600 **INDUCTIVE HEATING**
601 .With diverse-type heating
602 .Metal working
603 ..Bonding
604 ...Container sealing
605 ...Wire (e.g., cable, etc.)
606 ...Ring
607 ...Tube (i.e., pipe)
608 ....With electrical control (e.g., speed, temperature, gaging thickness, etc.)
609 ....Layering (e.g., coating, lining, etc.)
610 ....With preheating or postheating
611 ....Plural (e.g., end to end, etc.)
612 ....Seam bonding
613 .....With impeder
614 .....With guiding device
615 ...Brazing (e.g., cladding, etc.)
616 ...Soldering
617 ...Welding
618 .With heat exchange
619 ..Roller (e.g., godet, etc.)
620 ..Cooking
621 ...Utensil (e.g., pot, pan, etc.)
622 ...With support
623 ....Having cooling device
624 ...Core or coil structure
625 ...Intermediate member condition responsive
626 ....Load sensing
627 ....Temperature
628 ..Fluid or liquid heater
629 ...By tube (i.e., pipe)
630 ....Core or coil structure
631 .....Core rotation
632 ..With cooling arrangement
633 ..Bonding (e.g., nonmetallic, etc.)
634 ..Susceptor
635 .Specific heating application
636 ..Wire (e.g., cable, etc.)
637 ..Rod
638 ...Semiconductor
639 ...Irregular (e.g., camshaft, etc.)
640 ..Gear
641 ..Valve
642 ..Ring or link
643 ..Tube (i.e., pipe)
644 ...Interior surface
645 ..Strip (e.g., sheet, etc.)
646 ..Slab (e.g., ingot, etc.)
647 .With workpiece support
648 ..Levitation
649 ..Materials
650 ..With monitoring (e.g., regulating, etc.)
651 ..Gas environment
652 ..Rotation of workpiece
653 ..Conveyor
654 ...Charge or discharge
655 ...Multiple stations
656 ....Plural heating zones
657 ...Curve path
658 ...Lift (i.e., vertical movement)
659 ..Pressure applicator (e.g., clamp, etc.)
660 .With power supply system
661 ..Power switching
662 ...Plural load inductors
663 ...Condition responsive
664 ....Input monitoring
665 ....Load sensing
666 .....With tuning
667 .....Temperature
668 ...With protection
669 ...Polyphase
670 ..With specific transformer
671 ..With plural load inductors
672 .Specific inductor configuration
673 ..U-coil section
674 ..Cylindrical coil
675 ..Planar coil
676 ..With inductor support
677 ..With cooling arrangement
678 **MICROWAVE HEATING**
679 .With diverse device
680 .With diverse-type heating
681 ..Convection heating
682 ...Steam generating
683 ...Gas burner
684 ...Tunnel type
685 ..Resistive heating
686 .Gas environment (e.g., pressurized, etc.)
687 .Fluid heater
688 ..Water
689 ..Beverage (e.g., coffee, etc.)
690 .Waveguide applicator
691 ..Slotted
692 ...Meander (e.g., zigzag, etc.)
693 ...Having load passage
694 ..With dummy load

695 ..Input power port arrangement
696 ...With tuning
697 ...Plural feed
698 .Tunnel furnace
699 ..With leakage suppression
700 ..Conveyor
701 ...Plural heating zones
702 .With control system
703 ..Defrost
704 ..Load condition sensor
705 ...Plural diverse types
706 ...By ultrasonic or acoustic
707 ...Gas or vapor
708 ...Weight
709 ...Field intensity/reflection
710 ...Temperature
711 ....By infrared
712 ....Probe
713 .....Wireless type
714 ..Remote (e.g., card, etc.)
715 ..Power switching
716 ...With detector
717 ...Plural power supplies
718 ...Having duty cycle
719 ..With timer
720 ..With display or alarm
721 ..Starting circuitry
722 ..Interlock circuitry and structure
723 ...With additional safety feature
724 ...With latch assembly
725 .Cookware (e.g., vessel, utensil, etc.)
726 ..With food mixer
727 ..Expandable
728 ..With field modifier
729 ...Shielding
730 ..With heat exchange (e.g., susceptor, etc.)
731 ...By fluent material (e.g., steaming, boiling, or frying, etc.)
732 ..With stand or handle
733 ..With drainage
734 ..With cover
735 ...Having vent
736 .Radiation protection
737 ..With leakage detector
738 ..With leakage prevention
739 ...Door assembly
740 ....With screen or window
741 ....With choke or seal
742 .....Slotted choke
743 .....Choke cavity cover
744 ...Absorption
745 .Field modification
746 ..With power feed structure
747 ...Phase shifting
748 ...Radiator (e.g., antenna, etc.)
749 ....Rotating
750 ...With tuning or particular modes
751 ..Mixer (e.g., rotating stirrer, etc.)
752 ..By load support movement
753 ...Horizontal and vertical
754 ...Horizontal (e.g., turntable, etc.)
755 ....Portable
756 .Enclosed cavity structure
757 ..With cooling or ventilation
758 ..With cavity illumination
759 .With heat exchange (e.g., susceptor, etc.)
760 .With specific transformer
761 .With specific generator
762 .Load support
763 ..Shelf

764 **CAPACITIVE DIELECTRIC HEATING**

765 .Bonding
766 ..Shoe
767 ..Die embroidery
768 ..Sewing machine type
769 ..Container sealing
770 .Specific heating application
771 ..Food
772 ..Fluent material
773 ..Sheet (e.g., board, etc.)
774 .With workpiece support
775 ..Conveyor
776 ...Multiple stations
777 ..Pressure applicator (e.g., clamp, etc.)
778 .With power supply system
779 ..Condition responsive
780 .Specific electrode configuration

50 **METAL HEATING (E.G., RESISTANCE HEATING)**

51 .Chain
52 ..Methods
53 .Rail bond
54 ..Arc weld
55 ..Resistance weld methods
56 .Wire, rod, or bar bonding
56.1 ..Of wire leads
56.21 ...By microbonding

56.22 ...Methods
57 ..Butt bonding (e.g., welding)
58 ..Methods
59.1 .Of cylinders (e.g., pipes and tubes)
60 R ..Electric arc
60.2 ...Tube sheet welding
61 ...Methods
60 A ...Rotatable tube welders
61.1 ..Having internal support means
61.11 ...With forming means
61.12 ...With cleaning means
61.13 ...With edge guidance means
61.2 ..Utilizing high frequency resistance heating
61.3 ..With edge guidance means
61.4 ..With adjustable electrode means
61.5 ..With condition responsive control of the welding process
61.6 ..Using three or more electrodes
61.7 ..With cooling means
62 ..Helical seam
63 ..Rotary transformer part
64 ..Container (e.g., cans)
65 ..Nonrotary electrode (e.g., oscillating)
66 ..Inside electrode
67 ..Resistance heating methods
68 .Cutting or disintegrating (e.g., machining engraving)
69.1 ..Electric arc
69.11 ..Electric spark machining
69.12 ...Wire cutting
69.13 ...Circuits
69.14 ...Dielectric composition and purification
69.15 ...Electrodes
69.16 ...Gap spacing control
69.17 ...Methods
69.18 ...Pulse
69.19 ...Safety circuits
69.2 ...Vibrating electrodes or workpiece
70 ...Hand-type tools
71 .Liquid electrode
72 .Nonatmospheric environment at hot spot (e.g., resistance weld under oil, vacuum)
73 ..Slag (e.g., submerged arc)
73.1 ...Including electroslag welding
73.11 ....For coating
73.2 ...With granular flux supply
73.21 ....For deposition welding
74 ..Gas supply (e.g., by ingredient of electrode, by external source)
75 ...Nonconsumable electrode (e.g., atomic hydrogen)
76.1 .For deposition welding (e.g., coating or building up)
76.11 ..With cooling means
76.12 ..Of multiple distinct layers
76.13 ..By spark discharge
76.14 ..By electric arc
76.15 ...With nonconsumable electrode
76.16 ...Plasma
76.17 ..By resistance heating
77 ..Cutting edges of tools
78.01 .For bonding with pressure (e.g., resistance welding)
85.1 ..Brazing or soldering
85.12 ...Utilizing radiant energy
85.13 ....Methods
85.14 ...With filler metal in circuit
85.15 ....Methods
85.16 ...Electrically heated tool (e.g., electrodes, heaters, etc.)
85.17 ...Furnaces or enclosures
85.18 ...Wire lead bonders
85.19 ...Machine for predetermined operation
85.2 ...Fluxes or solders
85.21 ...Solder preforms
85.22 ...Methods
78.02 ..By solid-state bonding (e.g., diffusion)
78.11 ..Honeycomb
78.12 ...Methods
78.13 ..With additional heating device
78.14 ..With work cleaning means
78.15 ..With work cutting means
78.16 ..With work deforming means (e.g., tube sealing)
79 ..With conveyer for workpiece
80 ...Spot bond
81 ..Roller electrode
82 ...Roller moves over work
83 ...Methods
84 ...Electrode structure
86.1 ..By spot bonding
86.21 ...With hand-manipulative portable devices
86.22 ...With separately applied pressure and heat
86.23 ...With welding pressure controlled by the work support

86.24 ...With work orientation means
86.25 ...With significant electrode support
86.31 ....Having cooling means
86.32 ....Having magnetic force actuated electrode
86.33 ....Having adjustment means
86.41 .....With condition responsive control means
86.51 ......Responsive to pressure
86.61 ....By force balancing
86.7 .....For predetermined welding operation
86.8 ....Having interchangeable welding electrodes
86.9 ...For one-face welding
87 ...Multiple spot type
88 ...Electrode positionable along fixed bus bar (e.g., reaction bar type)
89 ...Fluid pressure actuated electrode
90 ...Plier or tong type
91.1 ...With condition responsive control of the welding process
91.2 ...Methods
91.21 ....Of welding through insulation
91.22 ....With additional heating to same spot
91.23 ....With work deforming
92 ....Current limitation (e.g., by interposed insulation)
93 .....By localized projection
94 .....By interposed button
95 ..Percussive
96 ...Methods
97 ..Flash
98 ...Stud
99 ....Methods
100 ...Methods
101 ..Butt
102 ...Extended seam
103 ...One part fed
104 ...Methods
105 ....Preparation of edges
106 ....By use of a bridging member (e.g., splice plate)
107 ....End or edge to surface
108 ..Systems of current supply
109 ...With indicator (e.g., recorder)
110 ...Controlled in response to current, voltage, or temperature
111 ...Repeat or interrupted current systems (e.g., multiple welds, multiple heated weld)
112 ...Stored energy discharge (e.g., inductive)
113 ....Condenser discharge
114 ...With space-discharge tube control (e.g., thyratron, ignitron)
115 ...Synchronous switching on and off
116 ...With transformer
117.1 ..Methods
118 ...Particular material (e.g., dissimilar, aluminum)
119 ..Electrodes (e.g., structure)
120 ...With cooling
121.11 .By arc
121.12 ..Using electron beam
121.13 ...Welding
121.14 ....Methods
121.15 ...Deposition (e.g., sputtering)
121.16 ...Melting
121.17 ....Methods
121.18 ...Cutting
121.19 ....Etching or trimming
121.2 .....Methods
121.21 ...Chamber
121.22 ....Sealing
121.23 ....Monitoring
121.24 ...Nonvacuum environment
121.25 ...Shaping
121.26 ....With focusing
121.27 ....With electrode or gun structure
121.28 ...Position control
121.29 ....Swept or scanned
121.3 ....Condition responsive
121.31 ...Workpiece position control
121.32 ....Condition responsive
121.33 ...With fluid supply (e.g., shielding gas or coolant)
121.34 ...Power supply
121.35 ...Methods
121.36 ..Using plasma
121.37 ...Melting
121.38 ....Methods
121.39 ...Cutting
121.4 ....Etching
121.41 .....Methods
121.42 .....Rate control
121.43 .....With chamber
121.44 ....Methods
121.45 ...Welding

121.46 ....Methods
121.47 ...Spray coating
121.48 ...Plasma torch structure
121.49 ....Cooling system
121.5 ....Nozzle system
121.51 ....Gas supply system
121.52 ....Electrode structure
121.53 ....Consumable electrode
121.54 ...Control systems
121.55 ....Gas supply
121.56 ....Arc positioning
121.57 ....Arc ignition
121.58 ...With work holder
121.59 ...Methods
121.6 ..Using laser
121.61 ...Beam energy control
121.62 ....Condition responsive
121.63 ...Welding
121.64 ....Methods
121.65 ...Melting
121.66 ....Methods
121.67 ...Cutting
121.68 ....Etching or trimming
121.69 .....Methods
121.7 ....Hole punching
121.71 .....Methods
121.72 ....Methods
121.73 ...Shaping
121.74 ....With mirror
121.75 ....With lens
121.76 ...Multiple beams
121.77 ....With sing source
121.78 ...Beam position control
121.79 ....Path adjustment
121.8 ....Swept or scanned
121.81 ....Condition responsive
121.82 ...Workpiece position control
121.83 ...With monitoring
121.84 ...With fluid supply
121.85 ...Method
121.86 ...Chamber
122 ..Control of arc direction
123 ...Magnetic
124.01 ..With ignition by retraction
124.02 ..With gap control
124.03 ...By arc voltage
124.1 ..With automatic positioning of arc
124.21 ...Including work cutting
124.22 ...In response to work shape
124.31 ....Having carriage supported by work
124.32 ....Having variable welding head travel rate (e.g., gravity feed)
124.33 ....Having electrode angle control
124.34 ....By using probe means
124.4 ...In response to work position
124.5 ...In response to the transfer rate of the weld metal
125.1 ..With predetermined welding operation
125.11 ...For closed path welding (e.g., circumferential welding)
125.12 ...For oscillating electrode welding
126 ...Vertical work (e.g., horizontal seam in vertical wall)
127 ..Spot arc bonding (e.g., arc riveting)
128 ..With working of bonding metal (e.g., by peening)
129 ..Brazzing or soldering
130.01 ..Including circuits for monitoring arc parameters
130.1 ..Including arc-power supplies
130.21 ...With automatic output control (e.g., shortcircuit, infrared)
130.31 ....Responsive to arc voltage only
130.32 ....Responsive to arc current only
130.33 ....Responsive to both arc voltage and arc current
130.4 ...With arc ignition and stabilization arrangements
130.5 ...With predetermined time variation of arc voltage or current (e.g., programmed)
130.51 ....Pulsating or periodic output
132 ...Remote control
133 ...With generator (e.g., gas engine driven)
134 ....Electric motor driven
136 ..Welding
137 R ...Process
137 PS ....Power supply
137 WM ....Weld metal composition
137.2 ..With consumable electrode device
137.31 ...Gun
137.41 ....Having fume extractor
137.42 ....Having gas flow limiting shape (e.g., gas diffuser)
137.43 ....Having spatter shield

137.44 ....Having integral electrode guide
137.51 .....With flexibility
137.52 .....With wear resistant liner
137.61 ....Having filler electrical contact structure
137.62 ....Having cooling means
137.63 ....Having supply connection means (e.g., quick disconnect)
137.7 ...Rate control
137.71 ....Circuits
137.8 ...Including filler wire deforming
137.9 ...Supply cables (e.g., for current, shielding gas, coolant)
138 ..Electrode holder (e.g., spring biased tong)
139 ...Plural adjustable electrodes (e.g., hand torch)
140 ...Spring jaw (e.g., sprung by electrode)
141 ....With separate actuator
142 ...Plunger jaw (e.g., screw actuated)
143 ....Spring biased
144 ...Positive grip
145.1 .Weld rod structure
145.21 ..Nonconsumable
145.22 ..Flux cored
145.23 ..Flux coated
145.31 ...Partially
145.32 ...With wire wrap
145.41 ..Nonmetal cover
146.1 .Weld rod composition
146.21 ..Nonconsumable
146.22 ..Nonferrous
146.23 ..Containing nickel, chromium, and iron
146.24 ..Metal deoxidizer or denitrogenizer
146.3 ...Particulate
146.31 ..Particulate
146.32 ...Alloying
146.41 ....Nickel or chromium
146.51 ...Containing carbide
146.52 ...Shielding
147 ..With eye shield
148 .Bonding
149 .With forging or shaping (e.g., of powder)
150 R ..Upsetting
151 ...Anvil electrode
152 ...Simultaneous with heating
150 V ...Riveting
153 ..Bending or twisting
154 ..Subsequent to heating
155 .Endless strip
156 .Rods and bars
157 .Rivets
158 .Work holders
159 ..Rotating supports
160 ..Mandrels (e.g., anvil)
161 ..Clamp
162 .Methods

200 **HEATING DEVICES**

201 .Combined with diverse-type art device
202 ..Vehicle or vehicle component
203 ...Windshield or window
204 ...Steering device
205 ...Motor or engine
206 ....Manifold
207 ....Carburetor
208 ....Radiator or cooling system
209 ..Electrical devices
210 ...Crystal or other vibratory device
211 ..Apparel
212 ..Bed covering (e.g., blanket)
213 ..Static structure (e.g., building pavement, etc.)
214 ..Vending, dispensing, or display device
215 ..Shoe machinery
216 ..Printing or reproduction device
217 ..Chair, bed, or other body-supporting means
218 ..Table or cabinet
219 ..Mirror
220 ..Light means
221 .Tool or instrument
222 ..Hair heaters
223 ...Singeing apparatus
224 ...Electrolytic
225 ...With heated clamp means (e.g., hand-held)
226 ...With heated casing
227 ..Hand-manipulative
228 ...With heat distribution means (i.e., heat applied to extended area)
229 ...With heated tip or other heat concentration means (i.e., heat applied to localized area)
230 ....With tip cooling, clamping, or lighting means

231 ....Convertible
232 ....Internal arc-type heating unit
233 ....Tip in electrical circuit
234 .....Work in circuit
235 .....With transformer secondary
236 ....Coil or loop-type heating element
237 .....Integral with tip
238 .....Detachable tip
239 ......Threaded
240 ...With power supply, voltage or current control, or connection and/or disconnection means
241 ....With thermal control means
242 ...Supports
243 .Combined with pressure application means
244 ..Rotatable
245 ..Sole plate-type pressure application means (e.g., flatiron)
246 ...Combined with stand
247 ....With complementary electrical connector means to external circuit terminating in stand
248 ...With condition-responsive indicator
249 ...Convertible
250 ...With power supply, voltage or current-control means
251 ....Thermally responsive
252 .....Adjustable
253 .....Comprising fusible metal, expansible liquid, or bar means
254 ...With heating unit structure
255 ....Plural heating units
256 ...With electrical circuit completion or terminal structure
257 ....Automatically operated
258 ...With heat storage, exchange, or reflector means
259 ...Supporting devices
260 .Resistive element: igniter type
261 ..With blower, suction, or other ignition facilitating means
262 ..With current control or external circuit connection or disconnection means
263 ...Automatic
264 ....Thermally responsive
265 .....Bimetallic or other flexible means
266 ...Resilient means
267 ..With housing casing or support means for igniter unit
268 ..With source of power or current
269 ..With indicating means
270 ..With igniter unit structure

Class 392 is an integral part of this Class (Class 219), as shown by the position of this box, and follows the schedule hierarchy of this Class, retaining all pertinent definitions and Class lines of this class.

383 .Electric arc-type devices
384 ..With perforating or disintegrating means
385 .Combined with container, enclosure, or support for material to be heated
386 ..Portable or mobile
387 ...Food conveying type (e.g., lunch box)
388 ..With means whereby material to be heated may be passed continuously through heated area (e.g., conveyor)
389 ..Revolving enclosure
390 ..Muffle-type enclosure
391 ..Oven type
392 ...Combined with additional material support
393 ...Oven performs plural diverse functions
394 ...With plural ovens
395 ...With plurality of separate heating units
396 ....Of diverse construction or functioning in diverse manners
397 ....Of different resistive values
398 ....Selectively energized
399 ...With heat energy transfer, distribution, or accumulator means
400 ....By convection
401 ...With steam generating means
402 ...With casing or support for heating unit or units
403 ....Retractable or detachable (from heated enclosure)
404 ....Hinged or adjustable (within the heated enclosure)

405 ....Including heat energy reflecting or directing means
406 ...With resistance heating means surrounding heating area
407 ....Embedded within or between walls of container
408 ...With resistance heating unit or units fixed enclosed by or located within heating area
409 ...With heating unit structure or composition
410 ....With plural section heating element
411 ....With infrared generating means
412 ...With current or voltage control or regulating means
413 ....Automatically responsive to condition of heating area
414 ...With switch or other external circuit completing means
415 ..Deep well
416 ...Convertible
417 ...With plurality of separate heating units
418 ...With adjustable position heating unit or units
419 ...With current control or external circuit opening or closing means
420 ..Crucible or furnace type (i.e., adapted to hold meltable material)
421 ...Melting pot
422 ...With plural separate heating units
423 ...With protection means for heating unit or switch
424 ...With resistance heating element surrounding or embedded within walls of container
425 ...With current or voltage control means
426 ...With significant heating unit structure or composition
427 ....Container comprises resistance heating element
428 ..Plural containers
429 ..With vessel and stand
430 ...With heat storage or transfer means
431 ...With pressure generating or maintaining means
432 ...Vessel separable from stand
433 ...With heating unit unitary with or attached to the stand
434 ....Adjustable relative to vessel or stand
435 ...With external electrical circuit connection or disconnection means
436 ...With heating unit attaching or support means
437 ....Immersible
438 ..With vessel
439 ...With heat storage or transfer means
440 ...With pressure generating or maintaining means (e.g., pressure cooker)
441 ...With temperature or current control means
442 ....Adjustable
443.1 ..Exposed horizontal planar support surface for material to be heated (e.g., hot plate, etc.)
444.1 ...Material is an electronic semiconductor device
445.1 ...With indicator
446.1 ...Having sensor
447.1 ....Responsive to presence of material (e.g., food, a cooking vessel, etc.)
448.11 ....Responsive to temperature
448.12 .....Having microprocessor to control output of the heating device
448.13 .....Of material (e.g., food, a cooking vessel, etc.)
448.14 ......Using thermistor-type sensor
448.15 ......Using temperature expansible fluid-type sensor
448.16 ......Using bimetallic member-type sensor
448.17 .....Of the exposed horizontal planar support surface
448.18 ......Using bimetallic member-type sensor
448.19 .....By rod or wire in a tube (e.g., thermo-cutoff probe, etc.)
449.1 ...Heating by convection
450.1 ...For direct contact with food (e.g., grill, griddle, etc.)
451.1 ...Having support for a heating unit

452.11 ....Frame, casing, or housing (e.g., range top, stove top, countertop, etc.)
452.12 .....Supporting an imperforate exposed horizontal planar surface to overlie the heating unit (e.g., cooktop, etc.)
452.13 .....Convertible (e.g., to an oven, to storage, etc.)
453.11 ....Allowing heating unit movement
453.12 .....Enabling the exposed horizontal planar surface to conform to material having other than a planar surface
453.13 .....Using hinge for tilting or pivoting
453.14 ......Of pintle and gudgeon type
453.15 ....Having an axis at an acute or obtuse angle to the exposed horizontal planar surface
454.11 ....Bracket having a hub and three or more angularly spaced horizontal projections (e.g., a spider, etc.)
454.12 .....Having means to secure to the heating unit or a surrounding support
455.11 ....Pan or cup (e.g., a drip pan, etc.)
455.12 .....Reflector-type
456.1 ....Ring having a flange overlaying hole in a surrounding support surface
457.1 ...Having direct manually actuated electrical switch
458.1 ...Having electrical connection
459.1 ....Receptacle (e.g., socket, an insulator block, a terminal block, etc.)
460.1 ...Heating element gapped from underside of the exposed horizontal support surface (e.g., ceramic plate, radiation-type, etc.)
461.1 ....Support for the heating element
462.1 ....Plural heating elements
463.1 ...Formed by tubularly shaped heating unit
464.1 ....Having plural tubular heating units
465.1 ...Heating element contacting planar underside of the exposed horizontal planar support surface (e.g., sheet metal, etc.)
466.1 ....Foil or film-type of heating element
467.1 ....Support for the heating element
468.1 ...Heating element is embedded in the exposed horizontal planar support surface
468.2 ...Heating element is in a groove formed on underside of the exposed horizontal planar support surface (e.g., cast metal plate, etc.)
469 ..Cylindrical or roller-type support for material to be heated
470 ...With plural heating units
471 ...With external electrical circuit completion means
472 .Plural functions simultaneously or convertible
473 ..To nonheating device
474 ..To diverse-type electric heating device
475 .With plural heat utilization means (single heater)
476 .Plural separate heating devices
477 ..With common power supply or current control means
478 ..With unitary housing, support, or casing means
479 ..Diverse type (each electric)
480 ..Selectively activated
481 .With protective means for heater
482 .With power supply and voltage or current regulation or current control means
483 ..Controlling or regulating plural separate distinct heating resistance elements(i.e., one control system for all elements)
484 ...Of diverse resistance characteristics or value
485 ...With total current or power limiting means
486 ...Selectively, sequentially or alternately
487 ....With indicator means
488 ..With voltage limitation, conversion, or adapting means

489 ..Combined manual and automatic regulating or control means
490 ..Automatic regulating or control means
491 ...Combined (e.g., electromechanical and thermal)
492 ...Comprising timing or cycling means
493 ....Electromechanical
494 ...Thermally responsive
495 ....Thermomagnetic
496 ...Pressure responsive
497 ...Comprising voltage and/or current measuring and comparing or combining means
498 ....Including follow-up servo means
499 ....Including bridge means
500 ...Including electron or glow-discharge tube means
501 ...Including semiconductor means (e.g., transistor)
502 ...Utilizing light-sensitive and/or responsive means
503 ...Inductive reactor means (e.g., auto transformer)
504 ...Comprising variable resistance means
505 ....Comprising nonlinear or negative temperature coefficient resistance means
506 ...With signal or indicating means
507 .With current connection and/or disconnection means (e.g., switch)
508 ..Plural means intermittently or selectively operated
509 ..Automatically operated
510 ...Thermally responsive
511 ....With auxiliary heating means for thermal switch means
512 ....Comprising linearly expansible metal
513 ....Comprising expansible fluid (e.g., alcohol or mercury)
514 ....With solenoid means
515 ....Adjustable means
516 ....Insertable into or in direct contact with heated material
517 ....Fusible link
518 ...Responsive to weight, position, or presence of body to be heated
519 ...Including electromagnetic relay means
520 .With heater-unit housing, casing, or support means (e.g., frame and single sheet)
521 ..Including or comprising holding or support means for material to be heated
522 ..Housing, casing, or support performs plural diverse functions (e.g., window)
523 ..Housing, casing, or support insertable into material or space to be heated (e.g., immersion type)
524 ..Comprising hinged or separable compartment (e.g., waffle iron type)
525 ...With plurality of or sectional heating means
526 ..With means for attaching housing or casing to an external device (e.g., magnetic or vacuum)
527 ...Body-supported (e.g., human body)
528 ..Flexible or resilient (e.g., warming pad)
529 ...Cloth or other fabric
530 ..With heat storage or transfer means (vanes)
531 ..With thermal insulation or cooling means
532 ..With open frame or grid-type support
533 ..Portable (e.g., with handle)
534 ..Rigid tubular housing, casing, or support (e.g., flattened tube)
535 ..Specially formed or adapted to fit material to be heated (e.g., a pipe)
536 ..With heating unit mounting or attaching means
537 ...Plural units combined with single casing housing or support
538 .With heating unit structure
539 ..Comprising plural separate and distinct resistive elements
540 ..With heat storage or transfer means (e.g., fins or plate)
541 ..With terminal or connector means (e.g., to external circuit means)

542 ..With resistive-element attaching, securing or electrical insulation means
543 ...Comprising coating printed or deposited on core sheath or support means
544 ...Element embedded within or completely surrounded by core, sheath, or support means
545 ...Resistive element interwoven with fabric support
546 ..Core, sheath, or support means for heating element
547 ...Comprising material to be heated
548 ...Of particular construction or material
549 ....Flexible
550 ....Sectional or interconnectable insulator means
551 ....Gasket or wafer-type insulator means
552 ..Heating element structure
553 ...Of particular construction and/or material (e.g., infrared generator)

FOREIGN ART COLLECTIONS

FOR 000 **CLASS-RELATED FOREIGN DOCUMENTS**