

CLASS 460, CROP THRESHING OR SEPARATING

SECTION I - CLASS DEFINITION

This class provides for apparatus or process not otherwise classified for operating upon crops which have been removed from their natural or original positions by harvesting; in addition this is the generic class for crop separation including apparatus and process relating to separating crop material lying under the soil such as peanuts, potatoes, beets or the like.

- (1) Note. This class includes means to separate grain from the head, straw, short broken straw (cavings), pieces of broken ears (cobs) and chaff. Also included are means for separating grain, seeds or produce from trash and separating hops strings, beans, peas and tomatoes from the vine, Brussels sprouts or the like from stems, husks and kernels from the corn.
- (2) Note. This class is limited to the individual components that perform the separation except as provided under machine component arrangement. The combine with harvesting or pickup is more appropriate for other classes. See Lines With Other Classes, below, for the Harvesting class and the class for Unearthing Plants or Buried Objects.

SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS

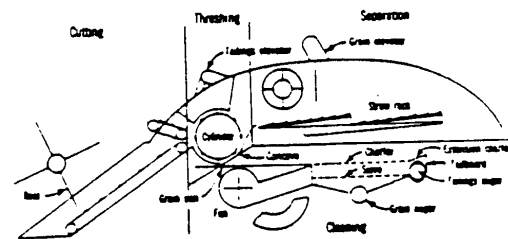
Class 14, Bridges: Class 14 does not have any direct relationship to Class 460 except subclass 70 which includes floored, narrow structures having an endless conveyor as whole or part of the floor.

Class 19, Textiles: Fiber Preparation: Class 19 includes means which mechanically isolate and manipulate fibers so as to place them in condition for the purpose for which they are to be utilized; subclasses 5+ includes an apparatus having means to separate stalk and leaf fibers of plants and also includes means for stripping the seeds or leaves from the plant; subclasses 65+ includes method and apparatus to disentangle, clean and straighten the fibers.

Class 29, Metal Working: Class 29 the generic class of assembly and combined mechanical manufacturing.

Class 30, Cutlery: Class 30 is the broad generic class for cutting implements including those for cutting by sharp point, which are manipulable by hand. Class 30 also includes hand manipulable scrapers having a sharpened scraping or cutting edge. Subclass 121.5 includes devices for corn strippers. Subclass 298 includes hand harvesting implements such as removing corn ear from stalk, removing grapes from vine, fruit stem from fruits.

Class 56, Harvesters: Class 56 and 460 are closely related due to the fact that one of the most important modern day (at least for the last 50 years) power farming machines is the harvester-thresher. It is more often called the "combine" as it combines several operations into a single operation. With the help of the combine, harvesting and threshing are done simultaneously thereby eliminating several expensive operations formerly needed such as binding, shocking, stacking, pitching bundles and hauling crop to the thresher. Combines now harvest all the grain crops, roots crops, most of the vine crops and corn crop. The combine as a whole unit performs six major operations. Processes and apparatus with respect to the cutting unit, the feeding unit and the grain handling unit are classified more appropriately in Class 56. Processes and apparatus with respect to threshing and rethreshing, separating, and cleaning are classified in Class 460. Further, in Class 56, particular attention should be given regarding subclasses 14.6 and 16.5 which include combines having threshing machines; subclasses 122+ which includes apparatus for cutting, conveying and threshing; subclasses 103+ which includes machines for seed gatherers, strippers and also those which thresh from the standing stalks.



Schematic cross-section of combine showing units that perform the six major operations.

Class 99, Foods and Beverages: Apparatus: Class 99 includes apparatus for preparing, treating, and preserving food substances such as all types of grain, underground and above ground vegetables, nuts and similar

crop material. Subclasses 567+ includes apparatus which spatially removes recognizable external portion from food material by compressing, impacting, or severing means.

Class 171, Unearthing Plants or Buried Objects: Class 171 includes machines and methods for removing a weed or plant root with the vine stem or top portion of said plant either connected to the root or severed therefrom. Particularly subclass 13 has an apparatus having a pronged member which is adapted to snag or comb vines, tops, weed, trash or other material; subclass 17 has an apparatus which separates material by fluid current; subclass 23 has means to shift the flow of recovered objects; subclasses 27 and 28 include apparatus which severs or separates parts of harvested plants.

Class 209, Classifying, Separating, and Assorting Solids: Class 209 includes methods and apparatus for separating solids materials and assorting and segregating them in grades or classes according to their physical characteristics. The class in general includes separation of grains, fruits and vegetables. It does not include separation of straw and chaff from grain. In particular, subclasses 132+ includes conveyors delivering the material; subclasses 233+ includes apparatus having reciprocating agitators with sifters having convex and concave forms; subclasses 307+ includes methods and means having endless belt sifters; subclass 607 includes apparatus for separating corn silk.

Class 222, Dispensing: Class 222 is the generic class for processes or apparatus for dispensing material which may be in any physical state (solid, liquid or gaseous), and may have any form or shape. The class may include subject matter related to feeders for shellers and huskers. Subclass 161 includes dispensing container having movement for the purpose of shaking the contents, and may include vibrators or shakers for grain separator and straw carrier.

Class 241, Solid Material Comminution or Disintegration: Class 241 includes processes or apparatus for classifying and separating the material into grades or sizes. This class also has means for applying fluid to the material and includes processes and apparatus for comminution of cereal or other seeds or seed plants. Subclass 38 includes apparatus for inducing, controlling or directing fluid to or from the material; subclass 185.5 includes apparatus in which the material is subjected to a rotary member; subclasses 198.1, 221 and 244+ include apparatus in which comminution of the material takes place between the two relatively moving surfaces having non-smooth surface characteristics which cooperate with

each other and in which the material flows either circumferentially or tangentially.

Class 294, Handling: Hand and Hoist-Line Implements: Class 294 does not have direct relationship to Class 460 except subclass 25 which includes miscellaneous hand and finger attachments to facilitate handling of material.

Class 340, Communications: Electrical: Class 340 is the residual class for subject matter, not elsewhere classified, relating to communication by means which are in part or in whole electrical. Subclass 684 includes condition-responsive indicating system in a agricultural machinery where an electrical means provides a humanly perceptible signal in response to the attainment for a predetermined condition.

Class 406, Conveyors: Fluid Current: Class 406 includes apparatus or methods for conveying solid material or articles which are guided or supported to travel along a path by means of or with the assistance of a fluid current. Subclass 53 includes screw-type power driven conveyor; subclass 73 includes reciprocating or oscillating conveyors; subclass 77 includes endless conveyors; subclass 69 includes means to advance the load which means is a plurality of flexible bristles; subclass 70 includes a rotating annular or cylindrical member to advance the load.

Class 492, Roll or Roller: Class 492 is the generic class for a roll or roller, per se, not elsewhere provided for, and see the search notes thereunder.

SECTION III - GLOSSARY

BEATER

A rotary device mounted behind or in front of the cylinder on a combine which strikes the grains.

CHAFF

These are seed coverings and small stem pieces which are separated from seed and threshed grain during threshing or processing operation.

CHAFFER

A moving device having lips, loovers or similar means that separates the chaff from threshed grain or seed.

COMBINE

A machine in which six major operations are performed during harvesting; cutting the standing grain (cutting unit); feeding the cut grain to the threshing unit (feeding unit); threshing and rethreshing the grain or seed from the heads; separating the grain from the straw and chaff; cleaning the threshed grain; collecting the threshed grain for convenient handling (grain handling unit).

CONCAVE

A device consisting of a series of bars that are held together by rods or straps and is curved to match the cylinder. It is sometimes adjustable up and down to allow the operator to change the cylinder to concave clearance.

CONCAVE SPACING

The radial distance between the concave and the cylinder on a combine.

CYLINDER

A device consisting of bars mounted on two hubs that are supported on a shaft that run the length of the threshing unit. There are three types of cylinders; rasp-bar cylinder, spike-tooth cylinder, and angle-bar cylinder.

EAR

The article usually consists of grain bearing spike of a cereal plant such as an ear of corn.

FEEDER

The component of a grain thresher that transports the crop from the cutter or crop pickup apparatus to the threshing system. Apparatuses prior to approximately 1950 included bundle handling and a band cutter.

FLAIL

An implement consisting of a free-swinging stick tied to the end of another stick or a plurality of swinging knives or blades which are mounted on a rotating shaft, used to thresh grains.

GRAIN

This term is interpreted to include those seeds to which the term is ordinarily applied, e.g., wheat, oats, cotton seeds, corn, coffee, bean, barley, etc., and to exclude larger vegetables such as beets, nuts, potatoes, etc.

GRATE

A separating device to separate the grain from the straw after threshing.

HUSK

The material consisting of the dry outer covering of the ear of corn.

ROTOR-TYPE COMBINE

A machine equipped with rotor or cylinder designed so that the crop stays in contact with the cylinder for several complete revolutions.

SCREEN

A device consisting of suitably mounted wirecloth, grate bars, or perforated sheet iron which removes particles smaller than the grain being threshed, such as weed seeds, sand, and other foreign matter.

SEPARATING

The operation which removes the threshed grain from the mixture of plant parts that comes from the threshing section. The separation usually occurs at three places: (a) concave grate, (b) finger grate beneath beater and (c) straw walker.

SHELLING

The operation in which the kernels of corn are removed or separated from the ear of corn.

SIEVE

A meshed or perforated device which is usually located under the chaffer on a combine that separates larger particles from the grain or seed.

SNAPPING

This expression is arbitrarily assigned as being generic to the separation of the corn ears from the corn stalks. As the stalks are pulled downward between the cylindrical members, the ears, being too large to pass through the available space are snapped off.

STALK

The article usually consists of the stem or main axis of a

plant or any lengthened support on which an organ grows such as a corn ear stalk.

STEMMING

This expression is arbitrarily assigned as being generic to the separation of items such as a blossom, leaf, root, tip, or similar portion of a naturally-occurring crop product in addition to connoting the separation of a stem.

STRAW

The material usually consisting of grain stalks mixed with leaves and chaff that is left after the threshing operation.

STRAW WALKER

A mechanism that imparts a fluffing, pitching motion to the material other than grain before it “walks” out of the rear of the combine.

TAILINGS

The material consisting of unthreshed heads and all trash that is too coarse to fall through the sieves. Unthreshed heads are sometimes returned to the threshing section for second threshing.

THRESHED

The operation in which the grain is removed from the straw, the seed is removed from the seed head, the kernel is removed from the corn cob, or the bean is removed from the pod by a cylinder or rotor usually working against a curved, grated concave.

SUBCLASSES

1 MEANS RESPONSIVE TO A SENSED CONDITION:

This subclass is indented under the class definition. Subject matter in which the threshing apparatus includes means for: (a) sensing a characteristic of the thresher or a characteristic that is external to the thresher but related to its use, and; (b) performing an action by at least one of the operating assemblages thereof, which action is a direct result of such sensing.

SEE OR SEARCH CLASS:

56, Harvesters, subclasses 10.2+ which includes motorized harvester with condition-responsive operation.

2 Foreign material:

This subclass is indented under subclass 1. Subject matter which detects the passage of objects such as stones, metal pieces etc., which would damage the machine.

3 Drive interrupt:

This subclass is indented under subclass 2. Subject matter in which in response to the detection of foreign material within the machine power to any part of the machine is stopped.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 10.3 for release or slip of drive in response to obstruction and subclass 10.4 for retraction of cutter-unit in response to obstruction.

4 Grain loss:

This subclass is indented under subclass 1. Subject matter including means to detect or determine the amount of grain which is not being separated and blown out with the chaff.

5 By detector at sieve or screen or grain pan:

This subclass is indented under subclass 4. Subject matter having a sensor (e.g., diaphragm) at or near the sieve, screen or grain pan for determining the amount of grain passing at the specified location.

(1) Note. The sensor distinguishes the frequency of the grain hitting the diaphragm from the frequency of unwanted product e.g., chaff.

6 Machine load:

This subclass is indented under subclass 1. Subject matter including means to determine according to harvesting conditions the power requirement of any operational component of the machine for the purpose of affecting a change within the machine.

(1) Note. The harvesting conditions may include type of crop, speed of the machine (combine) or moisture content.

- (2) Note. The operational component may be a crop feed conveyor, or a threshing cylinder or a harvester engine.
- (3) Note. The change within the machine is "Speed Change".
- SEE OR SEARCH CLASS:
56, Harvesters, subclass 10.2 for motorized harvester with condition-responsive operation.
- 7 Moisture:**
This subclass is indented under subclass 1. Subject matter having means to determine water vapor content of the harvested crop for affecting a speed change within the machine.
- (1) Note. A high water vapor content usually necessitates more difficult crop separation thus requiring more power for each unit of crop separation.
- 8 HAVING MEANS TO DISTRIBUTE OR LEVEL CROP MATERIAL:**
This subclass is indented under the class definition. Subject matter having means to prevent crop buildup to the side, front, or rear of the combine while the combine is traversing uneven terrain such as a hill.
- (1) Note. To handle uneven or unlevel terrain, a portion of the machine is angularly shifted relative to the apparatus by gravity, power or manual means. An alternative is the use of a deflector to direct crop material away from a side of the apparatus or exceeding a specific height.
- 9 In association with shaking table:**
This subclass is indented under subclass 8. Subject matter wherein leveling is accomplished in conjunction with a horizontal surface which imparts tossing, oscillating movement to the crop material.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
89, for shaking table, per se.
- 10 And baffle for grain:**
This subclass is indented under subclass 9. Subject matter relating to barriers extending upwardly and rearwardly from the surface to maintain proper quantity of grain on the surface in spite of the movement of which it is subjected during operation, thereby substantially reducing the sideward movement of the grain.
- 11 WITH RECYCLING OF PROCESSED MATERIAL:**
This subclass is indented under the class definition. Subject matter having means to feed back material to the beginning or intermittent stage of the machine to prevent objectionable grain loss and to enhance the machine efficiency.
- 12 With means to recycle processed material from sieve, grate, or screen:**
This subclass is indented under subclass 11. Subject matter acting in cooperation with or at the sieve, grate or screen to return crop material to any part of the machine for separation.
- 13 Rethreshing:**
This subclass is indented under subclass 11. Subject matter which brings back tailings to the threshing section for second threshing.
- (1) Note. Tailings are unthreshed heads and all trash that is too coarse to fall through the sieve and screens and too heavy to be blown out by the air blast.
- 14 By separating diverse threshing means:**
This subclass is indented under subclass 13. Subject matter wherein means to rethresh is a secondary threshing apparatus including but not limited to another cylinder.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
24, for flax thresher.
46, for corn shelling by concave and cylinder.
63, for prethreshing cylinder.
75, for transverse threshing section.
141, for threshing nongrain crop material.

- 15 CLOVER HULLER:**
This subclass is indented under the class definition. Subject matter particularly adapted by virtue of its structure or operation for the separation of clover from hulls.
- (1) Note. This subclass also includes machines of similar-type structure e.g., alfalfa threshing.
- (2) Note. For machines to be included in this subclass must have specific disclosure of a finer threshing than for grain.
- 16 WITH FEEDER:**
This subclass is indented under the class definition. Subject matter mounted immediately before the thresher, separator, sheller, husker or stripper which conveys harvested material to said operational element.
- (1) Note. A feeder may be referred to as a feeder table.
- SEE OR SEARCH CLASS:
209, Classifying, Separating, and Assorting Solids, subclasses 243+ for means for means for feeding material to sifting devices.
222, Dispensing, appropriate subclasses for dispensing or conveying solid material.
- 17 Having grasping system for shelling or cutting:**
This subclass is indented under subclass 16. Subject matter wherein the conveying device has means to grip or hold a corn ear for shelling or cutting.
- 18 Feeder for husker (e.g., feeder table):**
This subclass is indented under subclass 16. Subject matter for conveying corn ears to the husking apparatus.
- SEE OR SEARCH CLASS:
222, Dispensing, appropriate subclasses for conveying solid material.
- 19 With band cutter:**
This subclass is indented under subclass 16. Subject matter in which the feeder includes means for severing a strap which binds the product being conveyed.
- 20 And cooperating means for feeder:**
This subclass is indented under subclass 16. Subject matter in which structure is provided in addition to a conveyor to assist in the feed of material to the thresher, separator or sheller.
- 21 CONVERTIBLE:**
This subclass is indented under the class definition. Subject matter in which by making an integral change the apparatus or structure may be utilized to perform a separate function distinct from a primary function.
- (1) Note. The change may be accomplished by moving, altering or conversion of one or more parts of the apparatus.
- 22 COMBINED WITH DIVERSE ART DEVICE (E.G., HOISTING, DIGGING):**
This subclass is indented under the class definition. Subject matter combined with any other functional apparatus or process not provided for under the class definition except as provided for under the Harvesting class and the class for Unearthing Plants or Buried Objects (see below).
- SEE OR SEARCH CLASS:
56, Harvesting.
171, Unearthing Plants or Buried Objects.
- 23 WITH HOPPER:**
This subclass is indented under the class definition. Subject matter which relates to a bin as intake structure for a thresher, separator or sheller.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
19, for a feeder including a band cutter.
- SEE OR SEARCH CLASS:
209, Classifying, Separating, and Assorting Solids, subclass 244 in which the material is fed from hoppers to the sifting devices.

- 222, Dispensing, appropriate subclasses for dispensing or conveying solid material.
- 24 FLAX THRESHER:**
This subclass is indented under the class definition. Subject matter for threshing and separating slender, erect plants having delicate flowers, narrow leaves and stem having threadlike fibers.
- SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclasses 5+ for the liberation of stalk and leaf fibers of plants, particularly subclass 6 which includes means for stripping the seeds or leaves from the plant.
- 25 CORN PROCESSING APPARATUS:**
This subclass is indented under the class definition. Subject matter for snapping, picking, husking and shelling corn.
- 26 With corn snapping or husking means:**
This subclass is indented under subclass 25. Subject matter including means for breaking the corn ear from the stalk or removing husks from the corn ear.
- (1) Note. The husks are “usually” removed from the ear by engagement of the ear between the two surfaces which include a pair of toothed elements, by a pair of husk engaging rollers having an endless chain, or by a revolving cylinder with a yielding concave surface.
- (2) Note. A common form of corn combine machine employs at least a pair of snapping and husking rolls which rotate in opposite angular directions on parallel axes and are spaced apart a distance which is sufficient to admit the corn ear.
- SEE OR SEARCH CLASS:
56, Harvesters, subclass 14.1 for motorized harvester having separately-acting opposed-rolled-couple units; subclass 103 for pickers or huskers.
99, Foods and Beverages: Apparatus, subclasses 567+ for separating one external portion from the remaining food.
- 209, Classifying, Separating, and Assorting Solids, subclass 607 which includes means for separating corn silk.
- 492, Roll or Roller, for a roll, per se, not elsewhere provided for, and see the search notes thereunder.
- 27 Compound roll having snapping and husking surface:**
This subclass is indented under subclass 26. Subject matter wherein a revolving surface both breaks the ear from the stalk and removes the husk from the ear.
- 28 Diverse functioning multiple roll pairs:**
This subclass is indented under subclass 26. Subject matter having pairs of oppositely rotating parallel revolving surfaces arranged to cooperate so that the first pair performs a snapping function and the second pair performs a husking function.
- SEE OR SEARCH CLASS:
56, Harvesters, subclasses 103+ for pickers or huskers in which plurality of pairs of rollers are disclosed.
- 29 Including a husking or snapping roll:**
This subclass is indented under subclass 26. Subject matter including surface for removing the husk from the corn ear or breaking the corn ear from the stalk.
- 30 Including roll mounting means:**
This subclass is indented under subclass 29. Subject matter relating to specific structure for attaching the roll or rolls to the frame.
- (1) Note. The mounting means may include a gear housing, a support frame or a drive apparatus.
- 31 Including particular roll construction:**
This subclass is indented under subclass 29. Subject matter having a longitudinal or circumferential working surface.
- (1) Note. The longitudinal or circumferential working surface of the roll defines a configuration which is directed to enhance the husking or snapping efficiency.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
27, which includes compound roll with snapping and husking surface.
- SEE OR SEARCH CLASS:
492, Roll or Roller, for a roll, per se, not elsewhere provided for, and see the search notes thereunder.
- 32 With rib or bar:**
This subclass is indented under subclass 31. Subject matter provided with a projecting element positioned on the roll surface to effectively pull the husk, stalk or ear.
- 33 With teeth:**
This subclass is indented under subclass 31. Subject matter having at least one row of a projecting part resembling a tooth like part such as a time or prong in shape or function, designed to separate or convey the stalk, leaves or ear.
- 34 With abrasive surface, (e.g., rubber surface):**
This subclass is indented under subclass 31. Subject matter wherein a part of the roll surface is formed of granular, rough or abrasive particles.
- (1) Note. The increased frictional engagement of the roll surface lessens clogging of the rolls.
- 35 With cooperating member:**
This subclass is indented under subclass 26. Subject matter provided with an element structured for contacting, guiding or positioning corn ears during husking, cutting or debutting operation.
- (1) Note. The guide means may be in the form of but not exclusive of a single rotating member having a plurality of ear-engaging flexible fingers or bristle-type brushes or similar means.
- SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, appropriate subclasses under 567+ which includes gripping means and means to hold and rotate food.
- 36 Including roll adjusting means:**
This subclass is indented under subclass 26. Subject matter having means to change or adjust the position of the roll or rolls.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
51, which includes means to adjust the position of concave with respect to the cylinder.
- 37 By suction means (e.g., husking by suction, per se):**
This subclass is indented under subclass 26. Subject matter in which the husks are removed adjacent the husking roll by differential air pressure.
- SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclasses 516+ wherein outer skins of the food products are removed by vacuum pressure produced as compressed air is discharged at a high speed.
- 38 With cutting:**
This subclass is indented under subclass 25. Subject matter wherein severing means is provided in conjunction with or as an aid to the husking or snapping means.
- (1) Note. Severing operation is usually performed after completion of husking or snapping operation.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
48+, having means to remove kernels by cutting or severing.
- SEE OR SEARCH CLASS:
30, Cutlery, subclasses 194+ which may include devices for cutting crop material.
56, Harvesters, subclass 53 which includes means for cutting standing cornstalks or other stalks of similar nature.
99, Foods and Beverages: Apparatus, subclasses 584+ for cutting means that removes the tops from the remaining portion of food.

39 Shredding:

This subclass is indented under subclass 38. Subject matter which cuts the corn stalk or husk into a plurality of small pieces.

- (1) Note. The product is generally used for feed.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 500, for stalk choppers which includes means for cutting dead crop material into a plurality of small pieces.

40 Debutting:

This subclass is indented under subclass 38. Subject matter which cuts or removes the butt or stalk end of the ear.

41 Slitting:

This subclass is indented under subclass 38. Subject matter which incises the ear along its length to prepare the ear for husking operation.

SEE OR SEARCH CLASS:

99, Foods and Beverages: Apparatus, subclass 587 which includes cutting means for scoring to aid the tearing.

42 With separating system (e.g., removing husked trash):

This subclass is indented under subclass 26. Subject matter including a conveyor, blower or similar means to facilitate removal of the husked trash.

- (1) Note. The end result of above is more efficient husking and a reduced load on the cleaning mechanism.

43 With trash container:

This subclass is indented under subclass 42. Subject matter which collects the broken husks.

- (1) Note. Device may also have means to eject said husks collected in the container.

44 With blower means:

This subclass is indented under subclass 42. Subject matter which supplies a stream of air to remove husks, trash and other foreign material.

SEE OR SEARCH CLASS:

209, Classifying, Separating, and Assorting Solids, subclass 644 for methods and apparatus wherein items are separated by impinging a stream of fluid thereon.

45 With shelling:

This subclass is indented under subclass 25. Subject matter including means for separating kernels from the corn ear.

46 Concave and cylinder:

This subclass is indented under subclass 45. Subject matter having a revolving drum provided with a toothed convex surface and a stationary shell with a ribbed concave surface such that an ear of corn can move between the revolving cylinder and shell and the action of ribs and teeth serves to tear the grains of corn from the ear.

- (1) Note. The device may include a drum and a counter-drum disposed horizontally one within the other.

SEE OR SEARCH THIS CLASS, SUBCLASS:

63, for prethreshing cylinder; subclass 75 for apparatus with transverse threshing section; subclass 141 for apparatus having cylinder and concave used for separating nongrain crop material; subclass 14 for rethreshing apparatus having separate diverse threshing means.

SEE OR SEARCH CLASS:

99, Foods and Beverages: Apparatus, subclass 574 wherein separating means is rotated in order to separate the external portion from the remaining food.
209, Classifying, Separating, and Assorting Solids, subclass 274 for sifting devices which are curved concavely or convexly on the surfaces to which material is delivered.

47 Disk:

This subclass is indented under subclass 45. Subject matter having a feed wheel and a rotating shelling disc with teeth, ribs or corrugated

beveled surface and as the material passes the disc it is confined within an opposed surface and is subjected to an agitated grinding action whereby kernels and ears are separated.

SEE OR SEARCH CLASS:

99, Foods and Beverages: Apparatus, subclass 574 which includes apparatus for cracking nuts and similar material, without crushing the kernels thereof, having a fixed plate with a cutting blade and a rotatable wheel adjacent the plate.

48 Knife:

This subclass is indented under subclass 45. Subject matter including a cutting blade which severs the kernels from the corn ear.

49 Slitter:

This subclass is indented under subclass 48. Subject matter having a series of adjustable radial knives or blades or teeth which split or cut kernels of corn by incising or severing the ear along a longitudinal axis of the corn ear.

SEE OR SEARCH CLASS:

99, Foods and Beverages: Apparatus, subclass 575 which includes apparatus for slitting nut skins.

50 Tipper:

This subclass is indented under subclass 48. Subject matter where in the small, irregular, or imperfect kernels which are not yet fully developed and which are usually found at the butt and tip portions of the corn ear are removed by a knife, blade, cutter or similar means.

(1) Note. The device shapes the end of the ear for better reception by the corn cutter.

51 Reciprocable knife:

This subclass is indented under subclass 48. Subject matter wherein the cutting blade which removes kernels from the corn ear has a alternating back and forth movement.

SEE OR SEARCH CLASS:

30, Cutlery, subclasses 194+ wherein cutting blades having reciprocating movement are disclosed.

56, Harvesters, subclass 158 for machines which includes means to cut grain which means is a reciprocating cutter; subclass 123 for reciprocating cutter.

52 Stationary knife:

This subclass is indented under subclass 48. Subject matter in-which the corn ear is moved relative to a static knife for shelling.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

137, for stationary cutter.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 101 which discloses cutting means having one or more knives which are fixed with respect to the frame of the machine.

53 Rotary knife:

This subclass is indented under subclass 48. Subject matter wherein the movement of the cutting blade or blades is circular about a single axis.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

135, for rotary cutter.

SEE OR SEARCH CLASS:

30, Cutlery, subclasses 194+ wherein rotary blade and blade having rotary power source are disclosed.

56, Harvesters, subclass 157 for rotary cutting disk; subclass 235 for plurality of rotary disk cutters; subclass 295 for rotating cutting disk.

54 Pivotal mount:

This subclass is indented under subclass 48. Subject matter wherein the rods, arms or similar elements which swing on their pivots carry the cutting blade or blades.

(1) Note. As the ear advances through the group of cutters or blades, the blades are gradually expanded so as to remove the kernels off the surface of the ear.

SEE OR SEARCH CLASS:

30, Cutlery, subclasses 244+ wherein the blades are pivoted together.

55 Longitudinally of cob axis:

This subclass is indented under subclass 54. Subject matter in which a plurality of blades or cutters are arranged adjacent to the lengthwise axis of the ear and are pivotal about an axis spaced from the blades as well as spaced lengthwise along and from the ear.

56 Radially mounted:

This subclass is indented under subclass 48. Subject matter having a plurality of radially sliding blades or cutters arranged so as to surround the corn ear.

SEE OR SEARCH CLASS:

30, Cutlery, subclass 135 for implements in which the blades are spring-urged to open position and subclass 261 in which a spring is provided to either open or close the blades.

57 Having adjustment means:

This subclass is indented under subclass 48. Subject matter having means to regulate the depth of cut taken by the knife or knives so that they will shear off the kernels to the desired depth.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 121.41 for self-aligning gauging and cutting means and subclass 121.46 wherein gauge and cutter are relatively adjustable responsive to size of plant.

58 Peripheral action:

This subclass is indented under subclass 48. Subject matter in which shelling is accomplished by coaction between a roller or similar element having a rough (e.g., rib, tooth) surface and another member.

- (1) Note. The corn ear is fed between the roller and the member. As the ear is carried along, the pressure between the members serves to loosen and effectively remove the kernels from the ear.

SEE OR SEARCH CLASS:

99, Foods and Beverages: Apparatus, subclass 574 which includes apparatus having a roller and an endless belt and the food product is fed between

the roller and the endless belt to effectively remove the external portion.

59 THRESHING:

This subclass is indented under the class definition. Subject matter in which the grain is removed from the straw, the seed is removed from the seed head by a cylinder, rotor or similar element usually working against a curved, grated concave or similar element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

86, for threshing by endless apron.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 14.6 for harvester which includes thresher or crop separator unit; subclasses 122 and 126 which include means for cutting standing grain, and means for threshing the same.

99, Foods and Beverages: Apparatus, subclasses 567+, appropriate subclasses indented thereunder for separating a portion from the remaining food.

171, Unearthing Plants or Buried Objects, subclass 17 which includes means to separate material by fluid current; subclasses 27 and 28 for apparatus which severs or separates parts of harvested plants.

241, Solid Material Comminution or Disintegration, subclasses 185.5+ which includes apparatus in which the material is subjected to the action of rotary member which strikes the material a sudden blow.

60 With relief value in rotor section:

This subclass is indented under subclass 59. Subject matter including movable control element to prevent pressure build up about the rotor or concave.

- (1) Note. Pressure may build up within a closed or semi-closed crop separating system due to the rotational speed of the cylinders. Such a pressure may be in the form of an air differential or crop buildup at some location within the system.

61 Flail machine:

This subclass is indented under subclass 59. Subject matter in which a plurality of pivotable members are mounted on a rotor or cylinder to accomplish threshing.

- (1) Note. Separation is accomplished by rotor movement augmented by free-swinging rods or sticks attached to it and which in effect beats the crop as the rotor is rotated. The crop is beaten between the concave and the axis of the flail rotor.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 29, which includes flail or whip which beats the cotton from the plant.

62 With adjusting means for threshing cylinder:

This subclass is indented under subclass 59. Subject matter having means to increase or decrease the clearance between the cylinder or rotor and the surrounding concave.

SEE OR SEARCH THIS CLASS, SUBCLASS:

36, for roll-adjusting means.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 121.46 which includes adjusting means which adjust gauge or cutter in response to height or size of the crop material.
99, Foods and Beverages: Apparatus, subclass 579 which includes adjustment means for a separating member.

63 With prethreshing cylinder:

This subclass is indented under subclass 59. Subject matter in which a smaller size cylinder and a concave or a feeding surface with protruding fingers is mounted prior to main threshing elements to assist in threshing operation.

- (1) Note. Patents having rethreshing or multiple threshing cylinders of similar construction are classified in subclasses 13 and 76.

SEE OR SEARCH THIS CLASS, SUBCLASS:

75, for transverse threshing section

14, for rethreshing by separate diverse threshing means
141, for cylinder and concave for nongrain products.
46, for shelling by concave and cylinder.
24, for flax thresher.

SEE OR SEARCH CLASS:

99, Foods and Beverages: Apparatus, subclasses 574+ for separation by rotating means.
209, Classifying, Separating, and Assorting Solids, subclass 288 for cylinder or drum sifters.

64 Vertical axle type:

This subclass is indented under subclass 59. Subject matter in which threshing is accomplished about an axis which is perpendicular relative to ground.

- (1) Note. The device has added advantage of reducing overall length of the machine by taking advantage of gravity for movement of the crop material through the threshing section.

SEE OR SEARCH THIS CLASS, SUBCLASS:

66, for threshing by axial flow through threshing section.

SEE OR SEARCH CLASS:

209, Classifying, Separating, and Assorting Solids, subclass 301 for cylinders or drum sifters having vertical axes.

65 Centrifugal:

This subclass is indented under subclass 59. Subject matter in which threshing is accomplished by the action of force tending to make rotating crop move away from the center of rotation.

- (1) Note. The force is developed by a fan or blower or by high speed movement of the rotor.

SEE OR SEARCH CLASS:

56, Harvesters, subclasses 12.8+ which includes means for moving air under pressure or suction, whereby vegetation or crop is moved under the influence of air.

- 209, Classifying, Separating, and Assorting Solids, subclass 148 for methods and means where in material is centrifugally projected into the suspending gaseous current.
- 222, Dispensing, subclass 410 for centrifugal force feeders, per se.
- 241, Solid Material Comminution or Disintegration, subclasses 39+ and 275 for comminutors including centrifugal force feeding.
- 66 Axial flow through threshing section:**
This subclass is indented under subclass 59. Subject matter in which the crop moves in a spiral motion and is subjected to an extended time duration for initial crop separation.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
64, for vertical-axle type threshing.
- SEE OR SEARCH CLASS:
209, Classifying, Separating, and Assorting Solids, subclass 301 for cylinders or drum sifters having vertical axes; subclass 362 for spiral sifter; subclass 913 for screw feed conveyor.
406, Conveyor: Fluid Current, subclass 53 for screw-type power driven conveyors.
- 67 Flared cylinder:**
This subclass is indented under subclass 66. Subject matter in which the threshing cylinder or rotor expands or opens outward in shape, e.g., frustum of a cone.
- SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclasses 567+ which includes devices having frusto conical breast and cylinder for removing outer portion of the food products.
- 68 Rotor formed with integral feed section:**
This subclass is indented under subclass 66. Subject matter in which a forward feed section is formed as an integral part of the threshing rotor.
- (1) Note. The device facilitates crop feeding, prevents crowding of the crop material upon the threshing rotor, maintains
- the crop feed uniform and feeds the crop in larger volume.
- 69 With axial flow separator:**
This subclass is indented under subclass 66. Subject matter integral with the threshing rotor which separates the grain from the chaff and straw by opposing action between the rotor and concave.
- (1) Note. The crop is along the axial length of the rotor.
- 70 With feed means for threshing section:**
This subclass is indented under subclass 59. Subject matter mounted between the feeder conveyor and the forward end of the rotor means to help engage the crop material with the threshing rotor.
- (1) Note. The device may be an improved feed ramp or a transition housing or the infeed area with an improved geometry which facilitates imparting a radial motion to the crop material early in its travel as it enters the threshing and separating cylinders and prevents back-feeding of the crop material down the feed conveyor.
- SEE OR SEARCH CLASS:
209, Classifying, Separating, and Assorting Solids, subclass 263, 264 in which means are employed to cause particles of material to move in some definite relation to the sifter and wherein guides are employed to direct the particles of material to the sifters.
- 71 With bar (e.g., rasp bar or inclined blade):**
This subclass is indented under subclass 59. Subject matter including rows or columns of protrusions arranged about the rotor cylinder in a removable or integral formation.
- (1) Note. The device may have protrusions in the form of spiketeeth, carried on the transverse bars of the rotor cylinder, which thresh out the grain as they revolve through similar teeth in the concave; the protrusions may be of rasp-bar type which are transverse bars with grooved metal faces, threshing is done by the rasping action between the cylin-

der bars and the solid concave bars below the cylinder; the protrusions may be of angle-bar type which are spiral bars having rubber facing. They beat out the grain between the revolving cylinder bars and the stationary shelling plate or concave.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

141, for cylinder and concave having similar protrusions or projections.

SEE OR SEARCH CLASS:

99, Foods and Beverages: Apparatus, subclasses 574+ for devices which include cylinder or rotor having projections or protrusions and the other surface (concave or similar) having slots or projects. Separation or hulling of the food products is accomplished through contact between the two surfaces.

209, Classifying, Separating, and Assorting Solids, subclass 393 for sifting passages generally of elongated-slot form, are formed of bars or rods which do not intermesh.

72 **Adjustable:**

This subclass is indented under subclass 71. Subject matter wherein the position of the bar or blade can be regulated.

(1) Note. This subclass provides for the adjustment or replacement of the individual blade or bar or the total movement of all blades or bars that perform threshing.

SEE OR SEARCH CLASS:

209, Classifying, Separating, and Assorting Solids, subclass 394 wherein the sifting passages which are formed by nonintermeshing bars have means for their relative adjustment to vary the size of the passages.

73 **With beater:**

This subclass is indented under subclass 59. Subject matter including a drum, or rotor, or cylinder having protruding fingers or similar elements which is usually mounted behind and

acting in cooperation with the threshing cylinder.

(1) Note. The device prevents wrapping of the crop material about the threshing cylinder and thereby feeds the material downstream.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

113, for beater, per se
142, for drum and beater.

SEE OR SEARCH CLASS:

56, Harvesters, subclass 13.2 which includes means to beat the vegetation and which usually comprises a rotating shaft having bristles or loosely-mounted flail elements.

99, Foods and Beverages: Apparatus, subclass 595 in which the device includes means to feed the food material past the separating means; subclasses 609+ which includes dynamic means to move or to control movement of grain to or from the hulling zone.

209, Classifying, Separating, and Assorting Solids, subclass 278 and 283 in which the sifters include rotating agitators; subclass 299 which includes means to beat the material.

74 **With accelerator roll:**

This subclass is indented under subclass 59. Subject matter having a single or a pair of rotating annular or cylindrical members which rapidly advance the threshed material leaving the threshing cylinder.

SEE OR SEARCH CLASS:

406, Conveyors: Fluid Current, subclass 53 for a rotating annular or cylindrical member to advance or accelerate the load.

75 **Transverse threshing section:**

This subclass is indented under subclass 59. Subject matter wherein the crop flow is mainly along a tangential and circumferential direction of the rotation of the threshing cylinder.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 14, for rethreshing by separate diverse threshing means.
- 46, for shelling by cylinder and concave.
- 63, for prethreshing means.
- 141, for threshing by cylinder and concave for nongrain products

SEE OR SEARCH CLASS:

- 241, Solid Material Comminution and Disintegration, subclasses 244+ which includes apparatus wherein comminution of the material takes place between two relatively moving surfaces having nonsmooth surface characteristics which cooperate with each other and in which the material flows along a tangential direction of rotation.

76 Multiple threshing cylinders:

This subclass is indented under subclass 75. Subject matter including two or more annular or cylindrical members of identical function which are usually mounted in series.

SEE OR SEARCH CLASS:

- 99, Foods and Beverages: Apparatus, subclasses 574+ which include devices having two or more rollers or cylinders of identical design which are mounted in series for separating.
- 209, Classifying, Separating, and Assorting Solids, subclasses 289+ which includes a plurality of rotating cylindrical or drum sifters mounted on horizontal axis.

77 With axial flow to opposed ends:

This subclass is indented under subclass 75. Subject matter including means to direct crop material in the direction or line of rotor axis for threshing in opposite directions.

78 With cutting:

This subclass is indented under subclass 59. Subject matter including means to sever the crop material prior to or during threshing or after it is discharged from the threshing section.

SEE OR SEARCH CLASS:

- 30, Cutlery, subclasses 194+ for cutting tools, and appropriate subclasses indented there under for cutting implements.
- 56, Harvesters, subclasses 53+ which includes means for cutting cornstalks or other stalks of similar nature, regardless of ultimate disposition of the cut stalks; subclasses 122+ for cutting, conveying and threshing which includes means for cutting crop material; subclasses 153+ for cutting and conveying; subclass 500 for stalk choppers.
- 171, Unearthing Plants or Buried Objects, subclasses 26+ for removing the ends from food after removing it from the ground.

79 SEPARATOR:

This subclass is indented under the class definition. Subject matter which removes the grain from the straw and chaff after it is threshed.

- (1) Note. The device usually includes one or more of the following; a revolving beater, deflector, straw rack, and a grain conveyor. The aggressive motion of straw rack separates threshed grain from the straw; the grain falls through openings in the bottom of the rack to the grain pan or the grain conveyor. The revolving beater strips the straw from the rear of the cylinder and distributes it to the straw rack. Deflectors above the rack regulate the movement of the straw and deflect grain kernels.

SEE OR SEARCH CLASS:

- 56, Harvesters, subclass 14.6 which includes crop-separator unit.
- 99, Foods and Beverages: Apparatus, subclass 528 having means to separate products; subclass 601 having means to set apart from one another grain, nongrain or separated grain portions.
- 171, Unearthing Plants or Buried Objects, subclasses 111+ for earth removal and separation, appropriate subclasses which include screen or sieve for separation, separating conveyor having

- compound motion including agitator, rotary-drum type separator, endless-belt type separator, etc.
- 209, Classifying, Separating, and Assorting Solids, subclasses 233+ having means and methods by which material is separated or assorted according to size by presentation to a series of openings.
- 241, Solid Material Comminution or Disintegration, subclasses 68+ for comminuting device provided with means to separate material; subclasses 83+ in which comminuting surface provided with openings to permit discharge of material.
- 80 Axial:**
This subclass is indented under subclass 79. Subject matter which separates grain from straw and chaff by propelling the crop material in a generally spiral path in line with harvesting direction.
- (1) Note. The device usually includes a separating rotor having several finger-like elements, guide vanes or bars or similar protrusions. The rotary motion with finger-like action provides the desired axial displacement and circumferential movement of the crop material.
- 81 Separating cylinder:**
This subclass is indented under subclass 92. Apparatus having an annular or cylindrical member which separates the threshed grain from the straw.
- (1) Note. The device may or may not be integral with the threshing cylinder and may not be of similar construction but essentially performing the function of the straw walker; however, device does not necessarily exclude the straw walker also being present. See subclass 85 for straw walker, per se.
- SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclasses 567+ having means to separate external portion from food products.
- 209, Classifying, Separating, and Assorting Solids, subclass 288 for rotating drum sifters.
- 241, Solid Material Comminution or Disintegration, subclasses 185.5+ for apparatus in which the material is subjected to rotary striking member; subclass 220 for apparatus in which one of the cooperating surfaces rotates about an axis.
- 82 Foraminous periphery without associated concave:**
This subclass is indented under subclass 81. Subject matter in which the separating cylinder is provided with plurality of (partial or full) perforations or openings which allow the grain and smaller chaff and refuse to pass through but will detain the larger refuse and chaff.
- (1) Note. Separation is accomplished without an associated concave and the flow of the separated material is through the cylinder.
- SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclass 503 for means to treat food with a rotating foraminous separator; subclass 603 for hulling means having rotary perforated surface.
- 83 Multiple cylinders:**
This subclass is indented under subclass 81. Subject matter having a plurality of annular or cylindrical members which separate threshed grain from the straw and chaff.
- 84 Including deflector means:**
This subclass is indented under subclass 79. Subject matter including means to divert or to turn aside the crop to any part of the separating and cleaning system.
- (1) Note. The device prevents uneven build-up of the crop material and evenly distributes the material upon the grain pan.
- SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclass 634 for food deflector to direct the food through the container or into contact with the abrading means.

- 209, Classifying, Separating, and Assorting Solids, subclass 294 for rotating cylindrical or drum sifters having means for deflecting the material along the sifter.

85 Straw walker:

This subclass is indented under subclass 79. Subject matter including a moving rack or a similar element which separates the grain and moves the straw, chaff and other material out the back of the thresher.

- (1) Note. The device tosses and tumbles the straw and chaff and propels it to the rear. This aggressive motion separates threshed grain from the straw and chaff. The straw travels the full length of the rack and is discharged at the rear. The device consists of section of bars which are driven by means which gives an alternate lifting and dropping motion as the straw is "walked" toward the rear.

SEE OR SEARCH CLASS:

- 99, Foods and Beverages: Apparatus, subclasses 605+ for perforated sifters in a grain huller.
- 209, Classifying, Separating, and Assorting Solids, subclass 247 and 257 for devices which include conveyors associated with sifting means and delivering material to the latter; subclasses 277, 278 for reciprocating agitators; subclass 282 for stationary sifters with reciprocating agitators, subclasses 325, 326, 329 for flat reciprocating sifters having both horizontal and vertical movements and also having circular or orbital motion; subclass 396 for sifting passages of elongated slot form which are formed by bars or rods and which have relative movement during the sifting operation.

86 Endless apron:

This subclass is indented under subclass 79. Subject matter including an endless flexible belt or conveyor with slats, bars or similar protrusions causing grain separation.

SEE OR SEARCH CLASS:

- 14, Bridges, subclass 70 which includes floored, narrow structures having an endless conveyor as whole or part of the floor.
- 99, Foods and Beverages: Apparatus, subclass 616 for endless-belt hulling surface.
- 209, Classifying, Separating, and Assorting Solids, subclass 272 for sifters having endless belt; subclass 307 for endless belt sifters; subclasses 921 and 923 for endless feed conveyor.
- 406, Conveyor: Fluid Current, subclass 77 which includes pneumatic conveyors having endless belt.

87 Overhung rake:

This subclass is indented under subclass 79. Subject matter which is usually made up of rods, bars, teeth or similar elements and is usually positioned over the crop flow.

- (1) Note. The device agitates the crop flow and aids in separation of grain from the straw.

SEE OR SEARCH CLASS:

- 99, Foods and Beverages: Apparatus, subclass 632 for grain hulling apparatus having agitator or flow control means.
- 209, Classifying, Separating, and Assorting Solids, subclass 152 and 320 for devices in which material is agitated by the drum or a cooperating element; subclasses 277, 322, 357 which include reciprocating agitators, subclasses 278, 283, 324, and 358 which include rotating agitators.

88 Rotary rake:

This subclass is indented under subclass 87. Subject matter having a rotary member which agitates the crop and separates grain from the straw.

SEE OR SEARCH CLASS:

- 209, Classifying, Separating, and Assorting Solids, subclass 278, 283, 324, and 358 for rotary agitators.

89 Mounted on crankshaft:

This subclass is indented under subclass 88. Subject matter in which the rake member is carried by a link mechanism that turns about a center of rotation.

90 Shaking table:

This subclass is indented under subclass 79. Subject matter including an assembly of parallel bars, cross bars or similar elements which moves to-and-fro with a quick abrupt motion in separating grain from the straw.

SEE OR SEARCH CLASS:

- 209, Classifying, Separating, and Assorting Solids, subclass 325, 326, 329, and 674 for reciprocating sifters having movement both horizontally and vertically; subclass 921 for reciprocating or oscillating feed conveyor.
406, Conveyors: Fluid Current, subclass 73 for reciprocating or oscillating conveyors.

91 Oscillating:

This subclass is indented under subclass 90. Subject matter including a member which swings the table back and forth.

92 And reciprocating:

This subclass is indented under subclass 91. Subject matter including means to induce combined alternating back-and-forth and swinging back-and-forth movements to the table.

93 Reciprocating:

This subclass is indented under subclass 90. Subject matter having a member which induces alternating back-and-forth movement to the table.

SEE OR SEARCH CLASS:

- 209, Classifying, Separating, and Assorting Solids, subclass 277, 322, 357 for reciprocating agitators.

94 Mounting of:

This subclass is indented under subclass 90. Apparatus including means to support the shaking table to the combine.

95 Suspended:

This subclass is indented under subclass 94. Subject matter having a member which hangs the table so as to allow free movement.

- (1) Note. The table is principally suspended from the frame of the combine.

96 With material vibrator:

This subclass is indented under subclass 79. Subject matter consisting of a system of rods, fingers, fins or similar elements which agitates the crop material and prevents crop buildup.

SEE OR SEARCH CLASS:

- 209, Classifying, Separating, and Assorting Solids, subclass 152 for a cooperating element which agitates the material; subclass 266 for guiding devices; subclass 267 for devices associated with sifters which retard the passage of material over the sifting surfaces; subclass 283 for sifters associated with rotating agitators.
222, Dispensing, subclass 161 for material vibrators.

97 CLEANER:

This subclass is indented under the class definition. Subject matter which removes chaff and fine residue from the threshed and separated grain.

- (1) Note. The device usually includes a grain pan, chaffer, and chaffer extension. The device cleans the crop by the combined action of cleaning element and an air blast.

SEE OR SEARCH CLASS:

- 19, Textiles: Fiber Preparation, subclass 9 for decorticating fibers with air blast.
99, Foods and Beverages: Apparatus, subclasses 516+ for means to treat food products by fluid application; subclass 570 for means for removing shell or external portion by fluid application.
171, Unearthing Plants or Buried Objects, subclass 17 for separation by fluid current.

- 209, Classifying, Separating, and Assorting Solids, subclass 380 for devices having means to project fluid jets or streams against the sifting elements for purpose of cleaning or keeping open the sifting passages.
- 98 Rotary cleaner:**
This subclass is indented under subclass 97. Subject matter usually consisting of a hollow rotating screen or a sieve which rolls, tumbles or agitates the grain while separating it from the chaff and other foreign matter.
- SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclass 522 and 528 having multi-perforated rotary member which retains grain and allows nongrain material to pass through or allows the grain to pass through and retains nongrain material; subclass 603 for hulling means having moving perforated surface.
- 241, Solid Material Comminution or Disintegration, subclasses 69+ where the discharge permitting screen forms a partition or end wall in a rotary comminuting drum; subclasses 83+ appropriate subclasses indented there under which include rotary comminuting surface having openings, and wherein screen or screen elements move during comminution.
- 99 Air control affecting air flow:**
This subclass is indented under subclass 97. Subject matter including means to regulate the direction of air blast.
- SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, for treating food by applying fluid, subclass 525 which includes (a) dynamic means to forcibly propel gas to or from the device, or (b) static means to direct the flow of gas to or from the device, or both (a) and (b); subclass 527 which includes a relatively movable member that stops or varies the flow of gas through a gas entrance or gas exit.
- 100 With fan feature:**
This subclass is indented under subclass 97. Subject matter including means which blows across the crop material to further separate the grain from the remaining chaff and small pieces of straw.
- SEE OR SEARCH CLASS:
241, Solid Material Comminution or Disintegration, subclass 50 for apparatus wherein the material is elevated or moved to a screen by a fan member or members.
- 101 Sieve or grate:**
This subclass is indented under subclass 97. Subject matter consisting of sections or slats made of corrugated formation of plurality of plates or bars which separate grains from any remaining chaff after it is received from a separating mechanism.
- SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclass 601 and 603 for means to segregate diverse material including moving perforated surface.
- 209, Classifying, Separating, and Assorting Solids, subclasses 393+ for bar-type elements for sifting bulk material; subclasses 659+ for sorting items by size which includes bars, slats etc.
- 102 Screen:**
This subclass is indented under subclass 101. Subject matter consisting of a utensil of wire mesh or closely perforated metal which removes particles smaller than the grain being separated such as weed seeds, sand and other foreign matter.
- SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclass 528 for screen to separate food products,
- 209, Classifying, Separating, and Assorting Solids, subclass 401 for sifting passages which are formed by spaced intermeshing or crossing connected threads, wires or bars.
- 241, Solid Material Comminution and Disintegration, subclasses 83+ for comminuting surface provided with open-

ings to permit discharge of material which includes screen or screen elements.

103 WITH MEANS TO CLEAN MACHINE:
This subclass is indented under the class definition. Subject matter for cleaning any part of the threshing machine.

SEE OR SEARCH THIS CLASS, SUBCLASS:

97, for cleaning of the crop, per se.

SEE OR SEARCH CLASS:

171, Unearthing Plants or Buried Objects, subclass 12 for apparatus cleaner in which means is provided to remove accumulated dirt, recovered objects, or portions of said recovered objects from parts of said apparatus.

209, Classifying, Separating, and Assorting Solids, subclass 487 for devices which remove from belt or drum surfaces material adhering thereto after gravital discharge of the stratified material.

241, Solid Material Comminution or Disintegration, subclass 166 and 167 for apparatus wherein means is provided to scrape or otherwise clean a comminuting member.

104 Concave cleaner:
This subclass is indented under subclass 103. Subject matter including means to clean the concave portion of the machine to free it from all debris and unwanted foreign matter.

105 WITH STONE TRAP:
This subclass is indented under the class definition. Subject matter having means attached to the thresher which directs or collects rock or metal object away from the crop flow path and prevents it from reaching the crop separating components inclusive of the threshing cylinder.

106 Pivoting trap:
This subclass is indented under subclass 105. Subject matter including a short rod or shaft which rotates or swings to facilitate emptying stones and metal objects from the stone trap.

107 CONCAVE:
This subclass is indented under the class definition. Subject matter having a series of stationary bars or open grates located below the threshing cylinder or rotor and surrounds part of its circumference.

SEE OR SEARCH CLASS:

99, Foods and Beverages: Apparatus, subclasses 567+ for separating one external portion from the remaining food and grain hulling.

209, Classifying, Separating, and Assorting Solids, subclasses 274+ for sifters having concave or convex material receiving surfaces.

241, Solid Material Comminution or Disintegration, subclass 27 for apparatus in which comminution or disintegration of the material is effected by subjecting the particles thereof to a blow by a moving surface; subclass 86 for apparatus in which the surface having openings cooperates with a rotary surface or member to effect the comminution; subclass 273.4 wherein the stationary comminuting surface is an interior curved surface; subclasses 185.5+ for apparatus wherein the material is subjected to the action of a rotary member which strikes the material a sudden blow to effect comminution; subclass 221 for apparatus in which the material flows circumferentially or tangentially of the rotary surface during the comminuting operation.

108 Grid or grate:
This subclass is indented under subclass 107. Subject matter consisting of a framework of crisscrossed bars or rods or a network of coil or fine wire, or a concave plate with a plurality of uniformly spaced perforations.

(1) Note. This subclass provides for specific detail of the grid and grate portion of the concave.

SEE OR SEARCH CLASS:

209, Classifying, Separating, and Assorting Solids, subclass 396 wherein sifting passages are formed by bars or

rods; subclass 401 wherein sifting passages are formed by spaced intermeshing or crossing connected wires or bars; subclasses 659+ for apparatus for sorting items by size which includes curved grating passages (e.g., bar, slat, etc.) between stationary element and roller.

- 241, Solid Material Comminution or Disintegration, subclass 51 wherein screen forms part of comminuting surface; subclass 88.4 for spaced parallel bars (e.g., "Grate").

109 Adjustable:

This subclass is indented under subclass 108. Subject matter having means to regulate the grid or grate or any part thereof by moving the concave closer or further away from the threshing or separating cylinders.

SEE OR SEARCH CLASS:

- 99, Foods and Beverages: Apparatus, subclass 523 for means to vary spacing between hulling surfaces; subclass 579 for apparatus which includes means for adjustment of a separating member.
- 241, Solid Material Comminution or Disintegration, subclass 89.1 for apparatus in which the surface having openings, or portions thereof, is movable to change the size of the openings or its position relative to the comminuting member.

110 Teeth, bars, blades, etc.:

This subclass is indented under subclass 108. Subject matter specific to the structure of the teeth, bars, blades or groups of the same.

111 STRAW CHAFF SPREADER OR HANDLING (DISCHARGE):

This subclass is indented under the class definition. Subject matter consisting of a fan, a blower or an adjustable valve which controls or regulates the discharge at the rear of the threshing machine.

- (1) Note. The device spreads, handles, or regulates the material (other than uncontrolled discharge) including straw and chaff which exit from the machine after it is threshed, separated and cleaned.

SEE OR SEARCH CLASS:

- 56, Harvesters, subclass 13.3 for air-moving means which directs crop material away from the harvester; subclasses 16.4+ for apparatus for handling, regulating or dividing one portion of crop from another thereof, or dividing unwanted material from wanted crop; subclass 71 for apparatus having mechanism for effecting the discharge of the cut stalks from the machine.
- 99, Foods and Beverages: Apparatus, subclass 580 for discharge feature for handling subdivided portion of food which includes an ejector, guiding-trough, trap door, etc.; subclasses 609+ for mechanism to feed or discharge material including discharge of the grain from final hulling zone.
- 209, Classifying, Separating, and Assorting Solids, subclass 256 and 258 for valves associated with sifters to control the discharge of the material from the sifters.
- 241, Solid Material Comminution or Disintegration, subclass 186.2 and 186.3 for means to effect a change in the flow of material from the comminutor and means to change the course of the material as it flows from the comminuting zone; subclass 222 which includes material discharge mechanism or control.

112 With chopper:

This subclass is indented under subclass 111. Subject matter including a cutting element which cuts the chaff into small pieces.

SEE OR SEARCH CLASS:

- 56, Harvesters, subclass 60 for means for cutting the stalks into short lengths; subclass 500 for stalk choppers.

113 BEATER:

This subclass is indented under the class definition. Subject matter consisting of an annular or cylindrical revolving member which strips the straw.

- (1) Note. The device usually consists of a small diameter drum with protrusions

around its circumference or may be a paddle or a rod with plurality of fingers.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 73, for beater.
142, for drum and beater.

SEE OR SEARCH CLASS:

- 99, Foods and Beverages: Apparatus, subclass 629 which includes moving means which causes the material to randomly contact the separating means.
209, Classifying, Separating, and Assorting Solids, subclass 254 for distributors or spreaders which distribute or spread the material over the surfaces of sifters; subclass 299 which includes means for beating the material.
241, Solid Material Comminution or Disintegration, subclasses 200+ and 227+ wherein a rotor or a rotary member cooperates with the moving surface; subclass 250 for apparatus in which the rotary surface cooperates with comminuting surface which moves during the comminuting operation.

114 **TRANSPORT CONVEYOR:**

This subclass is indented under the class definition. Subject matter consisting of a continuous moving belt or similar structure which transports the crop material from one part of the machine to another including the discharge.

SEE OR SEARCH CLASS:

- 14, Bridges, subclass 70 for floured, narrow structures having an endless conveyor.
56, Harvesters, subclass 122 which includes means or conveying the cut grain from the cutter to the thresher.
198, Conveyors, Power-Driven, subclasses 804+ for endless conveyor.
209, Classifying, Separating and Assorting Solids, subclass 241, 247, 257 and 261 wherein conveyors are employed for the feeding of material to and for discharging material from sifting devices.
241, Solid Material Comminution or Disintegration, subclass 223 in which mechanism for feeding and discharg-

ing comprises an endless belt conveyor.

- 406, Conveyors: Fluid Current, subclass 77 for endless belt conveyors.

115 **Pneumatic:**

This subclass is indented under subclass 114. Subject matter wherein the air flow from the fan or the blower assists in transporting crop material.

SEE OR SEARCH CLASS:

- 406, Conveyors: Fluid Current, appropriate subclasses for methods and apparatus for conveying solid material by means of or with the assistance of a fluid current.

116 **DRIVE RELATED FEATURES:**

This subclass is indented under the class definition. Subject matter including a structure that relates to any operating part of the machine, e.g., gearing, casing, axle mount.

- (1) Note. This subclass is limited only to structure that is directly connected to a thresher and unique for its utilization within the thresher.

SEE OR SEARCH CLASS:

- 171, Unearthing Plants or Buried Objects, subclass 142 for drive details (e.g., clutch, or gearing) which includes a specific means forming a part of a power supply system to move a portion of a device which removes and separates buried plants or objects from the earth.

117 **DUST HANDLING:**

This subclass is indented under the class definition. Subject matter having means to control the dust due to threshing and separating operations and to prevent it from escaping except through usual discharge openings.

118 **DRIER:**

This subclass is indented under the class definition. Subject matter which removes moisture by direct heat, exhaust gases or air blast from the harvested crop prior to its separation or during its separation or after it is separated or threshed.

SEE OR SEARCH CLASS:

- 34, Drying and Gas or Vapor Contact With Solids, appropriate subclasses, for processes and apparatus of drying and vapor contact with the material.
- 56, Harvesters, subclass 12.2 for machine which includes means for utilizing exhaust gases to dry the crop.
- 99, Foods and Beverages: Apparatus, appropriate subclasses, for the heating of food products.
- 209, Classifying, Separating, and Assorting Solids, subclass 11 for methods and means for heating associated with separation methods.
- 241, Solid Material Comminution or Disintegration, subclass 8 and 17 for comminuting combined with heating.
- 426, Food or Edible Material: Processes, Compositions, and Products, appropriate subclasses, for processes involving the application of a fluid to heat cereal or other seeds.

119 MACHINE COMPONENT ARRANGEMENT AND STRUCTURE, E.G., ENGINE PLACEMENT, GRAIN BIN:

This subclass is indented under the class definition. Subject matter unique to machine arrangement of major elements, e.g., grain bin, engine placement, in order to make the machine more efficient, shorter in length or similar improvement.

120 RACK, GRATE, BAR EXTENSION:

This subclass is indented under the class definition. Subject matter which bridges the crop flow to the next succeeding processing element but is not structurally identical to the element from which the extension is integrally connected.

- (1) Note. The device would be a series of rods or bars connected to the rear of a screen grate.

SEE OR SEARCH CLASS:

- 56, Harvesters, subclass 12.4 which includes fingerlike elements that engage and handle vegetation or crop; subclasses 161 and 164 which include conveying mechanism having a rake which is operated to rake the grain;

subclass 180 which includes raking elements for raking grain from a harvester platform.

- 209, Classifying, Separating, and Assorting Solids, subclass 267 for devices which retard the passage of material over the sifting surfaces and which are not primarily agitators.

121 TOOTH STRUCTURE:

This subclass is indented under the class definition. Subject matter including a projecting part resembling tooth in shape or function.

SEE OR SEARCH CLASS:

- 209, Classifying, Separating, and Assorting Solids, subclasses 363+ for elements, particularly subclass 399 wherein the sifting passages are formed by bars or rods which do not intermesh.
- 241, Solid Material Comminution or Disintegration, subclass 87.1 for offset fingers or projections on stationary surface and on rotary member; subclasses 291+ for comminuting elements.

122 Mounting means:

This subclass is indented under subclass 121. Subject matter including means to position or attach the tooth member either to the concave or cylinder, or roller.

123 FRUIT OR VEGETABLE PROCESSING APPARATUS:

This subclass is indented under the class definition. Subject matter which separates vegetables or fruits from plant stalks, pod or vine.

- (1) Note. Device separates vegetables from the plant stalk such as Brussels sprouts; pods from the plant stem such as peas, beans; vegetables from the vine such as peanuts, cucumbers, potatoes, tomatoes; leaves from the stalk such as tobacco, sugarcane, broom-corn, hops from the branches and clusters.

SEE OR SEARCH CLASS:

- 56, Harvesters, subclass 54 which include mechanism for trimming or cleaning broom-corn; subclasses 126+ for seed gatherers or strippers.

- 99, Foods and Beverages: Apparatus, subclass 546 and 635 which include severing means for detaching a stem-end or blossom-end from the food material.
- 171, Unearthing Plants or Buried Objects, subclasses 26+ for apparatus and method for detachment of plant parts by pulling, beating and shaking; subclasses 111+ which includes means for earth removal and separation of plant objects.
- 209, Classifying, Separating, and Assorting Solids, subclass 283 for stationary sifters having concave and convex material receiving surfaces including rotating agitators; subclasses 288 and 299 which include cylindrical and drum sifters mounted with their axes in horizontal or inclined position having rotary motion and having devices for lifting and dropping material and means for beating the material.
- 124 Pre-stripper:**
This subclass is indented under subclass 123. Subject matter including means to trim up the stalk before being inserted into the separating element.
- 125 Declustering:**
This subclass is indented under subclass 123. Subject matter including means to subdivide bunches or masses of naturally-connected crop products into smaller single crop products and means to sever the stem.
- SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclass 638 for cluster-breaking means.
- 126 Including picking or plucking (peanuts, hops or similar material):**
This subclass is indented under subclass 123. Subject matter consisting of cylinders, rollers, endless belts or similar elements which give an abrupt pull to the crop material and detach the product by grasping and pulling abruptly.
- (1) Note. The device usually includes cylinders or rollers having projecting fingers or rods which rotate in opposite or same direction or an endless belt having projecting fingers or rods or similar means. The fingers or rods engage the vine and strip the pods.
- SEE OR SEARCH CLASS:
56, Harvesters, subclass 27.5 for devices used in harvesting tobacco; subclasses 38 and 49 wherein picking mechanism is carried by an endless belt.
- 171, Unearthing Plants or Buried Objects, subclass 28 wherein detachment of plant objects is accomplished by opposed rotary gripping elements; subclasses 126+ for moving separating conveyors having compound motion, and having rotary cylinder, rotary drum, endless belt, shaking screen or grate, separating rollers, etc.
- 127 Spike tooth:**
This subclass is indented under subclass 126. Subject matter in which the projection is made of a long, thick, sharp-pointed piece of metal or equivalent.
- 128 Spring biased:**
This subclass is indented under subclass 126. Subject matter in which the projection is an elastic device such as a coil of wire.
- SEE OR SEARCH CLASS:
56, Harvesters, subclass 16.1 which includes elongated fingers attached on an axle or a shaft.
- 171, Unearthing Plants or Buried Objects, subclass 128 which includes rotary cylinder with radially extending separating elements.
- 129 Combing:**
This subclass is indented under subclass 126. Subject matter in which the projection is made of a plurality of thin, toothed strips which impart a combing effect in separating the crop material.
- SEE OR SEARCH CLASS:
56, Harvesters, subclass 34 for device which includes a comb between the teeth of which the stalks are drawn; subclasses 114, 116, 127, 130 in which the snapping member consists of a fixed bar with teeth in the form of a comb.

130 Pressure roller (e.g., snapping-cucumber):
This subclass is indented under subclass 123. Subject matter consisting of a single roll or a pair of closely spaced rolls which snap the crop material and separates the product.

SEE OR SEARCH CLASS:

- 56, Harvesters, subclasses 14.1+ for devices which include at least two generally cylindrical closely spaced members rotating in opposite angular directions.
- 99, Foods and Beverages: Apparatus, subclass 558 for devices which include parallel, cooperating cylinders; subclasses 574+ and 600+, appropriate indented subclasses for rotating cylindrical separating means; subclass 640 which includes two or more revolving cylinders which coast to grasp and pull off a stem while the food product is in contact with the cylinders.
- 171, Unearthing Plants and Buried Objects, subclass 28 for devices which include opposed rotary gripping elements; subclass 58 for cylindrical spaced members between which an object being unearthed is grasped; subclass 129 for rotary-drum type separators.
- 492, Roll or Roller, for a roll, per se, not elsewhere provided for, and see the search notes thereunder.

131 Shelling pressure roller (e.g., peas, beans, per se):
This subclass is indented under subclass 123. Subject matter consisting of a member or members with resilient surface which resiliently press and separate the product from the crop material.

- (1) Note. The device is used for shelling green peas, lima beans, string beans, black-eyed peas and similar material.

SEE OR SEARCH CLASS:

- 99, Foods and Beverages: Apparatus, subclass 558 for parallel, cooperating cylinders, one resilient, one impaling; subclass 566 for ribbed rotating cylinder; subclass 575 for separating

means with relative movement between adjacent irregular surfaces. Subclass 586 for device including a flexible material or a plurality of flexible members which cooperate to form a passage; subclasses 623+ for grain hulling by abrading or resilient separating means.

- 492, Roll or Roller, for a roll, per se, not elsewhere provided for, and see the search notes thereunder.

132 With adjusting means for roller or cylinder:
This subclass is indented under subclass 123. Subject matter including means to regulate or change the clearance of the separate member or members.

SEE OR SEARCH CLASS:

- 99, Foods and Beverages: Apparatus, subclass 579 for device including means for adjusting of a separating member; subclass 523 for means to vary spacing between hulling surfaces.

133 Including agitator:
This subclass is indented under subclass 123. Subject matter consisting of a plurality of rods, rakes, or similar means which extend into the crop flow and shake the crop material.

- (1) Note. The device increases the machine efficiency and provide an added motion consonant with the normal movement of the crop material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 96, for material vibrator which agitates the crop material and prevents the crop build up.

SEE OR SEARCH CLASS:

- 99, Foods and Beverages: Apparatus, subclass 632 for agitator or flow control means.
- 171, Unearthing Plants or Buried Objects, subclass 127 for moving conveyor, digger or separator having an agitating means.

134 Stripper or stemmer:

This subclass is indented under subclass 123. Subject matter having means to sever and detach product or leaf from the vine or stalk from the fruit or vegetable.

SEE OR SEARCH CLASS:

- 56, Harvesters, subclass 338 which includes means to sever the stem of the fruit.
- 99, Foods and Beverages: Apparatus, subclass 546 and 635 for devices having a severing means for detaching a stem-end or blossom-end from food material.
- 171, Unearthing Plants or Buried Objects, subclasses 26+ for removing the ends from food after removing it from the ground.

135 With rotary cutter:

This subclass is indented under subclass 134. Subject matter in which the stripping or stemming is accomplished by a cutting element which moves in a circular orbit about a single axis.

SEE OR SEARCH CLASS:

- 99, Foods and Beverages: Apparatus, subclass 593 for device wherein the cutting means to sever the skin from the food is rotary.
- 171, Unearthing Plants or Buried Objects, subclass 42 for a rotary-moving topping cutter.

136 With cutter encompassing stalk:

This subclass is indented under subclass 134. Subject matter in which cutting means is arranged about a central axis.

137 With stationary cutter:

This subclass is indented under subclass 134. Subject matter in which the product to be cut is moved relative to a stationary cutting means.

SEE OR SEARCH CLASS:

- 99, Foods and Beverages: Apparatus, subclass 595 for the device wherein means to move food past the stationary cutting tool is disclosed.

138 With oscillating cutter:

This subclass is indented under subclass 134. Subject matter having cutting means which swings back and forth.

139 With vibrating cutter:

This subclass is indented under subclass 134. Subject matter wherein the cutting means moves back and forth rapidly.

SEE OR SEARCH CLASS:

- 99, Foods and Beverages: Apparatus, subclass 589 wherein a vibrating cutting tool means is disclosed.

140 With roller:

This subclass is indented under subclass 134. Subject matter including an annular cylindrical member which performs the stripping or stemming in combination with a cutting means.

SEE OR SEARCH CLASS:

- 99, Foods and Beverages: Apparatus, subclass 585 for device for removing skin by pinching roller; subclass 625, for adjacent moving surfaces that remove skin by abrading; subclass 640, for roller means that grip a stem to remove it from food.
- 171, Unearthing Plants or Buried Objects, subclass 28 for oppositely rotating members between which certain portions of a plant are engaged and fed until such portions are pinched or pulled apart from other portions of said plant; subclass 58, for opposed roller-type plant extractors.

141 With cylinder and concave (for nongrain products):

This subclass is indented under subclass 123. Subject matter which includes a rotor having protruding elements and a grated area that surrounds part of its circumference.

- (1) Note. The device is similar to the grain threshing cylinder and concave but with unique features which separates only nongrain products.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 14, for rethreshing by separate diverse threshing means.
- 24, for flax thresher.
- 46, for ear shelling by concave and cylinder.
- 63, for prethreshing means.
- 75, for transverse threshing section.

SEE OR SEARCH CLASS:

- 99, Foods and Beverages: Apparatus, subclasses 574+ for separating one external portion from the remaining food by rotating separating means; subclasses 600+ for grain hulling; subclasses 623+ for separating by abrading or resilient separating means.
- 209, Classifying, Separating, and Assorting Solids, subclass 279 for rotating sifters having material-receiving surfaces concave or convex in shape.
- 241, Solid Material Comminution or Disintegration, subclass 221 for apparatus in which the material flows circumferential or tangentially of the rotary surface during the comminuting operation.

142 Drum and beater:

This subclass is indented under subclass 123. Subject matter consisting of a rotating perforated member within which another rotary member with a plurality of rods, bars or similar elements interact with the crop material to separate the product.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 73, for threshing section having beater; subclass 113 for beater.

SEE OR SEARCH CLASS:

- 99, Foods and Beverages: Apparatus, subclasses 603+ for grain hulling apparatus having moving perforated surface particularly subclass 608 wherein the cylindrical or conical perforated enclosure contains an inner hulling member which revolves about an axis substantially coincident with the axis of the cylinder or cone, with

which the cylinder or cone cooperates to hull the grain.

143 Blower assisted:

This subclass is indented under subclass 123. Subject matter including fan means to provide air blast for removing leaves, stems and other foreign matter from the crop product.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 100, for cleaner with fan feature.

SEE OR SEARCH CLASS:

- 99, Foods and Beverages: Apparatus, subclasses 516+ for apparatus for treating food by applying fluid.

144 Endless separating conveyor:

This subclass is indented under subclass 123. Subject matter consisting of a mechanical contrivance such as a continuous chain or belt which separates product from the crop material.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 114, for transport conveyor.

SEE OR SEARCH CLASS:

- 406, Conveyors: Fluid Current, subclass 77 for endless belt conveyors.

145 Shaker or shaking table (for nongrain products):

This subclass is indented under subclass 123. Subject matter consisting of an endless conveyor having a plurality of bars or rods or similar elements which agitates the crop material and separates the product.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 90, for shaking table.

SEE OR SEARCH CLASS:

- 171, Unearthing Plants or Buried Objects, subclasses 26+ for apparatus wherein means is provided to remove object from the plant parts, particularly subclass 27 wherein plant parts are separated by means which impacts or violently agitates the plant to jar or remove portions therefrom.

146 Reciprocating:

This subclass is indented under subclass 145. Subject matter having means which induces alternating back-and-forth movement to the table or any part thereof.

147 Oscillating:

This subclass is indented under subclass 145. Subject matter having means which swings the table back and forth or any part thereof.

148 Vibratory:

This subclass is indented under subclass 145. Subject matter having means to cause rapid back and forth motion to any part of the shaker member.

149 PROCESS:

This subclass is indented under the class definition. Method for separating crop product.

150 MISCELLANEOUS:

This subclass is indented under the class definition. Subject matter which is not in conformance with the definition of any prior subclass in this schedule.

SEE OR SEARCH THIS CLASS, SUBCLASS:

149, for the corresponding process.

902 GRAIN CLEANER:

This subclass is indented under the class definition. Subject matter having means for rethreshing the repeat material and thereby avoiding the necessity of returning the repeat material to the main threshing cylinder.

903 GRAIN SAVER:

This subclass is indented under the class definition. Subject matter having means adapted to be attached to some portion of the threshing machine in such a position as to catch the grains which are shelled out during the threshing operation and which would otherwise be lost.

904 POTATO DIGGER:

This subclass is indented under the class definition. Subject matter especially adapted for removing potatoes from the earth.

905 STRAW OR CHAFF STACKER:

This subclass is indented under the class definition. Subject matter for catching and retaining stalks or husks of grain after being discharged from the threshing machine.

END

CROSS-REFERENCE ART COLLECTIONS

The following subclasses are collections of published disclosures pertaining to various specified aspects of the threshing art. These subclasses assist a search based on remote function of the apparatus and may be of further assistance to the searcher as an indication of further related fields of search inside or outside of the class. Thus, there is here provided a second access for retrieval of a limited number of types of disclosures.

- (1) Note. The disclosures found in the following subclass are examples, only of the indicated subject matter, and no instance do they represent the entire extent of the prior art.

901 MATERIAL DISTRIBUTOR:

This subclass is indented under the class definition. Subject matter including means which permits the crop material to be distributed evenly across the feeder or shaking table.