circuits are periodically interrupted by periodic switch means.

215 With additional periodic switch in the distributor switch means circuit:

This subclass is indented under subclass 211. Systems having a periodic switch (in addition to the distributor switch means) connected in series relation with the distributing type periodic switch means so that the supply circuit for at least one load device is periodically interrupted by both.

(1) Note. The second periodic switch need not operate in timed relation to the operation of the distributor type periodic switch means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

214, where the distributing switch means is connected to the secondary of a transformer the primary circuit of the transformer including a periodic switch.

216 Plural electrically operated switches:

This subclass is indented under subclass 211. Systems in which the distributor type periodic switch means comprises two or more switches each of which periodically interrupts the supply to one or more of the load devices, the switches having electrical operating means (such as an electromagnet or electrically heated thermostat) and means causing the electrical operating means to operate the switches in time sequence with respect to each other.

SEE OR SEARCH THIS CLASS, SUBCLASS:

214, and 215, for such systems having an additional periodic switch to control energy delivered either to or from the distributor switch means.

226, for single load device systems under subclass 209 having a plurality of periodic switches or a multiple contact periodic switch in the supply circuit of the load device.

217 Periodic switch selectively connectable to plural load device circuits:

This subclass is indented under subclass 210. Systems wherein the periodic switch is connected in the circuit so that it may be selectively connected in the supply circuit of either of two or more of the load devices.

218 Magnetoelectric generator supply:

This subclass is indented under subclass 209. Systems wherein a magneto-electric generator is utilized as the source of supply for the load device.

(1) Note. This subclass includes only systems under subclass 209 wherein the source of supply is limited by claimed subject matter to being a magneto- electric generator.

219 Periodic switch in the primary circuit of the supply transformer:

This subclass is indented under subclass 209. Systems provided with a transformer connected between the source of supply and the load device for supplying electric current or potential to the load device and having the periodic switch connected in the primary circuit of the transformer so as to periodically interrupt the primary circuit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

212, and indented subclasses, for periodic switch controlled systems having plural loads and a transformer in the supply circuit.

276, and indented subclasses and the subclasses specified in the notes to the definition of those subclasses for other systems under the class definition which have a transformer connected in the supply circuit of the load device.

220 Plural transformers in the supply circuit:

This subclass is indented under subclass 219. Systems having two or more transformers connected in the supply circuit of the load device.

(1) Note. The transformers may be connected in the supply circuit so that the primary circuit of one transformer is connected to the secondary circuit of another transformer, or may have their primaries and/or secondaries connected in electrical series or shunt relation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

277, for other systems provided with a plurality of transformers connected in the supply circuit of a load device.

221 Secondary conductively connected to the primary:

This subclass is indented under subclass 219. Systems having the primary circuit of the transformer connected to the secondary circuit by current conductive means.

(1) Note. The current conductive means may be an inductance, a condenser, or a conductor.

222 Plural interrupted transformer coil circuits:

This subclass is indented under subclass 219. Systems wherein the circuits which are connected to two or more of the transformer coils are periodically interrupted.

(1) Note. The circuits which are periodically interrupted may be the primary and secondary circuits, or may be two or more different primary or secondary circuits.

SEE OR SEARCH THIS CLASS, SUBCLASS:

213, for plural load device systems provided with a transformer in the supply circuit of each of the load devices, the primary circuits of the plural transformers being connected to a distributor type periodic switching means so

that the primary circuits are closed in timed sequence with respect to each other.

214, for this subject matter where there are a plurality of load devices in the system and a transformer in the supply circuit, a periodic switch being connected in the primary circuit and a distributor type periodic switch means being connected in the secondary circuit.

226, for systems under subclass 209 which are provided with a plurality of periodic switches or a multiple contact periodic switch in the supply circuit of the load device.

223 Condenser or inductance in the primary circuit:

This subclass is indented under subclass 219. Systems having a condenser or an inductance connected in the primary circuit of the transformer.

SEE OR SEARCH THIS CLASS, SUBCLASS:

227, and indented subclasses and the subclasses specified in the notes to the definition of those subclasses, for other systems provided with a condenser in the supply circuit of the load device.

289, and indented subclass and the subclasses specified in the notes to those subclasses, for other systems under the class definition provided with an inductance connected in the supply circuit of the load device.

224 Impedance or current regulator in the supply circuit:

This subclass is indented under subclass 209. Systems having an impedance or a current or voltage regulator connected in the supply circuit of the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

223, for this subject matter where there is a transformer connected in the supply circuit of the load device, the primary circuit including a periodic switch and a condenser or inductance.

291, and indented subclasses, and the subclasses specified in the notes to the definition of those subclasses, for other systems under the class definition provided with a current or voltage regulator in the supply circuit of the load device.

225 Periodic switch cut-out:

This subclass is indented under subclass 209. Systems having means provided for rendering the periodic switch inoperative to interrupt the circuit when it is so desired.

(1) Note. The means provided may be means to hold the contacts of the periodic switch in circuit closing position or to close a shunt circuit about the switch.

226 Plural periodic switches or multiple contact periodic switch:

This subclass is indented under subclass 209. Systems wherein (1) the periodic switch is provided with two or more pairs of circuit interrupting contacts, or (2) two or more periodic switches are provided in the circuit, the circuit being intermittently interrupted at two or more different places.

SEE OR SEARCH THIS CLASS, SUBCLASS:

216, for this subject matter where there are a plurality of load devices in the system and a plurality of electrically operated periodic switches are used to distribute the current to the load devices.

222, for this subject matter where there is a transformer in the supply circuit of the load device and there are periodic switch means to interrupt the primary circuit and the secondary circuit of the transformer.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclasses 19.06+, and indented subclasses, for multiple contact periodic switches, per se.

227 CONDENSER IN THE SUPPLY CIRCUIT:

This subclass is indented under the class definition. Systems provided with a condenser connected either in electrical series relation or

electrical shunt relation to the load device and the source of current supply for the load device.

(1) Note. This subclass includes systems having a condenser and discharge device, the condenser being charged by a suitable source of potential until the potential is sufficient to ionize the discharge space of the discharge device, when the condenser is discharged through the discharge device. Such systems are included whether the system is stated to be for the production of oscillations or merely for the production of the space discharge (light generation). In some of the systems, the condenser is connected so as to form, with the other circuit elements, an oscillatory circuit. Such oscillatory circuit systems are included even though it is not clear from the patent that the discharge gas is ionized with each oscillatory impulse of current. Where it is clear that the oscillatory circuit is merely fed with current through the discharge device, and the oscillatory current does not ionize the discharge space but continues to oscillate in a closed circuit which does not include the discharge device, the oscillatory circuit is considered as a load device and the patent is excluded from this class, and will be found in Class 331, Oscillators, particularly subclasses 126+ for electrical oscillator systems of the gaseous space discharge device type utilizing a capacitor as one of the frequency determining elements of the system, indented subclass 128 providing for systems wherein the gaseous space discharge device provides for shock-excitation of an LC circuit, subclasses 143+ for relaxation oscillator utilizing space discharge devices and wherein an RC time constant network determines the period or frequency of the generated oscillation and subclasses 165+ for oscillators in general comprising a shock-excited resonant circuit or some related class.

SEE OR SEARCH THIS CLASS, SUBCLASS:

44, and 45, for devices which include a discharge device, an inductance and a condenser which are structurally combined in a unitary device.

58, for discharge devices having structurally combined therewith a condenser.

71, for lamps having structurally combined therewith a condenser.

173, for systems which include two sources of current supply for the load device, one of the supply circuits including a condenser.

187, and indented subclass, for systems wherein a plurality of load devices are connected in electrical series relation, a condenser being connected in the circuit.

223, for systems which include a transformer in the supply circuit of the load device, a periodic switch and a condenser being included in the primary circuit of the supply transformer.

224, for systems under the class definition which include a condenser and a periodic switch in the supply circuit of the load device.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclass 364 and the subclasses specified in the notes to the definition of that subclass, for miscellaneous condenser systems and for miscellaneous systems having a condenser for controlling the magnitude of the current and/or voltage in a single circuit.

378, X-Ray or Gamma Ray Systems or Devices, subclass 103 for X-ray tube systems wherein the X-ray tube is designed to be energized by the discharge from a charged condenser.

228 Plural load device systems:

This subclass is indented under subclass 227. Systems having two or more load devices in the system.

(1) Note. Where a single lamp or a single discharge device is the ultimate load device, and the system includes an addi-

tional lamp and/or discharge device in the circuit which is connected in the circuit so as to control and/or modify the current and/or potential supplied to such single ultimate load device, the patent is classified as a plural load device system, if (a) the controlling and/or modifying device is a lamp, or (b) the controlling and/or modifying device is limited in the claims to being a gas or vapor discharge device. Conversely, such a system is not classified as a plural load device system where the controlling and/or modifying device is claimed broadly as a discharge device, even though it is disclosed as a gas or vapor discharge device.

The controlling and/or modifying device may be connected in the control circuit of the discharge device where the ultimate load device is a discharge control discharge device, and the same basis of classification is used as is set forth above.

SEE OR SEARCH THIS CLASS, SUBCLASS:

187, for this subject matter where the plurality of load devices are connected in electrical series relation.

312, and indented subclasses, and the subclasses referred to in the notes to the definition thereof for other plural load device systems.

SEE OR SEARCH CLASS:

331, Oscillators, subclasses 126+ for gaseous space discharge device type oscillators which may employ plural gaseous discharge devices, especially indented subclass 130 for relaxation oscillators utilizing plural gaseous devices.

378, X-Ray or Gamma Ray Systems or Devices, subclasses 91+ for X-ray tube systems wherein the X-ray tube is designed to be energized by the discharge from a charge condenser.

229 Condenser connected to plural cathodes or anodes of asymmetrical discharge device loads:

This subclass is indented under subclass 228. Systems wherein the load devices are discharge devices of the type which conduct more current in one direction of current flow between the cathode and anode electrodes of the discharge device than is conducted in the other direction of current flow between the cathode and anode electrodes, and having the condenser connected in a circuit between similar principal discharge electrodes (such as between the anode or between the cathodes of two of the electric discharge devices).

SEE OR SEARCH THIS CLASS, SUBCLASS:

235, for systems wherein the load device is a plural cathode and/or anode load device and the system includes a condenser connected either between the anodes or between the cathodes.

230 Discharge control discharge device loads:

This subclass is indented under subclass 228. Systems wherein the load devices are discharge devices of the type having two or more principal electrodes and a discharge controlling means, and the system includes means for controlling the electric discharge device by applying electric current or potential to the control means.

(1) Note. For other systems under subclass 227 wherein the load device is a device having discharge control means, search this class, subclass 234, where the control means is an auxiliary starting electrode, and subclass 237 and indented subclasses for other such systems.

SEE OR SEARCH THIS CLASS, SUBCLASS:

229, for this subject matter where the discharge devices are of the asymmetrical type and a condenser is connected between either the anodes or the cathodes of such asymmetrical load devices.

234, see the note above.

237, see the note above.

231 Plural series connected condenser and load device circuits:

This subclass is indented under subclass 228. Systems wherein at least two load devices are each connected in electrical series relation with a condenser, each of the series connected load devices and condensers being connected in electrical shunt relation to the other series connected load device and condenser.

SEE OR SEARCH THIS CLASS, SUBCLASS:

187, and indented subclass, where the load devices are in series relation with each other.

232 Condenser in shunt to load and supply:

This subclass is indented under subclass 228. Systems wherein the condenser is connected in electrical shunt relation with respect to at least one of the load devices and the source of supply.

SEE OR SEARCH THIS CLASS, SUBCLASS:

188, for this subject matter where the load devices are connected in electrical series relation with respect to each other.

241, for single load device systems under subclass 227 having a condenser in shunt to the load device.

233 Plural cathode and/or anode discharge device load:

This subclass is indented under subclass 227. Systems wherein the load device in the system is a discharge device which has two or more cathodes and/or two or more anodes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

334, and indented subclasses and the subclasses specified in the notes to the definitions of these subclasses, for other systems provided with a plural cathode and/or anode load device.

234 Condenser in the auxiliary starting electrode circuit:

This subclass is indented under subclass 233. Systems wherein the electric discharge device is provided with at least one principal anode and at least one principal cathode and an auxiliary discharge electrode, a condenser being included in the circuit which supplies current or potential to the auxiliary discharge electrode.

SEE OR SEARCH THIS CLASS, SUBCLASS:

335, and indented subclass, and the subclasses specified in the notes to the definitions of those subclasses, for other systems having an auxiliary starting electrode discharge device load.

235 Condenser connected to plural cathodes or anodes:

This subclass is indented under subclass 223. Systems wherein the condenser is connected in a circuit between two or more similar principal electrodes (such as between two anodes or between two cathodes).

SEE OR SEARCH THIS CLASS, SUBCLASS:

229, for plural discharge device loads under subclass 227 having a condenser connected between the anodes or between cathodes of at least two load devices.

236 Electromagnetic influenced discharge device load:

This subclass is indented under subclass 227. Systems wherein the load device is a discharge device and an electromagnet is placed adjacent to the interelectrode discharge space of the discharge device so that the space discharge is influenced by the magnetic flux.

SEE OR SEARCH THIS CLASS, SUBCLASS:

344, and indented subclasses and the subclasses specified in the notes to the definitions of those subclasses, for other systems provided with an electromagnet for influencing the discharge in a discharge device load.

SEE OR SEARCH CLASS:

376, Induced Nuclear Reactions: Processes, Systems, and Elements, subclasses 100+ for the use of magnetic field or flux in plasma heating and containment.

237 Discharge control discharge device load:

This subclass is indented under subclass 227. Systems wherein the load device is an electric discharge device provided with a discharge controlling means, and the system includes means for controlling the electric discharge by applying an electric current and/or potential to the control means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

234, for systems where the discharge control means for the discharge device is an auxiliary starting electrode having a condenser connected in its circuit.

236, for systems where the discharge controlling means is an electromagnet for influencing the electric discharge.

349, and indented subclasses and the subclasses specified in the notes to the definitions of those subclasses for other systems under the class definition having a discharge control discharge device load.

238 Condenser in the control circuit:

This subclass is indented under subclass 237. Systems having (in addition to a condenser in the supply circuit) a condenser connected in a circuit which includes the control electrode.

SEE OR SEARCH THIS CLASS, SUBCLASS:

234, for this subject matter where the discharge control means is an auxiliary starting electrode and the condenser is connected in the auxiliary starting electrode circuit.

355, and indented subclass and the subclasses referred to in the notes to the definition of those subclasses, for other systems provided with a condenser in the control circuit of the discharge control discharge device load.

239 Transformer in the condenser load device circuit:

This subclass is indented under subclass 227. Systems provided with a transformer, one of the windings of the transformer being in the circuit which includes both the condenser and the load device.

(1) Note. Where the load device is connected to the source of supply by means of a transformer, the load device being connected to the secondary of this transformer and there is no condenser connected in the circuit, other than in the primary circuit of the supply transformer, the patent is excluded from this subclass and will be found in the subclasses below, the primary circuit being considered only a source of pulsating or A. C. potential for the secondary circuit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

223, for systems which include a transformer in the supply circuit of the load device, the primary circuit of the transformer including a periodic switch and a condenser.

276, and indented subclasses and the subclasses specified in the notes to the definition of those subclasses, for other systems under the class definition having a transformer in the supply circuit of the load device.

240 Electric switch in the condenser circuit:

This subclass is indented under subclass 227. Systems provided with a switch which is connected to the circuit which includes the condenser so that the condenser may be connected in the system in different ways or disconnected from the system.

(1) Note. The switch may be connected in the system so that (1) the condenser may be disconnected from the load device during the condenser charging period and then connected to the load device to discharge to the load device, or (2) the condenser may be included or excluded from the system, or (3) the condenser may be placed either in electrical series or shunt relation with respect to the load

device, or (4) the circuit connections of the condenser may be altered in any desired manner.

241 Condenser in shunt to the load device and the supply:

This subclass is indented under subclass 227. Systems wherein the condenser is connected in electrical shunt relation with respect to the load device and the source of supply.

SEE OR SEARCH THIS CLASS, SUBCLASS:

188, for this subject matter where there are a plurality of series connected load devices, and a condenser is connected in shunt relation to at least one of the load devices.

232, for this subject matter where there are a plurality of load devices and a condenser is connected in shunt relation to at least one of the load devices.

236, for this subject matter where there is electromagnetic means for influencing the discharge in a discharge load.

237, and indented subclass, for this subject matter where the load device is a discharge control discharge device.

242 With an inductance in the circuit:

This subclass is indented under subclass 241. Systems having an inductance connected in the circuit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

44, for discharge control discharge devices which have combined therewith an inductance and a condenser, all structurally combined in a single unitary device, the condenser and the inductance being connected between the discharge control electrode and another electrode of the discharge device.

53, for discharge devices which have combined therewith an inductance and an impedance, all structurally combined in a single unitary device.

244, for other systems under subclass 227 having an inductance in the circuit.

289, and indented subclass, and the subclasses specified in the notes to the definition of those subclasses, for other systems under the class definition provided with an inductance in the circuit.

243 Inductance in series with the load device and the supply:

This subclass is indented under subclass 242. Systems having an inductance connected in the current supply circuit in electrical series relation with the source of supply and the load device.

(1) Note. The shunt circuit which includes the condenser may be connected between the source of supply and the inductance or between the inductance and the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

244, for other systems under subclass 227 which include an inductance in the circuit.

244 Inductance in the condenser circuit:

This subclass is indented under subclass 227. Systems having an inductance in addition to the condenser.

SEE OR SEARCH THIS CLASS, SUBCLASS:

53, for devices which include a lamp or discharge device, a condenser, and an inductance, all structurally combined to form a unitary structure.

242, and indented subclass, for this subject matter where the condenser is connected in shunt relation to the load device.

289, and indented subclass and the subclasses referred to in the notes to the definition of those subclasses, for other systems under the class definition provided with an inductance.

245 Resistance in the condenser circuit:

This subclass is indented under subclass 227. Systems provided with a resistance in a circuit which includes the condenser.

(1) Note. The resistance may be (1) in electrical series relation with the source of supply and the condenser so that the charging current for the condenser flows

through the condenser, or (2) in electrical series relation with the condenser and the load device so that the condenser discharges its current through the resistance and the load device, or (3) in electrical shunt relation to the condenser so that there is a flow of current through the resistance during the charging and/or discharge periods of the condenser.

246 PULSATING OR A.C. SUPPLY:

This subclass is indented under the class definition. Systems wherein the load devices in the system is supplied with either pulsating or alternating current or potential (but not both).

SEE OR SEARCH THIS CLASS, SUBCLASS:

57, for discharge devices which are structurally combined with a transformer so as to form a unitary device.

70, for load devices other than discharge devices which are structurally combined with a transformer so as to form a unitary device.

72, for load devices having combined therewith a periodic switch, the switch and load device being structurally combined so as to form a unitary device and the periodic switch periodically interrupting the current supplied to the load device.

97, and subclass 105 and the indented subclass, for systems under the class definition wherein the load device is a discharge device provided with either a thermionic cathode heated by the passage of electric current or an indirectly treated cathode, the cathode or the cathode heater being supplied by a source of pulsating and/or alternating current.

105, see the reference to subclass 97, above.

137, and indented subclasses, for this subject matter where the system is a polyphase alternating current system.

156, where the system includes a source of pulsating and/or alternating current supply for the load device, a discharge device and/or rectifier being connected in the supply circuit, the discharge device or rectifier being controlled by a radiant energy sensitive device (photocell).

171, where the system includes a plurality of sources of current supply for the load device, one of the sources of current supply being a pulsating and/or alternating source and having a discharge device or rectifier in the supply circuit to the load device.

172, where the system includes a plurality of sources of current supply for the load device, one of the supply circuits including a periodic switch for periodically interrupting the supply of current to the load device.

174, where there are a plurality of diverse type pulsating and/or alternating current supplies for the load device, or both alternating and pulsating current supplies.

177, for this subject matter where there is a transformer in the power supply circuit, there being a load device in the primary circuit of the transformer and another load device in the secondary circuit.

186, for systems which include a plurality of series connected load devices, the supply circuit for the load devices including a periodic switch to periodically interrupt the supply of current.

194, for this subject matter where the load device is a discharge control discharge device, and phase shifting means are used to regulate the current and/or potential supplied to the discharge control means.

200, where the system includes a pulsating and/or alternating current supply source for the load device, the supply circuit including a rectifier and/or discharge device.

209, and indented subclasses, for systems which include a periodic switch in the supply circuit of the load device for periodically interrupting the supply of current to the load device.

227, and indented subclasses, for systems under the class definition wherein a condenser is included in the load device circuit so that the load device is energized periodically by the current discharged from the condenser.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, appropriate subclasses, for systems for supplying pulsating and/or alternating current to consumable electrode discharge devices, note especially subclasses 31 and 32.

378, X-Ray or Gamma Ray Systems or Devices, subclasses 106 and 107 for X-ray tube power supplies having pulse or A. C. output.

247 With power factor control device:

This subclass is indented under subclass 246. Systems having combined therewith means designed to alter the power factor of the system.

(1) Note. To be classified in this subclass, there must be included in the system some device which has no function other than to alter the power factor of the system. Systems under the definition of subclass 246 having the circuit elements designed to give a desired power factor are not included in this subclass but are in the subclasses below. For example, for systems under the definition of subclass 246, having a transformer in the circuit supplying power to the load device, the transformer being designed to give a particular power factor, search subclass 276 and indented subclasses below.

248 Induction-type discharge device load:

This subclass is indented under subclass 246. Systems wherein the load device in the system is a discharge device of the type which has an envelope (such as a glass bulb), containing an atmosphere of gas or vapor, the system including a magnetic coil mounted in inductive relation to the confined gas or vapor in the envelope and a generator of high frequency current connected to the magnetic coil so that the gas or vapor may be subjected to a high frequency field to ionize the gas or vapor within the envelope.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 153+, especially indented subclass 161, for the structure of discharge devices, per se, which have combined therewith a magnetic field producing means.

249 Potential node-type discharge device load:

This subclass is indented under subclass 246. Systems wherein the load device in the system is a discharge device having the electrodes formed of conductive rods or wires which are arranged in physical parallel relation with respect to each other and having the source of supply designed to impress voltage waves upon the electrode system so that an electric discharge is established between the electrodes at the antinodes of the potential wave, the system being provided with means to cause the antinodes of potential, and therefore the electric discharge, to traverse the electrodes along their length.

(1) Note. This type of system is used for developing a scanning ray for television purposes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

345, for systems under the class definition wherein the discharge device is provided with parallel mounted rod or wire like electrodes, and an electromagnet is used to cause the discharge to traverse the electrodes along their length.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, appropriate subclasses for discharge device structures, per se. See subclass 325 for discharge devices which involve only two electrodes. See subclasses 306+ and the subclasses specified in the Notes thereto for discharge devices which have three or more electrodes.

348, Television, subclasses 800+ for television systems using such discharge devices.

250 Plural load device systems:

This subclass is indented under subclass 246. Systems having two or more load devices in the system.

(1) Note. Where a single lamp or a single discharge device is the ultimate load device, and the system includes an additional lamp and/or discharge device in the circuit which is connected in the circuit so as to control and/or modify the current and/or potential supplied to such single ultimate load device, the patent is classified as a plural load device system, if (a) the controlling and/or modifying device is a lamp, or (b) the controlling and/or modifying device is limited in the claims to being a gas or vapor discharge device. Conversely, such a system is not classified as a plural load device system where the controlling and/or modifying device is claimed broadly as a discharge device even though it is disclosed as a gas or vapor discharge device.

The controlling and/or modifying device may be connected in the control circuit of the discharge device where the ultimate load device is a discharge control discharge device, and the same basis of classification is used as is set forth above.

SEE OR SEARCH THIS CLASS, SUBCLASS:

97, for systems provided with a plurality of load devices, the load devices having thermionic cathodes heated by the passage of electric current or indirectly heated cathodes, the cathode or cathode heater circuits being supplied with pulsating or alternating current.

137+, for this subject matter where the source of supply for the load devices is polyphase alternating current.

177, for this subject matter where there is a transformer in the supply circuit, a load device being connected in the primary circuit of the transformer and another load device being connected in the secondary circuit of the transformer.

186, for systems which include a plurality of series connected load devices, the supply circuit including a periodic switch to periodically interrupt the supply of current to at least one of the load devices.

195, for this subject matter where the load devices are discharge control discharge device load devices, and the system includes means to shift the phase of the current and/or potential supplied to the control means with respect to the current in the anode-cathode circuit.

201, for plural load device systems wherein the source of supply is a source of alternating or pulsating current, and a rectifier and/or an electric space discharge device is connected in the supply circuit of at least one of the load devices.

228, and indented subclasses, for plural load device systems wherein a condenser is included in the circuit of at least one of the load devices so that the load device is periodically energized by the current discharged from the condenser.

251 Inverse parallel connected asymmetrical discharge device loads:

This subclass is indented under subclass 250. Systems wherein the load devices are discharge devices of the type which conduct more current in one direction of current flow between the cathode and anode electrodes of the discharge device than is conducted in the other direction of current flow between the cathode and anode electrodes, and at least two of the discharge devices each have its anode connected to the cathode of the other load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

196, and indented subclass, for this subject matter where the load devices are discharge control discharge device load devices and the system includes means to shift the phase of the current and/or potential applied to the discharge control means with respect to the current in the cathode-anode circuit of the discharge devices.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 for electronic tube regulators. See Lines With Other Classes and Within This Class, "Electronic Tube Systems," in the class definition of Class 323.

252 Discharge control discharge device loads:

This subclass is indented under subclass 250. Systems wherein the load devices are discharge devices of the type having two or more principal electrodes and a discharge controlling means, and the system includes means for controlling the electric discharge device by applying electric current or potential to the control means.

(1) Note. For other systems under subclass 246 wherein a discharge device load is provided with discharge controlling means, search this class, subclass 261 and indented subclasses where the discharge controlling means is an auxiliary starting electrode, subclass 267 where the controlling means is an electromagnet, and subclass 268 and indented subclasses, for other miscellaneous discharge control discharge device systems.

SEE OR SEARCH THIS CLASS, SUBCLASS:

195, for this subject matter where the system includes means to shift the phase of the discharge control current and/or potential with respect to the current in the cathode-anode circuit of the load devices.

251, for this subject matter where the discharge devices are inverse parallel connected asymmetrical discharge devices.

261, see (1) Note. above.

267, see (1) Note. above.

268, see (1) Note. above.

325, and the subclasses specified in the notes to the definition thereof for other plural discharge control discharge device loads.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 for electronic tube regulators. See Lines With Other Classes and Within This Class in the class definition of Class 323.

363, Electric Power Conversion Systems, subclasses 116 and 121+ for current conversion systems having an electronic tube convertor provided with discharge control means; subclasses 83, 94, and 99 for current conversion systems having an electronic tube line circuit control means provided with discharge control means. The systems in Class 363 are closely analogous to those in this subclass. See Lines With Other Classes and Within This Class in the class definition of Class 363 for the line between Class 315 and Class 363.

253 Full wave systems with asymmetrical discharge device loads:

This subclass is indented under subclass 250. Systems wherein the load devices are electric space discharge devices of the type which conduct more current in one direction of current flow between the cathode and anode electrodes than is conducted in the other direction of current flow between the cathode and anode electrodes, the load devices being connected to an alternating current source so that a discharge is established alternately in the discharge devices with each half of the alternating current wave.

SEE OR SEARCH THIS CLASS, SUBCLASS:

252, for this subject matter where the discharge devices are discharge control discharge devices.

265, for full wave systems wherein the load device is a plural cathode and/or anode load device.

254 Transformer in the supply circuit:

This subclass is indented under subclass 250. Systems provided with a transformer connected between the source of supply and at least one of the load devices for supplying electric current and/or potential to the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

144, for this subject matter for polyphase alternating current systems.

177, for this subject matter where one load device is connected in the primary circuit of the transformer and another is connected in the secondary circuit of the transformer.

212, for plural load device systems having a distributor type periodic switch means and a transformer in the supply circuit of the load devices.

276, and indented subclasses and the subclasses specified in the notes to the definition of that subclass, for other systems with a transformer in the supply circuit of a load device.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 355 through 363, and the subclasses specified in the Notes to the definitions of those subclasses, for miscellaneous transformer systems and for systems having a transformer for controlling the magnitude of the current and/or voltage in a single circuit.

255 Plural transformers in the supply circuit:

This subclass is indented under subclass 254. Systems provided with two or more transformers in the supply circuit.

(1) Note. Two or more of the load devices may each have a transformer in its supply circuit, or there may be a plurality of transformers in the supply circuit of one of the load devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:

257, for plural load device systems under subclass 254 having a plural secondary or tapped secondary in the supply circuit of the load devices.

277, for other systems provided with a plurality of transformers in the supply circuit of the load device.

256 Primaries in series:

This subclass is indented under subclass 255. Systems wherein two or more of the load devices each have a transformer in its supply circuit and the primary coils of the transformers are connected in electrical series relation with respect to each other.

SEE OR SEARCH THIS CLASS, SUBCLASS:

185, and indented subclasses, for plural load device systems under the class definition wherein the load devices are connected in electrical series relation.

257 With plural secondary or tapped secondary:

This subclass is indented under subclass 254. Systems wherein the transformer is provided with (1) two or more secondary coils, or (2) a tapped secondary coil, and a load device is connected to each of the secondary coils or each of the sections of the tapped secondary coil.

SEE OR SEARCH THIS CLASS, SUBCLASS:

278, for other systems under the class definition provided with a transformer in the supply circuit of a load device, the transformer being provided with three windings.

282, for other systems with tapped transformers in the supply circuit of the load device.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 251 and 332, for miscellaneous systems having a plural primary or secondary winding transformer for controlling the magnitude of the current and/or voltage in a single circuit.

336, Inductor Devices, appropriate subclasses for the structure of transformers and inductive reactors with plural coils.

258 Inductance in the supply circuit:

This subclass is indented under subclass 250. Systems provided with an inductance connected either in electrical series relation or

electrical shunt relation to at least one of the load devices and the source of current supply.

SEE OR SEARCH THIS CLASS, SUBCLASS:

283, and indented subclasses, for other pulsating or A. C. systems having an inductance connected in the supply circuit.

289, and indented subclass, and the subclasses specified in the notes to the definition of those subclasses for other systems provided with an inductance in the supply circuit.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 247, 301, 305, and 328, and the subclasses specified in the notes to the definition of those subclasses for miscellaneous reactor systems and for systems having an inductance for controlling the magnitude of the current and/or voltage in a single circuit.

259 Variable inductance:

This subclass is indented under subclass 258. Systems wherein the inductance in the circuit is a variable inductance.

SEE OR SEARCH THIS CLASS, SUBCLASS:

284, and indented subclasses, for other systems under subclass 246 having a variable inductance in the supply circuit of the load device.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 247, 301, 305, and 328 and the subclasses specified in the notes to the definition of these subclasses, for systems having a variable inductance for controlling the magnitude of the current and/or voltage in a single circuit.

336, Inductor Devices, appropriate subclasses for the structure of variable transformers and inductive reactors including saturable reactors.

260 Plural cathode and/or anode discharge device load:

This subclass is indented under subclass 246. Systems wherein the load device in the system is an electric space discharge device which has two or more cathodes and/or two or more anodes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

145, for this subject matter where the discharge device is connected in a ploy phase A. C. supply system and there is a transformer in the supply circuit.

147, and indented subclass, for this subject matter where the discharge device is connected in a ploy phase A. C. supply system.

334, and indented subclasses, and the subclasses referred to in the notes to the definition of those subclasses, for other systems under the class definition wherein the load device is provided with a plurality of cathodes or anodes.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 306+ and the subclasses specified in the Notes thereto for the structure of discharge devices which have two or more cathodes or two or more anodes.

261 Auxiliary starting electrode-type discharge device load:

This subclass is indented under subclass 260. Systems wherein the electric discharge device is provided with at least one principal anode and at least one principal cathode and an auxiliary discharge electrode.

SEE OR SEARCH THIS CLASS, SUBCLASS:

194, for this subject matter where the system includes means to shift the phase of the current supplied to the auxiliary starting electrode with respect to the current flowing in the principal electrode circuit.

268, and indented subclasses, for systems wherein the discharge device is pro-

vided with an auxiliary electrode placed adjacent one of the principal electrodes, usually the cathode, and having the auxiliary electrode connected to a source of potential so that an electrostatic field is created near the principal electrode to facilitate initiating the discharge, the electrostatic electrode being arranged with respect to the principal electrode that there is no flow of discharge current to the electrostatic electrode. In such systems, the discharge electrodes are usually enclosed in a vitreous envelope and the auxiliary control electrode is placed on the outside of the envelope near the cathode.

335, and indented subclass, and the subclasses specified in the notes to the definition of these subclasses, for other systems under the class definition wherein the load device is provided with an auxiliary starting electrode.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 592+, 594, 595+, and 601+ for discharge devices which are provided with an envelope containing a gas or vapor and which have an auxiliary starting electrode, and subclasses 306+ for other discharge devices which have an auxiliary starting electrode.

323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 for electronic tube regulators. See Lines With Other Classes and Within This Class in the class definition of Class 323.

262 Transformer or auxiliary winding in the auxiliary electrode circuit:

This subclass is indented under subclass 261. Systems provided with (1) a transformer connected between the source of supply and the discharge device for supplying electric current or potential to the auxiliary electrode circuit, or (2) a transformer connected between the source of supply and the discharge device for supplying electric current or potential to the principal electrodes of the discharge device, the transformer being provided with an auxiliary winding which supplies current or potential to the auxiliary electrode circuit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

276, and indented subclasses and the subclasses specified in the notes to the definition of those subclasses, for other systems provided with a transformer in the supply circuit of the load device.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 355 through 363 and the subclasses specified in the notes to the definition of these subclasses for miscellaneous transformer systems.

336, Inductor Devices, appropriate subclasses for the structure of transformers and inductive reactors having plural windings.

263 Inductance or potential surge generator in the auxiliary electrode circuit:

This subclass is indented under subclass 261. Systems having (1) means for generating a surge of potential which is higher than the potential of the source of supply and applying the potential surge to the auxiliary electrode, or (2) an inductance in electrical series relation in the circuit which supplies potential to the auxiliary electrode.

SEE OR SEARCH THIS CLASS, SUBCLASS:

262, for systems wherein a transformer is utilized to impress a higher or lower potential or current on the auxiliary electrode than that impressed upon the principal electrodes.

283, and indented subclasses, and the subclasses specified in the notes to the definition of those subclasses, for other systems under subclass 246 having an inductance in the supply circuit of the load device.

289, and indented subclass, and the subclasses specified in the notes to the definition of those subclasses, for other systems under the class definition provided with an inductance or

surge generating means in the supply circuit of the load device.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 355 through 363, and the subclasses specified in the notes to the definitions of these subclasses for miscellaneous reactor systems.

264 Impedance in the auxiliary electrode circuit:
This subclass is indented under subclass 261. Systems in which an impedance is connected between the auxiliary electrode and the source of current supply of the principal electrodes of the discharge device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

263, for this subject matter where the impedance is an inductance.

337, for other plural cathode and/or anode load device systems having an impedance connected between two cathodes or anodes.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 364 through 370 and the subclasses specified in the notes to the definition of these subclasses for miscellaneous impedance systems.

265 Full wave-type system:
This subclass is indented under subclass 260. Systems wherein the electrical discharge device is connected to an alternating current supply circuit so that two of the electrodes (such as the anodes) have impressed thereon, alternately, a positive and negative potential, one of these electrodes being positive when the other is negative, and having the electrode (such as the cathode) which cooperates with these electrodes (anodes) connected to a point in the circuit which has a potential intermediate that of the alternating potential impressed on the first mentioned electrodes so that a discharge is established between an anode and a cathode on each half of the alternating current wave.

(1) Note. The discharge device may have two cathodes and an anode with the discharge alternating between the anode and different cathodes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

140, for full wave systems where the supply circuit is a polyphase alternating current system and includes phase multiplying means in the supply circuit.

141, for full wave systems where the supply circuit is a polyphase alternating current system and includes a transformer in the supply circuit.

146, for full wave systems where there are a plurality of discharge control discharge device load devices connected in a polyphase alternating current supply system.

147, for the subject matter where the discharge device is connected to a polyphase alternating current supply system.

195, for full wave systems where there are a plurality of discharge control discharge device load devices in the system, and the system includes means to shift the phase of the control current and/or potential with respect to the current in the cathode-anode circuit.

253, for miscellaneous full wave systems under subclass 246 where there are a plurality of asymmetrical discharge device load devices in the system.

266 Transformer in the supply circuit:
This subclass is indented under subclass 265. Systems provided with a transformer connected between the source of supply and the load device for supplying electric current or potential to the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

145, for this subject matter where the discharge device is connected in a polyphase alternating current supply system.

276, and indented subclasses and the subclasses referred to in the notes to the definition of those subclasses, for

other systems provided with a transformer in the supply circuit.

267 Electromagnetic influenced discharge device load:

This subclass is indented under subclass 246. Systems wherein the load device is a discharge device and an electromagnet is placed adjacent to the interelectrode discharge space of the discharge device so that the space discharge is influenced by the magnetic flux.

SEE OR SEARCH THIS CLASS, SUBCLASS:

344, and indented subclasses and the subclasses specified in the notes to the definition of those subclasses, for other systems under the class definition provided with an electric discharge device load and an electromagnet for influencing the electric discharge.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 153+ for the structure of discharge devices which are provided with an electromagnet.

323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 for electronic tube regulators. See Lines Wtih Other Classes and Within This Class in the class definition of Class 323.

376, Induced Nuclear Reactions: Processes, Systems, and Elements, subclasses 100+ for the use of magnetic field or flux in plasma heating and containment.

268 Discharge control discharge device load:

This subclass is indented under subclass 246. Systems wherein the load device is a discharge device provided with a discharge controlling means and the system includes means for controlling the electric discharge by applying an electric current and/or potential to the control means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

148, for this subject matter where the discharge device is a plural cathode and/or anode discharge device and is provided with discharge control means, the discharge device being connected in a polyphase alternating current supply system.

194, and indented subclasses, for this subject matter where the system includes means to shift the phase of the discharge controlling current and/or potential with respect to the current in the cathode-anode circuit.

251, for this subject matter where there are a plurality of discharge control devices in the system, the discharge devices being of the asymmetrical type, and being connected in inverse parallel relation with respect to each other.

252, for this subject matter where there are a plurality of discharge control discharge devices in the system.

261, and indented subclasses, for systems under subclass 246 where the discharge control means is an auxiliary starting electrode.

267, for systems under subclass 246 where the discharge controlling means is an electromagnet.

349, and indented subclasses and the subclasses specified in the notes to the definition of those subclasses, for other systems wherein the load device is a discharge control discharge device.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclass 308, and the subclasses specified in the Notes thereto for the structure of discharge devices which are provided with a discharge control electrode.

323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 for electronic tube regulators. See Lines With Other Classes and Within This Class in the class definition of Class 323.

363, Electric Power Conversion Systems, subclasses 116 and 121+, and the subclasses mentioned in the notes thereto, for electronic tube conversion systems wherein the electronic tube convertor is provided a discharge control device for controlling the output current.

Some of the systems in Class 363 are closely analogous to the systems of this subclass. See Lines With Other Classes and Within This Class in the class definition of Class 363 for the line between Class 315 and Class 363.

269 With plural discharge control devices:
This subclass is indented under subclass 268. Systems wherein the discharge device is provided with two or more discharge controlling means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
341, and indented subclasses and the subclasses specified in the notes to the definition of those subclasses, for other systems provided with a discharge control discharge device load device having a plurality of discharge controlling means.

SEE OR SEARCH CLASS:
313, Electric Lamp and Discharge Devices, subclasses 296+ for the structure of discharge devices which have a plurality of control grids.
323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 for electronic tube regulators. See Lines With Other Classes and Within This Class in the class definition of Class 323.

270 Plural control potentials:
This subclass is indented under subclass 268. Systems provided with means to apply two or more different currents and/or potential to the discharge control means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
350, and indented subclass, for other systems under the class definition having a discharge control discharge device load and being provided with means to apply two or more different currents and/or potentials to the discharge control means.

SEE OR SEARCH CLASS:
323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 for electronic tube regulators. See Lines With Other Classes and Within This Class in the class definition of Class 323.

271 Plural pulsating and/or A.C. potentials:
This subclass is indented under subclass 270. Systems provided with means to apply a pulsating and an alternating potential or two or more different pulsating or alternating potentials to the discharge control means.

(1) Note. In systems coming within the definition of subclass 268 wherein a transformer is provided which has two or more primary windings, each energized by pulsating or alternating current and having the secondary connected to the control circuit, the patent is placed in subclass 274 below and not in this subclass. Where two or more transformers are provided and the secondary windings are connected either in series or parallel, with the resultant potential impressed upon the control means, the patent is placed in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:
160, and indented subclasses, for plural power supplies.
274, see (1) "Note." above.
351, for other systems under the class definition provided with means to supply two or more different pulsating and/or alternating currents to the control means of a discharge control discharge device load.

SEE OR SEARCH CLASS:
323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 for electronic tube regulators. See Lines With Other Classes and Within This Class in the class definition of Class 323.

272 Rectifier and/or discharge device in the control circuit:

This subclass is indented under subclass 268. Systems provided with a rectifier and/or an electric space discharge device connected in the control circuit of the discharge device.

(1) Note. Where the system includes a plurality of discharge devices, one of which is connected in the control circuit of the discharge device which is the load in the circuit, the patent is classified as a plural load device system in the subclasses above, where the discharge device in the control circuit is claimed as a discharge device whose operation depends upon gaseous ionization even though the system is claimed as only having one ultimate load device. Where the controlling discharge device is claimed merely as a discharge device even though it is disclosed as a gaseous ionization discharge device, the system is not considered to be a plural load device system for the purpose of classification.

SEE OR SEARCH THIS CLASS, SUBCLASS:

197, 198, and 199, for this subject matter where the system includes means to shift the phase of the control current and/or potential with respect to the current flowing in the cathode-anode circuit.

198, see the reference to 197, above.

199, see the reference to 197, above.

203, and indented subclass, where the discharge control means is an auxiliary starting electrode and there is a rectifier or discharge in the auxiliary electrode circuit.

352, and indented subclass and the subclasses specified in the notes to the definitions of those subclasses, for other systems under the class definition provided with a discharge control discharge device load device and having a rectifier or discharge device in the control circuit.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 for electronic tube regulators. See Lines With Other Classes and Within This Class in the class definition of Class 323.

273 With condenser in the control circuit:

This subclass is indented under subclass 272. Systems provided with a condenser connected in the control circuit of the discharge load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

275, for other systems under subclass 268 having a condenser connected in the control circuit.

353, for other systems under the class definition provided with a discharge control discharge device load and having a condenser and a rectifier or a discharge device connected in the control circuit.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclass 364, for miscellaneous condenser systems.

274 Transformer in the control circuit:

This subclass is indented under subclass 268. Systems provided with a transformer connected in the control circuit of the discharge device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

262, where the discharge control means is an auxiliary starting electrode and a transformer is connected in the auxiliary starting electrode circuit.

354, for other systems under the class definition having a discharge control discharge device load and having a transformer connected in the control circuit.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclass 355, for miscellaneous transformer systems.

275 Condenser in the control circuit:
This subclass is indented under subclass 268. Systems provided with a condenser connected in the control circuit of the discharge device.

SEE OR SEARCH THIS CLASS, SUBCLASS:
234, where the control device is an auxiliary starting electrode and a condenser is connected in the starting electrode circuit.
273, for other systems under subclass 268, having a condenser and a rectifier and/or discharge device connected in the control circuit.
355, and indented subclass, for other systems under the class definition having a discharge control discharge device load, and having a condenser connected in the control circuit.

SEE OR SEARCH CLASS:
323, Electricity: Power Supply or Regulation Systems, subclass 364, for miscellaneous condenser systems.

276 Transformer in the supply circuit:
This subclass is indented under subclass 246. Systems provided with a transformer connected between the source of supply and the load device for supplying electric current and/or potential to the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:
57, for discharge devices combined with a transformer, the discharge device and transformer being structurally combined in a single unitary device.
70, for miscellaneous load devices which are structurally combined with a transformer so as to form a unitary device.
141, and indented subclasses, for this subject matter where the supply system is a polyphase alternating current system.
177, for this subject matter where there is a load device in both the primary and secondary circuits of the transformer.
206, for this subject matter where there is a rectifier and/or discharge device in the primary circuit of the transformer.
212, and indented subclasses, for plural load device systems having a transformer and a distributor type periodic switch means in the supply circuit.
219, and indented subclasses, for systems having a transformer in the supply circuit of the load device and a periodic switch in the primary circuit of the transformer.
239, where there is a condenser and transformer in the supply circuit.
254, and indented subclasses, for this subject matter where there are a plurality of load devices in the system.
262, for this subject matter where the discharge device is an auxiliary starting electrode discharge device, and there is a transformer in the auxiliary starting electrode circuit.
266, for this subject matter where the load device is a plural cathode and/or anode discharge device, and the system is a full wave system.

SEE OR SEARCH CLASS:
314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 32, for systems for supplying current to discharge devices of the consumable electrode type in which a transformer is used to supply the current to the discharge device.
323, Electricity: Power Supply or Regulation Systems, subclasses 355 through 363, and the subclasses specified in the notes to the definitions of those subclasses for miscellaneous transformer systems and for miscellaneous systems having a transformer for controlling the magnitude of the current and/or voltage in a single circuit.

277 Plural transformers in the supply circuit:
This subclass is indented under subclass 276. Systems provided with two or more transformers in the supply circuit of the load device.

(1) Note. The transformers may have their primaries and/or secondaries connected in electrical series or shunt relation, or the transformers may be connected in cascade, that is, with the primary of one transformer connected to the secondary of another transformer.

SEE OR SEARCH THIS CLASS, SUBCLASS:

220, for systems having a plurality of transformers in the supply circuit of the load device and having a periodic switch in the primary circuit of at least one of the transformers.

255, and indented subclass, for plural load device systems under subclass 246 having a plurality of transformers in the supply circuit of the load devices.

278, where the transformer is provided with only one primary winding or only one secondary winding, and there are a plurality of cooperating windings.

278 Three or more coil-type transformers:

This subclass is indented under subclass 276. Systems wherein the transformer is of the type having three or more coils or windings.

(1) Note. This subclass does not include systems provided with transformers having only a primary and secondary coil with one or both of the coils tapped, but the transformer used in the system must have three or more separate coils, although two or more of the coils may be connected in series, usually so that the current flow through one of the series connected coils flows in the opposite direction to the current flow through the other series connected coil.

SEE OR SEARCH THIS CLASS, SUBCLASS:

257, for plural load device systems under the class definition having a plural secondary or tapped secondary transformer in the supply circuit.

282, for such systems having tapped coils.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 249, 302, 310, 329, and 355, for miscellaneous transformer systems and for transformer systems for controlling the magnitude of the current and/or voltage in a single circuit where the transformer has an auxiliary saturating winding.

336, Inductor Devices, appropriate subclasses for the structure of transformers and inductive reactors including those with three or more coils or windings.

279 Current regulator in the primary circuit:

This subclass is indented under subclass 276. Systems provided with means in the primary circuit of the transformer for regulating the current or voltage supplied to the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

291, and indented subclasses, for other systems under the class definition which include a current or voltage regulator.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 247, 301, 305, 328, and 355, for miscellaneous transformer systems and for systems having a transformer for controlling the magnitude of the current and/or voltage in a single circuit, the transformer being provided with current regulating means in its primary circuit.

280 Convertible to inductance:

This subclass is indented under subclass 276. Systems having means provided in the system so that the transformer may be connected in the system so as to function either (1) as a transformer for the current or voltage supplied to the load device, or (2) as merely an inductance in the supply circuit, the transformer being converted to an inductance by connecting one or both of the transformer coils in electrical series with the source of supply and the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

258, and indented subclass, for plural load device systems having an inductance in the circuit and a pulsating or A. C. supply.

283, and indented subclasses, for other systems under subclass 246, provided with an inductance in the circuit.

281 Relatively movable core and coil-type transformer:

This subclass is indented under subclass 276. Systems in which the transformer is provided with means for varying the inductive coupling between the windings, the inductive coupling being varied by (1) arranging one of the transformer windings so as to have free relative movement with respect to the other winding and/or the transformer core, or (2) arranging the transformer core so as to have free relative movement with respect to the transformer windings, or (3) using a transformer having a core made of two or more parts, at least one of the parts being arranged so as to have free relative movement with respect to another of the core parts.

SEE OR SEARCH THIS CLASS, SUBCLASS:

285, for systems having a relatively movable core and coil type inductance in the supply circuit.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 264 and 347, for miscellaneous transformer systems and for systems having a transformer for controlling the magnitude of the current and/or voltage in a single circuit, the transformer having an adjustable or movable winding or coil.

336, Inductor Devices, subclasses 115+ and the subclasses specified in the Notes thereto for the structure of transformers having relatively movable coils, and subclasses 130+ and the subclasses specified in the Notes thereto for transformers having a relatively movable core and coil.

282 Regulating transformer:

This subclass is indented under subclass 276. Systems in which the transformer is provided with means for changing the effective ratio of the input current or voltage to the output current or voltage.

(1) Note. Examples of transformers such as are used in the systems in this subclass are transformers having taps in the coils to vary the number of turns in the coil, or transformers having a high leakage path for the magnetic flux in the core, or transformers having the core designed to be saturated under certain load conditions in the magnetizing winding and to be unsaturated under other load conditions.

SEE OR SEARCH THIS CLASS, SUBCLASS:

257, for pulsating or A. C. supply, plural load device systems having a plural secondary or a tapped secondary transformer in the supply circuit.

278, for this subject matter where the transformer has three or more coils.

279, for this subject matter where there is a current regulating means in the primary circuit.

281, for this subject matter where the transformer is of the relatively movable coil and core type.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 355 through 363 and the subclasses specified in the notes to the definition of those subclasses for miscellaneous transformer systems and for transformer systems for controlling the magnitude of the current and/or voltage in a single circuit.

336, Inductor Devices, appropriate subclasses for the structure of transformers and inductive reactors. See especially subclass 150 and the subclasses specified in the Notes thereto, for transformers with tapped coils; and subclasses 155+ for transformers and inductive reactors of the leakage reactance type and of the saturating type.

283 Inductance in the supply circuit:

This subclass is indented under subclass 246. Systems provided with an inductance connected either in electrical series relation or electrical shunt relation to the load device and the source of current supply for the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

258, and indented subclass, for this subject matter where there are a plurality of load devices in the system.

265, for this subject matter where the load device is a plural cathode and/or anode discharge device and there is an inductance in the system, the system being a full wave system.

280, for this subject matter where the supply circuit includes a transformer, the transformer being convertible to an inductance.

289, and indented subclass and the subclasses referred to in the notes to the definition of those subclasses, for other systems under the class definition provided with an inductance in the supply circuit of the load device.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 355 through 363, and the subclasses specified in the notes to the definition of those subclasses for miscellaneous reactor systems and for systems having an inductance for controlling the magnitude of the current and/or voltage in a single circuit.

284 Variable inductance:

This subclass is indented under subclass 283. Systems wherein the inductance in the circuit is a variable inductance.

SEE OR SEARCH THIS CLASS, SUBCLASS:

259, for this subject matter where there are a plurality of load devices in the system.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 355 through 363, and the subclasses specified in the notes to the definition of those subclasses for systems having a variable inductance for controlling the magnitude of the current and/or voltage in a single circuit.

336, Inductor Devices, appropriate subclasses for the structure of adjustable inductive impedances.

285 Relatively movable core and coil-type inductance:

This subclass is indented under subclass 284. Systems wherein the inductance coil is provided with a magnetic core, (1) the coil and the core being arranged so as to have free relative movement with respect to each other, or (2) the core being made of two or more parts, at least one of the core parts being arranged so as to have free relative movement with respect to another of the core parts so as to vary the magnetic reluctance of the core, so that the current through the coil is more or less relatively impeded depending on the relative positions which the core and coil or the core parts occupy.

SEE OR SEARCH THIS CLASS, SUBCLASS:

281, for systems having a relatively movable core and coil type transformer in the supply circuit.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 264 and 347, for miscellaneous reactor systems and systems for controlling the magnitude of the current and/or voltage in a single circuit by means of a reactor, the reactor having a movable coil and/or core.

336, Inductor Devices, subclasses 115+ and the subclasses specified in the Notes thereto for the structure of inductive impedances having relatively movable coils, and subclasses 130+ and the subclasses specified in the Notes thereto for inductive impedances having a relatively movable core and coil and subclasses 155+ for inductive impedances of the regulating type which do not have moving parts (e.g., saturating type).

286 Biased movable part with supply current controlled movement:

This subclass is indented under subclass 285. Systems wherein the movable (coil or core) part is biased against movement by suitable

biasing means, such as a spring or weight, the relative movement of the coil and core or the core parts being brought about by variations of the magnetic flux generated by the variations of the current in the coils, the value of the current in the supply circuit being thereby less dependent upon changes in the resistance of the load device.

SEE OR SEARCH CLASS:

336, Inductor Devices, subclasses 40+ for the structure of inductive impedances which have a biased movable coil or core, the position of the movable part being controlled by the current in the impedance.

287 Periodic-type current and/or voltage regulator in the supply circuit:

This subclass is indented under subclass 246. Systems provided with means in the supply circuit of the load device to vary the current or voltage applied to the load device between a low and high value at constantly recurring intervals.

(1) Note. This subclass provides for systems under the class definition wherein the source of current or voltage supply is a direct source, and the periodic regulator converts the current or potential to pulsating current or potential.

SEE OR SEARCH THIS CLASS, SUBCLASS:

209, and indented subclasses, for systems under the class definition provided with a periodic switch in the supply circuit of the load device.

288 THREE OR MORE WIRE DISTRIBUTION SYSTEMS:

This subclass is indented under the class definition. Systems wherein the distributing system for supplying current to the load device has three or more wires with two wires connected to the source of supply so that a desired voltage is maintained between them, the other wires being connected in the system so that the potential between any of these wires and either of the first mentioned two wires is less than the potential between the first mentioned two wires.

(1) Note. This subclass includes, either as originals or cross references, patents relating to systems wherein a load device of the type which is within the class definition can be connected between the two wires of higher potential or between the intermediate wire and one of the higher potential wires so as to impress either a high or low potential on the load device. Also included are patents for supplying current to a plurality of load devices by means of a three wire distribution system.

SEE OR SEARCH THIS CLASS, SUBCLASS:

137, and indented subclasses, for systems wherein the load device is supplied with polyphase alternating current by means of a three or more wire polyphase alternating current distributing system.

160, and indented subclasses, for systems which are provided with a plurality of sources of current supply for one or more load devices.

184, for systems wherein each side of the current supply is connected to two or more conductors, three or more load devices being connected between the two sides of the line, each load device being connected to a different pair of conductors from the conductors connected to the other load devices.

250, and subclass 265, and indented subclass, for systems having an alternating current supply source for the load device or devices and having the load device or devices connected so as to be operative on each half wave of the alternating current cycle. In many of these systems the wires connecting the load device or devices to the alternating current source are arranged so as to constitute a three wire distribution system or to be closely analogous to a three wire distribution system.

289 SURGE GENERATOR OR INDUCTANCE IN THE SUPPLY CIRCUIT:

This subclass is indented under the class definition. Systems provided with (1) means for generating a surge of potential which is higher

than the potential of the source of supply is provided in the circuit of the load device, or (2) an inductance connected either in electrical series relation or electrical shunt relation to the load device and the source of current supply for the load device.

(1) Note. In many of the systems in this subclass, and indented subclasses, the load device is an electric space discharge device which requires a higher potential to start its operation than to continue its operation after it has been started. Also included are other systems wherein a surge generator or inductance is provided for other reasons.

SEE OR SEARCH THIS CLASS, SUBCLASS:

4, and indented subclasses, for cathode-ray tubes which have structurally combined therewith, so as to form a unitary device, an inductance.

40, for discharge devices or lamps having an electrode formed as an inductive impedance.

41, and indented subclasses, for discharge devices having structurally combined therewith, so as to form a unitary device, an inductive impedance, such impedance being connected between the electrodes of the discharge device.

54, for discharge devices and lamps having a plurality of inductive impedances structurally combined therewith so as to form a unitary device.

62, for discharge devices having an inductive impedance structurally combined therewith to form a unitary device.

103, for systems wherein the load device is a discharge device having a thermionic cathode designed to be heated by the passage of heating current through it, or an indirectly heated cathode having an electric heating means, the system including means to heat supply heating current to the cathode or cathode heater and to delay the application of the discharge potential to the discharge electrodes until the cathode has reached operating temperature, the system also including means to apply a surge of potential to the discharge electrodes when the discharge potential is first connected to the discharge electrodes.

223, where the supply circuit of the load device includes a transformer, the primary circuit of the transformer including a periodic switch and an inductance.

242, and indented subclass, for this subject matter where there is a condenser in shunt to the load device and the inductance is also included in the circuit.

244, for miscellaneous systems where there is also a condenser in the supply circuit of the load device in addition to the inductance.

258, and indented subclass, for this subject matter where the source of supply current is pulsating and/or alternating.

263, for this subject matter where the load device is an auxiliary starting electrode discharge device, the auxiliary starting electrode circuit including an inductance or a surge generating means.

276, and indented subclasses and the subclasses specified in the notes to the definition of those subclasses, for systems under the class definition having a transformer in the supply circuit of the load device.

283, and indented subclasses, for this subject matter where the load device is supplied with pulsating and/or alternating current.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 355 through 363, and the subclasses specified in the notes to the definition of those subclasses for miscellaneous reactor systems and for systems having an inductance for controlling the magnitude of the current and/or voltage in a single circuit.

336, Inductor Devices, appropriate subclasses for the structure of transformers and inductive reactors.

290 Circuit interrupter in the inductance circuit:

This subclass is indented under subclass 289. Systems provided with an electric circuit maker and breaker or interrupter in the circuit which includes the inductance.

(1) Note. The circuit interrupter may be an electric switch or an electrolytic device or other means for making and breaking the inductance circuit.

(2) Note. In many of the systems in this subclass, the source of current supply, the inductance, and the load device, which may be a discharge device, are connected in electrical series relation when the load device is operating, and the circuit interrupter is connected so as to shunt the load device so that the source of supply and the inductance are connected in electrical series relation when the load device is not in operative condition whereby current may flow through the inductance, the circuit interrupter when opened or placed in its second closed position then placing the load device in series with the inductance so that the high potential surge generated by the inductance when the circuit is interrupted is impressed upon the load device to initiate operation of the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

103, for this subject matter where the discharge device is of the type which has a thermionic cathode designed to be heated by the passage of current through it, or which has an indirectly heated cathode, the system including means to supply heating current to the cathode or cathode heater and to delay the application of discharge potential to the electrodes until the cathode has reached its operating temperature, the system also including means to apply a surge of potential to the discharge electrodes when the discharge electrodes when the discharge potential is applied to the electrodes.

209, and indented subclasses for systems having a periodic switch in the supply circuit of the load device, especially subclass 223 where a periodic switch and inductance are connected in the primary circuit of the load device current supply transformer.

263, for this subject matter where the load device is an auxiliary starting electrode discharge device and the inductance is connected in the auxiliary starting electrode circuit.

SEE OR SEARCH CLASS:

361, Electricity: Electrical Systems and Devices, subclasses 268+ for the structure of transformers and inductive reactors combined with a line switch.

291 CURRENT AND/OR VOLTAGE REGULATION:

This subclass is indented under the class definition. Systems which include means to regulate the current and/or voltage supplied to the load device.

(1) Note. This subclass does not include systems wherein the load device is a space discharge device having a discharge control means, such as a control grid, electromagnet or auxiliary starting electrode, and the only means for regulating the discharge current is the discharge control means. For such systems, see subclass 349 and indented subclasses of this class and the subclasses specified in the notes to the definition of those subclasses.

SEE OR SEARCH THIS CLASS, SUBCLASS:

36, for devices which include a plurality of series connected discharge devices and an electrical circuit element, all of which are structurally combined in a single unitary device, one of the discharge devices and/or the circuit element forming means to regulate the flow of current to the other discharge device.

71, for miscellaneous discharge devices which have structurally combined therewith, so as to form a unitary device, an electrical impedance.

106, and 107, wherein the discharge device in the system is provided with a thermionic cathode designed to be heated by the passage of current through it or an indirectly heated cathode, the system including means to supply the cathode or cathode heater circuit with current, the cathode or cathode heater circuit including voltage regulating means for the cathode or cathode heater circuit.

116, for systems where the load device is provided with electric heating means, the heater circuit including a regulator for the heating current.

151, for systems wherein the load device circuit includes a radiant energy responsive means (photocell), the load device irradiating the radiant energy responsive device and thereby regulating the current flow in the load device circuit.

156, wherein the supply circuit of the load device includes a discharge device to control the supply of current to the load device, the discharge device being controlled by radiant energy responsive means (photocell).

158, for miscellaneous systems wherein the regulating means for controlling the current flow to the load device is controlled by radiant energy responsive means (photocell).

171, for systems where there are plural sources of current supply for the load device, one of the supply circuits including a discharge device and/or rectifier for controlling the supply of current from one of the current sources to the load device.

200, for systems where there is an electric discharge device or rectifier in the supply circuit of the load device to control the flow of current to the load device.

224, for systems wherein the supply circuit for the load device includes a periodic switch and an impedance or current regulator.

277, for systems wherein the pulsating or alternating current is supplied to the load device and there are a plurality of transformers in the supply circuit, the transformers including means to regulate the supply of current to the load device.

279, for systems wherein pulsating or alternating current is supplied to the load device, a transformer being included in the supply circuit and a current regulating means being included in the primary circuit of the transformer.

280, for systems wherein pulsating or alternating current is supplied to the load device, a transformer being included in the supply circuit, the transformer being connected in the circuit so that it may be converted into an inductance.

281, for systems wherein pulsating or alternating current is supplied to the load device, a movable core and coil-type transformer being connected in the supply circuit of the load device.

282, for miscellaneous systems wherein pulsating and/or alternating current is supplied to the load device, a regulating transformer being included in the supply circuit.

287, for this subject matter wherein the regulator is a periodic-type current and/or voltage regulator.

289, for miscellaneous systems where there is an inductance in the supply circuit and see the notes to such subclass.

349, see (1) “Note.” above.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 135, for systems provided with means to regulate the current or voltage supplied to discharge devices of the consumable electrode type.

322, Electricity: Single Generator Systems, appropriate subclasses for generator regulating systems, particularly subclasses 17+, for automatic generator regulating systems.

323, Electricity: Power Supply or Regulation Systems, subclasses 220 through 354, for miscellaneous systems for controlling the magnitude of the current and/or voltage in a single circuit.

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, appropriate subclasses for miscellaneous distribution systems which include regulators.

336, Inductor Devices, appropriate subclasses for the structure of transformers and inductive reactors, including tap-change transformers and saturable reactors.

338, Electrical Resistors, subclasses 68+ for mechanically variable electrical resistors, such as rheostats and potentiometers.

361, Electricity: Electrical Systems and Devices, subclasses 291+ for the structure of variable condensors.

363, Electric Power Conversion Systems, subclasses 74+ for current conversion systems having automatic voltage and/or current magnitude control; and subclass 149 for phase conversion systems having automatic voltage magnitude and/or phase control.

378, X-Ray or Gamma Ray Systems or Devices, subclasses 91+, for X-ray tube systems provided with means for maintaining the discharge rate in the tube constant, and subclass 103 for X-ray tube systems which include a current or voltage regulating means.

292 Keyboard operated or pattern controlled regulator:

This subclass is indented under subclass 291. Systems wherein the means for controlling the amount of impedance connected in the supply circuit of the load device is (1) a perforated card, sheet, or strip having the perforations arranged in a pattern so that the number and/or location of the perforations control the operation of the regulator operator means, for (2) a pattern member having a particular shape which cooperates with the regulator operating means to control the operation of the regulators, or (3) a keyboard consisting of a plurality of manually actuated keys, each of which controls the operation of the regulating means associated therewith.

SEE OR SEARCH THIS CLASS, SUBCLASS:

316, for other keyboard or pattern controlled switching systems.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, appropriate subclasses, for keyboard switches, and subclass 46, for pattern switches.

307, Electrical Transmission or Interconnection Systems, subclasses 38+ for selectively controlled plural load circuits, including those controlled by a program or sequence determining means.

345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 168+ for selective electrically controlled visual display systems actuated by a keyboard.

293 Pre-selectable regulator systems:

This subclass is indented under subclass 291. Systems, wherein (1) the supply circuit of the load device includes at least two impedances, means being provided for selectively connecting either of the two impedances in the supply circuit of the load device, or (2) the regulator in the supply circuit of the load device is designed to have its impedance varied over a range of values, means being provided to preselect the value of the impedance to be connected in the circuit and means being provided to effect a transition from one of the impedance values and to stop such transition at the preselected impedance value.

(1) Note. The systems in this subclass are designed to energize the load device with current of one intensity and while the load device is energized to preselect the value of the impedance which is to be connected in the circuit for the subsequent energization of the load device.

(2) Note. The systems in this subclass are often used to control stage and theater lights.

SEE OR SEARCH THIS CLASS, SUBCLASS:

292, for preselectable regulator systems of the keyboard or pattern controlled type.

314, for plural load device systems which include preselectable switching means.

294 Plural load device regulation:
This subclass is indented under subclass 291. Systems which include means to regulate the current or voltage supplied to two or more of the load devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:
292, for this subject matter where the regulating means is controlled by a keyboard or pattern controlled mechanism.
293, for this subject matter where the system includes pre-selectable regulating means.

SEE OR SEARCH CLASS:
307, Electrical Transmission or Interconnection Systems, subclasses 31+ for plural load circuit systems having regulators therefor.

295 Regulator selectively connectable to plural circuits:
This subclass is indented under subclass 294. Systems provided with means for selectively connecting at least one regulating means in the supply circuit of either of two load devices.

296 Inverse control of load devices:
This subclass is indented under subclass 294. Systems having the regulating means connected in the circuit so that by varying the regulating means, the impedance in one of the load device circuits is decreased and the impedance in another load device circuit is increased.

297 Automatic regulation:
This subclass is indented under subclass 294. Systems, wherein the regulation of the current or potential supplied to the load device is automatically controlled in response to some condition.

(1) Note. The condition controlling the regulation may be the current or potential of the load device circuit, some condition, such as the temperature, of the load device, or the temperature of the atmosphere in which the load device operates or any other condition affecting the operation of the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:
301, for miscellaneous systems where there are a plurality of automatic regulators in the system.
307, and indented subclasses, for miscellaneous systems which include an automatic regulating means.

SEE OR SEARCH CLASS:
336, Inductor Devices, subclasses 30+ for the structure of transformers and inductive reactors which are designed to have their effective impedance varied in response to a condition.

298 Mechanically connected regulators:
This subclass is indented under subclass 294. Systems, wherein two or more regulators are provided for regulating the current and/or voltage supplied to two or more of the load devices, each of these two regulators having a movable means to vary the effective impedance of the regulator in the load device circuit, the movable means of each of these regulators being mechanically connected to a common operating member.

299 Plural regulators:
This subclass is indented under subclass 291. Systems, wherein the current or voltage supply to the load device is controlled by (1) two or more diverse type regulating means, or (2) two or more regulating means of the same or diverse type which are operated by separate operating means, or (3) two or more regulating means connected in the system in different ways so as to control the current and/or voltage by exercising different effects in the systems.

SEE OR SEARCH CLASS:
307, Electrical Transmission or Interconnection Systems, subclasses 31+ for plural load circuit systems having regulators therefor.
323, Electricity: Power Supply or Regulation Systems, subclasses 220 through 354 for miscellaneous regulators which may have diverse type regulating means.

300 Current generator control:

This subclass is indented under subclass 299. Systems , wherein one of the regulating means is a generator of current and means are provided for varying some characteristic of the generating means so as to vary the current or voltage output of the generating means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

302, and indented subclasses, for other systems under subclass 291, provided with means for controlling the current generating means for regulating the current supplied to the load device.

SEE OR SEARCH CLASS:

322, Electricity: Single Generator Systems, appropriate subclasses, for miscellaneous regulation systems wherein the regulation is controlled by the current generating means.

301 Plural automatic regulators:

This subclass is indented under subclass 299. Systems wherein two or more of the regulating means are designed to be controlled automatically in response to some condition.

(1) Note. The condition controlling the operation of the regulating means may be the current or potential of the circuit of the load device, some condition of the load device such as its temperature, or the temperature of the atmosphere in which the load device is operating, or any other condition affecting the operation of the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

307, and indented subclasses, for other systems under subclass 291 provided with automatically controlled current regulating means.

302 Current generator control:

This subclass is indented under subclass 291. Systems wherein regulation is secured by varying some characteristic of the current or voltage generator, or by varying the number of generators used to supply the current or voltage, so as to vary the current or voltage output of the generating means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

300, for this subject matter where there are a plurality of regulating means in the system, one of the regulating means being a current generating means.

SEE OR SEARCH CLASS:

322, Electricity: Single Generator Systems, appropriate subclasses, for miscellaneous generator regulator systems.

303 Control of the prime mover:

This subclass is indented under subclass 302. Systems, wherein the current or voltage is generated by a dynamoelectric machine, and means are provided for controlling the operation of the prime mover for the dynamoelectric machine so as to regulate the output of the dynamoelectric generator.

SEE OR SEARCH THIS CLASS, SUBCLASS:

78, where the system is combined with vehicle structure, the generator being driven by the motor of the vehicle or some part of the vehicle which varies its speed due to variations in speed of the vehicle, such as a wheel.

SEE OR SEARCH CLASS:

290, Prime-Mover Dynamo Plants, appropriate subclasses, for prime-mover dynamoelectric machines and the control means therefor which are of general application excepting when the prime mover is a dynamoelectric machine (electric motor).

322, Electricity: Single Generator Systems, subclasses 14+, for generator systems having combined control of generator and driving means and subclasses 38+, for generator systems having driving means control.

363, Electric Power Conversion Systems, subclasses 102+, 150 for conversion systems and 174+, including dynamoelectric convertors.

304 Plural field-type generator:

This subclass is indented under subclass 302. Systems wherein the current or voltage generator is a dynamoelectric generator having a plurality of exciting fields.

SEE OR SEARCH CLASS:

322, Electricity: Single Generator Systems, subclasses 63+, for generator systems wherein the generator control includes a plurality of field windings.

305 Three or more fields:

This subclass is indented under subclass 304. Systems wherein the generator is provided with three or more exciting fields.

306 Regulator in shunt to the load device:

This subclass is indented under subclass 291. Systems wherein the regulator is placed in shunt circuit to the load device so that part of the current from the source of current supply is diverted from the load device to the regulator.

SEE OR SEARCH THIS CLASS, SUBCLASS:

119, and indented subclasses, for systems under the class definition provided with means for automatically completing a circuit in shunt to the load device when the load device becomes (1) inoperative through failure of some part, such as the filament where the load device is a lamp, or (2) when the supply voltage becomes either too high or too low for the proper operation of the device. The shunt circuit is usually completed in the systems in subclass 119 and indented subclasses by the closing of an electric switch.

207, for systems under the class definition having a discharge device connected in shunt to the load device, the discharge device being adapted to regulate the current flow to the load device.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 220 through 233, for systems for controlling the magnitude of the current and/or voltage in a single circuit by means of an impedance connected in shunt with the circuit.

307 Automatic regulation:

This subclass is indented under subclass 291. Systems wherein the regulation of the current or potential supplied to the load device is automatically controlled in response to some condition.

(1) Note. The conditions controlling the regulation may be the current or potential of the load device circuit, some condition of the load device such as the temperature of the load device, or the temperature of the atmosphere in which the load device is operating, or any other condition affecting the operation of the load device.

(2) Note. See the notes to subclass 291.

SEE OR SEARCH THIS CLASS, SUBCLASS:

278, for this subject matter where the supply circuit of the load device includes a three or more coil-type transformer for automatically regulating the supply of current to the load device.

291, see note (2) above.

297, for this subject matter where there are a plurality of load devices in the system.

301, for this subject matter where there are a plurality of automatic regulators in the system.

302, and indented subclasses, for this subject matter where the automatic regulators effect the operation of the supply current generating means.

306, for this subject matter where the automatic regulating means is connected in shunt relation to the load device.

SEE OR SEARCH CLASS:

307, Electrical Transmission or Interconnection Systems, subclasses 31+ for plural load circuit systems having means for automatically controlling the current or power therein.

322, Electricity: Single Generator Systems, subclasses 17+, for automatic generator regulation systems of general application.

323, Electricity: Power Supply or Regulation Systems, subclasses 234 through 303, for systems for controlling the magnitude of the current and/or voltage in a single circuit by means of an automatically controlled impedance.

336, Inductor Devices, subclasses 30+ for the structure of transformers and inductive reactors which are designed to have their effective impedance varied in response to a condition.

363, Electric Power Conversion Systems, subclasses 74+ for current conversion systems having automatic voltage and/or current magnitude control; and subclass 149 for phase conversion systems having automatic voltage magnitude and/or phase control.

373, Industrial Electric Heating Furnaces, subclasses 102+, for electric arc furnace systems provided with current and/or voltage regulating means.

308 Regulator responsive to plural conditions:
This subclass is indented under subclass 307. Systems wherein the regulating means is responsive to two or more conditions; such as, the current and the voltage of the circuit, or a condition of the load device and the current or voltage of the circuit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

301, for systems under subclass 291, provided with a plurality of automatically operated regulators in the supply circuit.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 234 through 303, for automatically controlled systems for controlling the magnitude of the current and/or voltage in a single circuit by means of an impedance which is controlled in response to a plurality of conditions.

309 Thermal responsive regulator:
This subclass is indented under subclass 307. Systems, wherein the regulating means is responsive to a thermal condition.

(1) Note. The thermal condition may be, for example, (1) the heat generated by the current in the load device circuit flowing through an impedance, or (2) the heat generated by the load device, or (3) the temperature of the atmosphere in which the load device is operating.

(2) Note. This subclass includes ballast resistance devices placed in the circuit of the load device.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 236 and 245, for automatically controlled systems for controlling the magnitude of the current and/or voltage in a single circuit by means of an impedance which is responsive to a thermal condition.

310 Shunted impedance-type regulator:
This subclass is indented under subclass 307. Systems wherein the system includes a current limiting impedance and means to open and close a low impedance shunt circuit about the current limiting impedance, the shunt circuit controlling means being operated automatically in response to some condition.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 296 through 298, for systems having a resistor which may be short circuited for controlling the magnitude of the current and/or voltage in a single circuit.

311 Variable impedance-type regulator:
This subclass is indented under subclass 307. Systems wherein the regulating means is a device designed to have its impedance varied automatically in response to some condition.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply, or Regulation Systems, subclasses 234 through 303, for systems having an automatically controlled impedance for controlling the magnitude of the current and/or voltage in a single circuit.

312 PLURAL LOAD DEVICE SYSTEMS:

This subclass is indented under the class definition. Systems having a plurality of load devices connected in the system.

(1) Note. Where the claimed system includes a plurality of lamps or discharge devices and one is connected in the circuit so as to control or modify the current flow to the other which is the ultimate load device in the system, or where a lamp or discharge device is connected in the control circuit of the discharge control discharge device where the load device is a discharge control discharge device, the patent is classified as a plural load device system where the controlling and/or modifying device is a lamp or discharge device whose operation depends upon gas or vapor ionization even though the system is claimed as having only one ultimate load device. Where the controlling and/or modifying device is claimed, merely as a discharge device, even though it is disclosed as a gaseous ionization discharge device, the controlling and/or modifying device is not considered to be a load device for the purpose of classification.

SEE OR SEARCH THIS CLASS, SUBCLASS:

35, and indented subclasses, for devices which include a plurality of discharge device units and an electrical circuit element which are all structurally combined in a unitary device.

46, for devices which include an electric lamp of the filament type and a discharge device unit structurally combined in a unitary device, the lamp being connected in shunt to the discharge electrodes.

49, for devices which include an electric lamp of the filament type and a discharge device unit structurally combined in a unitary device, the lamp being connected in series relation to the discharge electrodes.

64, and indented subclasses, for multiple filament lamps structurally combined with a circuit element.

88, for systems with means to automatically substitute another load device when the operating load device fails.

95, for plural discharge device load device systems, the discharge devices having heatable cathodes, and the system including means to supply current to the cathodes or cathode heaters.

113, and indented subclass, for plural load device systems provided with means for modifying the temperature of the load devices.

121, and indented subclass, for plural load device systems with automatically operating means to close a shunt circuit about or to open the circuit of one or more of the load devices.

130, for plural load device systems provided with a signal indicator or alarm.

137, and indented subclasses, for polyphase alternating current plural load device systems.

152, and indented subclasses, for plural load device systems which include a radiant energy sensitive device (photocell).

161, and indented subclasses, for plural load device systems wherein there are a plurality of sources of current supply for the load devices.

177, where there is one load device in the secondary of the supply transformer and another in the primary circuit.

178, and indented subclasses, for plural load device systems wherein two or more of the load devices are of the diverse types.

184, for systems wherein the load devices are connected between different pairs of paired supply conductors.

185, for plural electrical series connected load devices.

195, and indented subclasses, for plural discharge control discharge device loads with phase shifting means in the discharge control circuits.

201, for plural load device systems with a discharge device or rectifier in the supply circuit of at least one of the load devices.

210, and indented subclasses, for plural load device systems with a periodic switch in the supply circuit of at least one of the load devices.

228, and indented subclasses, for plural load device systems with a condenser in the circuit of at least one of the load devices.

250, and indented subclasses, for plural load device systems supplied with alternating or pulsating current.

288, for three or more wire systems which include a plurality of load devices.

292, 293, and subclass 294, and indented subclasses, for plural load device systems with current or voltage regulating means.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 7, and indented subclass, for systems which include a plurality of consumable electrode discharge devices, or a consumable electrode discharge device and a lamp or discharge device of another type.

313 Electric switch in the supply circuit:

This subclass is indented under subclass 312. Systems having an electrical circuit maker and breaker in the current supply circuit to the load device for selectively controlling the supply of current to the load devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:

64, and indented subclasses, for multiple filament lamps which are structurally combined with an electric switch.

121, for this subject matter where the switch means is an automatic shunt and/or cutout.

154, for this subject matter where there is a switch means connected in the circuit to select the load device to be energized, the switch means being controlled by a radiant energy sensitive device (photocell).

184, for this subject matter where each side of the supply circuit includes a plurality of pairs of conductors, three or more load devices, each being connected to a different pair of the conductors.

186, for this subject matter where there are a plurality of series connected load devices, a periodic switch being included in the supply circuit.

191, for this subject matter where there are a plurality of series connected load devices, the system including switch means so the load devices may be converted from series connected to parallel connected.

193, for this subject matter where there is a plurality of series connected load devices, the system including switching means.

210, for this subject matter where there is a periodic switch which periodically connects different ones of the load devices to the source of current supply in timed sequence.

362, and the subclasses specified in the notes to the definition of that subclass for other systems under the class definition provided with an electric switch in the supply circuit.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, appropriate subclasses, especially subclasses 1+, subclasses 19.06+, subclasses 37 and 46 for multiple circuit control electric switches.

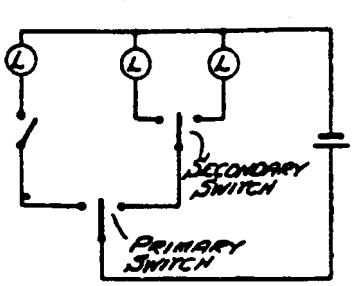
307, Electrical Transmission or Interconnection Systems, subclasses 38+ for plural load circuit systems having means for selectively connecting said load circuits.

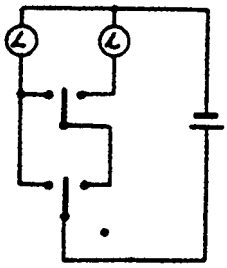
335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclasses 48, 60, 72, 88, and 106+ for electromagnetically actuated multiple circuit control switches.

314 Pre-selectable switching systems:

This subclass is indented under subclass 313. Systems wherein the system includes a switching system for controlling the connection of the load devices to the source of supply, the switching system including a primary or master switch and a secondary switch, the primary and the secondary switch each having two circuit closing positions, the source of supply being adapted to be connected to the primary switching means, the primary switch selectively closing the circuit to either the secondary switch or another circuit, the secondary switch means selectively closing either of two circuits so as

to connect either of these two circuits to the source of supply through the primary and secondary switches, the circuits closed by the primary and the secondary switches in each of their operated positions serving to close the circuit from the source of supply to at least one of the load devices, for example:





(1) Note. The circuits closed by the primary and secondary switch may be the circuit through which current flows to the load device, or may be the circuits supplying current to electrically controlled or operated switches, connected in the load device circuits, the electrically controlled or operated switch connecting the load devices directly to the source of supply for the load devices.

(2) Note. This subclass includes systems wherein there are only two load devices, a different one of the load devices being energized in each of the circuit closing positions of the secondary switch and one of the load devices being energized when the primary switch is in the circuit closing switch positions which does not include the secondary switch.

(3) Note. This subclass includes systems wherein there are three or more load devices, a different one of two of the load devices being energized in each of the circuit closing positions of the secondary switch positions and the third load device being energized when the primary switch is in the circuit closing position which does not include the secondary switch.

(4) Note. The systems in this subclass are designed to permit the selection of the load device to be energized from the group of load devices controlled by the secondary switch means prior to the closing of the circuit to the secondary switch means by the primary switch means.

(5) Note. The systems in this subclass are often used to control stage and theater lights.

SEE OR SEARCH THIS CLASS, SUBCLASS:

293, for pre-selectable regulating systems.

316, for switching systems under subclass 313 wherein the switching means includes a keyboard or pattern (perforated sheet).

317, and indented subclasses, for other systems under subclass 313 wherein there are three or more load devices.

320, and indented subclass, for other systems under subclass 313 having a plurality of switches in the supply circuit.

322, for other systems under subclass 313 provided with an alternate circuit closing switch.

SEE OR SEARCH CLASS:

307, Electrical Transmission or Interconnection Systems, subclasses 38+ for plural load circuit systems having means for selectively connecting said load circuits.

345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 1.1-3.4 for visual display systems with preselectable switching systems included for providing selective electrical control of the display.

315 Electrically controlled load device switch:
This subclass is indented under subclass 314. Systems wherein the circuit controlling switches for closing the circuit from the source of supply to the load device circuits are electrically controlled or operated switches, the preselectable switches being connected in the circuit of the electrically controlled or operated load device circuit switches and serving to select the electrical switch controller or operator to be energized, and thereby to select the load device circuits which are to be energized.

SEE OR SEARCH CLASS:
307, Electrical Transmission or Interconnection Systems, subclasses 38+ for switching systems of general application for controlling two or more load device circuits.
361, Electricity: Electrical Systems and Devices, subclasses 139+ for relay switching systems of general application.

316 Keyboard or pattern controlled switch:
This subclass is indented under subclass 313. Systems wherein the switch for controlling the load device circuits is (1) a switch wherein the contacts are controlled by either a perforated card, sheet, or strip, having the perforations arranged as a pattern so that the number and/or the location of the perforations determine which of the switch contacts are to be operated or (2) a pattern member having a particular shape which cooperates with the switch contacts to determine which of the switch contacts are to be operated, or (3) a switch which is provided with a keyboard consisting of a plurality of manually actuated keys, each of which controls the operation of the switch contacts associated therewith.

SEE OR SEARCH THIS CLASS, SUBCLASS:
292, for keyboard operated or pattern controlled regulating systems.

SEE OR SEARCH CLASS:
200, Electricity: Circuit Makers and Breakers, appropriate subclasses, for keyboard operated switches and subclass 46, for pattern sheet controlled switches.
345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 168+ for selective electrically controlled visual display systems actuated by a keyboard.

317 Three or more controlled load device circuits:
This subclass is indented under subclass 313. Systems having three or more load device circuits.

SEE OR SEARCH THIS CLASS, SUBCLASS:
68, for multiple filament lamps having three or more filaments and having an electric switch structurally combined therewith so as to form a unitary device.
184, for this subject matter where each side of the supply circuit includes a plurality of conductors, there being three or more load devices, each of the load devices being connected to a different pair of the supply conductors.
211, for this subject matter where there is a periodic switch which periodically connects different ones of the load devices to the source of current supply in timed sequence.
314, for this subject matter where the switch means is a preselectable switching system.
316, for this subject matter where the switch means is operated by keyboard means or is controlled by a pattern.

318 Group control systems:
This subclass is indented under subclass 317. Systems wherein the switch means is provided with at least two circuit closing positions, the circuit being completed from the source of supply to a group consisting of two or more load devices in each of the circuit closing positions, each of the groups including a load device not included by the other groups and at least one load device which is included by at least one other group.

SEE OR SEARCH THIS CLASS, SUBCLASS:
314, and indented subclass, where the system is a preselectable switching system.

319 Four or more groups:

This subclass is indented under subclass 318. Systems wherein the switch means is provided with at least four different circuit closing positions, the switch means being connected in the circuit so as to complete the circuit from the source of supply to a group of load device circuits in each of its circuit closing positions, each of the groups containing a different combination of load devices from that of each of the other groups.

SEE OR SEARCH THIS CLASS, SUBCLASS:

314, and indented subclass, where the system includes preselectable switching means.

SEE OR SEARCH CLASS:

345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 1.1 through 3.4 for visual display systems with switching means included for providing selective electrical control of the display.

320 Plural switches:

This subclass is indented under subclass 313. Systems having two or more switches connected in the circuit between the source of supply and the load devices.

(1) Note. The system may have a switch in the circuit between each load device and the source of supply or there may be a plurality of switches in the circuit between the source of supply and one or more of the load devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:

314, and indented subclass, where the system includes preselectable switch means.

321 Master circuit closing switch:

This subclass is indented under subclass 320. Systems wherein there is a switch in each of at least two load device circuits, and a master switch is connected in the system so as to be capable of closing the circuit from the source of supply to these two load devices irrespective of the open or closed position of any other switches in the load device circuits.

SEE OR SEARCH THIS CLASS, SUBCLASS:

361, for systems under the class definition provided with a load device and two control means located at different places in the supply circuit for controlling the supply of current to the load device, each of the control means (switch) being designed to perform the same control function irrespective of the condition of operation of the other control device (i.e., open and close the circuit to the source of supply, so called lazy man system).

322 Alternate circuit closing:

This subclass is indented under subclass 313. Systems which include at least two load device circuits and an electric switch having two or more contacts each of which is connected to a different one of the load device circuits, the cooperating contact means being arranged to close the circuit from the source of supply to one of the load devices to the exclusion of the other.

SEE OR SEARCH THIS CLASS, SUBCLASS:

64, for multiple filament load devices which have an electric switch structurally combined therewith, the switch being designed to close the circuit to one of the filaments to the exclusion of another.

83, for this subject matter where the load devices are claimed as being vehicle (automobile) headlight systems.

211, and indented subclasses, for this subject matter where the system includes a periodic distributor type switch which periodically connects different ones of the load devices to the source of current supply in timed sequence.

317, for systems under subclass 313 wherein the system includes a switch for closing the circuit to three or more load device circuits in progressive order.

320, and indented subclass, for systems under subclass 313 wherein two or more switches are provided so that

any one of two or more load devices may be supplied with current.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclasses 1+, 19.06+, 37 for multiple circuit control and multiple contact electric switches.

335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclasses 106+ for electromagnetically actuated switches of the multiple contact type.

323 Sequential starting:

This subclass is indented under subclass 312. Systems provided with means to start the load devices into operation one after another in sequence.

SEE OR SEARCH THIS CLASS, SUBCLASS:

46, and indented subclasses for devices which include a filament lamp and a discharge device structurally united in a unitary structure, the filament being connected in shunt to the discharge electrode, and the device being designed so that the filament becomes luminous before the electric discharge is established between the discharge electrodes.

65, for multiple filament load devices which have an automatically operating circuit element, such as a switch, structurally combined with the load device so as to form a unitary device, the automatically operating means substituting a second filament for the first operated filament when the first operated filament fails to operate properly.

87, and subclass 88 and indented subclasses, for systems in which a load device is operated until it fails to operate properly when automatically operated means substitute another load device for the first operated load device.

137, and indented subclasses, for systems having a plurality of load devices supplied with polyphase alternating current, the sequence of operation being determined by the phases of the alternating current.

195, where the load devices are discharge control discharge devices, and the system includes phase shifting means for controlling the discharge control means to thereby determine the sequence of operation.

211, and indented subclasses, where the system includes a distributor type periodic switch.

229, where a commutating condenser is connected to either the cathodes or the anodes of a plurality of discharge device loads so as to cause them to operate alternately.

250, and indented subclasses where the current supplied to a plurality of load devices is alternating current.

294, and indented subclasses where the sequential operation is controlled by regulating means.

313, and indented subclasses, where the sequential operation is controlled by electric switch means.

324 Plural discharge device loads:

This subclass is indented under subclass 312. Systems having two or more discharge device loads in the system.

(1) Note. Where a single lamp or a single discharge device is the ultimate load device, and the system includes an additional lamp and/or discharge device in the circuit which is connected in the circuit so as to control and/or modify the current and/or potential supplied to such single ultimate load device, the patent is classified as a plural load device system if (a) the controlling and/or modifying device is a lamp, or (b) the controlling and/or modifying device is limited in the claims to being a gas or vapor discharge device. Conversely, such a system is not classified as a plural load device system where the controlling and/or modifying device is claimed broadly as a discharge device even though it is disclosed as a gas or vapor discharge device.

The controlling and/or modifying device may be connected in the control circuit of the discharge device where the

ultimate load device is a discharge control discharge device, and the same basis of classification is used as is set forth above.

SEE OR SEARCH THIS CLASS, SUBCLASS:

35+, for devices which include a plurality of discharge devices and an electrical circuit element which are structurally combined in a unitary device.

86+, where the system includes means to automatically substitute another source of supply for the discharge devices when the first operated source fails to operate properly.

88, and indented subclasses, where the system includes means to automatically substitute another discharge device when the first operated discharge device fails to operate properly.

95, and indented subclasses, where the discharge devices are provided with resistance heated cathodes or indirectly heated cathodes, and the system includes means to supply current to the cathodes or the cathode heaters.

113, and indented subclass, where the discharge devices are provided with temperature modifying means.

121, and indented subclass, for systems provided with means to complete a shunt circuit about or to open the circuit of one of the discharge devices when the discharge device fails to operate properly.

130, and indented subclasses, for systems provided with a signal, indicator, or alarm for at least one of the discharge devices.

137, and indented subclasses, for polyphase alternating current systems with discharge device load devices.

152, and indented subclasses, where the system includes a radiant energy sensitive device (photocell).

161, and indented subclasses, where the system includes a plurality of sources of current supply for the discharge devices.

177, where the system includes a discharge device load in the secondary circuit and another discharge device load in the primary circuit of a current supply transformer.

180, and indented subclass, for plural series connected diverse type discharge device load devices.

182, and indented subclass, for plural diverse type discharge device load device systems.

189, and indented subclass, for plural series connected discharge device load devices.

195, and indented subclasses, for plural discharge control discharge device, load device systems which are provided with phase shifting means in the control circuits of the discharge control means.

201, where the system includes an electric space discharge device or rectifier in the supply circuit.

228, and indented subclasses, where the system includes a condenser in the supply circuit.

250, and indented subclasses, where the source of supply is alternating current.

323, where the system includes means to start the discharge devices into operation one after another in sequence.

326, and indented subclasses, for other systems provided with a single discharge device load.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 7, and indented subclass, for systems which include a plurality of consumable electrode discharge devices.

325 Discharge control discharge device loads:

This subclass is indented under subclass 324. Systems wherein the load devices are discharge devices which are provided with a discharge controlling means.

(1) Note. The discharge controlling means may be a grid electrode, an electromagnet for influencing the space discharge, an auxiliary starting electrode or other means for controlling the space discharge in the discharge device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

35, and indented subclasses, for devices which include a plurality of discharge control discharge device load devices and a circuit element, all of which are structurally combined in a single unitary device.

146, where the source of supply is polyphase alternating current.

195, where the control circuit includes phase shifting means for shifting the phase of the control current and/or voltage with respect to the cathode-anode current.

230, where there is a condenser in the supply circuit.

252, where the supply current for the discharge device is alternating current.

349, and indented subclasses, and the subclasses referred to in the notes to the definition of those subclasses for systems wherein the single load device is a discharge control discharge device.

326 DISCHARGE DEVICE LOAD:

This subclass is indented under the class definition. Systems wherein the load device is a discharge device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3, for cathode-ray discharge devices which have an electrical circuit element structurally combined therewith so as to form a unitary device.

34, for discharge devices which have an antenna structurally combined therewith so as to form a unitary device.

39, for discharge devices which have a waveguide, coaxial cable or resonant parallel wire transmission line structurally combined therewith so as to form a unitary device.

40, for discharge devices having an electrode formed as an inductive impedance.

46, for devices which include a discharge device and a filament lamp which are structurally combined in a single unitary device, the filament being connected in shunt with the discharge electrodes.

49, for devices which include a discharge device and a filament lamp which are structurally combined in a single unitary device, the filament being connected in series relation with respect to the discharge electrodes.

50, for discharge devices which are provided with temperature modifying means, the temperature modifying means being formed so as to act as a circuit impedance or combined with a circuit impedance, the discharge device, temperature modifying means, and the impedance all being structurally combined in a single unitary device.

51, for discharge devices which have a plurality of impedances structurally combined therewith so as to form a unitary device.

55, for discharge devices which have an electric generator or piezoelectric device structurally combined with the discharge device so as to form a unitary device.

56, for miscellaneous discharge devices which have an electric circuit element structurally combined therewith so as to form a unitary device.

85, where the discharge device is provided with radiation preventing or shielding means.

86, and indented subclass, for systems for automatically substituting another source of supply for the discharge device when the first operated source of supply fails to operate.

94, and indented subclasses, for discharge devices with resistance type thermionic cathodes or indirectly heated cathodes and the source of current supply for the cathode or cathode heater.

108, and indented subclasses, where the discharge device is of the confined gas or vapor type and is provided with pressure regulating means.

111.01, where the discharge device includes means to supply a fluent material to the discharge space.

112, and indented subclasses, where the discharge device includes temperature modifying means.

119, and indented subclasses, where the system includes automatic means to open the circuit of or to complete a shunt circuit about the discharge device when it fails to operate properly.

129, and indented subclasses, where the system includes a signal, indicator, or alarm.

137, and indented subclasses, where the source of supply current is polyphase current.

149, and indented subclasses, where the circuit includes a radiant energy ray sensitive device (photocell).

160, and indented subclasses, where the system is provided with a plurality of sources of current supply for the discharge device.

178, and indented subclasses, where the system includes a plurality of diverse type load devices, one of the load devices being a discharge device.

194, and indented subclasses, where the load device has discharge control means and the control circuit includes phase shifting means to shift the phase of the control current or voltage with respect to the cathode-anode current.

200, and indented subclasses, where there is a discharge device or rectifier in the supply circuit.

209, and indented subclasses, where there is a periodic switch in the supply circuit.

227, and indented subclasses, where there is a condenser in the supply circuit.

246, and indented subclasses where the source of supply current is pulsating or alternating current.

291, and indented subclasses, where the system includes a current and/or voltage regulator.

324, and indented subclass, and the subclasses referred to in the notes to the definitions of those subclasses, for systems provided with a plurality of discharge device loads.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, appropriate subclasses for the structure of discharge devices, per se.

314, Electric Lamp and Discharge Devices: Consumable Electrodes, appropriate subclasses, for systems wherein the load device is an electric space discharge device of the consumable electrode type (such as carbon arc lamps, et cetera).

323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 for electronic tube regulators. See Lines With Other Classes and Within This Class, "Electronic Tube Systems," in the class definition of Class 323.

327 Discharge drawing-type discharge device:

This subclass is indented under subclass 326. Systems wherein the discharge device is of the type wherein the discharge between the electrodes is initiated by bringing the electrodes into physical contact with each other and then separating the electrodes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

263, and subclass 289, and indented subclass, for systems provided with an inductance or a surge generator in the circuit of the electrodes and designed to impress a high potential surge on the electrodes when the electrodes are separated from each other, after having been placed in physical contact.

291, and indented subclasses, for systems wherein means are provided for regulating the current in the supply circuit when the electrodes are placed in physical contact with each other.

357, for other movable electrode discharge device systems not of the discharge drawing type.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 146+ for discharge devices, per se, which are provided with movable electrodes (other than mere liquid electrodes) which may be brought into contact with each other, and subclasses 163+ for liquid electrode discharge devices (e.g., mercury arc lamps and rectifiers).

314, Electric Lamp and Discharge Devices: Consumable Electrodes, appropriate subclasses, for discharge devices of the consumable electrode type wherein the discharge is initiated by bringing the electrodes into physical contact with each other and then separating the electrodes, the discharge device being provided with means for feeding the electrodes together to compensate for the consumption of the electrode material during the discharge, and the circuits therefor. Class 314, Electric Lamp and Discharge Devices: Consumable Electrodes, includes carbon arc lamps and the circuits therefor.

328 Tilting discharge device:

This subclass is indented under subclass 327. Systems wherein the discharge device is mounted so that it can be tilted, and one of the electrodes is either a liquid or movably mounted so that when the discharge device is tilted the electrodes are brought into physical contact with each other, and when the device is restored to its operating position, the discharge is drawn between the electrodes.

(1) Note. This subclass includes patents wherein the only significant support structure for the discharge device claimed is that which is provided so that the discharge device may be tilted for starting. Where more of the discharge device support structure is claimed than that necessary for mounting the discharge device so that it can be tilted during starting, the patent is excluded from this subclass even though the system is claimed.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclass 49, for miscellaneous discharge devices having means for supporting the discharge device so that it may be tilted for starting.

362, Illumination, appropriate subclasses, especially subclasses 382+ for electric light supports.

329 Electrically controlled tilting:

This subclass is indented under subclass 328. Systems wherein the means for tilting the discharge device is controlled by electrical means.

330 Auxiliary starting electrode type:

This subclass is indented under subclass 327. Systems wherein the electric discharge device is provided with at least one principal anode and a principal cathode and an auxiliary discharge electrode with the auxiliary electrode mounted so as to physically contact one of the principal electrodes, at least; during the starting period of the discharge device, the auxiliary electrode being arranged in the circuit so that the discharge is initiated between the auxiliary electrode and one of the principal electrodes, the auxiliary discharge conditioning the discharge space between the principal electrodes so that a discharge between the principal electrodes can be established.

SEE OR SEARCH THIS CLASS, SUBCLASS:

168, for this subject matter where the system includes a different type of current supply means for the auxiliary starting electrode from the type of current supply for the principal electrodes.

194, and indented subclasses, for this subject matter where the system includes means to shift the phase of the pulsating and/or alternating current in the auxiliary electrode circuit with respect to the phase of the current in the cathode-anode circuit of the load device.

203, for this subject matter where there is a discharge device or rectifier in the auxiliary electrode circuit.

234, for this subject matter where there is a condenser in the auxiliary electrode circuit.

261, and indented subclasses, for this subject matter where the discharge device is supplied with pulsating or alternating current.

335, and indented subclass, and the subclasses referred to in the notes to the definitions of those subclasses, for other systems under the class definition wherein the discharge device load

device is provided with an auxiliary starting electrode.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 146+ for discharge devices, per se, which have an auxiliary starting electrode of the discharge drawing type where the auxiliary starting electrode is movable and subclasses 170+ for discharge devices, per se, which have a liquid electrode and an auxiliary starting electrode of the discharge drawing type.

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 34, for consumable electrode discharge devices (arc lamps) having an auxiliary discharge drawing starting electrode and the circuit therefor.

323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 for electronic tube regulators. See Lines With Other Classes and Within This Class, "Electronic Tube Systems," in the class definition of Class 323.

331 Movable auxiliary starting electrode:

This subclass is indented under subclass 330. Systems wherein the auxiliary starting electrode of the discharge device is mounted so as to be movable into physical contact with one of the principal electrodes.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 146+ for discharge devices, per se, which are provided with a movable discharge drawing auxiliary starting electrode.

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 34, for consumable electrode discharge devices (carbon arc lamps) having a movable auxiliary discharge drawing starting electrode and the circuit therefor.

332 Automatic switch in the electrode moving device circuit:

This subclass is indented under subclass 331. Systems provided with electrically operated means for moving the auxiliary electrode with respect to the principal electrode, and having an automatically operated electric switch for controlling the circuit of the electrically operated auxiliary electrode moving means.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 146+ for discharge devices, per se, which have a movable discharge drawing auxiliary starting electrode where the operating means for moving the auxiliary electrode is an electrical means.

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 34, for discharge devices of the consumable electrode type (carbon arc lamps, et cetera) having an auxiliary discharge drawing starting electrode and provided with an automatically operated switch for controlling the circuit of the auxiliary electrode moving means.

333 Automatic cut-out for the electrode moving device circuit:

This subclass is indented under subclass 327. Systems provided with electrically operated means for moving the electrodes into physical contact with each other and for separating the electrode and having the automatically operated means for opening the circuit of the electrically operated electrode moving mechanism when the space discharge is initiated.

SEE OR SEARCH THIS CLASS, SUBCLASS:

332, where the discharge device is provided with a movable auxiliary starting electrode, the electrode moving mechanism circuit including an automatically operated switch for controlling the operation of the electrode moving mechanism.

SEE OR SEARCH CLASS:

314, Electric Lamp and Discharge Devices: Consumable Electrodes, appropriate subclasses, especially subclasses 34, 35, 58, 61, 62, 63, 64, subclass 68 and indented subclasses, and subclass 114 and indented subclasses, for electric discharge devices of the consumable electrode type (carbon arc lamp, et cetera) and the systems therefor where the discharge device is provided with electrically operated means for bringing the electrodes into contact with each other and for separating the electrodes and having automatically operated means for opening the circuit of the electrically operated electrode moving mechanism when the discharge is initiated.

334 Plural cathode and/or anode discharge device load:

This subclass is indented under subclass 326. Systems wherein the discharge device is provided with two or more cathodes and/or two or more anodes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

42, where the discharge device has structurally combined therewith an inductance which is connected between either a plurality of anodes, or a plurality of cathodes.

60, where the discharge device includes an auxiliary starting electrode and an impedance is structurally combined with the discharge device structure and connected to the auxiliary starting electrode.

84.61, for plural cathode or anode tubes utilized in storing systems.

109, where the discharge device is provided with an auxiliary electrode, the auxiliary electrode being included in a circuit which controls the operation of a gas or vapor replenishing means for the discharge device.

124, where the discharge device includes an auxiliary electrode which controls the operation of a shunt circuit closing means or a cutout means for isolating the discharge device from the supply source when the discharge fails to operate properly.

145, and subclass 147 and indented subclasses, where the discharge device is supplied with polyphase alternating current.

167, and indented subclasses, where there are a plurality of sources of current supply for the discharge device.

202, and indented subclasses, where the supply circuit includes an electric space discharge device.

233, and indented subclasses, where the supply circuit includes a condenser.

260, and indented subclasses, where the source of supply is a pulsating and/or alternating current.

330, and indented subclasses, where the discharge device is provided with an auxiliary starting electrode which is brought into contact with one of the principal electrodes to initiate the discharge.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 306+ and the subclasses specified in the Notes thereto for the structure of discharge devices which have a plurality of cathodes or a plurality of anodes.

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 36 and indented subclasses, for consumable electrode discharge devices provided with a plurality of cathodes, or anodes, and the systems therefor.

377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclass 100 for counters using multicathode gas discharge tubes.

335 Auxiliary starting electrode-type discharge device:

This subclass is indented under subclass 334. Systems wherein the discharge device is provided with at least one principal anode and at least one principal cathode and an auxiliary discharge electrode with the auxiliary electrode connected in the circuit so that the discharge is initiated between the auxiliary electrode and

one of the principal electrodes, the auxiliary discharge conditioning the discharge space between the principal electrodes so that a discharge between the principal electrodes can be established.

SEE OR SEARCH THIS CLASS, SUBCLASS:

60, where the discharge device is structurally combined with a circuit impedance which is connected between the auxiliary starting and one of the principal electrodes.

168, where the auxiliary starting electrode is supplied with current from a different source of current than that which supplies the current to the principal electrodes.

194, and indented subclasses, where the auxiliary starting electrode is used as a discharge control electrode, and the auxiliary starting electrode circuit includes phase shifting means to shift the phase of the current in the auxiliary electrode circuit with respect to the current in the principal electrode circuit.

203, and indented subclass, where the auxiliary starting electrode circuit includes a discharge device or rectifier.

234, where the auxiliary starting electrode circuit includes a condenser.

261, and indented subclasses, where the discharge device is supplied with pulsating or alternating current.

330, and indented subclasses, where the auxiliary starting electrode is designed to physically contact one of the principal electrodes to initiate the discharge.

337, for systems wherein one or more of the plural cathodes or of the plural anodes has a potential impressed thereon which is of a different magnitude from the potential impressed upon another electrode of the same type.

349, and indented subclasses, for other systems provided with discharge control means for controlling the initiation of the discharge in the discharge device. These subclasses include systems wherein the discharge device is provided with an auxiliary electrode placed adjacent one of the principal electrodes, usually the cathode, and having the auxiliary electrode connected to a source of potential so that an electrostatic field is created near the principal electrode to facilitate initiating the discharge, the electrostatic electrode being arranged with respect to the principal electrode so that there is no flow of discharge current to the electrostatic electrode. In such systems, the discharge electrodes are usually enclosed in a vitreous envelope, and the auxiliary control electrode is placed on the outside of the envelope near the cathode.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 592+, 594, 595+, and 601+, for discharge devices which are provided with an envelope containing an atmosphere of gas or vapor and which have an atmosphere of gas or vapor and which have an auxiliary starting electrode, and subclasses 306+ and the subclasses specified in the Notes thereto for other discharge devices which have an auxiliary starting electrode.

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 34, for consumable electrode discharge device systems, the consumable electrode discharge device being provided with an auxiliary starting electrode.

323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 for electronic tube regulators. See Lines With Other Classes and Within This Class, “Electronic Tube Systems,” in the class definition of Class 323.

336 Plural auxiliary starting electrode:

This subclass is indented under subclass 335. Systems wherein the discharge device is provided with two or more starting electrodes.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 599, 600, for discharge devices, per se, which have an envelope containing a gas or vapor and a plurality of auxiliary starting electrodes, and subclass 308 and the subclasses specified in the Notes thereto for other discharge devices which have a plurality of auxiliary starting electrodes.

337 Diverse potentials for the discharge electrodes:

This subclass is indented under subclass 334. Systems having the source of current supply connected to two or more similar electrodes, such as two or more anodes, the system including means to apply a different potential to one of the electrodes from that applied to another of the electrodes.

SEE OR SEARCH THIS CLASS, SUBCLASS:

167, for systems which include two or more sources of current supply and a plural cathode and/or anode discharge device load, one of the sources of current supply being connected to one of the similar electrodes, such as, an anode, and the other source of current supply being connected to the other similar electrode, such as the other anode; note especially subclasses 168, and 169.1+, where the two sources of current supply are of diverse character.

168, see the reference to subclass 167. 169.1, see the reference to subclass 167. 335, and the subclasses referred to in the notes to the definition of that subclass where one of the electrodes is an auxiliary starting electrode.

338 Electromagnetic influenced discharge device:

This subclass is indented under subclass 334. Systems wherein an electromagnet is placed adjacent the interelectrode discharge space so that the space discharge is influenced by the magnetic flux.

SEE OR SEARCH THIS CLASS, SUBCLASS:

42, for discharge devices having structurally combined therewith an inductive impedance which is connected between either a plurality of anodes or a plurality of cathodes of the discharge device, the discharge device being provided with an electromagnet for influencing the discharge between the electrodes.

343, and subclass 344 and indented subclasses, and the subclasses specified in the notes to the definition of those subclasses, for other systems wherein the discharge device load is provided with an electromagnet for influencing the discharge.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 153+ for the structure of discharge devices, per se, which are provided with an electromagnet. See especially subclass 162 where the discharge device is provided with an envelope and has three or more electrodes.

339 Discharge control discharge device load:

This subclass is indented under subclass 334. Systems wherein the electric discharge load device is provided with a discharge controlling means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

148, for this subject matter where the discharge device is supplied with polyphase alternating current.

335, and indented subclass, for systems wherein the discharge controlling means is an auxiliary starting electrode.

338, for this subject matter where the discharge control means is an electromagnet.

349, and indented subclasses and the subclasses specified in the notes to the definition of those subclasses for other systems wherein the discharge device load is provided with a discharge control means.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 298, 302, and 303 for the structure of discharge devices, per se, which have a plurality of anodes or a plurality of cathodes and a discharge control grid.

340 With de-ionizing means in the cathode-anode circuit:

This subclass is indented under subclass 326. Systems having means in the cathode-anode circuit for interrupting or extinguishing the flow of electric discharge current between the cathode and anode.

(1) Note. The search should be continued in the appropriate subclasses above for systems where the space discharge device is provided with current of a particular character and means are provided for interrupting the flow of interelectrode discharge current. For example, search subclass 261 and indented subclasses, subclass 268 and indented subclasses, where the discharge device is supplied with alternating current and a discharge control means is provided for the discharge device, the discharge being extinguished by the alternating current in each cycle of the alternating current wave, and the discharge controlling means being operative either to permit the discharge to be formed or to suppress the discharge on the succeeding cycle.

SEE OR SEARCH THIS CLASS, SUBCLASS:

261, see (1) Note. above.

268, see (1) Note. above.

341 With plural discharge control devices:

This subclass is indented under subclass 326. Systems wherein the discharge device is provided with two or more discharge controlling means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

148, 338, 339, where the load device is a plural cathode and/or anode load device, and a discharge control device is included in each of the plurality of cathode-anode circuits; subclass 148 where the discharge device is supplied with polyphase alternating current and subclass 338 where the discharge control means is an electromagnet.

336, where the discharge device is provided with a plurality of auxiliary starting electrodes.

338, see the reference to subclass 148 above.

339, see the reference to subclass 148 above.

349, and indented subclasses and the subclasses specified in the notes to the definitions of those subclasses for other systems wherein the load device is a discharge control discharge device.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 153+ for the structure of discharge devices, per se, which are provided with means for generating a magnetic field and which also have a discharge control electrode; subclass 154 for discharge devices which are provided with means for generating a plurality of magnetic fields; subclasses 296+ and the subclasses specified in the Notes thereto for the structure of discharge devices which are provided with a plurality of control grids, and subclass 308 for other discharge devices which are provided with two or more discharge controlling means.

323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 for electronic tube regulators. See Lines With Other Classes and Within This Class, “Electronic Tube Systems,” in the class definition of Class 323.

342 Diverse types:

This subclass is indented under subclass 341. Systems wherein the discharge device is provided with diverse types of discharge controlling means.

(1) Note. Auxiliary starting electrodes, electromagnets, electrostatic control devices (control grids) are each consid-

ered to be of a diverse type with respect to each other.

SEE OR SEARCH THIS CLASS, SUBCLASS:

335, and indented subclass, for this subject matter where one of the control means is an auxiliary starting electrode.

338, where the discharge device is a plural cathode and/or anode discharge device and electromagnetic means are provided for influencing the discharge.

339, where the discharge device is a plural cathode and/or anode discharge device and the discharge device is provided with discharge control means.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, appropriate subclasses, for the structure of discharge devices, per se, which are provided with diverse types of discharge controlling means. See the reference to Class 313 in the Notes to subclass 341 above for the particular subclasses to be searched.

343 Plural electromagnetic devices:

This subclass is indented under subclass 341. Systems wherein two or more electromagnets are placed adjacent the inter-electrode discharge space so that space discharge is influenced by the magnetic flux of the electromagnets.

(1) Note. Electromagnetic devices which have two or more separate coils on a common core are considered to be a plurality of electromagnets in so far as classification in this subclass is concerned.

SEE OR SEARCH THIS CLASS, SUBCLASS:

344, and indented subclasses and the subclasses specified in the notes to the definitions of those subclasses, for other systems wherein the load device is a discharge device having a discharge influencing electromagnet associated therewith.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclass 154 for the structure of discharge devices, per se, which are provided with means for generating a plurality of electromagnetic fields for influencing the discharge.

344 Electromagnetic influenced discharge device:

This subclass is indented under subclass 326. Systems wherein an electromagnet is placed adjacent the interelectrode discharge space so that the space discharge is influenced by the magnetic flux.

SEE OR SEARCH THIS CLASS, SUBCLASS:

42, for discharge devices having structurally combined therewith an inductive impedance which is connected between either a plurality of anodes or a plurality of cathodes of the discharge device, the discharge device being provided with an electromagnet for influencing the discharge between the electrodes.

236, for this subject matter where there is a condenser in the supply circuit of the discharge device.

267, for this subject matter where the discharge device is supplied with pulsating or alternating current.

338, for this subject matter where the discharge device is provided with two or more cathodes and/or two or more anodes.

342, for this subject matter where the discharge device is provided with a plurality of different control means, one of which is an electromagnet.

343, for this subject matter where there are a plurality of electromagnets for influencing the discharge.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 153+ for the structure of lamps and discharge devices which are provided with an electromagnet.

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 20, for consumable electrode discharge devices having a discharge deflecting electromagnet, and the circuits therefor.

323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 for electronic tube regulators. See Lines With Other Classes and Within This Class, "Electronic Tube Systems," in the class definition of Class 323.

373, Industrial Electric Heating Furnaces, subclasses 64 and 107, for electric furnaces provided with means to deflect the arc from its normal path.

345 Rail-type discharge device load:

This subclass is indented under subclass 344. Systems , wherein the discharge device has the discharge electrodes in the form of elongated members, usually in rod or wire form, the electrodes being either parallel or inclined with respect to each other, and the discharge being formed between the electrodes at one point and moved along the electrodes by means of the magnetic field.

SEE OR SEARCH THIS CLASS, SUBCLASS:

249, for systems under the class definition wherein the discharge device is provided with wire or rod-like electrodes which are arranged in physical parallel relation with respect to each other, the source of supply current being alternating current and designed to establish a discharge at the antinodes of the potential wave, the system including means to cause the antinodes of potential, and therefore the electric discharge, to traverse the electrodes along their length.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 153+ for the structure of the discharge device, per se, for use in the systems in this subclass of Class 315.

346 Plural current supply to the electromagnet:

This subclass is indented under subclass 344. Systems provided with means to supply two or more currents to the electromagnet coil.

SEE OR SEARCH THIS CLASS, SUBCLASS:

350, and indented subclass, and the subclasses specified in the notes to the definitions thereof for other systems having a discharge control discharge device load device and provided with means to apply two or more currents or potentials to the discharge control means.

347 Series connected with the load device:

This subclass is indented under subclass 344. Systems wherein the electric discharge device and the electromagnet coil are connected together in electrical series relation.

348 Pulsating or A.C. supply to the electromagnet:

This subclass is indented under subclass 344. Systems wherein the electromagnet is energized by pulsating or alternating current.

SEE OR SEARCH THIS CLASS, SUBCLASS:

267, for this subject matter where the load device is supplied with pulsating or alternating current.

345, for this subject matter where the discharge device is formed with a plurality of parallel rail or rod-like electrodes.

349 Discharge control discharge device load:

This subclass is indented under subclass 326. Systems wherein the electric discharge load device is provided with a discharge controlling means, and the system includes means for controlling the electric current and/or potential supplied to the control means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

43, and indented subclass, subclasses 61, 63, for devices which include a discharge control discharge device and an electrical circuit element structurally combined in a unitary device.

157, where the control circuit includes a radiant energy responsive device (photocell).

194, and indented subclasses, where the control circuit includes phase shifting means for shifting the phase of the current and/or voltage in the control circuit with respect to the current in the cathode-anode circuit of the discharge device.

237, and indented subclass, where there is a condenser in the supply circuit of the discharge device load.

268, and indented subclasses, where the source of supply current for the discharge device load is pulsating or alternating current.

325, and the subclasses specified in the notes to the definition of that subclass, for systems under the class definition having a plurality of discharge control discharge device load devices in the system.

335, and indented subclass, and the subclasses specified in the notes to the definition of those subclasses for systems under the class definition provided with a discharge device load device which is provided with an auxiliary starting electrode for controlling the discharge.

341, and indented subclasses, for systems under the class definition wherein the load device is a discharge device provided with a plurality of discharge controlling means (such as a grid electrode and an electromagnet).

344, and indented subclasses and the subclasses specified in the notes to the definition of those subclasses for systems under the class definition wherein the load device is a discharge device provided with an electromagnet for influencing the discharge.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclass 308 and the subclasses specified in the Notes thereto for the structure of discharge devices, per se, which have a discharge controlling electrode.

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 35, for consumable electrode discharge device systems wherein the discharge device includes an auxiliary electrode placed adjacent to the discharge space, the auxiliary electrode circuit controlling the operation of the electrode feeding mechanism of the discharge device.

323, Electricity: Power Supply or Regulation Systems, subclass 227 and 291 for electronic tube regulators. See Lines With Other Classes and Within This Class, "Electronic Tube Systems," in the class definition of Class 323.

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, appropriate subclasses for miscellaneous space discharge device systems not otherwise classified wherein the space discharge device is provided with a discharge controlling means.

363, Electric Power Conversion Systems, subclasses 111+, and the subclasses mentioned in the notes thereto, for electronic tube conversion systems wherein the electronic tube is provided with a discharge control means (e.g., grid) and the potential applied to the control means is controlled. Some of the systems of Class 363 are closely analogous to the systems of this subclass. See section VI, 7 of the class definition of Class 363 for the line between Class 315 and Class 363.

378, X-Ray or Gamma Ray Systems or Devices, subclass 113 for X-ray tube systems including a space discharge control element.

350 Plural control currents and/or potentials:

This subclass is indented under subclass 349. Systems provided with means to apply two or more potentials to the discharge control means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

270, and indented subclass, for this subject matter where the discharge device is supplied with pulsating or alternating current.

346, for systems under the class definition wherein the control means for the discharge device is an electromagnet which is supplied with two or more currents.

SEE OR SEARCH CLASS:
323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 for electronic tube regulators. See Lines With Other Classes and Within This Class, "Electronic Tube Systems," in the class definition of Class 323.

351 Plural pulsating or A.C. currents and/or potentials:
This subclass is indented under subclass 350. Systems provided with means to apply a pulsating and an alternating current and/or potential, or two or more different pulsating or alternating currents and/or potentials to the discharge control means.

(1) Note. In systems wherein a transformer is provided which has its secondary connected to the discharge control circuits, two or more primaries each energized by pulsating or alternating current and having the secondary connected to the control circuit, the patent is placed in subclass 354 below and not in this subclass. Where two or more transformers are provided, and the secondary windings are connected either in series or parallel with the resultant potential impressed upon the control means, the patent is placed in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:
271, for this subject matter where the discharge device is supplied with pulsating or alternating current.
354, see (1) Note. above.

SEE OR SEARCH CLASS:
323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 for electronic tube regulators. See Lines With Other Classes and Within This Class, "Electronic Tube Systems," in the class definition of Class 323.

352 Rectifier and/or discharge device in the control circuit:
This subclass is indented under subclass 349. Systems having a rectifier and/or an electric discharge device connected in the control circuit of the discharge device.

(1) Note. Where the system includes a plurality of discharge devices, one of which is connected in the control circuit of the discharge device which is the load in the circuit, the patent is classified as a plural load device system in the subclasses above where the discharge in the control circuit is claimed as a discharge device whose operation depends upon gas or vapor ionization even though the system is claimed as only having one ultimate load device. Where the controlling discharge device is claimed merely as a discharge device even though it is disclosed as a gaseous ionization discharge device, the system is not considered to be a plural load device is claimed merely as a discharge device system for the purpose of classification.

SEE OR SEARCH THIS CLASS, SUBCLASS:
157, for this subject matter where the discharge control discharge device load device is controlled by a radiant energy responsive device (photocell).
197, 198, 199, for this subject matter where the discharge control circuit includes a discharge control discharge device and means for shifting the phase of the pulsating or alternating current in the control circuit with respect to the current in the cathode-anode circuit of the load device.
203, and indented subclass, for systems under the class definition wherein the load device is a discharge device having an auxiliary starting electrode, and the auxiliary starting electrode circuit includes an electric discharge device or rectifier.
272, for this subject matter where the discharge device load device is supplied with pulsating or alternating current.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 227 and 291 for electronic tube regulators. See Lines With Other Classes and Within This Class, "Electronic Tube Systems," in the class definition of Class 323.

353 With condenser in the control circuit:

This subclass is indented under subclass 352. Systems provided with a condenser connected in the control circuit of the discharge device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

227, and indented subclasses, for condensers in the supply circuit for this subject matter.

273, where the discharge device is supplied with pulsating or alternating current.

355, and indented subclass, for other systems under subclass 349 having a condenser in the control circuit.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclass 364, for miscellaneous condenser systems.

354 Transformer in the control circuit:

This subclass is indented under subclass 349. Systems having a transformer connected in the control circuit of the discharge device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

262, where the load device is a discharge device having an auxiliary starting electrode, a transformer being included in the auxiliary starting electrode circuit.

274, for this subject matter where the discharge device is supplied with pulsating or alternating current.

276, and indented subclasses, and the subclasses specified in the notes thereto for transformers in the supply circuit.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 355 through 363, for miscellaneous transformer systems.

355 Condenser in the control circuit:

This subclass is indented under subclass 349. Systems having a condenser connected in the control circuit of the discharge device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

227, and indented subclasses, for systems having a discharge device load, the supply circuit including a condenser.

234, for systems wherein the load device is a discharge device having an auxiliary starting electrode, a condenser being included in the auxiliary starting electrode circuit.

238, for this subject matter where there is a condenser in the control circuit of the discharge device and another condenser in the supply circuit of the discharge device.

273, for this subject matter where the discharge device is supplied with pulsating or alternating current and there is also a discharge device or rectifier in the control circuit.

275, for this subject matter where the discharge device is supplied with pulsating or alternating current.

353, for this subject matter where there is also a discharge device or rectifier in the control circuit.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclass 364, for miscellaneous condenser systems.

356 Inductance in the control circuit:

This subclass is indented under subclass 355. Systems having an inductance connected in the control circuit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

43, and indented subclass, for devices which include a discharge control discharge device and an inductance

structurally combined in a unitary device, the inductance being connected between the control means and one of the discharge electrodes.

263, for systems having a discharge device load, the discharge device being provided with an auxiliary starting electrode, the starting electrode circuit including an inductance.

289, and indented subclass, and the subclasses specified in the notes to the definitions of those subclasses, for other systems which include an inductance in the circuit.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 355 through 370, for miscellaneous impedance systems having a reactor and condenser therein.

357 Movable electrode discharge device:

This subclass is indented under subclass 326. Systems wherein the discharge device is provided with an electrode which is movable with respect to its cooperating discharge electrode.

SEE OR SEARCH THIS CLASS, SUBCLASS:

327, for this subject matter where the electrode is designed to be moved into contact with another electrode during the starting period for drawing the discharge when the electrodes are separated.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 146+ for the structure of discharge devices, per se, which have a movable electrode.

314, Electric Lamp and Discharge Devices: Consumable Electrodes, appropriate subclasses, for consumable electrode discharge devices having means provided for feeding one of the electrodes toward the other to compensate for the consumption of the electrode material, and the electrical systems therefor.

358 Plural gases or vapors in the discharge device:

This subclass is indented under subclass 326. Systems wherein the discharge device contains two or more different gases and/or vapors.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 637+, for the structure of discharge devices, per se, having a confined atmosphere of two or more gases and/or vapors.

361, Electricity: Electrical Systems and Devices, subclasses 171+ for electrical relay systems of the code responsive or secret type.

359 PYRO-ELECTRIC DEVICE LOAD:

This subclass is indented under the class definition. Systems wherein the load device through which the current passes is formed of a pyroelectric material.

(1) Note. Pyroelectric materials, or second class conducting materials, have a high electrical resistance at ordinary temperatures, and low electrical resistance when heated to a high temperature.

SEE OR SEARCH THIS CLASS, SUBCLASS:

114, and subclass 115 and indented subclass, for systems having a pyroelectric load device which is provided with an electric heater for the pyroelectric material, the system including means to supply electric current to the heater.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclass 14 for the structure of pyroelectric type lamps where the lamp is provided with a heating means for heating the pyroelectric material, and subclass 315 for the structure of other pyroelectric lamps.

360 TIME-CONTROLLED:

This subclass is indented under the class definition. Systems provided with a time controlled means for (1) supplying operating current or potential to the load device after a predeter-

mined time lapse, or (2) supplying current or potential to the load device for a predetermined time, or (3) altering the flow of current or potential to the load device after a predetermined time, or (4) interrupting the supply of current or potential to the load device after a predetermined time lapse.

SEE OR SEARCH THIS CLASS, SUBCLASS:

209, and indented subclasses, for systems wherein a periodic electric switch is provided in the supply circuit of the load device.

227, and indented subclasses, for systems wherein a condenser is connected in the supply circuit of the load device so that the discharge of the stored electrical energy in the condenser is applied to the load device, the condenser being connected in the load device circuit so as to be charged and discharged periodically.

291, and indented subclasses, for systems provided with means for regulating the current and/or voltage applied to the load device.

313, for systems wherein the system includes two or more load devices and is provided with an electric switch in the supply circuit of one of the load devices.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, subclasses 33+, for time controlled electric switches.

378, X-Ray or Gamma Ray Systems or Devices, subclasses 96+ for X-ray systems with exposure timer.

361 PLURAL CONTROL STATIONS:

This subclass is indented under the class definition. Systems provided with two control means located at different places in the supply circuit for controlling the supply of current to the load device, the two of the control means each being designed to perform the same control functions as that performed by the other of the two control means, irrespective of the condition of operation of the other of the two control means.

(1) Note. This subclass includes systems wherein two switches are provided in the circuit of the load device, each of the switches being connected in the circuit so that it can open or close the circuit of the load device, irrespective of the position of the other switch. Also, included in this subclass are systems wherein a single switch opens and closes the supply circuit to the load device, this switch being operable by either of two remotely located switches.

(2) Note. This subclass also includes cross references of patents wherein the control means for the current supply for the load device is a current regulator, the system being designed so that the regulation may be effected from two or more different points.

(3) Note. This subclass does not include systems wherein two or more control means, such as electric switches, are connected in the circuit in such a manner that if one of the control means is in the operated position to deprive the load device of current, the other control means, even if placed in the “on” position cannot close the circuit to supply current to the load device because of the position of operation of the first control means. For such systems, where the control means is a regulator, search this class, subclass 299, and indented subclasses and where the control means is a switch, search this class, subclass 362.

SEE OR SEARCH THIS CLASS, SUBCLASS:

272, see (3) Note above.

299, see (3) Note above.

SEE OR SEARCH CLASS:

307, Electrical Transmission or Interconnnection Systems, subclasses 113+ for systems of general application provided with two or more control means located at different places for controlling the supply of current or potential to a load device.

362 ELECTRIC SWITCH IN THE SUPPLY CIRCUIT:

This subclass is indented under the class definition. Systems having an electrical circuit maker and/or breaker in the current supply circuit to the load device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

32, and indented subclasses, and especially subclass 63, subclass 64, and indented subclasses, 72, 73, subclass 74 and indented subclass, for devices which include an electric lamp or discharge device which has structurally combined therewith an electric switch.

63, see the reference to subclass 32 above.

64, see the reference to subclass 32 above.

72, see the reference to subclass 32 above.

73, see the reference to subclass 32 above.

74, see the reference to subclass 32 above.

76, for this subject matter where the load device system is combined with the structure of some particular art device, such as a vehicle, such combinations usually including a switch operated by some part of the art device, such as for example, brake pedal in the case of a vehicle.

86, and indented subclass, for systems which include automatically operating switching means for substituting another source of current supply for the load device when the operating source of current supply fails to operate properly.

88, and indented subclasses, for systems which include automatically operating switching means for substituting another load device for the operating load device when the operating load device fails to operate properly.

100, where the load device is a discharge device provided with a plurality of cathodes or cathode heaters connected in series relation with respect to each other, and the series circuit includes a thermostatic switch.

106, and 107, where the load device is a discharge device provided with a circuit for supplying current to the cathode or cathode heater circuit, the supply current for the cathode or cathode heater including an automatically operated cutout switch.

116, where the load device is provided with an electric heater for modifying the temperature of the load device, the heater circuit including an automatically operated cutout switch.

119, and indented subclasses, where the system is provided with an automatically operated switch for closing a shunt circuit about, or opening the circuit of, the load device when the load device fails to operate properly.

136, where the system includes a signal, indicator, or alarm device and the circuit of the signal, indicator, or alarm is controlled by an electrically operated switch.

159, where the system includes a radiant energy responsive device (photocell) which controls the operation of an electric switch in the supply circuit of the load device.

172, and 186, subclass 209 and indented subclasses, where the supply circuit of the load device includes a periodic switch.

186, see the reference to subclass 172 above.

191, 192 and 193, where the system includes a plurality of series connected load devices and an electric switch in the circuit.

192, see the reference to subclass 191 above.

193, see the reference to subclass 191 above.

209, see the reference to subclass 172 above.

240, where the supply circuit of the load device includes a condenser, and an electric switch is provided to connect the condenser to the load device.

290, where the supply circuit of the load device includes an inductance and there is an electric switch in the inductance circuit.

313, and indented subclasses, and the subclasses specified in the notes to the definition of those subclasses for plural load device systems provided with an electric switch in the circuit.

340, where the load device is an electric discharge device, and an electric switch is provided in the cathode-anode circuit of the discharge device.

SEE OR SEARCH CLASS:

200, Electricity: Circuit Makers and Breakers, appropriate subclasses, for the structure of electrical circuit makers and breakers.

307, Electrical Transmission or Interconnection Systems, subclasses 112+ for miscellaneous electrical systems having a switch in the current supply circuit.

314, Electric Lamp and Discharge Devices: Consumable Electrodes, subclass 131, and the subclasses referred to in the notes to the definition of that subclass, for consumable electrode discharge devices provided with switches, and the systems therefor, which include electric switches.

335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, appropriate subclasses for electromagnetically operated circuit makers and breakers.

337, Electricity: Electrothermally or Thermally Actuated Switches, appropriate subclasses for electrothermal and thermally actuated switches.

362, Illumination, appropriate subclasses, for illumination devices and fixtures having an electric light source and provided with an electric switch for controlling the flow of current to the electric light, note especially subclass 36, for vehicles with electric lighting devices to illuminate the direction toward which the vehicle is turned and lighted only during the turning of the vehicle, subclasses 21+, for lanterns having electric light sources which are provided with mechanism responsive to dangerous conditions for interrupting the supply of current to the lamp, subclasses 285+ for lanterns of the projector type with adjustable light focusing means, and having the light focusing device coupled with electric switch means to control the current supply to the lamp, subclasses 394+ for lamp supports which normally hold the light in an inaccessible position and which may be adjusted so that the lamp may be reached for trimming, cleaning, or repairing, and which are provided with an electric switch, the switch usually being arranged so as to connect the lamp with the current supply circuit only when the lamp has reached its inaccessible or operating position, and subclasses 394+ and indented subclass, for illuminating fixtures provided with an electric switch for the light source.

363 MISCELLANEOUS SYSTEMS:

This subclass is indented under the class definition. Systems which are not provided for in any of the preceding subclasses of this class.

364 Cathode-ray deflections circuits:

This subclass is indented under subclass 1. Subject matter which includes a cathode-ray tube including a cathode-ray beam source, cathode-ray deflection means operably connected with the cathode tube and an electrical circuit connected to the deflection means to deliver, when energized, voltage or current to the deflection means to move the cathode-ray beam from one position to another within the tube and methods corresponding to the above apparatus.

(1) Note. Included in this group of subclasses are subcombinations which include the deflection means and the electrical circuit to energize the deflection means when not elsewhere classified.

(2) Note. The electric circuit connected to the deflection means, instead of directly causing a cathode-ray to be deflected may, when acting in conjunction with another electrical force on a cathode-ray beam cause, by a change of current or potential, deflection of the cathode-ray beam.

SEE OR SEARCH THIS CLASS, SUBCLASS:

1+, for cathode-ray beam tubes wherein the cathode-ray tube is not the ultimate load in the system.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 281+ for deflection circuits used in the ionic separation or analyses of material and subclasses 396+ for deflection circuits to deflect a charged particle beam used to bombard material or a detector.

313, Electric Lamp and Discharge Devices, subclasses 421+ for cathode-ray tubes including deflection means.

324, Electricity: Measuring and Testing, particulary subclasses 121 and 250 for test devices using a cathode-ray tube.

345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 10+ for cathode-ray tube display systems with selective electrical control for providing more than two visual outputs.

348, Television, subclasses 284+, 325+, 377+, 379, 380+, and 805+ for television systems utilizing a cathode-ray tube.

395, Information Processing System Organization, appropriate subclasses, and see the search class note in the class definition of this class (315).

365 Symbol generator:

This subclass is indented under subclass 364. Subject matter wherein the cathode-ray tube includes a cathode-ray beam impenetrable member having at least an area in the shape of a symbol or a code pulse configuration which permits passage of the cathode-ray beam through only the area of the member at that point in the shape of the symbol or the pulse code configuration and the deflection means causes the cathode-ray beam to be deflected so the cathode-ray beam can pass through the area under the control of the electrical circuit and other character generators not provided for elsewhere.

(1) Note. Class 345, subclasses 17 and 26, includes character generators which form the symbol on a fluorescent screen of a cathode-ray tube. However, selective electrical control must be claimed. Included in Class 345, subclasses 10+ are symbol generators which form a cathode-ray pattern of the symbol by (1) a claimed raster scan of a cathode-ray beam synchronized with the control of the cathode-ray beam and by (2) a claimed line vector generation apparatus synchronized with the control of the cathode-ray beam. Also included are animation generators of the cathode-ray tube type.

SEE OR SEARCH THIS CLASS, SUBCLASS:

8.51, for code translating systems generally, subclass 9 for symbol generators of the type found in subclass 365 where plural cathode-ray tubes are used.

13, for symbol generators of the type found in subclass 365 where plural distinct cathode-rays are utilized within a cathode-ray tube to form a character.

367, for one or more deflector circuits used in a single beam cathode-ray tube wherein a digital to analog device is used to create the deflection current or voltage required to deflect the cathode-ray beam of the tube.

391, for plural cathode-ray deflection circuits with or without a cathode-ray beam controlled by the deflection circuit.

399+, for coil type deflection circuits generally.

SEE OR SEARCH CLASS:

345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 10+ for cathode-ray tube display systems with selective electrical control which may include character generators and/or animation generators.

366 For flat cathode-ray tube:

This subclass is indented under subclass 364. Subject matter wherein the cathode-ray tube has a fluorescent screen and the deflection means, when energized through the electrical circuit, causes the cathode-ray beam, when

moving from the source to the screen, to be deflected at some time parallel to the cathode-ray screen.

(1) Note. The electrical circuit and the deflection means can periodically sweep the beam across the screen or just deflect the beam parallel to the screen.

SEE OR SEARCH THIS CLASS, SUBCLASS:

13.1, for plural ray beam deflection circuits which include a flat type cathode-ray tube.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclass 422 for flat type cathode-ray tubes.

342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 55, 138, 142+, and 176+ for radar systems and subclasses 350+ for directive systems which may utilize a flat cathode-ray type tube and a deflection system to move the cathode-ray beam parallel to the screen of the tube prior to the beam striking the screen.

348, Television, subclasses 805+ which may include a flat cathode-ray tube.

367 Including a digital-to-analog device:

This subclass is indented under subclass 364. Subject matter wherein the electrical circuit includes means, having an input responsive to digital signals, to convert the digital signals into an analog signal, which analog signal is applied to the deflection means.

(1) Note. The bulk of the patents here have an electrical multiple output register responsive to digital signals wherein the multiple outputs are all connected to the deflection means whereby the sum of the outputs determine the extent of the deflection of the cathode-ray beam within the cathode-ray tube.

SEE OR SEARCH THIS CLASS, SUBCLASS:

8.51, for counting circuits responsive to digital pulses which cause a cathode-ray tube to store in analog fashion the sum of the pulses.

368.12+, for this subject matter in a color convergence control circuit

SEE OR SEARCH CLASS:

341, Coded Data Generation or Conversion, subclass 155 for digital-to-analog code convertors in electrical communication systems.

345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 10+ for cathode-ray tube display systems with selective electrical control which may include digital-to-analog convertors.

368.11 Including color convergence control:

This subclass is indented under subclass 364. Subject matter which includes at least two electron beam deflection elements connected in a circuit which generates a time varying signal to permit the focusing and scanning of plural electron beams in the envelope of a cathode-ray tube in one or two directions at each and every point on a screen of the cathode-ray tube.

(1) Note. The deflection elements may be either electrostatic or electromagnetic, and are usually additional to a deflection arrangement providing for scanning by the electron beam.

(2) Note. Included in this subclass are combinations which do not include either a vertical or horizontal deflection device, but only the claimed statement that the cathode ray beam deflection circuit is a source for a dynamic convergence circuit.

(3) Note. Included in this subclass are claimed subcombinations which state a waveform source energizes the winding of a convergence electro-magnet.

(4) Note. Included in this subclass is subject matter which may have only a claimed statement that the convergence circuit is energized from line or frame frequency components.

SEE OR SEARCH THIS CLASS, SUBCLASS:

11.5, for color convergence control circuitry for a cathode-ray tube, having photodetector control.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclass 412 for cathode-ray tube structure for plural beam convergence, absent circuitry.

345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 418 through 475 for the application of a CRT in control of data presentation.

348, Television, subclass 807 for a color television receiver having a cathode-ray tube.

368.12 Including specified signal storage (e.g., memory, register, etc.):

This subclass is indented under subclass 368.11. Subject matter including storage of values for the convergence control signal for subsequent retrieval.

SEE OR SEARCH THIS CLASS, SUBCLASS:

367, for this subject matter including an analog to digital signal conversion circuit.

SEE OR SEARCH CLASS:

360, Dynamic Magnetic Information Storage or Retrieval, appropriate subclasses for dynamic magnetic information storage not limited to color convergence control.

365, Static Information Storage and Retrieval, appropriate subclasses for static information storage not limited to color convergence control, particularly subclasses 185.01+ for floating gate memory storage (e.g., flash memory).

369, Dynamic Information Storage or Retrieval, appropriate subclasses for dynamic information storage not limited to color convergence control.

368.13 Interpolation:

This subclass is indented under subclass 368.12. Subject matter wherein a convergence signal has values which lie between stored discrete values.

(1) Note. The values of the convergence signal are determined by a proportionate or other fraction of the interval between the stored values.

368.15 Including electrostatic element (e.g., electrode, lens, etc.):

This subclass is indented under subclass 368.11. Subject matter including structure that produces an electrostatic field which deflects the electron beam.

368.16 Offset apertures in plural sequential electrodes;

This subclass is indented under subclass 368.15. Subject matter having successive electrodes with apertures so as to form plural paths for the several beams which are not parallel with each other or with the axis of travel of the beam in the tube.

368.17 Including signal delay circuitry:

This subclass is indented under subclass 368.11. Subject matter including circuitry to shift time relations of two or more control signals.

(1) Note. Signal phase control circuitry is included in this subclass.

368.18 Including specified waveform generating circuitry:

This subclass is indented under subclass 368.11. Subject matter including a circuit arrangement to produce a control signal having a recited amplitude dependence on time.

368.19 By nonlinear device (e.g., square law device, diode, etc.):

This subclass is indented under subclass 368.18. Subject matter wherein the convergence control signal is produced by a circuit having a nonlinear voltage to current characteristic.

368.21 Parabolic waveform:
This subclass is indented under subclass 368.18. Subject matter wherein the control signal has a component which is proportional to the square of the elapsed time.

368.22 By integrating of signal:
This subclass is indented under subclass 368.21. Subject matter wherein the control signal is produced by integrating the amplitude of a signal with respect to time.

(1) Note. The signal to be integrated is often a ramp signal derived from a scanning deflection circuit.

SEE OR SEARCH CLASS:
708, Electrical Computers: Arithmetic Processing and Calculating, subclass 444 for integration by a digital computer and subclass 823 for integration by an analog computer.

368.23 By multiplying of signal:
This subclass is indented under subclass 368.21. Subject matter wherein the control signal is produced by a circuit which performs multiplication of two signals.

(1) Note. The two signals are often two representations of a single signal.

(2) Note. The signal to be multiplied is often a ramp signal derived from a scanning deflection circuit.

368.24 Static convergence feature:
This subclass is indented under subclass 368.11. Subject matter further including a circuit or element providing an additional constant electric field or magnetic flux which is combined with the time varying field to form the focussing field for convergence.

368.25 Including core or winding structure:
This subclass is indented under subclass 368.11. Subject matter including a structural feature of the core or winding arrangement of the convergence electromagnet.

SEE OR SEARCH CLASS:
335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, for electromagnets, cores, or coils, per se.

368.26 Adjacent to or integral with deflection winding or housing structure therefor:
This subclass is indented under subclass 368.25. Subject matter in which the convergence coil is positioned within or close to a housing for deflection coils.

368.27 Including particular magnetic field distribution:
This subclass is indented under subclass 368.25. Subject matter which specifically describes the spatial distribution of the intensity of the magnetic flux.

368.28 Including plural cores or coils:
This subclass is indented under subclass 368.25. Subject matter which describes plural distinct magnetic core elements or electrical conductor windings.

369 Target controls deflection circuit:
This subclass is indented under subclass 364. Subject matter wherein the cathode-ray tube includes a target, a cathode- ray beam source, and an electrical circuit. The electrical circuit includes circuitry connected to the target to correct or regulate the deflection of the cathode-ray beam through the deflection means as a function of the beam hitting the target.

(1) Note. This subclass provides for retrace control due to impingement of the cathode-ray on a target.

SEE OR SEARCH THIS CLASS, SUBCLASS:
12.1, and 13.1, for cathode-ray tubes with secondary emission stages and plural cathode-rays, respectively, which may include means on the target thereof for control of the deflection circuit.

SEE OR SEARCH CLASS:
358, Facsimile and Static Presentation Processing, subclass 507 for a cathode-ray tube type color television display having circuitry to sense the ray beam

to control or indicate the position of the beam.

370 With ray deflection distortion correction or reduction:

This subclass is indented under subclass 364. Subject matter wherein the cathode-ray tube has a cathode-ray beam source and (1) the deflection means is placed in a certain manner or of a configuration to correct or improve the cathode-ray beam pattern caused by the energized deflection means acting upon the beam or (2) there is an electrical element or an electrical network connected to the electrical circuit or the deflection means to correct or diminish the distortion of the beam pattern caused by the energized electrical circuit, deflection means, or the cathode-ray tube.

(1) Note. Included are television circuits which include a horizontal or vertical deflection circuit whose deflection waveform is modified in parabolic fashion by another waveform including the deflection waveform of the other horizontal or vertical circuit to correct for pin cushion, barrel or keystone type distortions of the cathode-ray beam pattern.

SEE OR SEARCH THIS CLASS, SUBCLASS:

368, for dynamic color convergence circuits to correct the focus of the cathode-ray beam dependent upon the vertical or horizontal deflection circuits.

369, for the correction of the vertical or horizontal deflection circuit dependent upon the cathode-ray beam striking a target.

382, for the combination of a deflection circuit to deflect the cathode-rays of a cathode-ray tube and a circuit connected to a focus electrode to control the cathode-ray beam in its movement to the target of the cathode-ray tube.

387, for linearity control circuits utilizing feedback networks in the cathode-ray tube deflection circuits.

401, for distortion correction circuits utilizing a saturable magnetic device in the deflection circuit.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclass 133 for miscellaneous sawtooth generation with distortion regulation and subclass 317 for miscellaneous amplitude controlled distortion compensation.

330, Amplifiers, subclass 149 for amplifiers wherein a hum noise or distortion bucking signal is introduced into the amplifier signal channel.

348, Television, subclasses 251 and 615 for shading and black spot correction circuitry.

371 By modulation of deflection waveform:

This subclass is indented under subclass 370. Subject matter wherein the electrical circuit includes a source of a deflection waveform which is delivered to the deflection means and the electrical network delivers another waveform or signal to the electrical circuit or the deflection means to modulate the deflection waveform so that a composite waveform is delivered to the deflection means to correct or diminish some type of distortion received by the energized electrical circuit, deflection means, or the cathode-ray tube.

372 For cathode-ray tube having plural targets:

This subclass is indented under subclass 364. Subject matter wherein the cathode-ray tube includes a cathode-ray beam source and a plurality of spaced targets to receive the cathode-ray beam under the control of the deflection means when the cathode-ray tube and its deflection means are energized.

(1) Note. The term “target” includes anodes, collectors, and electrodes.

(2) Note. Under this group, no fluorescent targets are included. For color fluorescent targets are include. For color fluorescent screens wherein phosphors emit various colors when energized, see subclass 375.

SEE OR SEARCH THIS CLASS, SUBCLASS:

3+, for a cathode-ray tube having plural targets combined with an integral circuit element.

8.51+, for pulse counting, storing, or a code translating system having a plural target cathode-ray tube and means to deflect a cathode-ray beam within the tube from one to another target.

9, for cathode-ray tube systems including plural cathode-ray tubes, at least one of the tubes having plural targets.

12.1, for a cathode-ray tube circuit including a cathode-ray tube having plural targets with secondary emissive properties.

13.1, for a cathode-ray tube circuit including a cathode-ray tube with plural targets responsive to plural ray beams formed in the tube.

SEE OR SEARCH CLASS:

178, Telegraphy, subclasses 3+ for automatic telegraphic which contain a cathode-ray tube having plural cathode-ray targets.

313, Electric Lamp and Discharge Devices, subclass 419 for a cathode-ray tube having plural targets each target when impacted by the cathode-ray beam transmitting the beam current to an external circuit.

331, Oscillators, subclasses 79+ for charged particle beam tubes which include plural targets and deflection means for moving the charged particle beam in such a manner as to produce an oscillatory electrical output.

373 Targets radially about cathode:

This subclass is indented under subclass 372. Subject matter wherein the targets are spaced from each other and arranged peripherally with respect to the cathode-ray beam source.

(1) Note. Included are switching tubes which sequentially rotate a cathode-ray beam from target to target. The deflection means may be a rotating electrostatic field or a combination of a magnetic field and a plurality of electrodes which cooperate with the cathode-ray beam to cause the beam to rotate in one direction or to be selectively controlled by the electrodes to allow the cathode-ray beam to stop in its rotary movement and strike a specific target.

(2) Note. The magnetic field necessary to obtain beam deflection in certain of the radial switching tubes may or may not be claimed.

SEE OR SEARCH THIS CLASS, SUBCLASS:

39.51+, for distributed parameter resonator type magnetrons having a plurality of electrodes peripherally arranged around the cathode-ray beam emitting electrode.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 157+ for magnetic type discharge devices with a plurality of electrodes arranged concentrically about a cathode in the discharge device.

374 Targets in single plane:

This subclass is indented under subclass 372. Subject matter wherein the targets have flat cathode-ray beam receiving surfaces and the ray receiving surfaces are all arranged in a single plane.

(1) Note. Included herein are switching tube circuits which may or may not be sequentially operated from target to target.

375 For plural phosphor target tube:

This subclass is indented under subclass 364. Subject matter wherein the cathode-ray tube includes a cathode-ray beam source and a fluorescent screen formed of plural phosphor materials, each material being capable of emitting a different color of light when struck by the cathode-ray beam and the electrical circuit connected to the deflection means, acting alone or in combination with focusing means or phasing means, has circuitry to cause the cathode-ray beam, when present, to impinge selectively on one or more phosphor materials.

(1) Note. Switching circuits which rely on secondary emission to excite the various phosphors of a color to be are found in subclasses 10+ of this class.

(2) Note. See subclass 369 for deflection circuits which select the appropriate phosphor in a color tube and which also control the deflections of the cathode-ray beam striking a target.

(3) Note. The deflection means for the most part is the post deflection type. However, some systems utilize a raster type deflection means in combination with a mask or focus screen.

SEE OR SEARCH THIS CLASS, SUBCLASS:

10, for a light detector system responsive to the light emitted from a screen of a colored cathode-ray tube, which system corrects its direction of the rays hitting the screen through the deflection system associated with the tube.

13, for cathode-ray tube circuits which include plural cathode-ray beam tubes and wherein the plural beams may be arranged to excite a plurality of separate, distinct color phosphors.

368, for cathode-ray tube deflection circuits which include a color convergence control circuit and which have a plural phosphor target.

369, for cathode-ray tube deflection circuits which include a target which controls the deflection of a cathode-ray beam.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclass 486.1, for fluorescent or phosphorescent devices having plural luminescent materials.

313, Electric Lamp and Discharge Devices, subclasses 399+ for color cathode-ray tubes with secondary emissive electrodes, 402+ for color shadow masks per se or in combination with a color cathode-ray tube, 426+ for plural cathode-ray deflection means, and 429+ for post deflection electrode grid arrangements.

348, Television, subclass 810 for a plural phosphor cathode-ray tube color television system including deflection circuits to direct the ray beam to the proper phosphor of the tube.

376 With post deflection phosphor selection:

This subclass is indented under subclass 375. Subject matter wherein the deflection means is a plural electrostatic electrode grid system separate from the screen, and the cathode-ray beam, when present, passes through the electrode system so that the electrical circuit, when energized, places different voltages on the individual electrodes to electrically move the cathode-ray beams to strike one or more of the phosphor materials at any given time.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 461+ for cathode-ray color screens, per se, or claimed as a part of a cathode-ray tube.

348, Television, subclass 815 for a plural phosphor cathode-ray tube television system including an auxiliary deflection circuit located near the plural phosphors to select the proper color phosphors of the tube.

377 With marker:

This subclass is indented under subclass 364. Subject matter wherein the cathode-ray tube includes a cathode-ray beam source, fluorescent target, and a marker circuit whereby the cathode-ray beam is caused to produce a periodically recurring indication pattern, or marker on the fluorescent target by the effect of the marker circuit on the cathode-ray beam, when the marker circuit is energized.

(1) Note. This subclass provides for markers caused by intensity control of the cathode-ray beam when distinctly claimed as a marker. For intensity control in general, see subclasses 383+.

(2) Note. Included in this subclass are cathode-ray tube marker circuitry subcombinations with energization means connected thereto which are connected to deflection means to give a pulse input to the deflection means but wherein the

deflection means is not distinctly claimed.

SEE OR SEARCH CLASS:

324, Electricity: Measuring and Testing, subclasses 600+ for devices determining impedance, admittance and related quantities which may employ a marker signal generator.

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, appropriate subclasses for electron space discharge devices having a particular wave output with a marker pulse.

342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 138, 142+ and 182+ for echo type communication systems which utilize a cathode-ray tube including a marker circuit.

348, Television, subclass 601 for television systems which include circuitry to generate and display a marker on a cathode-ray tube.

356, Optics: Measuring and Testing, subclasses 3+ for light type radar systems which may have electronic markers on cathode-ray radar displays.

367, Communications, Electrical: Acoustic Wave Systems and Devices, subclass 113 for sonar devices which have a cathode-ray display having an electronic marker.

378 Circular, spiral, or radial sweeps:

This subclass is indented under subclass 364. Subject matter wherein the cathode-ray tube includes a cathode-ray beam source and a fluorescent target to receive the cathode-ray beam and the deflection means includes (1) two deflection means orthoepically positioned with respect to each other and operably connected to the cathode-ray tube, each deflection means having an electrical circuit including a periodic waveform generator, the two waveforms being out of phase with respect to each other by ninety degrees to cause both deflection means to act simultaneously upon the cathode-ray beam to form a circular, spiral, or radial trace on the target or (2) a deflection means connected to the electrical circuit to cause the cathode-ray beam to strike the target in a radial manner at various angular degrees about a point on the target or (3) deflection means including a combination of mechanical and electrical means to cause the cathode-ray beam to describe a circular trace on the fluorescent target when the cathode-ray beam source and deflection circuitry are energized.

(1) Note. Included are circular, spiral, and sector sweep circuits.

SEE OR SEARCH THIS CLASS, SUBCLASS:

372+, for plural target cathode-ray tubes which may utilize a circular, spiral, or radial sweep system to control the cathode-ray beam of the tube.

SEE OR SEARCH CLASS:

342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 176+ for radar systems having a cathode-ray tube readout which may use a circular, spiral, or radial deflection of the cathode-ray beam of the tube.

367, Communications, Electrical: Acoustic Wave Systems and Devices, subclass 113 for compressional wave echo location systems having a cathode-ray tube readout which uses a circular, spiral, or radial deflection of the cathode-ray beam of the tube.

379 With additional control of cathode ray:

This subclass is indented under subclass 364. Subject matter wherein the cathode-ray tube has associated with it (1) circuitry for the regulation of the energization of the cathode-ray tube, (2) circuitry for the regulation of the cathode-ray beam current, density, or velocity in the tube, (3) circuitry for focusing the cathode-ray beam in the tube, or (4) circuitry under the control of the electrical circuit or the deflection means for controlling the cathode-ray beam of the tube.

(1) Note. The term focusing includes the concentration of an electron beam or the converging or diverging of the rays of the beam by an electrostatic or magnetic lens.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12.1, for cathode-ray tube circuits which may include regulation of secondary emission in a cathode-ray tube.

13.1, for cathode-ray tube circuits which may include regulation of the concentration of a plurality of cathode-ray beams.

368, for cathode-ray tube convergence circuits for concentration of a plurality of cathode-ray beams, e.g., in color cathode-ray tubes.

369, for cathode-ray tube deflection circuits wherein the target controls deflection of the cathode-ray beam.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 530+ for tubes with a particular source of power or bias voltage and subclass 549 for miscellaneous circuits with hum or interaction prevention means.

345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 20+ for data responsive selective intensity control in connection with driving a cathode-ray tube.

348, Television, subclasses 284+, 325+, 377+, 379, 380+, and 805+ for regulation means or circuitry to control the scanning cathode-ray beam of a television system.

380 Control only at turn-on or turnoff of circuit:
This subclass is indented under subclass 379. Subject matter wherein the circuit which controls the deflection means functions to control the cathode-ray beam of the tube only at initiation or termination of the cathode-ray beam.

SEE OR SEARCH CLASS:

342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 118+ for echo systems of the distance determining pulse type wherein the echo may cause actuation of a cathode-ray tube display device.

348, Television, subclass 377 for a color television system having a circuit to control the high voltage anode or the intensity of the cathode rays of a color television tube to prevent tube damage or X-ray emission from the tube.

381 Circuits control grid-cathode circuit of tube:
This subclass is indented under subclass 380. Subject matter wherein the cathode-ray tube has a cathode or grid electrode and the circuitry for the control of the cathode-ray beam at the initiation or termination of the beam controls the beam through the grid or cathode of the cathode-ray tube.

382 With focusing of ray:
This subclass is indented under subclass 379. Subject matter wherein the circuitry associated with the cathode-ray tube for control of the cathode-ray beam, when present, comprises circuitry for concentration or diffusing the cathode-ray beam to produce a desired cathode-ray beam cross sectional shape and sharpness.

SEE OR SEARCH THIS CLASS, SUBCLASS:

14+, for cathode-ray tube circuits with a plurality of cathode-ray beam concentrating stages.

31, for cathode-ray tube circuits including circuitry for focusing or concentrating the cathode-ray beam.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclass 311 for electron microscopes with means for focusing the electron beam on a target specimen, and 396+ for devices or systems with charged particle beam focusing.

313, Electric Lamp and Discharge Devices, subclasses 414, 442, and 452+ for cathode-ray tubes which include means for focusing a cathode-ray beam on the target of the cathode-ray tube.

382.1 For television:
This subclass is indented under subclass 382. Subject matter wherein the circuit is adapted for use with cathode-ray tubes in television systems.

383 Intensity control of ray:

This subclass is indented under subclass 379. Subject matter wherein the brightness of a trace on the screen of the cathode-ray tube is controlled in such a manner as to turn-off, turn-on, or vary the brightness of a spot produced by a cathode-ray on the screen of the cathode-ray tube.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12, for cathode-ray tube circuits which vary the intensity of a primary cathode-ray beam to influence the rate of secondary emission in a cathode-ray tube.

377, for cathode-ray tube deflection circuits with marker means in which the marker may be produced by intensification of the cathode-ray beam.

SEE OR SEARCH CLASS:

342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 107+, 133, 139+, and 146 for pulse type distance and direction determination systems of the radar type wherein the display may be produced by intensity modulation of the cathode-ray beam in the system.

384 Ray blanking:

This subclass is indented under subclass 383. Subject matter in which the cathode-ray is turned-off during normal operation of the cathode-ray tube.

(1) Note. Subject matter in which a cathode-ray is turned-on or turned-off by deflecting the cathode-ray to a portion of the cathode-ray tube where a trace will not form due to lack of a phosphor material is excluded from this subclass and may be found in subclass 379 for broad control of a cathode-ray.

SEE OR SEARCH CLASS:

348, Television, subclasses 634+ for the blanking of the cathode-ray beam of a picture tube in television systems which may also claim the deflection circuitry for the cathode-ray beam in a television image signal processing circuitry.

385 Ray unblanking:

This subclass is indented under subclass 383. Subject matter wherein the cathode-ray is turned on during normal operation of the cathode-ray tube and a trace appears on the screen of the cathode-ray tube.

SEE OR SEARCH CLASS:

345, Computer Graphics Processing and Selective Visual Display Systems, subclasses 20+ for data responsive selective intensity control in connection with driving a cathode-ray tube.

348, Television, subclass 635 for the unblanking of the cathode-ray beam of a color picture tube which may also include the deflection circuitry for the cathode-ray beam in a television processing circuit.

386 With ray control responsive to deflection circuit:

This subclass is indented under subclass 383. Subject matter wherein the deflection means, and the circuit connected thereto are responsible for a change in the cathode-ray beam density, current, or velocity which in turn results in control of the brightness of a trace on the screen or target of the cathode-ray tube.

387 Including feedback circuit:

This subclass is indented under subclass 364. Subject matter wherein the electrical circuitry connected to the deflection means includes at least one feedback loop.

(1) Note. Compensation for nonlinearity in the deflection of the cathode-ray caused by the deflection means or components of the deflection circuit are included here.

SEE OR SEARCH THIS CLASS, SUBCLASS:

370, for cathode-ray deflection circuits which include circuitry for distortion, correction or reduction generally.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclass 137 for miscellaneous sawtooth waveform generation with particular feedback and subclass 590 for miscellaneous circuits with particular feedback.

330, Amplifiers, subclasses 75+, appropriate subclasses, for signal feedbacks in amplifier circuits.

388 Plural feedback circuits:

This subclass is indented under subclass 387. Subject matter wherein the circuitry for deflection of the cathode-ray beam of the cathode-ray tube includes a plurality of feedback loops.

(1) Note. The plural feedbacks may comprise plural negative feedback loops, plural positive feedback loops, or combined positive and negative feedback loops.

389 Negative feedback:

This subclass is indented under subclass 387. Subject matter wherein the circuitry includes a feedback loop of the degenerative type.

SEE OR SEARCH THIS CLASS, SUBCLASS:

388, for plural feedback circuits which may include at least one negative feedback loop or circuit.

390 Tube-type circuit:

This subclass is indented under subclass 389. Subject matter wherein the circuitry consists only of circuits containing tube devices and is completely void of all solid state devices or circuitry.

391 Plural deflection circuits:

This subclass is indented under subclass 364. Subject matter wherein the cathode-ray tube includes a cathode-ray beam source and a target and the deflection circuitry includes plural, separate, deflection means and each deflection means has its own electrical circuit whereby the individual electrical circuits, when energized, cause the cathode-ray beam, when present, to be deflected by each deflection means in its passage from the beam source to the target.

SEE OR SEARCH THIS CLASS, SUBCLASS:

17, for ray deflecting means with plural concentrating accelerating, and/or deaccelerating stages.

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclasses 421+ for cathode-ray tubes with beam deflection means; especially subclasses 426+ for plural beam deflecting means.

348, Television, subclasses 284+, 325+, and 805+ for television systems with means for deflecting a cathode-ray beam in plural directions.

392 Plural waveform display circuits:

This subclass is indented under subclass 391. Subject matter wherein the target produces a visible trace when hit by a cathode-ray beam and the deflection means and electrical circuits electrically connected thereto when energized cause a plurality of visible indications or traces to be displayed on the target which will enable simultaneous or sequential viewing of the displayed indications or traces.

SEE OR SEARCH THIS CLASS, SUBCLASS:

13, for plural displays or traces on the cathode-ray tube screen produced by plural cathode-rays.

SEE OR SEARCH CLASS:

324, Electricity: Measuring and Testing, for display of plural waveforms and analysis thereof.

393 Interconnected sweep circuits:

This subclass is indented under subclass 391. Subject matter wherein each electrical circuits includes a generator delivering to its deflection means, a current or voltage waveform which periodically sweeps the cathode-ray beam across the target, and both electrical circuits are connected together to cause both waveforms to sweep the cathode-ray beam at the same time.

SEE OR SEARCH CLASS:

342, Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), subclasses 142+ and 176+ for radar systems which utilize an indicator having a cathode-ray beam deflected onto a screen of a cathode-ray tube by means of synchronized horizontal vertical deflection systems.

348, Television, subclasses 805+ for cathode-ray tube color television systems and appropriate subclasses for non-color television systems utilizing horizontal and vertical synchronized sweep circuits.

394 Plural deflections in one plane:

This subclass is indented under subclass 391. Subject matter wherein the cathode-ray beam is plurally deflected in the same deflection plane by energization of the deflection circuits.

(1) Note. The deflection in the same plane may be in the same or the opposite direction to be proper for this subclass.

(2) Note. This subclass includes cathode-ray tube circuits which provide for cathode-ray wobble means in the deflection circuit in addition to the normal deflection means.

395 Plural potentials or currents applied to deflection member:

This subclass is indented under subclass 364. Subject matter wherein the electrical circuit connected to the deflection means causes deflection of the cathode-ray beam, when present, and includes circuitry for applying a plurality of voltages or currents to the deflection means to cause the cathode-ray beam to move in one direction.

(1) Note. In this subclass, the deflection means will deflect cathode-rays within a cathode-ray tube in only one direction transverse to the movement of the cathode-rays within a cathode-ray tube.

(2) Note. The voltages or currents applied to the deflection means may be of the same type or different in character. Also the plural currents or voltages may be delivered simultaneously or alternately to the deflection means.

(3) Note. Magnetic flyback deflection circuits which induce a second current sequentially to the deflection means are in subclasses 405+.

SEE OR SEARCH THIS CLASS, SUBCLASS:

398, for centering of a cathode-ray beam wherein a direct current or voltage and a waveform current or voltage is supplied to the deflection means.

SEE OR SEARCH CLASS:

348, Television, subclasses 284+, 325+, 377+, 379, 380+, and 805+ for television systems which may include more than one current or voltage applied to the deflection means.

396 Push-pull deflection circuit:

This subclass is indented under subclass 395. Subject matter wherein the deflection means includes two deflection elements and the electrical circuit includes means connected to each of the deflection elements to simultaneously deliver voltage or current to each of the deflection elements so that the voltage or current delivered to each deflection element is one hundred an eighty degrees out of phase with respect to each other.

(1) Note. Each deflection element may have its own amplifier or one amplifier may deliver the voltage or current to both of the deflection elements.

(2) Note. Plural voltages or currents may be applied to center the cathode-ray beam in addition to the push-pull deflection voltages.

(3) Note. Solid state and tube amplifiers are both grouped together in this section.

SEE OR SEARCH CLASS:

330, Amplifiers, subclass 55 for amplifiers with distributed parameter type coupling having a push-pull circuit arrangement, and subclass 81 for push- pull circuits utilizing a feedback

type amplifier, subclasses 118+ for amplifiers which include a push-pull stage.

331, Oscillators, subclass 114 for solid state active element oscillators which function in a push-pull mode.

397 Coil-type circuit:

This subclass is indented under subclass 396. Subject matter wherein the elements are deflection coils and the means connected to each of the deflection elements includes a separate amplifier having an input and an output, connected through its output to each of the coils and means connected to the input of each amplifier to cause the current to increase through one of the coils and its associated amplifier while at the same time causing the current to decrease through the other coil and its associated amplifier.

398 With cathode-ray centering:

This subclass is indented under subclass 395. Subject matter wherein the circuit includes an arrangement to provide current or voltage to the deflecting means, which current or voltage in use with a cathode-ray tube, will establish the initial static position at which cathode-rays will strike the target of a cathode-ray tube.

399 Deflection coil circuit:

This subclass is indented under subclass 364. Subject matter wherein the deflection means is a cathode-ray deflection coil, and the coil, when energized through the electrical circuit, produces a magnetic field which interacts with the cathode-ray beam when present in the tube to move the beam transverse to and simultaneously with the movement of the beam within the tube.

(1) Note. The art herein is mainly magnetic sweep circuits which will move a cathode-ray beam within a cathode-ray tube in one direction only.

SEE OR SEARCH CLASS:

335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclasses 210+ for magnetic electron or ion beam deflection devices, per se.

400 Including a saturable element:

This subclass is indented under subclass 399. Subject matter wherein the electrical circuit includes a magnetic saturable element.

(1) Note. A magnetic saturable element for this subclass includes a saturable reactor, a saturating reactor, or a saturable transformer.

SEE OR SEARCH CLASS:

307, Electrical Transmission or Interconnection Systems, subclasses 401+ for nonlinear reactor systems.

323, Electricity: Power Supply or Regulation Systems, subclasses 206, 214, 249, 302, 310, and 329 for voltage magnitude control systems utilizing saturable reactors.

330, Amplifiers, subclass 8 for amplifier systems wherein the active element is a saturable core reactor.

336, Inductor Devices, subclasses 155+ for inductive regulators of the saturable core type.

401 Including a temperature responsive element:

This subclass is indented under subclass 399. Subject matter wherein the electrical circuit includes a heat responsive electrical element.

(1) Note. The deflection circuit may include a sweep waveform generator, and output amplifier responsive to the generator, and connections to the deflection coil from the amplifier. The temperature responsive elements may be in the generator, amplifier, or in the connections to the deflection coil.

SEE OR SEARCH CLASS:

330, Amplifiers, subclass 143 for thermally responsive impedance amplifiers.

335, Electricity: Magnetically Operated Switches, Magnets, and Electromagnets, subclass 217 for electron or ion beam deflecting electromagnets responsive to temperature.

338, Electrical Resistors, subclass 7 for resistors wherein the resistance value is temperature compensated.

402 Including a voltage dependent resistor:
This subclass is indented under subclass 399. Subject matter wherein the electrical circuit includes a voltage dependent resistor.

(1) Note. A voltage dependent resistor is one which does not follow Ohm's law and has a negative temperature coefficient of resistance.

SEE OR SEARCH CLASS:
323, Electricity: Power Supply or Regulation Systems, subclasses 293 through 298 for an automatic impedance system responsive to voltage and/or current.
338, Electrical Resistors, subclasses 20+ for resistors whose resistance value is responsive to current or voltage.

403 Including an amplifier:
This subclass is indented under subclass 399. Subject matter wherein the electrical circuit connected to the deflection coil includes an amplifier having an input and an output, and the output of the amplifier is connected to the deflection coil.

SEE OR SEARCH THIS CLASS, SUBCLASS:
378, for circular, spiral or radial sweeps which include a deflection coil circuit having an amplifier.
379+, for amplifiers type deflection coil circuits which additionally include a control of the cathode-ray beam.
387+, for amplifier feedback type deflection coil circuits.
391+, for amplifier type deflection coil circuits which deflect a cathode-ray beam at plural different locations in the same direction or will deflect the beam in two different directions simultaneously or sequentially.
395+, for amplifier type deflection circuits applying plural potentials or currents additively or sequentially to a deflection coil, particularly subclass 397 for push-pull deflection coil circuits.

404 Tube-type amplifier:
This subclass is indented under subclass 403. Subject matter wherein the amplifier is of the electric space discharge type.

SEE OR SEARCH THIS CLASS, SUBCLASS:
379+, for coil deflection circuits using a tube type amplifier combined with a control of the cathode-ray beam.
387+, for feedback deflection coil circuits which include a tube type amplifier.
391+, for plural deflection circuits which include tube type amplifiers.
395+, for coil type deflection circuits which include tube type amplifiers to deliver plural currents to a deflection coil, particularly subclass 397 for a push-pull coil type deflection circuit.
409+, for electrostatic type deflection circuits which include a tube type amplifier.

405 With transformer connecting amplifier to coil:
This subclass is indented under subclass 404. Subject matter wherein the electrical circuit includes a transformer and the transformer is connected between the output of the amplifier and the deflection coil.

(1) Note. The transformer may be (1) formed of two windings where one winding is connected to the output of the amplifier and the other winding, by induction, delivers current to the deflection coil, (2) a multiple tapped winding wherein the output from the amplifier flows through a portion of the tapped winding to induce a voltage in another portion of the tapped winding which is connected to the deflection coil, or (3) have the output current of the amplifier tube passing through a winding or a portion of the winding of the transformer and the current through the winding causes a voltage across the winding which energizes the deflection coil.

406 With power recovery circuit:
This subclass is indented under subclass 405. Subject matter wherein there is included a diode or additional amplifier to selectively pass

current produced by the induced voltages of the transformer or deflection coil, the movement of the current through the diode or amplifier being used as a power source.

(1) Note. The power source may be to supply the second anode voltage for a cathode-ray tube or kinescope or to boost the plate voltage of an amplifier tube.

407 With diode or amplifier across coil:

This subclass is indented under subclass 404. Subject matter wherein the electrical circuit includes a diode or another amplifier device connected in circuit across the deflection coil.

(1) Note. The diode or another amplifier may receive current at the same time the deflection coil does from the amplifier or the diode or another amplifier may receive current from the coil when the amplifier is not conducting.

(2) Note. Herein are diodes or amplifiers across the deflection coil used to damp the energy of oscillation caused by the shock energization of the coil when the amplifier is cutoff.

SEE OR SEARCH THIS CLASS, SUBCLASS:

406, for deflection coil circuits which include a power recovery circuit in the amplifier-transformer deflection coil circuit and which may include a damper tube connected across the transformer or deflection coils.

408 Including solid-state switch:

This subclass is indented under subclass 399. Subject matter wherein the electrical circuit connected to the deflection coil includes a solid state switching device.

(1) Note. A solid-state switching device is a semiconductor which may be a diode or a multielectrode element such as a silicon controlled rectifier, a silicon controlled switch, or a four-layer Shockley diode wherein no amplification of the current takes place in passing through the switching device to the deflection coil.

(2) Note. The combination of a deflection circuit including the switching device and a power supply energized from the deflection circuit is also in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

379+, for deflection circuits combined with an added control of the cathode-ray beam.

391+, for plural cathode-ray deflection circuits which deflect a cathode-ray beam at plural locations or in a plurality of directions and wherein any of the circuits may include a solid state switch.

395+, for deflection circuits which apply plural potentials or currents to the deflection means wherein the circuits may include a solid state switch in the deflection circuit.

SEE OR SEARCH CLASS:

29, Metal Working, subclasses 25.02+ for processes and apparatus for making barrier layer devices.

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 131+ for miscellaneous sawtooth or sweep waveform generation utilizing a solid-state device, subclasses 438+ for a four or more layer device (e.g., SCR) gating circuit, and subclasses 493+ for a two electrode solid-state device gating circuit.

409 Including a discharge device:

This subclass is indented under subclass 364. Subject matter wherein the deflection means is a pair of electrostatic plates and the electrical circuit, connected to the pair of plates, includes a space discharge device, the electrostatic plates when energized by the circuit causes an electrostatic field which interacts with the beam to move the beam in a directing transverse to and simultaneously with the movement of the beam within the tube.

(1) Note. The term “space discharge device” includes diodes and tube type amplifiers wherein an electric current flows between two spaced electrodes in

an envelope and the space is constituted by a gas, vapor, or a vacuum.

SEE OR SEARCH THIS CLASS, SUBCLASS:

364+, for deflection circuits including solid state diodes or amplifying devices connected to the deflection means.

379+, for a deflection circuit to deflect a cathode-ray beam in one or more directions transverse to the movement of the beam and additional cathode-ray beam control.

391+, for plural separate cathode-ray beam deflection circuits to deflect the cathode-ray beam in one direction or in two orthogonal directions transverse to the movement of the cathode-ray beam.

395+, for cathode-ray beam deflection circuits which require plural currents or potentials to operate the deflection means.

SEE OR SEARCH CLASS:

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 131+ for miscellaneous sawtooth waveform generation which may include an electron discharge device.

330, Amplifiers, appropriate subclasses for electric circuits which utilize a space discharge amplifying device.

331, Oscillators, subclasses 129+ for relaxation oscillators using gas tubes and subclasses 143+ for relaxation oscillators utilizing a vacuum tube to form a deflection waveform to be applied to a deflection means of a cathode-ray tube.

410 With device discharging a condenser:
This subclass is indented under subclass 409. Subject matter wherein the electrical circuit includes a condenser and connections between the condenser and the discharge device to cause the condenser when charged, to discharge through the discharge device.

(1) Note. The circuits for the most part here are sweep circuits but the circuits are generally not claimed as having the condenser periodically charged and discharged.

SEE OR SEARCH THIS CLASS, SUBCLASS:

227, and indented subclasses, for systems under the class definition, which include a condenser and a discharge device of the gas or vapor ionization type, the condenser being charged through the gas or vapor tube.

SEE OR SEARCH CLASS:

307, Electrical Transmission or Interconnection Systems, subclass 108 for waveform or waveshape determinative or pulse producing systems which include a capacitor.

320, Electricity: Battery or Capacitor Charging or Discharging, subclasses 166+ for charging or discharging a capacitor, per se.

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclass 183 for a pulse generated by a capacitor discharging through an electron tube.

331, Oscillators, subclasses 131 and 152 for relaxation oscillators using the charging and discharging of a capacitor to form a deflection waveform to be applied to a cathode-ray tube deflection means.

411 Power supply from deflection circuit source:
This subclass is indented under subclass 1. Subject matter which includes a transformer forming part of a cathode-ray beam deflection circuit and a circuit powered by the transformer connected to the transformer, said circuit being a power source (1) to supply energy to an electrode of a cathode-ray tube or to an element connected to the cathode-ray tube or (2) to regulate the energy delivered through the deflection circuit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

30, for a circuit to supply potential or current to a cathode-ray tube modulating means.

291+, for current or voltage regulation of a circuit supplying potential or current

to an electric lamp or discharge device generally.

364+, particularly subclass 406 for a cathode-ray beam deflection circuit source for a power supply which energizes one or more cathode-ray tube electrodes.

382, for a circuit to supply potential or current to a cathode-ray tube focusing or concentrating means.

SEE OR SEARCH CLASS:

323, Electricity: Power Supply or Regulation Systems, subclasses 277 and 291 for magnetic field control of an electric space discharge device for controlling the voltage or current to a load generally.

348, Television, subclasses 377+, 379, 380+, and 730 for television systems which may include a deflection circuit energized power supply to regulate the beam intensity of the picture tube.

500 HIGH ENERGY PARTICLE ACCELERATOR TUBE:

This subclass is indented under the class definition. Subject matter comprising a subcombination consisting of a space discharge tube device combined with a particular circuit means, wherein the space discharge means includes at least one electron or other charged particle accelerating type tube.

(1) Note. In this subclass, the high energy charged particle has energies in excess of one million electron volts (eV).

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 281+ for methods and apparatus for the ionic separation or analysis of material (e.g., mass spectrometer), subclasses 306+ for methods and apparatus for the inspection of solids or liquids by charged particles (e.g., electron microscope), and subclasses 423+ for methods and apparatus for generating ions.

376, Induced Nuclear Reactions: Processes, Systems, and Elements, subclasses 100+ and 190+ for processes and/or devices utilizing accelerated particles in obtaining thermonuclear reactions or in treating materials with accelerated neutron particles.

501 Magnetic field acceleration means:

This subclass is indented under subclass 500. Subject matter including means for initially accelerating the electrons or other charged particles by a time-varying magnetic flux and additional means for providing a cyclically varying electric field.

SEE OR SEARCH THIS CLASS, SUBCLASS:

5+, for a low energy particle (i.e., cathode ray) being accelerated by an inductive field.

502 Cyclotron:

This subclass is indented under subclass 501. Subject matter wherein the space discharge tube means includes two large, flat, hollow, semicircular segments of thin metal placed with their diametric edges closely parallel, the two segments being given a high frequency alternating potential difference, producing a rapidly oscillating field in the space between them, whereby a free charged particle (e.g., proton, deuteron, or alpha particle) released in the space is caused to be pulled first in one direction and then another.

(1) Note. The influence of a magnetic field perpendicular to the plane of the segments causes the free particles to follow a circular path (i.e., as in a cyclotron).

SEE OR SEARCH CLASS:

313, Electric Lamp and Discharge Devices, subclass 62 for the structure of cyclotrons, and subclasses 359.1+ for positive ion accelerator structure without having electric control circuitry.

376, Induced Nuclear Reactions: Processes, Systems, and Elements, subclass 112 for cyclotron-type acceleration of nuclei.

503 Synchrotron:

This subclass is indented under subclass 501. Subject matter wherein the space discharge tube means includes means for accelerating charged particles (e.g., electrons) in a circular orbit in an increasing magnetic field, which means consists of means for generating an

alternating electric field and applying it in synchronism with the orbital motion of the particles.

SEE OR SEARCH CLASS:

376, Induced Nuclear Reactions: Processes, Systems, and Elements, subclasses 100+ for the utilization of a synchrotron-type device in confining and controlling a plasma to yield thermonuclear reactions.

504 Betatron:

This subclass is indented under subclass 501. Subject matter wherein the space discharge tube means includes a particle accelerating means comprising a device in which the circular orbit of the accelerated particles (e.g., electrons) has a constant radius, the particles being accelerated by a rapidly changing magnetic field.

SEE OR SEARCH CLASS:

376, Induced Nuclear Reactions: Processes, Systems, and Elements, subclasses 100+ for the utilization of a betatron-type device in confining and controlling a plasma to yield thermonuclear reactions.

505 Linear accelerator (Linac):

This subclass is indented under subclass 501. Subject matter wherein the electrons or other charged particles are accelerated along a straight line.

(1) Note. These include magnetic induction type accelerators and all types of "Linac" accelerators (radio frequency quadrupole, RFQ; drift tube linac, DTL; coupled cavity linac, CCL; and side coupled linac, SCL).

506 Electrostatic accelerator means:

This subclass is indented under subclass 500. Subject matter wherein the electrons or other charged particles are accelerated by a change of electric field without magnetic influence.

507 With injection or extraction means:

This subclass is indented under subclass 500. Subject matter including (a) means combined with a source for introducing the electrons or other charged particles into a path or (b) means for ejecting the electrons or other charged particles after desired energy levels have been obtained.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 423+ for methods and apparatus for generating ions.

END