CLASS 209, CLASSIFYING, SEPARATING, AND ASSORTING SOLIDS

SECTION I - CLASS DEFINITION

The class comprises methods and apparatus for separating solid materials and assorting or segregating them in grades or classes according to physical characteristics.

(1) Note. The class includes in general separation of grains, fruits, vegetables, flour, minerals, and, when the assorting is automatic, various manufactured articles. It, however, does not include the separation of straw in threshing machines (see Search Notes below) or certain manufacturing articles the separation of which has attained a specialized status (for example, printing type and fraud preventives of check-controlled machines).

(2) Note. This class does not include devices, either manually operated or automatic, for testing and separating of defective or leaky containers from perfect ones unless the separation is based upon some characteristics, generally dimensional, which forms the basis of some subclass of assorters in this class.

(3) Note. This class provides for tanks or receptacles or methods involving their use which are adapted specially to separate different grades of solid material from each other, usually by differential transporting effect of flowing currents of liquid impinging on a mixture of such solid materials or by differential subsidence of the solids in liquid which may be stationary or flowing. (See References to The Current Class, below). Also see Lines With Other Classes below, for structure of process adapted for the separation of solids from the liquid in which they are suspended.

(4) Note. Where an apparatus or method depends upon or is adapted specially for the separation of solid ingredients from other solids by chemical action, as by dissolution of certain of the ingredients to be separated, with or without subsequent precipitation, it is classifiable in other classes, according to the nature of the material treated or of the chemical action involved. (See Lines With Other Classes, below.)

(5) Note. See Subclass References to The Current Class, below, for the so-called amalgamating apparatuses or methods when associated with other types of separation); when dependent upon the adhesion of amalgamable materials to surfaces coated with mercury or metallic equivalents; and when the metals to be recovered are collected within a body of liquid metal which may be mercury, lead, zinc, etc., or alloys, and the ingredients lighter than the metals sought are floated by the body of liquid metal. Where chemical or electrical action is involved, which is not directed to the chemical dissolution of the metals sought or formation of compounds thereof, such goes into other subclasses in this class, whether the “amalgamation” is adhesion to a coated surface of mercury or its equivalent or collection by a liquid metal body. (See Subclass References to The Current Class, below, for cites to all these areas.) When chemical dissolution of the metal or formation of compounds thereof is involved with subsequent amalgamation, it goes to other classes, for which see Lines With Other Classes, below.

(6) Note. This class does not include apparatus or methods which involve the use of bowls or receptacles rotating at speed high enough to develop sufficient centrifugal force to separate one class of solids from others unless there is “amalgamation” involved, in which case such apparatus or methods are classifiable here (see References to This Class, below). Cases not falling within the exception noted are classifiable elsewhere. See Lines With Other Classes, below.

(7) Note. This class provides for methods and apparatus for sorting special items. See Subclass References to This Class, below, for specific subclasses. Also see this latter section for a reference to examples of “special items.” Bulk materials (such as grains and ore) are not considered special items and are generally sorted by methods and apparatus of the type classifiable in other subclasses. See Subclass References to This Class, below, for specific subclasses.

SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS

This class provides for tanks or receptacles or methods involving their use which are adapted specially to separate different grades of solid material from each other, usually by differential transporting effect of flowing currents of liquid impinging on a mixture of such solid materials or by differential subsidence of the solids in liquid which may be stationary or flowing. Where the structure or process is adapted for the separation of the solids from liquid in which they may be suspended, it is classifiable in Class 210, Liquid Purification or Separation, even though there may be incidental separation of one grade of solids from another, when there is no structure or process adaptation intended to promote separation of one grade of solids from the other. However, in relation to the magnetic separators in this class (209), subclasses 212 and 213+, when combined with magnetic separation of particles from a liquid with another type of separation to remove nonmagnetic particles for the disclosed purpose of clarifying the liquid is properly classifiable in Class 210, subclasses 222+.

Where an apparatus or method depends upon or is adapted specially for the separation of solid ingredients from other solids by chemical action, as by dissolution of certain of the ingredients to be separated, with or without subsequent precipitation, it is classifiable in Class 23, Chemistry: Physical Processes, Class 75, Specialized Metallurgical Processes, Compositions for Use Therein, Consolidated Metal Powder Compositions, etc.; Class 252, Compositions; Class 422, Chemical Apparatus and Process Disinfecting, Deodorizing, Preserving, or Sterilizing; and Class 423, Chemistry: Inorganic, according to the nature of the materials treated or of the chemical action involved.

When chemical dissolution of the metal or formation of compounds thereof is involved with subsequent amalgamation, it goes to Class 75, Specialized Metallurgical Processes, Compositions for Use Therein, Consolidated Metal Powder Compositions, etc.; Class 423, Chemistry of Inorganic Compounds, or Class 204, Chemistry: Electrical and Wave Energy, according to whether the action involved is merely chemical or also involves electrical or wave energy as provided for in Class 204.

Cases not falling within the exception noted in (6) Note above are classifiable in Class 494, Imperforate Bowl: Centrifugal Separators. This class, however, does include some borderline cases where it is not clear that the separation of the classes of solids is wholly dependent upon centrifugal force generated by high speed rotation of the receptacle.

Where the structure or process is adapted for the separation of the solids from liquid in which they may be suspended, it is classifiable elsewhere, in Class 210, Liquid Purification or Separation, even though there may be incidental separation of one grade of solids from another, when there is no structure or process adaptation intended to promote separation of one grade of solids from the other. However, in relation to the magnetic separators in subclasses 212 and 213+ of this class (209), the combination of magnetic separation of particles from a liquid with another type of separation to remove nonmagnetic particles for the disclosed purpose of clarifying the liquid is properly classifiable in Class 210, subclasses 222+.

SECTION III - SUBCLASS REFERENCES TO THE CURRENT CLASS

SEE OR SEARCH THIS CLASS, SUBCLASS:

1, through 3, 4-44, 45-70, 127.1-508, and 710-734, for apparatus and methods of sorting bulk material (such as grains and ore that are not considered special items. However, includible in subclasses indented under subclass 509 are methods and apparatus not provided for in the subclasses for sorting special items, below. (see Note 7).

3.1, through 3.3, 44.1-44.4, and 509-707 provide for methods and apparatus for sorting special items (see note 7 above)

12.1, 14, 15, 16, 41, and 42 for so-called amalgamating apparatuses or methods when associated with other types of separation (see 5 Note).

12.1, 13, 15 to 18, 42, 43, 155 to 161, 173, 207, 208+, 268 to 273, and 422+ for the so-called ore and coal washers (see Notes 3 and 5).

12.1, 13, 16, 17, 18, 155- 161, 208+ for tanks or receptacles or methods involving their use which are adapted specially to separate different grades of solid material from each other, usually by differential transporting effect of flowing currents of liquid impinging on a mixture of such solid materials or by differential subsidence of the solids in liquid which may be stationary or flowing (see Note 3).

14, 41, 48 to 50, 174+ (see Note 5).

30+, 311 to 349, 352+ for so-called “winnowers” for grain.

43, 48-50 for so-called amalgamating apparatuses or methods when dependent upon the adhesion of amalgamable materials to surfaces coated with mercury or metallic equivalents.

60, 199 (see Class Definition, Note 6).

174+, for so-called amalgamating apparatuses or methods when the metals to be recovered are collected within a body of liquid metal which may be mercury, lead, zinc, etc., or alloys, and the ingredients lighter than the metals sought are floated by the body of liquid metal. (see note 5)

176, through 181, for where chemical or electrical action is involved, which is not directed to the chemical dissolution of the metals sought or formation of compounds thereof, whether the "amalgamation" is adhesion to a coated surface of mercury or its equivalent or collection by a liquid metal body. (see Note 5)

212, 213+, for magnetic separators (see Note 3).

509, (1) Note for examples of special items. (see Note 7). Includible in subclasses indented under subclass 509 are methods and apparatus not provided for in the subclasses referred to in the preceding sentence, and bulk material sorting (as well as special item sorting) effected by use of such methods and apparatus will be classified in these indented subclasses. (see 7 Note)

SECTION IV - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

23, Chemistry: Physical Processes, (see Note 4).

34, Drying and Gas or Vapor Contact With Solids, and see the note to Class 209 in the main class definition for the line.

53, Package Making, appropriate subclasses for methods of and apparatus for encompassing or encasing goods or materials with a separate cover or band which serves as means for identifying, protecting or unit handling the goods or materials, particularly subclasses 155+ for group forming of diverse contents units.

55, Gas Separation, appropriate subclasses for methods and apparatus for indiscriminately removing all solids from a gaseous suspension. See (3) Note in Class 209 subclass 132.

65, Glass Manufacturing, subclass 508 for glass fiber forming apparatus combined with assorting means for fibers.

95, Gas Separation: Processes, appropriate subclasses for methods for indiscriminately removing all solids from a gaseous suspension. See (3) Note in Class 209 subclass 132.

96, Gas Separation: Apparatus, appropriate subclasses for apparatus for indiscriminately removing all solids from a gaseous suspension. See (3) Note in Class 209 subclass 132.

99, Foods and Beverages: Apparatus, subclasses 518+, 569+, and 600+ for apparatus including separating means of that class (99) type.

131, Tobacco, subclass 110 and 311+ for separating in connection with tobacco feeding and disintegrating.

134, Cleaning and Liquid Contact With Solids, and see (4) Note to class definition for the line.

162, Paper Making and Fiber Liberation, appropriate subclasses for paper making processes and apparatus in which a fibrous slurry is placed in association with a foraminous screen to form a felted product thereon.

164, Metal Founding, appropriate subclasses for apparatus for disintegrating a sand mold or core or portion thereof, while in molding association with (a) a flask or (b) a casting, except those which involve abrading means (Class 451, Abrading) or an agitating screen (Class 209) as the sole means for disintegrating the mold or core.

198, Conveyors: Power-Driven, subclasses 373+ for an orientation control device for rearranging conveyed articles responsive to recognition of differences in attitude (rather than characteristics, as in the instant class); see for example, subclasses 271 and 275 for conveyor systems including divergent paths along which articles of mutually different attitudes are respectively directed, one of the paths (in subclass 275) or both (271) constituting or including the orienting device.

204, Chemistry: Electrical and Wave Energy, (see (5) Note).

210, Liquid Purification or Separation, (see (3) Note).

221, Article Dispensing, especially subclasses 156+ for article dispensing devices not otherwise classified combined with orienting. See section VII of the class definition of Class 221 for a statement of the line between the classes.

222, Dispensing, especially subclasses 169+, 189.01, 189.02+, and 565 for similar structures for mere dispensing and not having the function of classifying, separating, or assorting solids.

241, Solid Material Comminution or Disintegration, subclasses 24, 68+, and the notes thereto for the subject matter of this class combined with comminution of the material. See sections 8 and 12 of the main class definition of Class 241 for a statement of the line.

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

252, Compositions, (see Note 4).

312, Supports: Cabinet Structure, subclass 210.5 for so-called "kitchen-cabinets" which include sifters merely as parts of organizations which comprise storage means for kitchen supplies or utilities not directly related to sifters.

366, Agitating, for apparatus or method specially adapted for the agitation of materials and not limited to classification of solids to some specific chemical reaction or special operation classifiable in some other class.

422, Chemical Apparatus and Process Disinfecting, Deodorizing, Preserving, or Sterilizing, (see Note 4).

423, Chemistry of Inorganic Compounds, (see Note 4).

425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclass 317 for a molding machine for shaping or reshaping nonmetals combined with a Class 209 apparatus.

460, Crop Threshing or Separating, for the separation of straw in threshing machines.

494, Imperforate Bowl: Centrifugal Separators, appropriate subclasses for apparatus and processes for breaking up a mixture of fluids or fluent substances into two or more components by centrifuging within a generally solid-walled, receptacle-like member; see also (6) Note above.

516, Colloid Systems and Wetting Agents; Subcombinations Thereof; Processes of Making, Stabilizing, Breaking, or Inhibiting, appropriate subclasses for subject matter relating to: colloid systems (such as sols*, emulsions, dispersions, foams, aerosols, smokes, gels, or pastes) or wetting agents (such as leveling, penetrating, or spreading); subcombination compositions of colloid systems containing at least an agent specialized and designed for or peculiar to use in making or stabilizing colloid systems; compositions and subcombination compositions specialized and designed for or peculiar to use in breaking (resolving) or inhibiting colloid systems; processes of making the compositions or systems of the class; processes of breaking (resolving) or inhibiting colloid systems; in each instance, when generically claimed or when there is no hierarchically superior provision in the USPC for the specifically claimed art.

588, Hazardous or Toxic Waste Destruction or Containment, appropriate subclasses for chemically destroying or containing hazardous or toxic waste.

SUBCLASSES

1 This subclass is indented under the class definition. Processes and apparatus not classifiable elsewhere which relate to or are associated with the separation of solids into grades or classes.

2 This subclass is indented under the class definition. Methods and apparatus applied to particular materials or articles in which the invention lies in the application of the separation, which may or may not be novel, per se, to such particular substances or articles.

(1) Note. Search should be made in the appropriate classes which deal with the extraction, manufacture, or preparation of the particular substance or articles.

SEE OR SEARCH CLASS:

23, Chemistry: Physical Processes, subclasses 293+ for processes of preparing or treating inorganic compounds and nonmetallic elements by physical action.

422, Chemical Apparatus and Process Disinfecting, Deodorizing, Preserving, or Sterilizing, appropriate subclasses for apparatus for preparing or treating inorganic compounds and nonmetallic elements by physical action.

423, Chemistry of Inorganic Compounds, subclasses 1+ for extraction of inorganic materials.

3 This subclass is indented under the class definition. Methods and apparatus including preparation, e.g., treatment of materials or items prior to their separation to facilitate the latter.

3.1 Sorting special items or sorting by methods and apparatus includible in subclasses 509 through 707:
This subclass is indented under subclass 3. Methods and apparatus including a means classifiable in subclasses 509 through 707.

3.2 Condition responsive sensor controlling preparation:
This subclass is indented under subclass 3.1. Methods and apparatus including means for sensing a condition of materials or items and controlling preparation of said materials or items in accordance therewith.

3.3 Marking or tagging item:
This subclass is indented under subclass 3.1. Methods and apparatus wherein materials or items are marked or tagged to facilitate their separation.

4 This subclass is indented under subclass 3. Methods and apparatus for the treatment of a mixture of materials whereby the physical characteristics of one or more of the components are altered relatively to those of other components to permit or facilitate subsequent separation.

(1) Note. The characteristics of only one may be altered or those of all may be, but in different degree.

(2) Note. This subclass will include such methods and apparatus as are not classifiable in the subclasses indented thereunder, and may include selective alteration of bulk, specific gravity, or decomposition, as by dehydration etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:
11, 46, 47, 48, 49, 176-182, for combinations of separation with treatment to promote the separation.

SEE OR SEARCH CLASS:
241, Solid Material Comminution or Disintegration, appropriate subclasses, especially subclasses 14 and 102 for processes and apparatus for selectively comminuting material to enable better separation of the material into grades.

5 This subclass is indented under subclass 4. Methods and apparatus by which certain components of a mixture may be deflocculated or dispersed relatively to others or by which certain components may be flocculated to facilitate subsequent separation.

(1) Note. This subclass receives only methods and apparatus in which the deflocculation or coagulation is contributory to a subsequent separation of some components from others.

SEE OR SEARCH THIS CLASS, SUBCLASS:
166, through 170, for bubble flotation with treatment for the purpose of modifying the factors of flotation and for bubble flotation apparatus.

SEE OR SEARCH CLASS:
516, Colloid Systems and Wetting Agents; Subcombinations Thereof; Processes of Making, Stabilizing, Breaking, or Inhibiting, appropriate subclasses for subject matter relating to: colloid systems (such as sols*, emulsions, dispersions, foams, aerosols, smokes, gels, or pastes) or wetting agents (such as leveling, penetrating, or spreading); subcombination compositions of colloid systems containing at least an agent specialized and designed for or peculiar to use in making or stabilizing colloid systems; compositions and subcombination compositions specialized and designed for or peculiar to use in breaking (resolving) or inhibiting colloid systems; processes of making the compositions or systems of the class; processes of breaking (resolving) or inhibiting colloid systems; in each instance, when generically claimed or when there is no hierarchically superior provision in the USPC for the specifically claimed art.

7 This subclass is indented under subclass 4. Methods and apparatus by which components of a mixture are altered in form relatively to

other components to permit or facilitate subsequent separation into classes or groups having like characteristics.

SEE OR SEARCH CLASS:

241, Solid Material Comminution or Disintegration, appropriate subclasses and see the reference to Class 209 in section 12 of the class definition.

8 This subclass is indented under subclass 4. Methods and apparatus for developing or for neutralizing or destroying magnetic properties of components of a mixture to permit or facilitate subsequent separation of the components of the mixture.

(1) Note. The methods and apparatus hereof, insofar as the magnetizing is involved, are ordinarily independent of any particular structure of manipulation of the magnetic separator, unless it be adjustment of strength to the developed magnetic properties. Demagnetizing may be applied to prepare for a gravity or other separation, as by destroying coherence between particles which interferes with gravity or other separation.

(2) Note. For processes directed to the mere chemical (i.e., molecular) conversion of a substance or of one or more ingredients in a material, and the related apparatus, see the appropriate chemical classes particularly Classes 75, Specialized Metallurgical Processes, Compositions for Use Therein, Consolidated Metal Powder Compositions, etc.; 266, Metallurgical Apparatus; and 423, Chemistry of Inorganic Compounds. Processes including both a chemical reaction and a magnetic separation are classified in the appropriate chemical class.

SEE OR SEARCH THIS CLASS, SUBCLASS:

213, through 232, for separation of solids by magnetic attraction of materials responsive to the attraction from other materials not responsive or responsive to a lesser degree.

SEE OR SEARCH CLASS:

75, Specialized Metallurgical Processes, Compositions for Use Therein, Consolidated Metal Powder Compositions, and Loose Metal Particulate Mixtures, (see (2) Note).

266, Metallurgical Apparatus, (see (2) Note).

361, Electricity: Electrical Systems and Devices, subclass 267 for demagnetizing.

423, Chemistry of Inorganic Compounds, for pertinent subclass(es) as determined by schedule review.

9 This subclass is indented under subclass 4. Methods and apparatus whereby the surfaces of some components of a mixture are altered to permit or facilitate their separation from other components.

SEE OR SEARCH THIS CLASS, SUBCLASS:

47+, for adhesion separation including a coating operation, 163+, 175, 176, 178, 179, and 181 for flotation involving some surface alteration of the material to be separated.

10 This subclass is indented under the class definition. Methods and apparatus involving treatment of material after separation, which are not classifiable elsewhere.

(1) Note. This subclass includes separating processes which include treatment after separation, or the treatments themselves when said treatments cannot be otherwise assigned to some class or subclass elsewhere.

11 This subclass is indented under the class definition. Methods and means for heating or cooling associated with separation methods and apparatus, not elsewhere classified.

SEE OR SEARCH THIS CLASS, SUBCLASS:

8, for heating prior to separation for the purpose of affecting the magnetic properties of the material to facilitate separation.

182, for amalgamation separation processes involving heating for the purpose of promoting amalgamation.
238, for sifters combined with heaters.

SEE OR SEARCH CLASS:
75, Specialized Metallurgical Processes, Compositions for Use Therein, Consolidated Metal Powder Compositions, and Loose Metal Particulate Mixtures, heating in connection with metallurgical processes.
99, Foods and Beverages: Apparatus, appropriate subclasses for the heating of foods or beverages.
208, Mineral Oils: Processes and Products, subclasses 8 and 11 for the separation of bituminous material from solid natural sources such as rocks, oil shale, bituminous sands, etc.
241, Solid Material Comminution or Disintegration, appropriate subclasses, especially subclass 17 for comminuting combined with heating.
266, Metallurgical Apparatus, for metallurgical heating apparatus.
432, Heating, subclass 13 for a process and subclass 61 for a residual apparatus for heating material in which a portion of the material is separated for further heating and the heated portion is returned.

12.1 Plural, diverse separating operations:
This subclass is indented under the class definition. Methods and apparatus involving combinations of different, distinct types of separation operations.

(1) Note. This subclass and the subclasses indented hereunder do not include methods or apparatus which are mere duplications of the same type of separation. Some of the patents which involve sifting and assorting, automatic or manual, have been placed in the assorting subclasses 509-707, and search should be made in such assorting subclasses for such combination. See (7) note of the class definition and subclass 509 definition including the notes appended thereto for the statement of classification control.

(2) Note. The appropriate subclasses providing for the individual types of separations should be searched.

(3) Note. This is the residual subclass for separating combinations not classifiable in one of the subclasses indented hereunder or elsewhere.

SEE OR SEARCH THIS CLASS, SUBCLASS:
127.1+, for methods and apparatus employing plural electrostatic charge separating operations.
132+, for methods and apparatus employing both gaseous and liquid suspension of items or materials.
212, for a combination of diamagnetic and paramagnetic magnetic separating methods or apparatus or plural diamagnetic separating methods or apparatus.
214, for plural paramagnetic separating processes.
216, for a plurality of diverse paramagnetic separators.
234, for methods and apparatus employing a plurality of different general types of sifters.
557, for methods and apparatus employing a combination of a condition responsive separating means for either “bulk material” or “special items” and a noncondition responsive separating means. See (1) Note supra.
629+, for combinations of different types of special item separating operations. See (1) Note supra.

SEE OR SEARCH CLASS:
241, Solid Material Comminution or Disintegration, appropriate subclasses for processes, (i.e., subclasses 19, 20, and 24), and apparati, (i.e., subclasses 68+), including the combination of material comminution and material separation operations properly classifiable in this class as subcombinations.
299, Mining or In Situ Disintegration of Hard Material, subclasses 7+ for mining combined with separation of materials.

12.2 Including electrostatic:

This subclass is indented under subclass 12.1. Methods and apparatus including electrostatic charges for assorting materials by segregating those having certain characteristics from others having different characteristics.

(1) Note. The characteristics may be of weight, size, electroconductivity, hysteresis, etc.

(2) Note. The appropriate subclasses providing for the individual types of separations should be searched.

SEE OR SEARCH THIS CLASS, SUBCLASS:

127.1+, for particulars relating to electrostatic separation.

SEE OR SEARCH CLASS:

95, Gas Separation: Processes, subclasses 57+ for processes of electrostatic separation or purification of gases.

96, Gas Separation: Apparatus, subclasses 15+ for electrostatic separation or purification apparatus for gases.

204, Chemistry: Electrical and Wave Energy, subclasses 554+ for electrical (e.g. electrostatic, etc.) or simultaneous electrical and magnetic separation or purification of liquids or magnetic treatment of liquids (other than separation) and subclasses 660+ for corresponding apparatus.

13 This subclass is indented under subclass 12.1. Methods and apparatus which include aqueous suspension, sifting, and stratifying.

SEE OR SEARCH THIS CLASS, SUBCLASS:

14, and 44, for a combination including sifting and stratifying.

17, for a combination of aqueous suspension and sifting.

18, for a combination of aqueous suspension and stratifying.

155+, for particulars of aqueous suspension separators.

233+, for particulars of sifters.

422+, for particulars of stratifiers.

14 This subclass is indented under subclass 12.1. Methods and apparatus in which amalgamation, either so-called plate amalgamation in which values adhere to mercury coated surfaces, or liquid amalgamation in which values sink in a body of mercury or equivalent, sifting, and stratifying are employed to extract metallic values.

SEE OR SEARCH THIS CLASS, SUBCLASS:

13, 19 and 44, for a combination including sifting and stratifying.

41, for a combination including mercurial adhesion and mercurial suspension.

42, for a combination including mercurial adhesion or suspension and sifting.

43, for a combination including mercurial adhesion or suspension and stratifying.

15 This subclass is indented under subclass 12.1. Apparatus and methods employing both fluid suspension and either suspension by or adhesion to liquid mercury or equivalent to separate or segregate components of a solid mixture.

SEE OR SEARCH THIS CLASS, SUBCLASS:

48, and 50+, for particulars of mercurial adhesion separators.

132+, for particulars of fluid suspension separators.

172+, for particulars of mercurial suspension separators.

16 This subclass is indented under subclass 15. Processes and apparatus in which both free suspension in water and amalgamation by mercury are employed to separate metals.

SEE OR SEARCH THIS CLASS, SUBCLASS:

13, 17 and 18, for a combination including aqueous suspension.

155+, for particulars of aqueous suspension separators.

17 This subclass is indented under subclass 12.1. Methods and apparatus which employ free suspension in water and sifting to effect separation

or segregation of components of a mixture of solid materials.

SEE OR SEARCH THIS CLASS, SUBCLASS:
13, for a combination including aqueous suspension and sifting separations.
155+, for particulars of aqueous suspension separators.
233+, for particulars of sifters.

18 This subclass is indented under subclass 12.1. Methods and apparatus for separating components of mixtures of solids which employ both free suspension in water and stratifying.

(1) Note. The stratification of this subclass may be either wet or dry.

SEE OR SEARCH THIS CLASS, SUBCLASS:
13, for a combination including aqueous suspension and sifting separations.
155+, for particulars of aqueous suspension separators.
422+, for particulars of stratifiers.

19 This subclass is indented under subclass 12.1. Methods and apparatus employing free suspension in gas, sifting and stratifying, for the assorting or segregation of components of a mixture of solids.

SEE OR SEARCH THIS CLASS, SUBCLASS:
13, 14 and 44, for a combination including sifting and stratifying.
20, for a combination including gaseous suspension and stratifying.
21+, for a combination including gaseous suspension and sifting.
133+, for particulars of gaseous suspension separators.
233+, for particulars of sifters.
422+, for particulars of stratifiers.

20 This subclass is indented under subclass 12.1. Means and apparatus employing both gaseous suspension and stratifying to separate or segregate components of a mixture of solids into grades or classes of like characteristics.

SEE OR SEARCH THIS CLASS, SUBCLASS:
19, for a combination including gaseous suspension and stratifying.
133+, for particulars of gaseous suspension separators.
422+, for particulars of stratifiers.

21 This subclass is indented under subclass 12.1. Methods and apparatus for separating and segregating into grades components of solid mixtures having like characteristics, which employ both free suspension in gas and sifting.

(1) Note. Either may precede the other or the operations may be simultaneous.

(2) Note. This subclass and those indented thereunder are composed mainly of patents relating to the separation of grains, flour, and minerals, but are not restricted thereto.

(3) Note. Search this class, subclasses 12 and 19 for the combinations, and the subclasses indented thereunder and under Sifting (subclass 233) for subcombinations. Where the recovery of material carried by the gas is involved, search should be made in Class 96, Gas Separation: Apparatus, as well as in the deposition subclasses indented under Gaseous suspension and sifting (subclass 21), and Fluid Suspension (subclass 133), in this class.

SEE OR SEARCH THIS CLASS, SUBCLASS:
19, for a combination including gaseous suspension and sifting.
133+, for particulars of gaseous suspension separators.
233+, for particulars of sifters.

SEE OR SEARCH CLASS:
96, Gas Separation: Apparatus, for gas separation apparatus. See (3) Note above.
99, Foods and Beverages: Apparatus, subclasses 518+ for grain hullers and scourers combined with gas separating means.

241, Solid Material Comminution or Disintegration, subclasses 49+ for comminutors in which material suspended in a gas stream is conveyed to a separating screen.

22 This subclass is indented under subclass 21. Methods and apparatus in which the material to be separated is subjected simultaneously to sifting and gaseous suspension.

(1) Note. In the main the material is supported by the sifter while gaseous currents are sent through it to suspend and carry off the lighter components, but the subclass is not restricted thereto.

(2) Note. This is generic and receives such cases as do not permit assignment to subclasses indented thereunder. The gaseous suspension must be free, and there must be substantial conveyance of the suspended material to distinguish from stratification under the influence of the gas.

(3) Note. This subclass and those indented thereunder deal mostly with grain, flour, and minerals, but will also take other materials when the separations fall within the definitions.

23 This subclass is indented under subclass 22. Methods and apparatus in which there is coincident sifting and gaseous suspension, such as is defined in connection with subclass 22, and also a collection of the material that has been taken up by the gas.

(1) Note. This collection may be graded or not and may include part or all of the material suspended.

SEE OR SEARCH THIS CLASS, SUBCLASS:
19, and 20, for other combined separations including gaseous suspension.

24 This subclass is indented under subclass 22. Processes and apparatus in which there are coincident grading suspension and sifting, a horizontal current of gas, generally air, being employed to effect the suspension.

(1) Note. This subclass may include cases where the material is carried by the sifter while subjected to the suspending current, as well as cases where the material selectively suspended by the gaseous current is delivered as a horizontal current against sifting means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
250, for sifters having means to feed material thereto by suspension in a fluid.

25 This subclass is indented under subclass 24. Methods and apparatus in which the suspended material carried by the current is collected.

(1) Note. This collection may be a grading deposition or a separation of all or part of such suspended material without any definite grading in the collection.

26 This subclass is indented under subclass 22. Methods and apparatus in which there are coincident grading suspension and sifting, an inclined current of gas, generally air, being employed to effect the suspension.

SEE OR SEARCH THIS CLASS, SUBCLASS:
250, 276, 280, 295, 312, 318, and 321, for sifters employing a gas stream for feeding material or for agitation or conveying.

27 This subclass is indented under subclass 26. Methods and apparatus in which the suspended material carried by the current is collected.

28 This subclass is indented under subclass 22. Methods and apparatus in which there are coincident grading suspension and sifting, a vertical current of gas, generally air, being employed to effect the suspension.

SEE OR SEARCH THIS CLASS, SUBCLASS:
250, 276, 280, 295, 312, 318, and 321, for sifters employing a stream of gas for feeding material, or for agitation or conveying.

29 This subclass is indented under subclass 28. Methods and apparatus in which the suspended material carried by the current is collected.

30 This subclass is indented under subclass 21. Methods and apparatus employing both suspension by gas and sifting to segregate components of mixtures into grades of like characteristics, the two separations being sequential.

SEE OR SEARCH THIS CLASS, SUBCLASS:
19, and 20, for other combined separations including gaseous suspension.

31 This subclass is indented under subclass 30. Methods and apparatus for subjecting material to be separated successively to gaseous suspension and sifting, and collecting one or more of the components suspended by the gas.

32 This subclass is indented under subclass 30. Methods and apparatus for separating components of mixed solids into grades which successively sift and suspend in gaseous currents flowing horizontally.

SEE OR SEARCH THIS CLASS, SUBCLASS:
24, and 25, for the combination in which the sifting and horizontal gaseous suspension grading are coincident.
133+, and 233+, appropriate subclass for the subcombinations of grading by gaseous suspension and sifting respectively.

33 This subclass is indented under subclass 32. Methods and means for successively sifting and separating by current of gas or air where there is also collection of part or all of the material carried off in suspension and the suspending current impinges horizontally on the material.

34 This subclass is indented under subclass 30. Methods and means employing successively sifting and a suspending current of air impringing in an inclined direction on the material to be separated.

35 This subclass is indented under subclass 34. Methods and means including collecting steps or means for part or all of the material carried in suspension.

36 This subclass is indented under subclass 30. Methods and means for successively sifting and subjecting the material to be separated to a vertically flowing current of gas or air.

37 This subclass is indented under subclass 36. Methods and means including steps or means for collecting part or all of the material suspended by the gaseous current.

38 This subclass is indented under subclass 12.1. Apparatus and methods which involve both sifting and magnetic separation to segregate components of a mixture.

(1) Note. The separations may be sequential, to separate some components according to size and others according to magnetic permeability, or they may be simultaneous, as where one separation is made to promote or control the other, for instance, where there is a sifting separation to obtain one or more sized grades to be subjected to magnetic separation appropriate to each size grade.

SEE OR SEARCH THIS CLASS, SUBCLASS:
8, for magnetic separation with a prior treatment to develop, neutralize or destroy the magnetic property of at least one component.

39 This subclass is indented under subclass 12.1. Apparatus and processes employing both magnetic separation and fluid suspension, either wet or dry, for the segregation of components of a mixture according to magnetic permeability and falling weight in fluid.

SEE OR SEARCH THIS CLASS, SUBCLASS:
232, for magnetic separation including feeding material by means of a fluid suspension.

40 This subclass is indented under subclass 12.1. Apparatus and methods by which there is separation both by stratification and by magnetic separation.

SEE OR SEARCH THIS CLASS, SUBCLASS:
478, for such processes and apparatus as employ magnetic separation merely as an aid to stratification by subjecting the material to magnetic attraction while being stratified to give the magnetically permeable components and apparently increased or decreased specific gravity to modify the stratification.

41 This subclass is indented under subclass 12.1. Apparatus and methods employing both suspension by a liquid body of metal and adhesion to a surface or surfaces lined with a film or layer of such liquid metal.

(1) Note. The metal is ordinarily mercury of some alloy thereof, but may be lead in molten condition or alloys thereof for the suspension.

SEE OR SEARCH THIS CLASS, SUBCLASS:
14, for a combination including mercurial adhesion, sifting, and stratifying.
15, 16, 42, and 43, for other combinations including either mercurial adhesion or mercurial suspension.

42 This subclass is indented under subclass 12.1. Apparatus and methods employing both sifting and either adhesion to a surface coated with mercury or suspension by a body of liquid mercury or equivalent.

SEE OR SEARCH THIS CLASS, SUBCLASS:
14, for a combination including mercurial adhesion, sifting, and stratifying.
15, 16, 41, and 43, for other combinations including either mercurial adhesion or mercurial suspension.

43 This subclass is indented under subclass 12.1. Apparatus and methods employing both stratification and either suspension by or adhesion to mercury or its equivalent to separate ingredients from a mixture of solids.

SEE OR SEARCH THIS CLASS, SUBCLASS:
14, for a combination including mercurial adhesion, sifting, and stratifying.
15, 16, 41, and 42, for other combinations including either mercurial adhesion or mercurial suspension.

44 This subclass is indented under subclass 12.1. Apparatus and methods employing both sifting and stratifying to segregate components of a mixture of solids.

(1) Note. Either or both may be wet or dry.

SEE OR SEARCH THIS CLASS, SUBCLASS:
13, 14 and 19, for other combinations including both sifting and stratifying.
233+, for particulars of sifters.
422+, for particulars of stratifiers.

44.1 Including sorting of special items, or sorting methods or apparatus includible in subclasses 509 through 707:
This subclass is indented under subclass 12.1. Methods and apparatus wherein one of the types of separations is classifiable in subclasses 509 through 707.

SEE OR SEARCH THIS CLASS, SUBCLASS:
557, for a combination of condition responsive means for controlling a separating means and a noncondition responsive separating means. See (7) Note of the class definition and (1) Note of subclass 509 for this class (Class 209).

44.2 Fluid jet:
This subclass is indented under subclass 44.1. Methods and apparatus including a fluid jet for separating materials or items.

44.3 Drum-type sifter:
This subclass is indented under subclass 44.1. Methods and apparatus including a drum-type sifter.

44.4 Manual sorting:
This subclass is indented under subclass 44.1. Methods and apparatus including a picking station wherein material is presented for direct selection by a human observer.

(1) Note. The relevant subclasses providing for the respective types of separation operations employed in the combination should be searched.

(2) Note. The relevant preceding subclasses providing for combinations of separating operations with or without manual sorting should be searched.

SEE OR SEARCH THIS CLASS, SUBCLASS:
630, for a combination of different types of special item separating means including a manual sorting operation.
702+, for a picking station feature, per se.

45 This subclass is indented under the class definition. Apparatus and methods employing adhesion of one or more components of a mixture of solids to other bodies or surfaces to separate them from the rest of the mixture.

SEE OR SEARCH THIS CLASS, SUBCLASS:
76, for separations where the adhesion is due to mechanically entangling the components with some part of the surface or body to which the components are caused to adhere.

46 This subclass is indented under subclass 45. Apparatus and methods for separating some components of a mixture of solids by causing them to adhere to a surface or body otherwise than by entangling, wherein the mixture is treated to alter some of the components to enhance their capabilities to adhere to the selecting surface or body relatively to the capabilities of other components.

SEE OR SEARCH THIS CLASS, SUBCLASS:
4, for separations combined with a treatment precedent to facilitate separation.

47 This subclass is indented under subclass 46. Apparatus and methods by which some of the components of the mixture of solids to be separated are coated with some substance which enables such components to adhere to the selecting body or surface.

SEE OR SEARCH THIS CLASS, SUBCLASS:
9, for separations combined with a treatment precedent where by the surfaces of some components of a mixture are altered to facilitate separation.

SEE OR SEARCH CLASS:
118, Coating Apparatus, appropriate subclasses, for coating apparatus in general.
427, Coating Processes, for coating processes, per se, and note especially subclasses 212+ for processes of coating particles, flakes or granules.

48 This subclass is indented under subclass 47. Apparatus and methods in which some of the components of a mixture of solids are coated with mercury or its equivalent to facilitate their adhesion to a surface or body.

(1) Note. The surface or body to which the coated particles adhere generally is some substance which is readily wetted by mercury and may itself be coated with mercury.

SEE OR SEARCH THIS CLASS, SUBCLASS:
176+, for metallic liquid type separation including a chemical treatment to facilitate separation.
179+, for metallic liquid type separation including an electrical treatment to facilitate separation.

SEE OR SEARCH CLASS:
75, Specialized Metallurgical Processes, Compositions for Use Therein, Consolidated Metal Powder Compositions, and Loose Metal Particulate Mixtures, for separation of metals from ores involving a metallurgical operation.

204, Chemistry: Electrical and Wave Energy, subclasses 219+, 250 and 251 for apparatus for forming amalgams by electrolysis.

205, Electrolysis: Processes, Compositions Used Therein, and Methods of Preparing the Compositions, subclasses 558+ for forming amalgams by electrolysis.

49 This subclass is indented under subclass 45. Apparatus and methods wherein coated surfaces or masses are employed to which some of the components of the mixture of solids adhere while others do not.

SEE OR SEARCH THIS CLASS, SUBCLASS:

171, for flotation processes and apparatus in which an oil which has a selective affinity for some of the constituent of the mixtures to be separated.

SEE OR SEARCH CLASS:

55, Gas Separation, appropriate subclasses beginning with subclass 474 for the separation of solids from gases by filters which may be coated.

252, Compositions, subclasses 60+, 88.1, and 88.2 for physical separation agents and for particle adherent compositions respectively.

50 This subclass is indented under subclass 49. Apparatus and methods in which some of the components of a mixture of solids are caused to adhere to surfaces coated with mercury or its equivalent, and are thereby separated from other components which do not so adhere.

SEE OR SEARCH THIS CLASS, SUBCLASS:

14, through 16, and 41-43, for separation combinations provided in combination with either mercurial adhesion or mercurial suspension.

176, through 181,where chemical or electrical action is involved, since there is no essential difference in effect whether the separation is a gravity or an adhesion separation. Processes involving such chemical or electrical action are classified in said subclasses whether adhesion or gravity separation by means of a metallic gravity liquid.

SEE OR SEARCH CLASS:

75, Specialized Metallurgical Processes, Compositions for Use Therein, Consolidated Metal Powder Compositions, and Loose Metal Particulate Mixtures, for the separation of metals from ores involving a metallurgical operation.

204, Chemistry: Electrical and Wave Energy, subclasses 219+, 250 and 251 for apparatus for forming amalgams by electrolysis.

205, Electrolysis: Processes, Compositions Used Therein, and Methods of Preparing the Compositions, subclasses 558+ for forming amalgams by electrolysis.

241, Solid Material Comminution or Disintegration, subclasses 79+ for such arrangements combined with comminutors.

51 This subclass is indented under subclass 50. Processes and apparatus for applying to or removing coatings of mercury or its equivalent from surfaces which are intended to collect such components of a mixture as are wettable by mercury.

SEE OR SEARCH CLASS:

118, Coating Apparatus, appropriate subclasses, for coating apparatus in general.

52 This subclass is indented under subclass 50. Elements or parts, generally of an organized apparatus, which are coated with mercury or its equivalent, so that some of the components of a mixture of solids will adhere thereto.

53 This subclass is indented under subclass 52. Elements employed to agitate the material being treated, are coated with mercury or its equivalent, to which certain of the components will adhere, and thus be segregated from the other components of the mixture.

54 This subclass is indented under subclass 52. Elements usually stationary, against which the mixture containing the components sought to be removed moves, are coated with mercury or

its equivalent to which the components sought will adhere.

55 This subclass is indented under subclass 52. Elements of disk or spherical shape, generally but not necessarily movable, are coated with mercury or its equivalent to cause adhesion of such components of a mixture as are wettable by mercury to adhere thereto.

56 This subclass is indented under subclass 52. Elements intended to line or form walls of receivers, are coated with mercury to cause adhesion of some components of a mixture thereto.

(1) Note. The liners are usually removable from the receivers to which they are attached, but may be permanently attached to the receivers.

57 This subclass is indented under subclass 52. Elements forming a multiplicity of narrow passages for the material, are coated with mercury or its equivalent to collect certain of the components of the mixture.

58 This subclass is indented under subclass 50. Receivers having their receiving surfaces or interiors coated, in part or in whole, with mercury or its equivalent to cause adhesion of some components of a mixture contacting therewith.

(1) Note. The receivers hereof are generally in the form of chutes or tables, but may include tanks.

SEE OR SEARCH THIS CLASS, SUBCLASS:

174+, for separation involving separation by flotation on a metallic liquid.

SEE OR SEARCH CLASS:

204, Chemistry: Electrical and Wave Energy, subclasses 219+, 221, 250, and 251 for apparatus specialized therefor.

205, Electrolysis: Processes, Compositions Used Therein, and Methods of Preparing the Compositions, subclasses 558+ for electrolytic processes of producing mercury alloys.

59 This subclass is indented under subclass 58. Rotating receivers for the material being treated have portions coated with mercury or its equivalent to collect by adhesion certain of the components of the material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

198+, for rotating receptacles employed in metallic liquid flotation separations.

60 This subclass is indented under subclass 59. The rotating receptacles have sufficient speed of rotation to make the centrifugal force generated sufficient to be a material factor in the separation and have portions coated with mercury or its equivalent to separate components of the material treated by adhesion.

SEE OR SEARCH THIS CLASS, SUBCLASS:

199, for rotating receptacles utilizing centrifugal force employed in metallic liquid flotation separations.

SEE OR SEARCH CLASS:

494, Imperforate Bowl: Centrifugal Separators, appropriate subclasses, for a separator of that class, and see, in the definition of this class (209), the reference to that class in (6) Note and the search note thereto.

61 This subclass is indented under subclass 59. Cylindrical or polygonal devices approximating cylinders have their exteriors coated with mercury or its equivalent to which certain of the components adhere.

62 This subclass is indented under subclass 59. Hollow rotating cylinders or drums have their interiors coated with mercury or its equivalent to cause adhesion of certain of the components of the material treated.

63 This subclass is indented under subclass 59. Endless belts coated with mercury or its equivalent contact with the material treated to cause adhesion of some of the components of the mixture.

64 This subclass is indented under subclass 58. Receivers having the interiors or receiving surfaces coated in part or in whole with mercury or its equivalent to cause adhesion of some of the components of a mixture contacting therewith and having a shaking movement.

(1) Note. The devices hereof are generally chutes or tables, but may be tanks.

65 This subclass is indented under subclass 58. Receivers having some portion of their receiving or contacting surfaces coated with mercury or its equivalent and associated with means for agitating the material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

53, for combinations where the agitators are essential elements thereof of the combination; but this subclass may include those devices which have agitators which are merely incidentally mercury coated.

64, for mercury coated receivers having a shaking movement.

66 This subclass is indented under subclass 65. Receivers having contacting surfaces lined with mercury in which fluid, usually air or water is employed to agitate the material treated to promote contact with the mercury.

67 This subclass is indented under subclass 65. Devices for separating by adhesion of some components of material to surfaces coated with mercury or its equivalent which are associated with means for subjecting the material to attritive rubbing.

(1) Note. The rubbing elements may be part of the separating device or may be external thereto, but closely associated therewith, and the rubbing elements may themselves have mercury-coated portions.

SEE OR SEARCH THIS CLASS, SUBCLASS:

191, for metallic liquid flotation separations utilizing a rubbing action.

SEE OR SEARCH CLASS:

241, Solid Material Comminution or Disintegration, appropriate subclasses, especially subclasses 24 and 79+ for comminuting combined with separation by mercurial adhesion.

68 This subclass is indented under subclass 65. Devices for separating material by adhesion of components to surfaces coated with mercury in which the material is forcibly projected against the mercury-coated surfaces.

(1) Note. This subclass will include devices in which gravital fall of substantial extent is employed to secure the impacting forces, as well as those which employ projecting means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

190, for metallic liquid flotation separations in which the material is forcibly projected against the surface of the bath.

69 This subclass is indented under subclass 65. Devices for separating components of material by adhesion to mercury-coated surfaces in which reciprocating agitating means are employed to promote contact of the material with the coated surfaces.

70 This subclass is indented under subclass 65. Devices having mercury-coated portions to which certain components of a mixture of solids adhere and having rotating agitators to promote contact of the material with the mercury-coated surfaces.

127.1 ELECTROSTATIC:

This subclass is indented under the class definition. Methods and means employing electrostatic charges for assorting materials by segregating those having certain characteristics from others having different characteristics.

(1) Note. The characteristics may be of weight, size electroconductivity, hysteresis, etc.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12.2, for electrostatic separation combined with other separating operations classifiable in this class (Class 209).

SEE OR SEARCH CLASS:

15, Brushing, Scrubbing, and General Cleaning, subclass 1.5 for machines and implements employing an electrostatic field for removing foreign material from the surface of objects being cleaned.

204, Chemistry: Electrical and Wave Energy, subclasses 554+ for electrical (e.g., electrostatic, etc.) or simultaneous electrical and magnetic separation or purification of liquids or magnetic treatment of liquids (other than separation) and subclasses 660+ for corresponding apparatus.

127.2 With heating of particles:
This subclass is indented under subclass 127.1. Methods and means in which the particulate material is heated.

127.3 With vibrating trough charging of particles:
This subclass is indented under subclass 127.1. Methods and means wherein electrostatic charges are applied to the material while traversing a vibrating trough.

127.4 Free fall type particle charging:
This subclass is indented under subclass 127.1. Methods and means wherein electrostatic charges are applied to free falling materials.

128 This subclass is indented under subclass 127.1. Methods and means which involve the attraction of material toward a charged electrode followed by repulsion from the electrode, the material being assorted according to its response to the repellant forces.

129 This subclass is indented under subclass 127.1. Methods and means for assorting material by attraction toward or to a charged electrode.

SEE OR SEARCH CLASS:

95, Gas Separation: Processes, subclasses 57+ for processes of gas separation using an electric or electrostatic field.

96, Gas Separation: Apparatus, subclasses 15+ for apparatus for gas separation using an electric or electrostatic field.

130 This subclass is indented under subclass 127.1. Methods and means in which material, generally precharged, is subjected to the repulsive effect of a charged electrode or to the repulsive effect of the charges on the components of the material and assorted according to the response to the repulsion.

131 This subclass is indented under subclass 127.1. Methods and means in which electrostatic charges are employed either alone or associated with other forces to agitate material and cause it to stratify to permit separation of the different strata.

132 This subclass is indented under the class definition. Methods and means in which mixed materials or articles are subjected to the suspending influence of a fluid or fluids, either gaseous or liquid, generally in motion, under conditions permitting the collection of such material or articles as respond equally or in like manner to the suspending influence, and where all of the material is subjected to the suspending influence and none maintained as a stratum.

(1) Note. All of the materials are subjected to the lifting or conveying effect of the fluid, and those that ar not lifted or conveyed collected separately from those that are, or the materials may be separately collected in accordance with the rates at which they settle out or the distances they are conveyed by the fluid.

(2) Note. Where one or more of the materials remain as a stratum or strata and the remainder are removed therefrom by the fluid, the case comes under Stratifiers, in this class.

(3) Note. The distinction between the fluid suspension of this class and Classes 95, Gas Separation: Processes, 96, Gas Separation: Apparatus, and 210, Liquid Separation or Purification, is that in the fluid suspension of this class there is separation of solids according to different characteristics thereof, while in Classes 95, 96, and 210 there is sought an indiscriminate collection of suspended material without an attempt to separate and collect the solids in different grades or classes. Where the operation is a decanting one primarily to separate the solids from liquid, and there is a merely incidental overflow of light solids, Class 210 takes the case; but where there is provision for the positive removal of one solid from another or for the collection of the overflowing solid as such separately from the settling solids it finds a place in this class.

SEE OR SEARCH CLASS:

19, Textiles: Fiber Preparation, appropriate subclasses, for mechanically isolating fibers and for fiber manipulation to put them in condition for use.

95, Gas Separation: Processes, see (3) Note above.

96, Gas Separation: Apparatus, see (3) Note above.

99, Foods and Beverages: Apparatus, subclasses 518+ for fluid separation apparatus.

210, Liquid Purification or Separation, (see (3) Note).

241, Solid Material Comminution or Disintegration, subclasses 19, 20, 38+ for comminutors combined with means to apply fluid to the material to effect the separation thereof.

406, Conveyors: Fluid Current, appropriate subclasses, for fluid current conveyors, per se.

133 This subclass is indented under subclass 132. Methods and means in which the fluid employed for the suspending and classifying of material is gaseous.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12.1, 19, 20, and 21+, for gaseous current separation combined with other types of separation.

SEE OR SEARCH CLASS:

131, Tobacco, subclasses 110 and 311+ for gaseous separation employed in connection with tobacco feeding or leaf disintegrating.

241, Solid Material Comminution or Disintegration, subclasses 19 and 38+ for gaseous suspension separation combined with solid comminution or disintegration.

134 This subclass is indented under subclass 133. Methods and means in which the material is subjected to the suspending or transporting effect of a horizontally-flowing current of gas or air and the components collected according to their relative displacement thereby.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12.1, 19, 20, 24, 25, 32, and 33, for gaseous suspension separations employing a horizontal current combined with other types of separation.

135 This subclass is indented under subclass 134. Methods and means in which the material is subjected to a horizontally-flowing current of gas to sort the same and the portion of the material suspended and transported thereby is collected in part or in whole as one or more grades.

136 This subclass is indented under subclass 133. Methods and means in which gaseous currents flowing in an inclined direction--that is, having both vertical and horizontal components of motion--are employed to freely suspend components of material.

(1) Note. There is usually both elevation and horizontal displacement of the suspended material; but cases involving the use of currents flowing in a downwardly inclined direction maybe included.

(2) Note. Many instances are included in which the material not freely suspended flows down an inclined wall or support, resembling to some extent those stratifiers which employ an inclined gaseous current for removal of the lighter. The distinction between the two generally is that in the suspension subclasses employing the inclined current the inclination of the wall is such that the material on the wall or support will normally flow freely or rapidly down the support and not be detained to form a definite stratum.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12.1, 19, 20, 26, 27, 34, and 35, for gaseous suspension separation employing an inclined current combined with other types of separations.

137 This subclass is indented under subclass 136. Methods and means in which an inclined gaseous current is employed to assort the material, and provision is made for the collection of the material suspended in whole or in part and as one or more grades.

138 This subclass is indented under subclass 133. Methods and means in which a vertically flowing gaseous current is employed to assort the material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12.1, 19, 20, 28, 29, 36, and 37, for gaseous suspension separation employing a vertical current combined with other type of separation.

466, through 477, for pneumatic type stratifiers.

139.1 With deposition:
This subclass is indented under subclass 138. Methods and means in which a vertically flowing gaseous current is employed to assort the material, and provision is made to collect in part or in whole and as one or more grades or classes the material suspended.

139.2 With centrifugal feed distribution:
This subclass is indented under subclass 139.1. Subject matter wherein the material being assorted is fed or distributed employing centrifugal force.

140 This subclass is indented under subclass 138. Methods and means in which a vertically flowing gaseous current which expands as it rises in the sorting region is employed to suspend some of the components of the material treated.

141 This subclass is indented under subclass 140. Methods and means in which a vertically flowing gaseous current which expands as it rises in the sorting region is employed, and provision is made for the collection, in whole or in part and as one or more grades, of the material suspended.

142 This subclass is indented under subclass 133. Methods and means by which material suspended in gaseous media is collected in two or more grades or classes.

(1) Note. The preceding subclasses which involve fluid suspension and deposition should be searched.

143 This subclass is indented under subclass 142. Methods and means in which there is a collection of a plurality of grades or classes of material from gaseous current carrying the same in suspension, the gaseous current being deflected to promote deposition of suspended material.

145 This subclass is indented under subclass 133. Methods and means wherein material is given movement with substantial impetus in a direction or directions opposing the flow of gaseous suspending current.

SEE OR SEARCH THIS CLASS, SUBCLASS:

148, for separations wherein material is centrifugally projected into the suspending gaseous current.

146 This subclass is indented under subclass 133. Methods and means for delivering material to be sorted to a suspending current or flow of gas.

147 This subclass is indented under subclass 146. Methods and means wherein conveyors are employed to deliver the material to be assorted to the gaseous suspending current.

SEE OR SEARCH CLASS:
198, Conveyors: Power Driven, appropriate subclasses, for conveyor features.
460, Crop Threshing or Separating, subclasses 15, 59+ and 79+ for threshers involving feeding or conveying.

148 This subclass is indented under subclass 147. Methods and means wherein material is centrifugally projected into the suspending gaseous current, generally by rotating disks or bowls.

SEE OR SEARCH THIS CLASS, SUBCLASS:
145, for separators in which material is given movement with substantial impetus in a direction opposing the flow of the gaseous suspending current.

SEE OR SEARCH CLASS:
222, Dispensing, subclass 410, and the notes thereto, for centrifugal force feeders, per se.
241, Solid Material Comminution or Disintegration, subclasses 39+ and 275 for comminutors including centrifugal force feeders.

149 This subclass is indented under subclass 147. Methods and means wherein material is delivered to the gaseous suspending current by flow down or along chutes.

SEE OR SEARCH THIS CLASS, SUBCLASS:
145, for separators in which material is given movement with substantial impetus in a direction opposing the flow of the gaseous suspending current.

SEE OR SEARCH CLASS:
193, Conveyors, Chutes, Skids, Guides, and Ways, appropriate subclasses, for conveying chutes, skids, etc., per se.
460, Crop Threshing or Separating, subclasses 15, 59+ and 79+ for threshers involving the use of chute feeders.

150 This subclass is indented under subclass 147. Methods and means wherein material is delivered to the suspending gaseous current by disks along which it flows.

(1) Note. These disks are generally stationary and conical and deliver the material in a plurality of directions from an initial point of feed without imparting centrifugal impulse thereto.

151 This subclass is indented under subclass 147. Methods and means wherein material is passed over a series of planes in stepped relation and subjected to a suspending current of gas while passing from step to step, which current generally is horizontal or inclined.

SEE OR SEARCH THIS CLASS, SUBCLASS:
314, through 319, 354 and 355, for plane sifters placed in stepped or superposed relation.

152 This subclass is indented under subclass 146. Methods and means wherein material carries by hollow rotating cylinders or drums is agitated (usually by lifting and dropping) by the drum or a cooperating element thereof and subjected to a flow of gas which assorts the same.

(1) Note. The distinction between this subclass and subclass 473 is that in this subclass all the material is definitely and repeatedly dropped into the gaseous current, while in the latter subclass the heavier components remain on the bottom of the cylinder or drum and are retained as a body or stratum or are conveyed along the bottom as a stratum. The relations of the subclasses are otherwise very close, and search in one should always by extended into the other.

SEE OR SEARCH THIS CLASS, SUBCLASS:
233+, appropriate subclasses for drum sifters.
473, (see (1) Note)

SEE OR SEARCH CLASS:

241, Solid Material Comminution or Disintegration, subclasses 45 and 54 for comminutors or grinders of the horizontal drum type employing a gaseous current passing through the grinding zones.

153 This subclass is indented under subclass 146. Methods and means wherein agitators toss or project material into the path of flow of the sorting current.

154 This subclass is indented under subclass 133. Methods and means for controlling the gaseous-fluid currents employed for sorting material.

155 This subclass is indented under subclass 132. Methods and means wherein liquid is employed as the assorting medium.

(1) Note. While some of the subclasses indented hereunder are analogous to the subclasses indented under Fluid, Gaseous, above, other properties of liquid are availed of, such as specific gravity and surface tension. In the subclasses analogous to those involving gaseous fluid water is generally the medium, while where surface tension is involved water or aqueous solutions may be employed, and in those cases involving specific gravity water, aqueous solutions or suspensions, and liquid or liquefied metal may be employed.

SEE OR SEARCH CLASS:

241, Solid Material Comminution or Disintegration, subclasses 20 and 38+ for comminution combined with liquid application to effect the separation of the material.

156 This subclass is indented under subclass 155. Methods and means wherein a horizontal flow of liquid is employed to assort the components of solids which settle through the stream at different distances from the place of introduction or impingement of the solids.

SEE OR SEARCH THIS CLASS, SUBCLASS:

173, for gravity separation employing an aqueous medium.

207, for separations depending upon the surface tension of an aqueous medium.

157 This subclass is indented under subclass 155. Methods and means wherein an inclined current flow of liquid involving both horizontal and vertical displacement or motion of the suspended material, is employed to assort the components of material.

158 This subclass is indented under subclass 155. Methods and means vertically flowing liquid is employed to assort material.

SEE OR SEARCH CLASS:

210, Liquid Purification or Separation, subclasses 792+ for processes of rehabilitating a particulate bed filter; subclass 108 for flow, fluid pressure or material level backwash control for filter beds, and subclasses 269+ (particularly subclasses 275+) for particulate material type separators with rehabilitation means.

159 This subclass is indented under subclass 158. Methods and means wherein the vertically flowing liquid and the material subjected to the suspending influence thereof are agitated.

(1) Note. The agitating means may include mechanical stirrers, stationary baffles, or fluid jets.

160 This subclass is indented under subclass 158. Methods and means wherein vertically flowing currents which expand as they flow upwardly are employed to assort material.

161 This subclass is indented under subclass 160. Methods and means wherein vertically flowing expanding assorting liquid currents and the material subjected to the suspending influence thereof are agitated by means which may include mechanical stirrers, stationary deflectors, or fluid jets.

162 This subclass is indented under subclass 155. Methods and means wherein material to be assorted is delivered to a body of liquid, some of the components floating on the liquid, while other components are sunk or remain submerged.

(1) Note. This subclass will receive such cases as are not definitely classifiable in any of the indented subclasses hereunder and cases which are obscure as to the specific factors causing flotation.

SEE OR SEARCH CLASS:
252, Compositions, subclasses 60+ for compositions for use in assorting.

163 This subclass is indented under subclass 162. Methods and means wherein some material is caused to adhere selectively--i.e., to some constituents and not to others--which so lightens the material constituents to which it is attached as to cause them to float on the liquid, while the other constituents are not floated.

Fluid suspension, Liquid, Floating, Buoyant material, Bubbles:
The subclasses hereunder include apparatus and methods by which bubbles are caused to attach to some components of a material or mixture of solid materials and not to others, the components to which the bubbles are attached being caused thereby to float on the surface of the liquid.

SEE OR SEARCH THIS CLASS, SUBCLASS:
163+, where only selected portions of the mixed materials are floated.

SEE OR SEARCH CLASS:
210, Liquid Purification or Separation, subclasses 703+ for processes of precipitation involving flotation wherein the solids are floated indiscriminately, and subclasses 220+ for related apparatus.
261, Gas and Liquid Contact Apparatus, appropriate subclasses, for methods and apparatus in which contact is effected between the gas and solids suspended in liquid which are not limited to flotation, consequently Class 261 will take such methods and apparatus as are applicable to flotation as well as other purposes where the flotation step or element is not included as a limitation.
516, Colloid Systems and Wetting Agents; Subcombinations Thereof; Processes of Making, Stabilizing, Breaking, or Inhibiting, subclasses 10+ for foam colloid systems or agents for such systems or making or stabilizing such systems or agents, subclasses 115+ for compositions for or subcombination compositions for or breaking of or inhibiting of foam colloid systems; in each instance, when generically claimed or when there is no hierarchically superior provision in the USPC for the specifically claimed art.

164 Processes under subclass in which bubbles are caused to attach to certain of the components of the material treated and not to others, and the bubbles with adhering material are floated on the liquid.

(1) Note. This subclass will include processes in which reagents may be employed for the purpose merely of chemically generating bubbles, but not those cases in which a reagent is employed for modifying the surface of particles of material, the surface tension of the liquid, or the nature of physical properties of the bubbles, which cases go to subclasses 166+ of this class.

SEE OR SEARCH THIS CLASS, SUBCLASS:
166+, (see (1) Note).

SEE OR SEARCH CLASS:
516, Colloid Systems and Wetting Agents; Subcombinations Thereof; Processes of Making, Stabilizing, Breaking, or Inhibiting, subclasses 10+ for foam colloid systems or agents for such systems or making or stabilizing such systems or agents, subclasses 115+ for compositions for or subcombination compositions for or breaking of or inhibiting of foam colloid systems; in each instance, when generically claimed or when there is no hierarchi-

cally superior provision in the USPC for the specifically claimed art.

165 This subclass is indented under subclass 164. Processes by which certain components of a material are separated by bubble flotation from other components which are normally flotable, which processes do not involve the use of reagents which modify the physical characteristics of the liquid or bubbles.

(1) Note. This subclass will include processes in which the surfaces of one or more constituents are changed otherwise than by coating with a reagent or adsorption of the reagent and where no reagent is employed to modify the physical characteristics of the liquid or the bubbles by which the flotation is attained.

SEE OR SEARCH CLASS:

516, Colloid Systems and Wetting Agents; Subcombinations Thereof; Processes of Making, Stabilizing, Breaking, or Inhibiting, subclasses 10+ for foam colloid systems or agents for such systems or making or stabilizing such systems or agents, subclasses 115+ for compositions for or subcombination compositions for or breaking of or inhibiting of foam colloid systems; in each instance, when generically claimed or when there is no hierarchically superior provision in the USPC for the specifically claimed art.

166 This subclass is indented under subclass 164. Processes of bubble flotation of some constituents of a mixture, but not others, in which some reagent is employed to modify the factors in the flotation.

(1) Note. The modification may be of surfaces of components, as by coating or adsorption of the reagent, by variation of the surface tension of the liquid in which the separation is performed, or by modifying the nature of the bubbles, or of any combination of such factors. Mere chemical alteration of the surfaces of components does not bring the case into this subclass unless there is associated therewith the use of some reagent having a function such as indicated above.

SEE OR SEARCH CLASS:

127, Sugar, Starch, and Carbohydrates, for the manufacture of sugar, starch or carbohydrates from natural sources.

162, Paper Making and Fiber Liberation, subclasses 1+ for processes of chemical liberation, recovery or purification of natural cellulose or fibrous material.

204, Chemistry: Electrical and Wave Energy, for liquid purification including the use of electrical or wave energy.

210, Liquid Purification or Separation, subclasses 703+ for processes involving flotation wherein the solids are floated indiscriminately, and subclasses 220+ for related apparatus.

252, Compositions, subclass 61 for reagents employed in flotation.

261, Gas and Liquid Contact Apparatus, appropriate subclasses, for means for effecting gas and liquid contact, per se.

366, Agitating, for method and apparatus for mixing gases and liquids by agitation.

516, Colloid Systems and Wetting Agents; Subcombinations Thereof; Processes of Making, Stabilizing, Breaking, or Inhibiting, subclasses 10+ for foam colloid systems or agents for such systems or making or stabilizing such systems or agents, subclasses 115+ for compositions for or subcombination compositions for or breaking of or inhibiting of foam colloid systems; in each instance, when generically claimed or when there is no hierarchically superior provision in the USPC for the specifically claimed art.

167 This subclass is indented under subclass 166. Processes of bubble flotation of the type of the preceding subclass, employing reagents, in which the selection by the bubbles is between a plurality of constituents of which each is normally flotable, those of one kind being floated while others are not.

SEE OR SEARCH CLASS:

516, Colloid Systems and Wetting Agents; Subcombinations Thereof; Processes of Making, Stabilizing, Breaking, or Inhibiting, subclasses 10+ for foam colloid systems or agents for such systems or making or stabilizing such systems or agents, subclasses 115+ for compositions for or subcombination compositions for or breaking of or inhibiting of foam colloid systems; in each instance, when generically claimed or when there is no hierarchically superior provision in the USPC for the specifically claimed art.

168 This subclass is indented under subclass 163. Apparatus for effecting selective separation by bubble flotation.

(1) Note. As indicated in connection with subclass 166, the distinction between Classes 261, Gas and Liquid Contact Apparatus, and 366, Agitating, and this subclass, is that this subclass includes apparatus limited by positive inclusion of the element or elements which complete the device as a flotation apparatus, whereas Class 261 and 366 include devices which effect contact between gas and liquid not limited to flotation.

SEE OR SEARCH CLASS:

127, Sugar, Starch, and Carbohydrates, for apparatus employed in the manufacture of sugar, starch or carbohydrates.

204, Chemistry: Electrical and Wave Energy, for apparatus employed in purifying a liquid using electrical or wave energy.

210, Liquid Purification or Separation, subclasses 198+ for separators of that class combined with means to add treating materials, e.g., a gas, particularly subclasses 220+.

261, Gas and Liquid Contact Apparatus, appropriate subclasses. (See (1) Note).

516, Colloid Systems and Wetting Agents; Subcombinations Thereof; Processes of Making, Stabilizing, Breaking, or Inhibiting, subclasses 10+ for foam colloid systems or agents for such systems or making or stabilizing such systems or agents, subclasses 115+ for compositions for or subcombination compositions for or breaking of or inhibiting of foam colloid systems; in each instance, when generically claimed or when there is no hierarchically superior provision in the USPC for the specifically claimed art.

169 This subclass is indented under subclass 168. Devices in which the contact between the gas forming the bubbles and the liquid carrying the material to be selectively floated is effected by agitation, which devices are limited to flotation by bubbles.

SEE OR SEARCH CLASS:

261, Gas and Liquid Contact Apparatus, for gas and liquid contact apparatus, per se.

366, Agitating, for agitators, per se.

516, Colloid Systems and Wetting Agents; Subcombinations Thereof; Processes of Making, Stabilizing, Breaking, or Inhibiting, subclasses 10+ for foam colloid systems or agents for such systems or making or stabilizing such systems or agents, subclasses 115+ for compositions for or subcombination compositions for or breaking of or inhibiting of foam colloid systems; in each instance, when generically claimed or when there is no hierarchically superior provision in the USPC for the specifically claimed art.

170 This subclass is indented under subclass 168. Devices limited to selective flotation by bubbles in which the gas forming the bubbles is delivered below the surface of the liquid.

(1) Note. The gas as delivered may include some liquid or reagent.

SEE OR SEARCH THIS CLASS, SUBCLASS:

168, for apparatus wherein a gas is generated chemically or electrolytically within the liquid as are also combinations involving structures or elements belonging to both this and the immediately preceding subclass.

SEE OR SEARCH CLASS:

261, Gas and Liquid Contact Apparatus, appropriate subclasses, for gas and liquid contact apparatus, per se.

516, Colloid Systems and Wetting Agents; Subcombinations Thereof; Processes of Making, Stabilizing, Breaking, or Inhibiting, subclasses 10+ for foam colloid systems or agents for such systems or making or stabilizing such systems or agents, subclasses 115+ for compositions for or subcombination compositions for or breaking of or inhibiting of foam colloid systems; in each instance, when generically claimed or when there is no hierarchically superior provision in the USPC for the specifically claimed art.

171 This subclass is indented under subclass 163. Methods and means wherein oil which has a selective affinity for some of the components of the mixture to be separated is employed, to which such components adhere and with which they are floated to the surface of the bath of liquid.

(1) Note. This subclass includes cases in which sufficient bulk of oil is employed to reduce the specific gravity of the mixture of oil and adhering particles of material to a degree below that of the liquid in which the separation is effected so that the oily mixture may float.

172 This subclass is indented under subclass 162. Methods and means wherein material to be separated is delivered to or mixed with a liquid or mixture of liquids having a specific gravity greater than that of some constituents and less than that of other constituents, the constituents of lesser specific gravity than the liquid floating thereon, while those of greater specific gravity sink or remain suspended in the liquid.

(1) Note. This subclass takes such cases as do not fall within the subclasses indented thereunder.

172.5 This subclass is indented under subclass 172. Methods and means wherein the constituents of a mixture having lesser specific gravity are separated from those of greater specific gravity by flotation on a liquid system of intermediate specific gravity which system is a suspension of solids.

173 This subclass is indented under subclass 172. Methods and means wherein the constituents of a mixture having lesser specific gravity are separated from those of greater specific gravity by flotation on a liquid system of intermediate specific gravity which system is water or an aqueous solution.

SEE OR SEARCH CLASS:

99, Foods and Beverages: Apparatus, subclass 570 for apparatus for fluid separation including flotation.

241, Solid Material Comminution or Disintegration, subclasses 38+ particularly subclass 46.01 for comminutors combined with such separators.

174 This subclass is indented under subclass 172. Methods and means wherein metallic liquid is employed to float the constituents of lesser specific gravity from those of greater specific gravity.

(1) Note. This subclass takes those cases which involve the use of particular metals or alloys of metals which do not fall into the subclasses indented thereunder.

(2) Note. In substantially all the cases of this subclass and those indented thereunder the separation is of metal from worthless material with which the metal is mixed, the metal sinking in the metallic liquid and the worthless material floating thereon, though there may be some instances in which one metal may be separated from another.

(3) Note. Owing to the impracticability of drawing a clear line between cases where there is a clear flotation of the lighter specific gravity components and those cases in which liquid metal is mixed with the material and afterwards settled out with the attached or absorbed metals, both types are included in the subclasses indented hereunder, since the settling of the liquid metal with rejection of the lighter components of the material in the supernatant layer may be consid-

ered a species of flotation of such lighter components.

SEE OR SEARCH CLASS:

266, Metallurgical Apparatus, subclasses 227+ for apparatus for treating molten material to separate the same into different constituents e.g., slag from metal.

175 This subclass is indented under subclass 174. Processes involving the use of metallic liquid as a medium for the separation of those components of a mixture which have a lesser specific gravity from those that have a greater specific gravity than the liquid.

176 This subclass is indented under subclass 175. Processes including chemical treatment other than chemical dissolution or formation of compounds of the metal sought which are limited by the inclusion of the amalgamating step or which are preparatory for or promotive of the amalgamating step and have no other utility.

(1) Note. This subclass will include processes not classifiable in the subclass indented thereunder, generally processes in which the chemical treatment affects both the material treated and the mercury or its equivalent or in which the effect is not definitely assignable to one or the other.

(2) Note. This subclass and subclass 178 do not include processes involving chemical treatment for decomposing or altering the composition of metallic constituents sought to be extracted unless limited to or having utility restricted to amalgamation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

177, through 181, for other processes of chemical and for electrical treatments in connection with amalgamating step.

SEE OR SEARCH CLASS:

204, Chemistry: Electrical and Wave Energy, subclasses 219, 220, 221, 250, and 251 for electrolytic apparatus for the production of amalgams.

205, Electrolysis: Processes, Compositions Used Therein, and Methods of Preparing the Compositions, subclasses 558+ for electrolytic processes of producing amalgams.

420, Alloys or Metallic Compositions, subclasses 526+ for amalgams and methods of manufacturing them.

177 This subclass is indented under subclass 176. Processes involving chemical treatment which are limited to amalgamation and in which the effect of the treatment is upon the mercury or its equivalent or which involve chemical treatment which promotes the action of the mercury in absorbing the substances selectively separated or prepares the mercury or equivalent for such action and has no other utility.

SEE OR SEARCH THIS CLASS, SUBCLASS:

176, 179 and 180, for other processes of chemical or electrical treatment upon the mercury employed.

178 This subclass is indented under subclass 176. Processes involving chemical treatment other than chemical dissolution or formation of compounds of the metal, limited to amalgamation in which the effect of the treatment is upon the material to be separated or processes involving chemical treatment, other than chemical dissolution or formation of compounds of the metal, of the material to be separated to prepare it for separation by mercury or its equivalent and having no other utility.

SEE OR SEARCH THIS CLASS, SUBCLASS:

176, 179 and 181, for other processes of chemical or electrical treatment of the material to be separated.

SEE OR SEARCH CLASS:

75, Specialized Metallurgical Processes, Compositions for Use Therein, Consolidated Metal Powder Compositions, and Loose Metal Particulate Mixtures, for metallurgical treatment of ores.

179 This subclass is indented under subclass 175. Processes involving electrical treatment limited to amalgamation or which are promotive of

amalgamation and have no other utility. Such process does not ordinarily include cases involving the use of mercury charged with a reagent for decomposing salts or compounds of the metal sought, with incidental amalgamation.

(1) Note. This subclass includes such processes as are not classifiable in the subclasses indented hereunder, generally processes in which both the material being separated and the mercury or its equivalent are affected by the electrical treatment or in which the effect is not definitely assignable to either.

(2) Note. This subclass and subclass 181 do not include processes in which the material being treated or a portion thereof is electrolytically decomposed to facilitate a separation not limited to amalgamation, for which see Class 204, Chemistry: Electrical and Wave Energy.

SEE OR SEARCH THIS CLASS, SUBCLASS:
180, and 181, for other processes involving electrical treatment in connection with the amalgamating (see (2) Note).

SEE OR SEARCH CLASS:
204, Chemistry: Electrical and Wave Energy, subclasses 194+ for electrolytic apparatus.
205, Electrolysis: Processes, Compositions Used Therein, and Methods of Preparing the Compositions, subclasses 558+ for electrolytic processes of producing mercury alloys (see (2) Note.).

180 This subclass is indented under subclass 179. Processes involving electrical treatment limited to amalgamation or promotive of amalgamation and having no other utility, in which the effect of the electrical treatment is assigned to the mercury or its equivalent.

SEE OR SEARCH THIS CLASS, SUBCLASS:
179, for other processes of electrical treatment of the mercury in connection with the amalgamation.

181 This subclass is indented under subclass 179. Processes involving electrical treatment limited to or promotive of amalgamation and having no other utility in which the effect of the electrical treatment is assigned to the material being separated.

SEE OR SEARCH THIS CLASS, SUBCLASS:
179, for other electrical treatment of the material to be separated (see (2) Note thereto.)

182 This subclass is indented under subclass 175. Processes involving heat treatment limited to or promotive of amalgamation and having no other utility.

(1) Note. This subclass does not include heat treatment for the purpose of reducing or decomposing ores when not limited to amalgamation or not having utility restricted thereto.

SEE OR SEARCH THIS CLASS, SUBCLASS:
48, for processes of coating material with mercury to facilitate separation by adhesion.

SEE OR SEARCH CLASS:
75, Specialized Metallurgical Processes, Compositions for Use Therein, Consolidated Metal Powder Compositions, and Loose Metal Particulate Mixtures, for metallurgical processes employing heat.

183 This subclass is indented under subclass 174. Apparatus and methods for delivering material to be separated below the surface of the body of liquid material which serves to float the lighter components and to retain the heavier.

(1) Note. This subclass and the subclasses indented under it do not include such cases as do not involve the initial subsurface delivery of the material, cases where the material is submerged only after a preliminary surface delivery which permits the heavier to sink in the metallic bath not being ordinarily included.

184 This subclass is indented under subclass 183. Apparatus and methods wherein conveying means are employed to force the material beneath the surface of the metallic bath.

SEE OR SEARCH THIS CLASS, SUBCLASS:
205, for the use of a receptacle having a rotating agitating means in connection therewith to effect contact between the material to be separated and the metallic liquid.

185 This subclass is indented under subclass 183. Apparatus and methods wherein suction means are employed to draw the material beneath the surface of the metallic bath.

186 This subclass is indented under subclass 183. Apparatus and methods wherein means are employed to agitate the material while submerged in the metallic bath.

187 This subclass is indented under subclass 186. Apparatus and methods wherein baffles or stationary deflectors are employed to agitate the material while submerged in the metallic bath.

188 This subclass is indented under subclass 186. Apparatus and methods wherein mechanical stirrers are employed to agitate the material while submerged in the metallic bath.

189 This subclass is indented under subclass 174. Apparatus and methods wherein the material to be separated is delivered initially to the surface of the metallic bath.

190 This subclass is indented under subclass 189. Apparatus and methods wherein the material to be separated is delivered forcibly against the surface of the metallic bath.

(1) Note. Projecting means may be employed or the material may be delivered gravitally by dropping a sufficient distance to develop substantial impetus.

191 This subclass is indented under subclass 174. Apparatus and methods wherein means for attritively rubbing the particles of material are employed in conjunction with a metallic bath which floats the components of lesser specific gravity, while those of greater specific gravity remain in the bath.

(1) Note. The rubbing and subjection to the metallic bath may be coincident, or one may follow the other.

SEE OR SEARCH CLASS:
241, Solid Material Comminution or Disintegration, appropriate subclasses, especially subclasses 20 and 46.01 for processes and apparatus including comminution combined with separation by liquid flotation.

192 This subclass is indented under subclass 174. Devices for feeding material to or for discharging material to or from a liquid metallic bath or for both feeding and discharging such material.

193 This subclass is indented under subclass 192. Devices for feeding liquid metal to a metallic bath which separates components of material, or for discharging the metal of the bath, or for both feeding and discharging such metal composing the bath.

194 This subclass is indented under subclass 174. Devices constructed or specially adapted for use in connection with the treatment of material by metallic liquid for the purpose of separating constituents of such material.

(1) Note. In connection with this and the subclasses indented thereunder the titular term is employed in its broadest significance to indicate devices which receives the material treated and the liquid metal, whether they retain either or both or permit either or both to pass continuously through the device.

SEE OR SEARCH THIS CLASS, SUBCLASS:
183+, for devices where there is an initial submergence of the material in a body of liquid metal.

195 This subclass is indented under subclass 194. Receptacles in or on which the material to be separated and the liquid metal are brought into contact have a shaking movement.

196 This subclass is indented under subclass 195. Receptacles in or on which contact is effected between the material to be separated and the liquid metal are in the form of tables or shallow chutes or troughs to which a shaking movement is imparted.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12.1, 14, 15, 41, 42, and 64, for other separation processes and apparatus involving the use of tables or chutes with mercurial suspension or adhesion.

197 This subclass is indented under subclass 195. Means which are provided in the shaking receptacles for agitating the material to be separated or both the material and the liquid metal.

198 This subclass is indented under subclass 194. Devices on or in which contact is effected between the material to be separated and the liquid metal are given a rotating movement.

199 This subclass is indented under subclass 198. Devices in or on which the contact is effected between the material to be separated and the liquid metal which effects the separation are given rotation that will generate such centrifugal force as to promote the separation, generally by forcing the particles of higher specific gravity into the body or bodies of liquid metal in the receptacle.

200 This subclass is indented under subclass 198. Rotating receptacles in which contact is effected between the material to be separated and the liquid metal is provided with means for agitating the material or the material and the liquid metal.

201 This subclass is indented under subclass 194. Receptacles in which contact is effected between the material to be separated and the liquid metal is stationary.

202 This subclass is indented under subclass 201. Stationary receptacles in or on which contact is effected between the material to be separated and the liquid metal is in the form of a table or shallow trough.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12.1, 14, 16, 41, 42, and 58, for similar separations in which a table or trough is employed.

203 This subclass is indented under subclass 201. Stationary receptacles in which contact is effected between the material to be separated and the liquid metal is provided with means to agitate the material or the material and the liquid metal.

(1) Note. This subclass and those indented thereunder receive such cases as do not include the initial submergence of the material under the surface of the liquid metal in which agitating means are employed for the submerged material.

204 This subclass is indented under subclass 203. Stationary receptacles which receive the material to be separated and the liquid metal which effects the separation is provided with reciprocating agitating means.

205 This subclass is indented under subclass 203. Stationary receptacles which receive the material to be separated and the liquid metal which effects the separation is provided with a rotary agitating means.

206 This subclass is indented under subclass 174. Devices for retaining or collecting liquid metal that is employed to separate components of a mixture of solids.

207 This subclass is indented under subclass 162. Methods and means wherein material is delivered to the surface of a body of liquid, generally water or an aqueous solution, part of the material breaking through the surface and another part not breaking through, but floating, upon the surface.

(1) Note. In cases coming into this subclass the separation depends generally upon different capabilities of the components of the material for being surface wetted, those that are wetted sinking, while those that are not wetted during the period of contact allowed, float. The separation is independent ordinarily of specific gravi-

ties of the components. The subclass will include cases where the material is treated to modify the wetting susceptibilities of some of the components, as by coating with a film or oil, etc., as well as those in which the natural susceptibilities are depended upon.

208 This subclass is indented under subclass 155. Means and methods for assorting or grading material by deposition from a body of liquid, generally water, which are not dependent upon the effect of an impingement of a current flow of liquid upon the material.

(1) Note. The body of liquid may be static or may be in motion, and in the latter case the material is either initially in suspension in the liquid or is delivered to a body of liquid moving in other than the form of a current.

(2) Note. The distinction between this subclass and those indented thereunder and subclasses 155-161 lies in the dependance of the latter upon the effect of a current of liquid upon the material, while the former group is substantially independent thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:
155, through 161, (see (2) Note).

SEE OR SEARCH CLASS:
266, Metallurgical Apparatus, subclasses 227+ for apparatus for treating molten material to separate the same into different constituents e.g., slag from metal.

209 This subclass is indented under subclass 208. Means and methods wherein material is delivered to a body of liquid, either static or in motion otherwise than as a current, and fall of the different grades or sorts of material is checked or the material caught after definite time intervals, these intervals being different for the different grades or sorts of material.

210 This subclass is indented under subclass 208. Means and methods wherein the flow of liquid carrying material in suspension is deflected to promote deposition or settlement of the material.

(1) Note. One grade of material may be deposited and the rest be maintained in suspension and removed from the deposited grade or a plurality of grades may be deposited separately.

SEE OR SEARCH CLASS:
210, Liquid Purification or Separation, appropriate subclasses for apparatus and methods where the remaining of a portion in suspension after deposition of the material in unclassified condition is merely an incident of the decantation of the liquid from the settled mass, and no provision is made to definitely suspend a particular portion for removal.

Magnetic:
Apparatuses and processes which employ magnetic force to segregate material responsive to such force from other material which is not affected by such force.

212 Methods and means under Magnetic for separating components of material by magnetic repulsion.

(1) Note. This subclass includes cases where the repulsion is due to inherent diamagnetism and cases where it is due to magnetic polarity established by electrical currents (eddy or Foucault currents) developed in conductive components.

SEE OR SEARCH THIS CLASS, SUBCLASS:
12.1+, particularly subclasses 38-40, for diamagnetic separation combined with other separating operations classifiable in this class (Class 209).
562, for a magnetic means delaying actuation of a means separating special items.
567+, for a magnetic test sensing a property of special items to be sorted.
639, for means sorting special items by use of a magnet.

SEE OR SEARCH CLASS:

204, Chemistry: Electrical and Wave Energy, subclasses 554+ for electrical (e.g., electrostatic, etc.) or simultaneous electrical and magnetic separation or purification of liquids or magnetic treatment of liquids (other than separation) and subclasses 660+ for corresponding apparatus.

210, Liquid Purification or Separation, subclasses 222+ for processes and apparatus for applying a magnetic field to a liquid to separate particles therefrom for the disclosed purpose of clarifying the liquid.

588, Hazardous or Toxic Waste Destruction or Containment, subclasses 300+ for chemically destroying hazardous or toxic waste, which may additionally include the use of magnetic force.

213 Methods and means under Magnetic employing magnetic attraction to separate material responsive to the attraction from other materials not responsive to such attraction or responsive in lesser degree.

(1) Note. This subclass takes cases which are not classifiable in the subclasses indented thereunder.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12.1+, particularly subclasses 38-40, for paramagnetic separation combined with other separating operations classifiable in this class (Class 209).

562, for a magnetic means delaying actuation of a means separating special items.

567+, for a magnetic test sensing a property of special items to be sorted.

639, for means sorting special items by use of a magnet.

SEE OR SEARCH CLASS:

204, Chemistry: Electrical and Wave Energy, subclasses 554+ for electrical (e.g., electrostatic, etc.) or simultaneous electrical and magnetic separation or purification of liquids or magnetic treatment of liquids (other than separation) and subclasses 660+ for corresponding apparatus.

210, Liquid Purification or Separation, subclasses 222+ for processes and apparatus for applying a magnetic field to a liquid to separate particles therefrom for the disclosed purpose of clarifying the liquid.

414, Material or Article Handling, subclasses 606, 737, 793.2+, and 797.1 for a device of that class which may include a magnet.

588, Hazardous or Toxic Waste Destruction or Containment, subclasses 300+ for chemically destroying hazardous or toxic waste, which may additionally include the use of magnetic force.

214 This subclass is indented under subclass 213. Processes employing magnetic attraction to separate material responsive to such attraction from material not so responsive or responsive in lesser degree.

SEE OR SEARCH THIS CLASS, SUBCLASS:

8, for processes which involve treatment to render components of a mixture not normally magnetically attractable so attractable.

215 This subclass is indented under subclass 213. Methods and means involving the use of magnetic attraction to separate substances which are magnetically attractable from other substances, applied to particular substances or under special unconventional conditions.

216 This subclass is indented under subclass 213. Devices for magnetic separation of magnetically attractable substances from other substances which include magnetic separating elements of more than one type.

(1) Note. This subclass does not include mere duplications of one type of magnetic separating element.

217 This subclass is indented under subclass 213. Methods and means wherein the magnetic elements which effect the attraction of some components reciprocate.

218 This subclass is indented under subclass 213. Methods and means wherein the magnetic elements which effect the attraction of some components from other are in the form of endless rotating belts.

(1) Note. Said elements may be single or may be made up of a plurality of elements arranged in the form indicated.

(2) Note. This subclass will include devices including belts of magnetic material which may be "permanently" magnetized or may be inductively magnetized by stationary of movable magnets and devices in which a plurality of magnets are joined in belt form.

219 This subclass is indented under subclass 213. Devices including rotating cylinders or drums having other than vertical axes constituting magnetic elements which attract responsive components of material to or toward their exterior surfaces.

(1) Note. This subclass will include structures in which the cylinders or drums are themselves magnetic or composed of assembled magnetic elements or are composed of magnetizable material or assembled elements of magnetizable material with movable or stationary inducing magnets. It does not include rotating cylinders or drums surrounding stationary magnets where the cylinders or drums themselves are not magnetic and serve merely as shields or conveyors.

220 This subclass is indented under subclass 219. Devices including rotating cylinders or drums on vertical axes which attract magnetically responsive material to or toward their outer surfaces.

(1) Note. The cylinders or drums may be of the structure indicated for the cylinders or drums of the preceding subclass, and as with said preceding subclass, drums or cylinders surrounding nonrotating magnets and not themselves magnetic or magnetized are not included.

221 This subclass is indented under subclass 213. Devices wherein the magnetic attracting element or elements constitute or form part of a hollow rotating cylinder or drum, and material to be separated is delivered to the interior of such drum or cylinder, and the magnetizable constituents are attracted to the magnetic elements and detained or diverted from nonmagnetizable constituents.

(1) Note. Part or all of the rotating cylinder or drum must be magnetized, devices in the form of hollow cylinders or drums serving as shields or conveyors adjacent magnets, but no portion of which is magnetized to operate directly as attracting means, not being included.

222 This subclass is indented under subclass 213. Devices wherein the magnetic attracting element or elements are in rotating disk form or form part of a disk, the disk being rotated.

(1) Note. Disks which operate as shields or conveyors adjacent magnetic elements not of rotary disk type, which disks do not include a magnetic or magnetized portion, are not included. The subclass will include a series of open-spaced magnetic elements arranged to define a disk and rotated.

223.1 Stationary magnets:
This subclass is indented under subclass 213. Methods and means wherein the magnetic attracting elements are stationary.

(1) Note. Movable or stationary partitions, shields, or conveyors may be interposed between the attracting elements and the material and do not control classification if they include in themselves no magnetizable attracting elements.

223.2 Cylinder external:
This subclass is indented under subclass 223.1. Subject matter wherein the magnetic elements are portion of hollow cylinders or drums and the material being treated is fed along the outside surface of each element.

224 This subclass is indented under subclass 223. Methods and means wherein the magnetic attracting elements are in the form of or constitute portions of stationary hollow cylinders or drums, and the material is fed into or through these cylinders or drums.

225 This subclass is indented under subclass 213. Methods and means wherein means are provided for agitating or conveying the material being subjected to magnetic separation.

SEE OR SEARCH THIS CLASS, SUBCLASS:
232, for magnetic separators provided with means for feeding the material to be separated suspended in a liquid.

226 This subclass is indented under subclass 225. Methods and means wherein the material being magnetically separated is agitated by magnetic influence, which may be the result of some special construction or relation of the separating magnet or magnets or may be attained by supplemental magnets.

227 This subclass is indented under subclass 226. Methods and means wherein material being magnetically separated is agitated or conveyed by traveling magnetic fields generated by the separating magnetic elements or magnetic elements supplemental thereto.

228 This subclass is indented under subclass 213. Means and methods for discharging separated components from magnetic separators, mainly material attracted by the magnets.

229 This subclass is indented under subclass 228. Devices for mechanically removing or wiping off the material attracted to the magnetic elements of magnetic separators.

SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclasses 262+ for textile fiber drawing roll clearers.

230 This subclass is indented under subclass 229. Devices wherein magnets are employed to remove the material attracted to the separating magnets.

231 This subclass is indented under subclass 213. Means and methods for feeding material to be separated to separating magnets.

232 This subclass is indented under subclass 231. Means and methods in which the material to be separated is fed into the influence of the attracting magnet or magnets suspended in liquid.

233 This subclass is indented under the class definition. Means and methods by which material is separated or assorted according to size or dimensions of components by presentation to a series of openings or passages through which the components having dimensions below those of the openings or passages pass while those having dimensions greater than those of the passages or openings do not pass through.

(1) Note. The distinction between this subclass and subclasses indented hereunder and subclasses 659+, sorting items by size, is mainly that subclasses 659+ generally deal with the assortment of special articles, such as fruit, vegetables, and various articles of manufacture as set forth in (1) Note of subclass 509, and the articles are usually presented individually to the sizing passages; while in subclasses 233+, the material is ordinarily presented indiscriminately to the series of passages. The distinction is, however, not clearcut, and search in one group should be extended into appropriate subclasses of the other group.

SEE OR SEARCH THIS CLASS, SUBCLASS:
12.1+, for sifting separation combined with other separation operations.
557, for a combination of a noncondition responsive special item sorting by size separating operation with a condition responsive separating operation.
629+, for a combination of diverse types of special item separating operations.

SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclasses 521+ 522, 528, 603+, and 605+ for grain hullers embodying sifters.

241, Solids Material Comminution or Disintegration, appropriate subclasses, especially subclasses 49+, 69+, 83+ for screens combined with or forming part of a comminutor organization.

234 This subclass is indented under subclass 233. Sifting devices including a plurality of sifters of different general types, but not mere duplications of a single type.

235 This subclass is indented under subclass 233. Sifting devices employed for separating particular materials or for other than the mere size grading of a given mass of particles.

SEE OR SEARCH THIS CLASS, SUBCLASS:
251, for reversible sifters.

236 This subclass is indented under subclass 235. Sifting devices employed or adapted for the distribution or spreading of material and in which size grading is merely incidental.

SEE OR SEARCH CLASS:
406, Conveyors: Fluid Current, subclass 121 for sifting devices which distribute into a conveying current.

237 This subclass is indented under subclass 235. Sifting devices employed or adapted for sifting material to determine the proportion of each size in the whole.

238 This subclass is indented under subclass 233. Sifting means or steps associated with means or steps for heating or cooling the material treated.

SEE OR SEARCH THIS CLASS, SUBCLASS:
11, for other combinations of solid separation with heating or cooling.

239 This subclass is indented under subclass 233. Sifting means associated with means for weighing material treated.

(1) Note. The weighing may be precedent, coincident, or subsequent.

240 This subclass is indented under subclass 233. Sifting means associated with means for feeding and discharging.

241 This subclass is indented under subclass 240. Devices and methods, wherein conveyors are employed both for the feeding of material to and for discharging material from sifting devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:
420, for portable sifters.

SEE OR SEARCH CLASS:
171, Unearthing Plants or Buried Objects, particularly subclasses 111+ and 138 for separators for sifting and recovering from a mass of earth plants or other desired objects embedded therein combined with conveyors for moving the earth or recovered objects to or from said separators.

242 This subclass is indented under subclass 240. Devices and methods wherein the feeding and the discharging means for sifters are connected for simultaneous control other than mere actuation from a common source, generally means to set both into or out of operation simultaneously or to interrupt one when the other is set into operation.

243 This subclass is indented under subclass 233. Means and methods for feeding material to sifting devices.

244 This subclass is indented under subclass 243. Means and methods in which the material is fed from hoppers to the sifting devices.

SEE OR SEARCH CLASS:
193, Conveyors, Chutes, Skids, Guides, and Ways, for conveyors, chutes etc., per se.
222, Dispensing, for hopper feeders, per se.

245 This subclass is indented under subclass 244. Means and methods wherein agitating or conveying means are associated with hoppers which feed material to sifting devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:
254, for spreading and distributing the material over the surface of the sifter.
284, for feeders for drum sifters.

SEE OR SEARCH CLASS:
222, Dispensing, for hopper feeders, per se, with agitators to facilitate feeding.

246 This subclass is indented under subclass 244. Means and methods wherein cut-offs or valves are associated with hoppers to control the delivery of material to sifting devices.

SEE OR SEARCH CLASS:
193, Conveyors, Chutes, Skids, Guides, and Ways, for conveyors chutes etc., per se, with valves or cut-offs.
222, Dispensing, for hopper feeders with valves or cut-offs.

247 This subclass is indented under subclass 243. Means and methods which include conveyors associated with sifting means and delivering material to the latter.

SEE OR SEARCH THIS CLASS, SUBCLASS:
316, for plural superposed sifters with intermediate conveyors.
420, for portable sifters.

SEE OR SEARCH CLASS:
37, Excavating, subclasses 307+ for dredgers.
198, Conveyors: Power-Driven, for conveyor structure, per se.
460, Crop Threshing or Separating, subclasses 15, 59+, 79+, and 123 for threshing machines including conveyor feeders.

248 This subclass is indented under subclass 247. Devices in which the material is conveyed and delivered to sifters by portable receptacles, there generally being some adaptation of one for the other or some means facilitating the positioning of the receptacle relatively to the sifter.

249 This subclass is indented under subclass 248. Devices wherein ash pans are employed to deliver material to sifters, generally with some adaptation of one to the other or means for attaching the ashpan to the sifter.

250 This subclass is indented under subclass 247. Devices in which the material is delivered to sifters, generally by projection, suspended in a fluid.

SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclasses 202, 204+, and 304+ for fiber separators with pneumatic feed.
37, Excavating, subclasses 317+ for dredges which include a pump to cause a current to flow through the inlet or delusing pipe.
210, Liquid Purification or Separation, subclasses 153+ for flume stream type screens, and subclass 405 for filters having a movable prefilt distributor.
406, Conveyors: Fluid Current, appropriate subclasses, for fluid current conveyors, per se.

251 This subclass is indented under subclass 243. Sifters adapted to sift material through in one direction and then to be reversed to sift the material in the opposite direction relatively to the sifting element or elements.

252 This subclass is indented under subclass 243. Means and methods in which the material is sifted by movement of the sifter against a mass of the material instead of the latter being delivered to the sifter.

SEE OR SEARCH CLASS:
37, Excavating, subclasses 315+ for shell-fish dredgers.
171, Unearthing Plants or Buried Objects, subclasses 84+ for reticulated devices which comb through the soil or a mass of earth having object embedded therein to collect or gather desired objects therefrom.

253 This subclass is indented under subclass 243. Devices including a series of sifters and means whereby material may be delivered at will to any desired sifter of the series by manipulation

of the feeding means or shifting of the positions of the series of sifters.

254 This subclass is indented under subclass 243. Devices which distribute or spread material over the surfaces of sifters at points of delivery or which distribute material over the surfaces of a plurality of sifters as the material is fed.

255 This subclass is indented under subclass 233. Means and methods of discharging material from sifters.

(1) Note. These may include means for discharging oversize or undersize material or both.

256 This subclass is indented under subclass 255. Means and methods which include conveyors and valves which control delivery of material to or from the conveyors for discharge from sifters.

257 This subclass is indented under subclass 255. Means and methods wherein conveyors are employed to discharge material, either oversize, undersize, or both, from sifters.

SEE OR SEARCH THIS CLASS, SUBCLASS:

284, 317, 371, and 375, for other combinations including a sifter and a discharge conveyor.

420, for portable sifter.

SEE OR SEARCH CLASS:

37, Excavating, subclasses 307+ for dredgers.

171, Unearthing Plants or Buried Objects, subclasses 89, 123, 124+, and 138 for recovery devices in which a reticulated means for screening desired objects from a mass of earth is provided with a cooperating, conveyor means for receiving and carrying away from said reticulated means oversize and/or undersize material.

198, Conveyors: Power-Driven, appropriate subclasses, for conveyor structure, per se.

460, Crop Threshing or Separating, subclasses 15, 59+, 79+, and 123 for threshers including discharge conveyors.

258 This subclass is indented under subclass 255. Means and methods including valves associated with sifters to control the discharge of material, either oversize, undersize, or both, from the sifters.

259 This subclass is indented under subclass 255. Means and methods wherein special receptacles, generally portable are employed to receive material, either oversize, undersize, or both, from sifting devices.

260 This subclass is indented under subclass 255. Sifters adapted to discharge material, usually oversize, by tilting or inversion of the sifter.

261 This subclass is indented under subclass 233. Means associated with sifters for conveying material relatively to the sifting surfaces which do not fall within the feeding and/or discharging subclasses or within the agitating subclasses.

(1) Note. This specific subclass takes such cases as do not fall within the subclasses indented thereunder and includes generally means for conveying material from one part to another of a sifter or series of sifters out of contact with the sifting surface and means for conveying material around (by-passing) the sifting elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:

316, and 317, for other combinations of plural superposed sifters with intermediate conveyor or discharge means.

262 This subclass is indented under subclass 261. Means including conveying means, other than agitators which directly force material through the sifting passages.

(1) Note. These conveying means may be conveyors of a mechanical nature operating substantially in the direction in which the undersize passes through the sifting passages or may be means for forcing fluid in the direction specified.

(2) Note. Where fluid is employed to force material through the passages of a sifter, it must be a fluid supply which does not

merely agitate the material on the sifter, but must exert substantial force in the direction of passage through the sifting passages.

SEE OR SEARCH THIS CLASS, SUBCLASS:
250, for sifters with fluid current feeders.

263 This subclass is indented under subclass 261. Means employed to cause particles of material to move in some definite relation to the sifting passages of a sifter.

SEE OR SEARCH THIS CLASS, SUBCLASS:
392+, for sifter structure, per se.
659+, for size separation of special items.

264 This subclass is indented under subclass 263. Means wherein guides are employed to direct the particles of material in some definite relation to the sifting apertures.

265 This subclass is indented under subclass 264. Sifting devices associated with an imperforate surface or surfaces which operate to position particles of material relatively to the sifting passages, generally by causing particles having larger dimensions in one or more directions than in others to arrange themselves so that the larger dimensions shall be in planes paralleling the sifting surface.

266 This subclass is indented under subclass 264. Guiding devices which overlie the sifting surfaces to maintain particles of material having greater dimensions in one or more directions than in others with the greater dimensions paralleling the sifting surfaces.

267 This subclass is indented under subclass 261. Devices associated with sifters which retard the passage of material over the sifting surfaces and which are not primarily agitators.

SEE OR SEARCH THIS CLASS, SUBCLASS:
266, and 314, and the appropriate sifter with agitator subclasses, for sifters with guides or agitators, superposed stepped sifters etc., which may function to retard the passage of material over the sifting surfaces.

SEE OR SEARCH CLASS:
460, Crop Threshing or Separating, subclasses 59+ and 79+, straw carriers for threshing machines and cylinder type threshing machines.

268 This subclass is indented under subclass 233. Sifting means or methods adapted for sifting materials mingled with liquid or for subjecting the material to the action of a liquid to promote the sifting effect.

(1) Note. This subclass and the subclasses indented thereunder do not include cases where the liquid is employed to promote stratifying or liquid suspension separation and the sifting is independent of the liquid treatment or a mere incident of some other separation due to the effect of the liquid.

SEE OR SEARCH THIS CLASS, SUBCLASS:
12.1, 13, 14, 17, 42, and 44, for combinations of sifting and fluid suspension or stratifying type separations.
423, through 427 and 454-457, for stratifiers employing a permeable bed.

269 This subclass is indented under subclass 268. Reciprocating sifters adapted to sift material suspended in liquid or associated with liquid-supply means adapted to promote the sifting operation.

(1) Note. Cases in which the liquid is employed for stratifying or liquid suspension separation and sifting is merely incidental are not included.

SEE OR SEARCH THIS CLASS, SUBCLASS:
12.1, 13, 14, 17, 42, and 44, for combinations of sifting and fluid suspension or stratifying type separations.
423, through 427, for stratifiers employing a movable permeable bed.

SEE OR SEARCH CLASS:
162, Paper Making and Fiber Liberation, subclasses 355+ and 365 for vibrating screen molds employed in felting a fibrous product.

270 This subclass is indented under subclass 268. Means and methods wherein rotating cylindrical or drum sifters are employed to sift material suspended in liquid or liquid-supply means are associated therewith to promote sifting.

SEE OR SEARCH THIS CLASS, SUBCLASS:
12.1, 13, 14, 17, 42, and 44, for combinations of sifting and fluid suspension or stratifying type separations.

SEE OR SEARCH CLASS:
162, Paper Making and Fiber Liberation, subclasses 323+ and 357 for paper making machines employing a foraminous cylinder mold.

271 This subclass is indented under subclass 268. Means and methods wherein rotating-disk sifters are employed to sift material suspended in liquid or liquid-supply means are associated with such sifters to promote sifting.

SEE OR SEARCH THIS CLASS, SUBCLASS:
12.1, 13, 14, 17, 42, and 44, for combinations of sifting and fluid suspension or stratifying type separations.
423, through 427, for stratifiers employing moveable permeable beds.

272 This subclass is indented under subclass 268. Means and methods wherein endless-belt sifters are employed to sift material suspended in liquid or associated with liquid-supply means which promote the sifting action.

SEE OR SEARCH THIS CLASS, SUBCLASS:
12.1, 13, 17, 42, and 44, for combinations of sifting and fluid suspension or stratifying type separations.

273 This subclass is indented under subclass 268. Means and methods wherein stationary sifters are employed to sift material suspended in liquid or are associated with liquid-supply means which promote the sifting action.

SEE OR SEARCH THIS CLASS, SUBCLASS:
12.1, 13, 14, 42, and 44, for combinations of sifting with fluid suspension or stratifying separations.
454, through 457, for stratifiers employing stationary permeable beds.

274 This subclass is indented under subclass 233. Sifting devices curved concavely or convexly on the surfaces to which material is delivered and having both reciprocating and rotating motion, or not coming under the subclasses indented hereunder.

SEE OR SEARCH THIS CLASS, SUBCLASS:
309, for reciprocating and rotating horizontal or inclined plane sifters.

275 This subclass is indented under subclass 274. Sifters whose material-receiving surfaces are curved or bent in concave or convex form and are given a reciprocating movement.

276 This subclass is indented under subclass 275. Convex or concave sifters which reciprocate and are provided or associated with means for agitating the material being sifted, which do not fall within the subclasses indented hereunder.

277 This subclass is indented under subclass 276. Reciprocating convex or concave sifters wherein reciprocating agitators are employed with reciprocating sifters which are curved in concave or convex forms on the material-receiving surfaces.

SEE OR SEARCH THIS CLASS, SUBCLASS:
357, for stationary, horizontal or inclined plane sifter with reciprocating agitators.

SEE OR SEARCH CLASS:
460, Crop Threshing or Separating, subclasses 85+ for rake type straw carriers for grain separators.

278 This subclass is indented under subclass 276. Reciprocating concave or convex sifters have associated therewith rotating agitators.

SEE OR SEARCH THIS CLASS, SUBCLASS:
358, for stationary, horizontal or inclined plane sifter with rotating agitators.

SEE OR SEARCH CLASS:
460, Crop Threshing or Separating, subclass 22 for over hung rake straw carriers for grain separators.

279 This subclass is indented under subclass 274. Sifters which are rotating and have material-receiving surfaces concave or convex in shape.

SEE OR SEARCH THIS CLASS, SUBCLASS:
350+, for rotating horizontal or inclined plane sifters.

280 This subclass is indented under subclass 279. Rotating concave or convex sifters associated with means for agitating the material being sifted.

SEE OR SEARCH THIS CLASS, SUBCLASS:
351, for rotating horizontal or inclined plane sifters having agitating means.

281 This subclass is indented under subclass 274. Stationary sifters the material-receiving surfaces of which are concave or convex.

SEE OR SEARCH THIS CLASS, SUBCLASS:
352+, for stationary horizontal or inclined plane sifter.

282 This subclass is indented under subclass 281. Stationary sifters the material-receiving surfaces of which are concave or convex, having reciprocating agitators associated therewith.

SEE OR SEARCH THIS CLASS, SUBCLASS:
357, for stationary horizontal or inclined plane sifter with reciprocating agitator.

SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclasses 528 and 605+ for perforated sifters in a grain huller, including agitators and stationary sifters.
460, Crop Threshing or Separating, subclasses 85+ for rake type straw carriers for grain separators.

283 This subclass is indented under subclass 281. Stationary sifters having concave or convex material-receiving surfaces and associated with rotating agitators.

SEE OR SEARCH THIS CLASS, SUBCLASS:
358, for stationary horizontal or inclined plane sifter with rotating agitators.

SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclasses 38 and 94 for ball hullers and fiber picking means involving the use of rotating agitators or elements.
99, Food and Beverages: Apparatus, subclasses 528 and 607 for a perforated sifter in a grain huller that may include a rotating agitator.
241, Solid Material Comminution or Disintegration, subclasses 73 and 86+ for comminutors or disintegrators combined with sifter or screen elements cooperating with rotary comminuting elements.
460, Crop Threshing or Separating, subclasses 59+, 79+ and 123+ for threshers including rotating agitating means.

Sifting, Drum sifters:
The subclasses indented under this title include sifters whose sifting elements form hollow drums. The material treated may be delivered to the interiors of such drums or may be delivered to the exterior of such drums, particles of the material small enough passing outwardly in the former case and inwardly in the latter case.

284 This subclass is indented under subclass 233. Methods and means for feeding or for discharging material to or from hollow drum sifters mounted with their axes horizontal or inclined.

SEE OR SEARCH THIS CLASS, SUBCLASS:
287, through 299, for rotating sifters of this type.

SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclasses 609+ for means that feed and discharge to or from a hulling zone.
460, Crop Threshing or Separating, subclasses 123+ for vine and seed strippers.

285 This subclass is indented under subclass 284. Hollow cylinder or drum sifters having means for delivering material to the outside of the drums or cylinders for the undersize particles to be passed inside the sifting walls and the oversize retained on the outside.

SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclasses 304+ for screen condensers for forming webs from fibers, and subclass 202 for cleaning by condensing.
162, Paper Making and Fiber Liberation, subclasses 323+ for cylinder mold type paper making machines.

286 This subclass is indented under subclass 285. Hollow cylindrical or drum sifters having passages or inlets through their peripheral walls through which unsifted material is passed to the interiors of said sifters to be sifted within the drums, the undersize passing out of the drums through the sifting passages of the drums.

SEE OR SEARCH THIS CLASS, SUBCLASS:
407, for frames to which sectional drum sifters are attached.

287 This subclass is indented under subclass 233. Cylindrical or drum sifters mounted with their axes in horizontal or inclined position and having both reciprocating and rotating motion.

288 This subclass is indented under subclass 233. Cylindrical or drum sifters mounted with their axes in horizontal or inclined position and having rotary motion.

SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclasses 521 and 605+ for rotating perforated hulling surfaces.
241, Solid Material Comminution or Disintegration, subclasses 91+ for comminutors having a rotating comminuting surface having openings.
460, Crop Threshing or Separating, subclasses 59+ and 123+ for cylinder threshing machines and vine and vine and seed strippers.

289 This subclass is indented under subclass 288. Sifting systems having a plurality of horizontal or inclined axis rotating cylindrical or drum sifters.

(1) Note. This subclass takes such systems as include pluralities of sifters of the type indicated which do not fall into the subclasses indented hereunder.

290 This subclass is indented under subclass 289. Rotating cylindrical or drum sifters mounted on horizontal or inclined axes which aline.

291 This subclass is indented under subclass 290. Series of rotating cylindrical or drum sifters on common horizontal or inclined axes the series being nested or mounted one within the other.

292 This subclass is indented under subclass 289. Series of rotating cylindrical or drum sifters having horizontal or inclined axes, the series being supported one above another.

293 This subclass is indented under subclass 288. Rotating horizontal or inclined axes cylindrical or drum sifters having means for agitating the material and which do not fall into the indented subclasses.

294 This subclass is indented under subclass 293. Rotating cylindrical or drum sifters on horizontal or inclined axes provided with means for lifting and dropping the material and means for

deflecting the material along the sifter, generally during the drooping movement thereof.

295 This subclass is indented under subclass 293. Rotating cylindrical or drum sifters on horizontal or inclined axes provided with means for agitating the material by gaseous-fluid currents as the major agitating factor.

(1) Note. This subclass will include cases where the sole agitating means may be the air-supplying means, but will also include cases which employ mechanical stirring or conveying means within the sifter, provided the air-supplying means is a major factor and not merely an incident to the use of such mechanical devices or a minor factor. In the latter case the classification is determined by the type of mechanical agitator.

296 This subclass is indented under subclass 293. Rotating cylindrical or drum sifters mounted on horizontal or inclined axes associated with rotating agitating means which do not fall into the indented subclasses.

SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclasses 603+ and 608 for a moving perforated surface and a cylindrical or conical perforated enclosure that enclosed a rotating hulling element.

297 This subclass is indented under subclass 296. Rotating cylindrical or drum sifters mounted on horizontal or inclined axes and provided with agitating means attached to the walls of the sifter and moving therewith.

SEE OR SEARCH THIS CLASS, SUBCLASS:
392+, for structures in which the sifting passages of the sifters are formed.

298 This subclass is indented under subclass 296. Rotating cylindrical or drum sifters on horizontal or inclined axes associated with means for lifting and dropping the material while within the sifting drums.

SEE OR SEARCH THIS CLASS, SUBCLASS:
294, for other drum or cylindrical sifter having a horizontal or inclined axis having means for lifting the material.
392+, for structures in which the sifting passages of the sifters are formed.

299 This subclass is indented under subclass 288. Rotating cylindrical or drum sifters having horizontal or inclined axes and associated with devices for lifting and dropping material within the sifter and means for beating the material so lifted and dropped.

SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclasses 603+ and 608 for a moving perforated surface and a cylindrical or conical perforated enclosure that encloses a rotating hulling element.
460, Crop Threshing or Separating, subclasses 123+ for vine and seed strippers.

300 This subclass is indented under subclass 233. Stationary cylindrical or drum sifters having horizontal or inclined axes.

(1) Note. This subclass will include sifters of the type indicated whether associated with agitators or not.

SEE OR SEARCH THIS CLASS, SUBCLASS:
281+, for stationary sifters having concave or convex material receiving surfaces.

SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclasses 605+ for a cylindrical or conical perforated enclosure for hulling grain.

301 This subclass is indented under subclass 233. Cylindrical or drum sifters having vertical axes and having means for both reciprocating and rotating them.

302 This subclass is indented under subclass 233. Cylindrical or drum sifters having vertical axes and having means for reciprocating them.

303 This subclass is indented under subclass 233. Cylindrical or drum sifters having vertical axes and adapted for or associated with means for rotating them.

SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclasses 603+ for a moving perforated surface used in hulling grain.

304 This subclass is indented under subclass 303. Rotating cylindrical or drum sifters having vertical axes associated with means for agitating the material being sifted.

305 This subclass is indented under subclass 233. Stationary cylindrical or drum sifters on vertical axes.

SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclasses 605+ for a cylindrical or conical perforated enclosure for hulling grain.

306 This subclass is indented under subclass 305. Stationary cylindrical or drum sifters having vertical axes associated with means for agitating the material being sifted.

SEE OR SEARCH THIS CLASS, SUBCLASS:
274, for sifters having concave or convex material receiving surface.

307 This subclass is indented under subclass 233. Rotating sifters in the form of endless belts.

SEE OR SEARCH THIS CLASS, SUBCLASS:
393+, and 401, for elongated sifter passages and for sifting elements in woven form.

SEE OR SEARCH CLASS:
99, Foods and Beverages: Apparatus, subclass 616 for an endless-belt grain hulling surface.
460, Crop Threshing or Separating, subclasses 6 through 10 and 21 for corn shellers and straw carriers including endless belts.

308 This subclass is indented under subclass 307. Sifters in the form of rotating endless belts associated with means for agitating the material, which may be stirring means acting directly on the material or means acting indirectly on the material by agitating the belt.

309 This subclass is indented under subclass 233. Flat horizontal or inclined sifters having both a shaking and a rotating motion.

SEE OR SEARCH THIS CLASS, SUBCLASS:
274, for sifters having a concave or convex material receiving surface.

310 This subclass is indented under subclass 233. Sifters of a generally flat shape having a shaking motion produced by distortion of the sifting element in which the sifting passages are formed.

311 This subclass is indented under subclass 233. Pluralities of flat reciprocating sifters associated otherwise than as defined in the subclasses indented hereunder.

312 This subclass is indented under subclass 311. Series of flat reciprocating sifters associated with means for pneumatically agitating the material being sifted, the sifters being associated otherwise than as defined in the subclasses indented hereunder.

(1) Note. In devices entering this subclass the pneumatic agitating means must be an essential element of the combination or have some feature specially involving such agitating means.

313 This subclass is indented under subclass 311. Flat reciprocating sifters arranged end to end or side by side in substantially common planes or meeting at angles forming apices at the ends of the sifters.

314 This subclass is indented under subclass 311. Flat reciprocating sifters arranged end to end in stepped relation, material passing from one to another.

SEE OR SEARCH THIS CLASS, SUBCLASS:

151, for fluid suspension type separators involving feeding the material over plane elements in stepped relation.

265, and 266, for sifters having guides to position the particles relative to the sifting elements.

315 This subclass is indented under subclass 311. Pluralities of flat reciprocating sifters arranged one over another.

316 This subclass is indented under subclass 315. Pluralities of flat reciprocating sifters associated with intermediate conveying elements adapted to convey material generally from one sifter to some portion of a succeeding sifter, the material so conveyed usually being that which passes through or over the higher sifter.

(1) Note. This and the two succeeding subclasses, while not limited thereto, will include the so-called winnowing machines commonly employed for sorting threshed grain and flour sifters having the special structures or special elements of structure defined. Where the special feature or essential lies in the particular shake or means for producing the shake, the device is classified in one of the hereinafter listed subclasses taking devices having the shake specified.

SEE OR SEARCH THIS CLASS, SUBCLASS:

261+, for other sifters with conveyors.

317 This subclass is indented under subclass 315. Pluralities of flat reciprocating sifters one above another associated with some special means for discharging material away from the sifters.

SEE OR SEARCH THIS CLASS, SUBCLASS:

255, and 257, for other sifters with discharge means of discharge conveyors.

318 This subclass is indented under subclass 315. Pluralities of flat reciprocating sifters arranged one above another associated with special structures or means for pneumatically agitating the material being sifted.

SEE OR SEARCH THIS CLASS, SUBCLASS:

26, through 29, for combinations of gaseous suspension and sifting means.

276, and 280, for convex or concave sifters with agitating means.

321, for horizontal or inclined plane sifters with pneumatic agitator or conveyor.

319 This subclass is indented under subclass 315. Pluralities of flat reciprocating sifters arranged one above another having special structure or means for attaching or adjusting the sifting elements.

(1) Note. This subclass takes only those devices which include the defined pluralities of sifters and have attaching or adjusting features for one or more of the sifters. For devices for adjusting or attaching single sifters or sifters of other plural types, see the Search Notes below.

SEE OR SEARCH THIS CLASS, SUBCLASS:

404, and 405, for devices for adjusting or attaching single sifters or sifters of other plural types.

320 This subclass is indented under subclass 233. Flat reciprocating sifters associated with means for agitating the material being sifted, other than the means for reciprocating the sifter.

SEE OR SEARCH THIS CLASS, SUBCLASS:

392+, for sifter structure, per se.

SEE OR SEARCH CLASS:

460, Crop Threshing or Separating, subclasses 87, 88 and 90 for straw carriers for grain separators having agitating means.

321 This subclass is indented under subclass 320. Flat reciprocating sifters associating with pneumatic agitating means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
26, through 29, for combinations of sifting with gaseous suspension type separations.
318, for plural superposed plane sifters with pneumatic agitating means.

322 This subclass is indented under subclass 320. Flat reciprocating sifters associated with reciprocating agitators.

SEE OR SEARCH THIS CLASS, SUBCLASS:
277, for concave or convex sifters with reciprocating agitators.

SEE OR SEARCH CLASS:
460, Crop Threshing or Separating, subclasses 87, 88 and 90 for straw carriers for grain separators having agitating means.

323 This subclass is indented under subclass 322. Reciprocating agitators associated with flat reciprocating sifters are not attached positively to the sifter, but are free to move relatively to the sifter element, generally by inertia impulse.

SEE OR SEARCH THIS CLASS, SUBCLASS:
379+, for sifting passage clearers.

324 This subclass is indented under subclass 320. Flat reciprocating sifters associated with rotating agitators.

SEE OR SEARCH THIS CLASS, SUBCLASS:
278, for concave or convex sifters with rotating agitators.

SEE OR SEARCH CLASS:
460, Crop Threshing or Separating, subclasses 87, 88 and 90 for straw carriers for grain separators having agitating means.

325 This subclass is indented under subclass 233. Flat reciprocating sifters having movement both horizontally and vertically, which do not fall into the indented subclasses.

(1) Note. This subclass will take devices in which horizontal movement in more than one direction, including orbital movement in horizontal planes associated with means giving a vertical component of motion.

SEE OR SEARCH CLASS:
460, Crop Threshing or Separating, subclasses 88 and 90 for straw carriers for grain separators of the shaking table and walking rake types.

326 This subclass is indented under subclass 325. Flat sifters having circular or orbital motion in vertical planes.

SEE OR SEARCH THIS CLASS, SUBCLASS:
366+, for means for gyrating sifters.

SEE OR SEARCH CLASS:
74, Machine Element or Mechanism, appropriate subclasses, for the mechanical movement, per se.
460, Crop Threshing or Separating, subclasses 88 and 90 for straw carriers for grain separators of the shaking table and walking rake type.

327 This subclass is indented under subclass 325. Flat sifters having both horizontal and vertical movement, the horizontal movement being in a single side-to-side direction where there is no definite movement of material toward a discharge point, or, where there is such movement of material toward a discharge, across the line of movement.

328 This subclass is indented under subclass 327. Flat sifters having movement both horizontally and vertically, the horizontal movement being transverse to the sifter or the line of movement toward discharge of the material and in which one or both of the movements are impactive or bumping.

329 This subclass is indented under subclass 325. Flat sifters having both horizontal and vertical movement, the horizontal movement being in general line with the movement of the material toward discharge.

SEE OR SEARCH CLASS:
460, Crop Threshing or Separating, subclasses 88 and 90 for straw carriers for grain separators of the shaking table and walking rake type.

330 This subclass is indented under subclass 329. Flat sifters having both horizontal and vertical movement, the horizontal movement being in general line with the travel of the material toward discharge and one or both shakes being impactive or associated with bumping means.

SEE OR SEARCH THIS CLASS, SUBCLASS:
393, for elongated slot sifter elements.

331 This subclass is indented under subclass 233. Flat sifters having horizontal shake in a plurality of directions or both in general line with and across the direction of travel of the material toward discharge.

332 This subclass is indented under subclass 331. Flat horizontal or inclined sifters having orbital movement in substantially horizontal planes.

SEE OR SEARCH THIS CLASS, SUBCLASS:
366, for means for gyrating sifters.

SEE OR SEARCH CLASS:
74, Machine Element or Mechanism, appropriate subclasses, for the mechanical movement, per se.
460, Crop Threshing or Separating, subclass 24 for shaking table straw carriers for grain separators.

333 This subclass is indented under subclass 233. Flat horizontal or inclined sifters having a horizontal shake in one direction where there is no definite travel of material toward a discharge, or where there is such travel of the material, the shake is transverse to the direction of travel.

(1) Note. This subclass will in general take devices which do not fall into the indented subclasses, usually those in which no specific type of sifter support is involved.

SEE OR SEARCH THIS CLASS, SUBCLASS:
327, for similar sifters having both horizontal and vertical shake.

334 This subclass is indented under subclass 333. Flat horizontal or inclined sifters, the shake being produced by impact or having a bump or jar at some stage.

(1) Note. This subclass takes generally such cases of the indicated nature as are not associated with any particular or specified mount of the sifter.

SEE OR SEARCH THIS CLASS, SUBCLASS:
328, for similar sifters having both horizontal and vertical shake.

335 This subclass is indented under subclass 333. Flat horizontal or inclined sifters, the sifter being supported to swing on a vertical pivot or axis.

336 This subclass is indented under subclass 335. Flat horizontal or inclined sifters, the sifter being supported to move on a vertical pivot or axis and the shake being produced by impact or having a jar or bump at some stage.

337 This subclass is indented under subclass 333. Flat horizontal or inclined sifters, the sifters being supported to slide on supports.

338 This subclass is indented under subclass 337. Flat horizontal or inclined sifters, the shake being produced by impact or being modified by a jar or bump at some stage.

339 This subclass is indented under subclass 333. Flat horizontal or inclined sifters supported for swinging movement, generally on hangers or standards, the movement being in one horizontal direction where there is no definite travel of material over the sifter to discharge, or, where there is such travel, in a horizontal direction transverse to the direction of travel.

(1) Note. The slight incidental vertical component of motion due to support by standards or hangers is disregarded in connection with devices placed in this

subclass; but where the hanger or standard construction is such that there is a marked and material vertical component of motion the device generally is classified elsewhere (see Search This Class, Subclass, below) Where there is both sliding support and swinging (hanger or standard) support, the device is placed according to the sliding support.

SEE OR SEARCH THIS CLASS, SUBCLASS:
327, for a hanger or standard construction such that there is a marked and material vertical component of motion (see (1) Note).

340 This subclass is indented under subclass 339. Flat horizontal or inclined sifters, the movement being produced by impact or being modified by a jar or bump at some stage.

(1) Note. Where the vertical component of motion due ordinarily to the use of swinging standards or hangers is merely incidental, it is disregarded as a qualification; but where it is marked and material and there is an impact or jar the device is placed in subclass 328. Where there is both sliding and swinging support, the shake is transverse, as defined above, and there is an impact or jar, the device is placed in subclass 338.

SEE OR SEARCH THIS CLASS, SUBCLASS:
328, (see (1) Note).
338, (see (1) Note).

341 This subclass is indented under subclass 233. Flat horizontal or inclined sifters having a horizontal shake in the direction of travel of material over the sifters toward discharge.

(1) Note. This subclass takes devices with the defined shake, with or without impact, where the type of support is not involved or is not material.

342 This subclass is indented under subclass 341. Flat inclined or horizontal sifters supported for sliding movement, where the movement is horizontal and in the general direction of travel of material over the sifters toward discharge.

SEE OR SEARCH THIS CLASS, SUBCLASS:
329, for similar sifters having both a vertical and horizontal shake.

343 This subclass is indented under subclass 342. Flat horizontal or inclined sifters supported for sliding movement, the shake being horizontal in the general direction of movement of material over the sifters toward discharge and produced by impact or modified by a bump or jar at some stage.

SEE OR SEARCH THIS CLASS, SUBCLASS:
330, for similar sifters having both a vertical and horizontal shake.

344 This subclass is indented under subclass 341. Flat horizontal or inclined sifters supported, generally by hangers or standards, for a generally horizontal swinging shake in the direction of travel of the material over the sifters toward discharge.

SEE OR SEARCH THIS CLASS, SUBCLASS:
329, for similar sifters having both a vertical and horizontal shake.

345 This subclass is indented under subclass 344. Flat horizontal or inclined sifters supported, generally by hangers or standards, for horizontal swinging shake in the direction of travel of the material over the sifters toward discharge, the shake being produced by impact or modified by a bump or jar at some stage.

SEE OR SEARCH THIS CLASS, SUBCLASS:
330, for similar sifters having both a vertical and horizontal shake.

346 This subclass is indented under subclass 233. Flat inclined or horizontal sifters having a vertical shake.

(1) Note. This subclass takes such devices as do not come within the indented subclasses.

347 This subclass is indented under subclass 346. Flat horizontal or inclined sifters having a vertical shake produced by impact or modified at some stage by bumps or jars.

SEE OR SEARCH THIS CLASS, SUBCLASS:
382, for knocking or hammering devices for clearing sifters.

348 This subclass is indented under subclass 346. Flat horizontal or inclined sifters having a vertical shake, the sifters moving on horizontal pivots or axes.

(1) Note. This subclass takes devices moving on fixed pivots or axes or on curved rockers.

349 This subclass is indented under subclass 348. Flat horizontal or inclined sifters moving vertically on horizontal pivots or axes on rockers, the movement being modified by impact, jar, or bump at some stage.

350 This subclass is indented under subclass 233. Flat horizontal or inclined sifters having a rotating motion.

SEE OR SEARCH THIS CLASS, SUBCLASS:
279+, for rotating sifters having concave or convex material receiving surfaces.

351 This subclass is indented under subclass 350. Flat horizontal or inclined sifters associated with means for agitating the material on the sifters.

SEE OR SEARCH THIS CLASS, SUBCLASS:
280, for rotating sifters having concave or convex material receiving surfaces with agitators.

352 This subclass is indented under subclass 233. Flat horizontal or inclined sifters which have no movement, which do not fall within the indented subclasses.

(1) Note. This subclass will include sifters associated with agitating means not defined by the indented titles--i.e., means that do not reciprocate or rotate--as well as sifters of the indicated type not associated with any agitating means.

353 This subclass is indented under subclass 352. Pluralities of flat stationary horizontal or inclined sifters which do not fall into the subclasses indented hereunder.

354 This subclass is indented under subclass 353. Pluralities of flat stationary horizontal or inclined sifters in stepped relation such that material has a drop in passing from one to another.

SEE OR SEARCH THIS CLASS, SUBCLASS:
151, for fluid suspension separators with stepped plane type material feeders.

355 This subclass is indented under subclass 353. Pluralities of flat stationary horizontal or inclined sifters one over-laying the other.

356 This subclass is indented under subclass 355. Pluralities of flat stationary horizontal or inclined sifters one over-lying the other and each sifter reversed in inclination relatively to the adjacent sifter or sifters.

357 This subclass is indented under subclass 233. Flat stationary horizontal or inclined sifters associated with agitators which reciprocate and operate upon the material being sifted.

SEE OR SEARCH THIS CLASS, SUBCLASS:
282, for stationary concave or convex surface sifters with reciprocating agitators.

SEE OR SEARCH CLASS:
460, Crop Threshing or Separating, subclasses 87+ for overhung rake and walking rake type straw carriers for grain separators.

358 This subclass is indented under subclass 233. Flat stationary horizontal or inclined sifters associated with rotating agitators which operate upon the material being sifted.

SEE OR SEARCH THIS CLASS, SUBCLASS:
283, for stationary concave or convex surface sifters with rotary agitators.

SEE OR SEARCH CLASS:
460, Crop Threshing or Separating, subclass 87 for overhung rake type straw carriers for grain separators.

359 This subclass is indented under subclass 233. Flat vertical sifters.

(1) Note. This subclass includes those flat vertical sifters which have no movement.

360 This subclass is indented under subclass 359. Flat vertical sifters having a shaking movement.

361 This subclass is indented under subclass 359. Flat vertical sifters rotating on horizontal axes.

SEE OR SEARCH THIS CLASS, SUBCLASS:
672, for rotating disc-type sizing separation of special items.

SEE OR SEARCH CLASS:
171, Unearthing Plants or Buried Objects, subclasses 70, 97, 112, 115, and 132 for sifting wheel-type rotary separators which are disposed in a vertical plane and adapted to rotate about a horizontal axis.
241, Solid Material Comminution or Disintegration, subclasses 70+ for rotary drum comminutors having a screen as a partition therein or as an end wall.

362 This subclass is indented under subclass 233. Sifters of spiral of involute shape.

(1) Note. The sifting surface itself has the form specified and may be plane, curved, or tubular in cross section, and may have movement or be stationary.

(2) Note. This subclass does not include cylindrical or drum sifters which have spiral guide walls inside the same, which guide walls define spiral passages along the sifting surface; but it will include cylindrical sifting surfaces where the cylinders are bent or twisted into spirals.

363 This subclass is indented under subclass 233. Elements or subcombinations of sifters or attachments for sifters which do not find place in the indented subclasses.

364 This subclass is indented under subclass 363. Actuating means adapted for the operation of sifters which are not classifiable in the indented subclasses.

SEE OR SEARCH CLASS:
74, Machine Element or Mechanism, appropriate subclasses, for the machine element and mechanical movement, per se.

365.1 Reciprocating:
This subclass is indented under subclass 364. Means for effecting back and forth movement of the sifting apparatus.

(1) Note. The motion of the sifting element maybe described as vibrating or oscillating.

(2) Note. The device must be especially adapted for the operation of a sifter or the sifter must be included as an element of the device to be classified herein.

SEE OR SEARCH CLASS:
74, Machine Element or Mechanism, and
366, Agitating, appropriate subclasses, for similar apparatus not especially adapted for operation of a sifter or not including a sifter as an element thereof.

365.2 Cam and linkage:
This subclass is indented under subclass 365.1. Subject matter including a cam and linkage to the sifting elements.

365.3 With cushioning:
This subclass is indented under subclass 365.1. Subject matter including means to cushion or limit the reciprocating motion.

(1) Note. The cushioning means may be described as, e.g., dampening or motion buffering means or as a shock absorber.

365.4 Differential motion:
This subclass is indented under subclass 365.1. Subject matter wherein the recipricatory motion of the sifting element is not uniform in all areas or during all time periods.

(1) Note. The nonuniformity may be effected by, e.g., causing different areas of a screen to vibrate at different frequencies, or causing different velocities of movement in the backward and the forward movements of the reciprocating screen.

366 Means under subclasses 365.1+ for gyrating sifters.

(1) Note. Ordinarily the sifter must be included as an element of the combination to locate a device in this subclass. Otherwise the device is classifiable in Class 74, Machine Element or Mechanism, appropriate mechanical movement subclasses, when the novelty lies in the actuating means, per se, while if it involves the combination of the actuating means broadly with a receptacle without limitation to a sifter it may go to appropriate subclasses of Class 366, Agitating.

SEE OR SEARCH THIS CLASS, SUBCLASS:
326, and 332, for plane sifters having gyratory movement.

SEE OR SEARCH CLASS:
74, Machine Element or Mechanism, appropriate subclasses. (See (1) Note).

366.5 This subclass is indented under subclass 366. Devices in which gyration is caused or aided by an unbalanced weight.

367 Devices under subclasses 365.1+ wherein unbalanced weights operate sifters otherwise than as gyrators.

(1) Note. As with gyrators, the sifter ordinarily must be an element of the combination to place a device in this subclass or there must be some adaptation that limits it to the sifting art.

SEE OR SEARCH THIS CLASS, SUBCLASS:
326, 332 and 366.5, for plane sifters having gyratory motion and unbalanced weight type sifter gyrators.

SEE OR SEARCH CLASS:
74, Machine Element or Mechanism, appropriate subclasses, for the machine elements and mechanical movement, per se.

368 Magnetic devices under subclasses 365.1+ for reciprocating sifters.

(1) Note. Ordinarily the magnetic actuators must be limited to the sifting art by inclusion of the sifter as an element or by some special adaptation to the art to find a place in this subclass.

SEE OR SEARCH CLASS:
310, Electrical Generator or Motor Structure, subclasses 15+ for reciprocating electric motor structure.
318, Electricity: Motive Power Systems, subclasses 119+ for reciprocating electric motor systems.

369 This subclass is indented under subclass 364. Means for rotating sifters limited to the sifting art by inclusion of the sifter in the combination or by some special adaptation that limits it to said art.

(1) Note. The appropriate subclasses which include rotating sifters should be searched.

SEE OR SEARCH CLASS:
74, Machine Element or Mechanism, appropriate subclasses, for the machine element or mechanical movement, per se.
366, Agitating, subclasses 219+ for agitating devices including a rotatable mixing chamber.

370 This subclass is indented under subclass 363. Structures inclosing sifting devices in whole or in part which are not classifiable in the indented subclasses.

371 This subclass is indented under subclass 370. Devices associated with sifters and adapting them for connection, either loose or positive, with receivers, other than bag holders.

(1) Note. Generally the device adapts the sifter for connection to receivers of different sizes or types.

372 This subclass is indented under subclass 370. Closures other than feed or discharge controlling valves associated with the casings which inclose sifters in part or in whole.

(1) Note. These closures ordinarily open or close portions of the casing to give access to the interior for the insertion or removal of material or the sifting device or parts thereof.

(2) Note. This subclass does not include receptacle covers, per se, but may include covers of receptacles when a sifter is included in the combination or there is some special structure adapting for use with sifters.

SEE OR SEARCH THIS CLASS, SUBCLASS:
419, for sifters associated with shovels.

SEE OR SEARCH CLASS:
49, Movable or Removable Closures, appropriate subclasses, for closures of the type provided for and see the search notes thereto in section IV for the loci of closures in other classes.

373 This subclass is indented under subclass 370. Sifter-casing structures subdivided into compartments for reception of products of sifting either direct or by delivery into receptacles retained within the compartments or associated with casings subdivided into a plurality of compartments.

(1) Note. The distinction of this subclass over subclass 259 is that the receptacles of this subclass must be associated with or within compartments of casings, while subclass 259 is broader and includes receptacles not associated with casing compartments, although it may include cases of a plurality of different receiving elements one of which may be a receiver within a casing compartment.

SEE OR SEARCH THIS CLASS, SUBCLASS:
259, (see (1) Note).

SEE OR SEARCH CLASS:
312, Supports: Cabinet Structure, subclass 210.5 for cabinet structures having compartments and including a sifter.

374 This subclass is indented under subclass 370. Sifters having casings inclosing part or all of the sifters and specially adapted for household use.

(1) Note. The casing itself may be adapted for household utility related to the sifting of flour, ashes, etc., or may be associated with some utility not related to the sifting.

SEE OR SEARCH CLASS:
312, Supports: Cabinet Structure, subclass 210.5 for cabinet structures having compartments and including a sifter.

375 This subclass is indented under subclass 374. Sifters associated with chutes attached to or forming parts of buildings, ordinarily dwellings, for conveying refuse, including ashes, to places of deposit or receptacles for such refuse.

SEE OR SEARCH CLASS:
193, Conveyors, Chutes, Skids, Guides, and Ways, for chutes, etc., per se.
232, Deposit and Collection Receptacles, for deposit and collection receptacles, per se.

376 This subclass is indented under subclass 374. Sifters associated with or forming part of the structure of manually-portable coal hods or ash pans.

SEE OR SEARCH CLASS:
220, Receptacles, subclasses 500+ for compartmented receptacles.

377 This subclass is indented under subclass 374. Sifting devices adapted for operation in connection with or within stoves or furnaces, but not ordinarily limited to such by inclusion of the stove or furnace as an essential element, in such relation that the sifter structure may not have utility in other relations.

(1) Note. Merely incidental inclusion of stoves or furnaces will not exclude the device from this subclass; but where there is some essential relation of structure between the stove or furnace precluding possible other utility for the sifter the device is classifiable elsewhere (see Search Class note below)

SEE OR SEARCH CLASS:
126, Stoves and Furnaces, subclass 244 for a sifter device wherein the essential relation of the structure between the stove or furnace precludes possible other utility for the sifter (see (1) Note).

378 This subclass is indented under subclass 370. Casings for sifters having exits or vents for the air within the casings, other than passages or conduits for air currents propelled or sucked out by fans or equivalent forcing means.

379 This subclass is indented under subclass 363. Means or devices for clearing or keeping open the sifting passages of sifters which are not classifiable in the subclasses indented hereunder.

SEE OR SEARCH THIS CLASS, SUBCLASS:
323, for plane sifters with unattached reciprocating agitators.

380 This subclass is indented under subclass 379. Means for projecting fluid jets or streams against the sifting elements for the purpose of clearing or keeping open the sifting passages.

(1) Note. This subclass dose not ordinarily include devices in which the fluid current or jet has an agitating function in the sifting operation with or without incidental clearing of the sifting passages.

(2) Note. The appropriate preceding subclasses involving sifting with liquid treatment and those involving fluid or pneumatic agitation of the material being sifted should be searched.

SEE OR SEARCH CLASS:
55, Gas Separation, subclasses 294 and 302+ for gas separators combined with pneumatic clearers.

381 This subclass is indented under subclass 379. Devices for jarring sifting elements to keep the sifting passages open, which are not classifiable in the subclasses indented hereunder.

(1) Note. This subclass does not receive structures in which the sifting elements are jarred for promotion of the sifting function and clearing of the sifting passages is merely incidental.

(2) Note. The appropriate subclasses of reciprocating sifters involving impact should be searched.

SEE OR SEARCH CLASS:
55, Gas Separation, subclasses 293 and 300 for vibrating, shaking or jarring means for clearing gas separators.

382 This subclass is indented under subclass 381. Devices wherein knocking or hammering devices are employed to clear or keep open the sifting passages of sifters.

(1) Note. Devices for knocking sifting elements to promote sifting otherwise than by merely keeping open the sifting passages are not placed in this subclass, but are placed in preceding subclasses of reciprocating sifters which involve impact.

(2) Note. The preceding subclasses of reciprocating sifters should be searched.

SEE OR SEARCH CLASS:
55, Gas Separation, subclasses 293 and 300 for vibrating, shaking or jarring means for clearing gas separators.

383 This subclass is indented under subclass 381. Devices wherein flexible strips beat the sifting elements to keep the sifting passages clear or open.

SEE OR SEARCH CLASS:
55, Gas Separation, subclasses 293 and 300 for vibrating, shaking or jarring means for clearing gas separators.

384 This subclass is indented under subclass 379. Devices operating in contact with or in proximity to sifting elements which press out pieces of material that catch or wedge in the sifting passages.

SEE OR SEARCH THIS CLASS, SUBCLASS:
83, through 87, which include sifters and agitator movable relatively to the sifting elements.

385 This subclass is indented under subclass 379. Devices movable in contact with sifting elements to wipe the surfaces thereof to remove material that clogs the sifting passages, which are not classifiable in subclasses indented hereunder.

(1) Note. This subclass does not include devices whose function is to agitate the material as a whole on the sifting element with merely incidental clearing of the sifting passages.

(2) Note. The preceding subclasses which include sifters and agitators should be searched.

SEE OR SEARCH CLASS:
55, Gas Separation, subclasses 296+ for devices such as wipers or brushes having relative traversing motion with respect to the separator to clear it of residue and see other related subjects in subclasses 282+.
171, Unearthing Plants or Buried Objects, subclasses 12, 13, 25, 43, 87, 89, and 114 for cleaners which movable cooperate with a reticulated separating surface to clear such surface or recovered objects thereon of undesired adhering dirt, vegetation or like material.

386 This subclass is indented under subclass 385. Brushes which do not reciprocate or rotate are employed to wipe the sifting element and keep the sifting passages clear.

(1) Note. The preceding subclasses which include sifters and agitators should be searched.

SEE OR SEARCH CLASS:
55, Gas Separation, subclasses 296+ for devices such as wipers or brushes having relative traversing motion with respect to the separator to clear it of residue and see other related subjects in subclasses 282+.

387 This subclass is indented under subclass 385. Devices wherein reciprocating wipers operate in contact with sifting elements to keep the sifting passages clear.

(1) Note. The preceding sifter with reciprocating agitator subclasses should be searched.

SEE OR SEARCH CLASS:
55, Gas Separation, subclasses 296+ for devices such as wipers or brushes having relative traversing motion with respect to the separator to clear it of residue and see other related subjects in subclasses 282+.

388 This subclass is indented under subclass 387. Devices wherein reciprocating brushes wipe the surfaces of sifters to keep the sifting passages open.

(1) Note. The preceding sifter with reciprocating agitator subclasses should be searched.

SEE OR SEARCH CLASS:
55, Gas Separation, subclasses 296+ for devices such as wipers or brushes

having relative traversing motion with respect to the separator to clear it of residue and see other related subjects in subclasses 282+.

389 This subclass is indented under subclass 385. Devices wherein rotating devices wipe the surfaces of sifters to keep the sifting passages open or clear.

(1) Note. The preceding sifter with rotating agitator subclasses should be searched.

SEE OR SEARCH CLASS:

55, Gas Separation, subclasses 296+ for devices such as wipers or brushes having relative traversing motion with respect to the separator to clear it of residue and see other related subjects in subclasses 282+.

390 This subclass is indented under subclass 389. Devices wherein rotating brushes wipe the surfaces of sifting elements to keep the sifting passages open or clear.

(1) Note. The preceding sifter with rotating agitator subclasses should be searched.

SEE OR SEARCH CLASS:

55, Gas Separation, subclasses 296+ for devices such as wipers or brushes having relative traversing motion with respect to the separator to clear it of residue and see other related subjects in subclasses 282+.

391 This subclass is indented under subclass 363. Devices for closing and opening the sifting passages of sifters to render the sifters inoperative as such or bring them into operation.

(1) Note. This subclass does not include means intended primarily to adjust or vary the size of sifting passages.

SEE OR SEARCH THIS CLASS, SUBCLASS:

376, for sifters associated with coal hods or ash pans.

394, 398 and 402, for sifter passage structure which has adjustable openings.

SEE OR SEARCH CLASS:

241, Solid Material Comminution or Disintegration, subclass 89 for comminutors combined with adjustable screens.

392 This subclass is indented under subclass 363. Structures not classifiable in the indented subclasses by or in which the sifting passages of sifters are formed, and special combinations or successions of particular types or sizes of passages.

SEE OR SEARCH THIS CLASS, SUBCLASS:

233+, for sifter structure combined with other attributes of a sifting operation.

659+, for size separation of special items.

SEE OR SEARCH CLASS:

34, Drying and Gas or Vapor Contact With Solids, subclass 237 for reticulated floors for distributing a drying medium.

393 This subclass is indented under subclass 392. Sifting passages, generally of elongated-slot form, which are formed by bars or rods which do not intermesh.

SEE OR SEARCH THIS CLASS, SUBCLASS:

307+, for endless belt-type sifters.

675+, for stationary, elongated gauging passages for separating special items by size.

SEE OR SEARCH CLASS:

19, Textiles: Fiber Preparation, subclasses 61, 62, 89, and 95 for cotton gins and fiber picking apparatus employing slots, bars or rods.

126, Stoves and Furnaces, subclasses 174 through 180 for grates formed from bars or rods.

460, Crop Threshing or Separating, subclasses 59+ and 79+ for straw carriers for grain separators and cylinder threshing machines.

394 This subclass is indented under subclass 393. Sifting passages which reformed by nonintermeshing bars having means for their relative adjustment to vary the size of the passages.

SEE OR SEARCH THIS CLASS, SUBCLASS:
676, for adjustable, stationary, elongated gauging passages for separating special items by size.

SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclass 85 and subclasses 90-95 for fiber picking apparatus utilizing beaters and elongated slots.

395 This subclass is indented under subclass 393. Sifting devices in which sifting passages are formed by nonintermeshing bars or rods, and means for attaching the rods or bars are included.

SEE OR SEARCH THIS CLASS, SUBCLASS:
675+, for stationary, elongated gauging passages for separating special items by size.

SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclass 85 and subclasses 90-95 for fiber picking apparatus utilizing beaters and having elongated passages.

396 This subclass is indented under subclass 393. Sifting passages generally of elongated - slot form are formed by bars or rods which have relative movement during the sifting operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:
667+, for an elongated, gauging slot formed between rotatable elements; particularly subclass 673 wherein the rotatable elements are cylindrical rollers.
674, for an elongated gauging passage formed between moving elements.

SEE OR SEARCH CLASS:
460, Crop Threshing or Separating, subclass 87 for walking rake type straw carriers for grain separators.

397 This subclass is indented under subclass 392. Sifting passages which are formed through integral sheets of material.

(1) Note. Sheets of woven fabric may be included provided the passages are formed by perforation of the fabric and not by spacing of the intermeshing threads, wires, or bars.

SEE OR SEARCH CLASS:
428, Stock Material or Miscellaneous Articles, subclasses 131+ for a stock material product in the form of a single or plural layer web or sheet embodying a component which is apertured, and is not elsewhere provided for.

398 This subclass is indented under subclass 397. Devices including means whereby the size of passages formed through sheets of material as defined in connection with the preceding subclass may be varied or adjusted.

SEE OR SEARCH THIS CLASS, SUBCLASS:
680+, for sorting special items by size employing gauging apertures.

399 This subclass is indented under subclass 397. Devices including integral sheets of material perforated with sifting passages and means for attaching said sheets to their supports.

SEE OR SEARCH THIS CLASS, SUBCLASS:
319, and 405, for sifters or frames including attaching means.

400 This subclass is indented under subclass 392. Sifting devices in which the sifting passages are formed by nonintermeshing cords, wires, or other flexible strands.

(1) Note. This subclass will include inter alia devices in which spaced chains form the sifting passages.

SEE OR SEARCH CLASS:
428, Stock Material or Miscellaneous Articles, subclasses 105+ for a stock material product in the form of a com-

posite web or sheet in which strands, fibers or filaments in respective layers or components are angularly arranged, and subclass 114 for a similar composite product in which the strands, fibers or filaments in respective layers or components are in parallel relation.

401 This subclass is indented under subclass 392. Sifting devices in which the sifting passages are formed by spaced intermeshing or crossing connected threads, wires, or bars.

SEE OR SEARCH THIS CLASS, SUBCLASS:
307+, for endless belt sifters.

SEE OR SEARCH CLASS:
139, Textiles: Weaving, subclasses 383+ for an uncoated woven fabric of general utility.
428, Stock Material or Miscellaneous Articles, subclasses 175+, 190, 193, and 196+ for a stock material product in the form of a single or plural layer web or sheet embodying mechanically interengaged strands or stand portions (e.g., weave, or knit).
442, Fabric (Woven, Knitted, or Nonwoven Textile or Cloth, etc.), subclasses 1+ for an open mesh fabric.

402 This subclass is indented under subclass 401. Sifting devices including spaced intermeshing or crossing interconnected threads, wires, or rods forming sifting passages and means for varying or adjusting the size of the passages.

403 This subclass is indented under subclass 401. Devices for attaching woven sifting fabric to supporting elements or frames.

404 This subclass is indented under subclass 363. Devices wherein frames to which sifting elements are attached associated with means for adjusting said frames.

(1) Note. The frames of this subclass and the four following subclasses are not the general supporting frameworks of sifting devices, but those frames to which sifting elements, such as sifting fabric, sheets, or bars, are attached and one or more of these frames may constitute the sifter proper.

SEE OR SEARCH THIS CLASS, SUBCLASS:
319, which includes adjusting means for one or more of a series of flat reciprocating sifters.
347, and other appropriate sifter subclasses, according to the type of adjustment.

405 This subclass is indented under subclass 363. Devices including attaching means or structure by which frames which carry the sifting elements are attached to supports or frameworks.

(1) Note. See note (1) to subclass 404 of this class.

SEE OR SEARCH THIS CLASS, SUBCLASS:
286, 347 and 407, for other frame attaching means.
319, for adjusting means for one or more of a series of flat reciprocating sifters, and also other appropriate subclasses of sifters, according to the type of adjustment.

406 This subclass is indented under subclass 363. Frames to which the sifting elements of drum or cylindrical sifters are attached.

407 This subclass is indented under subclass 406. Frames to which the sifting elements of sectional drum or cylindrical sifters are attached.

(1) Note. The sifter may be made up of a plurality of frames carrying sifting elements or may be a frame adapted for the reception or attachment of a plurality of sections of sifting elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:
286, for drum, or hollow cylinder sifter having material inlets in the peripheral walls.

408 This subclass is indented under subclass 363. Frames to which the sifting elements of flat sifters are attached.

(1) Note. See Search Notes below.

SEE OR SEARCH THIS CLASS, SUBCLASS:
309, through 361, for plane sifters.
404, for the (1) Note.

409 This subclass is indented under subclass 363. Structures and devices for the support of sifters or of frames carrying sifting elements which are not classifiable in the subclasses indented hereunder.

410 This subclass is indented under subclass 409. Structures or devices for the axial support of drum sifters.

(1) Note. The appropriate sifting subclasses which include rotating sifters should be searched.

411 This subclass is indented under subclass 409. Devices or means which are applied to or bearing on the rims or peripheries of drum sifters to support the same.

(1) Note. The appropriate sifting subclasses which include rotating sifters should be searched.

412 This subclass is indented under subclass 409. Frameworks or structures relating to the general support of sifters or frames carrying sifting elements.

413 This subclass is indented under subclass 412. Frameworks or structures for the support of sifters or frames carrying sifter elements and which have means whereby said frameworks or structures may be adjusted to alter the position of the sifting elements or frames carrying such or adapt the supporting framework or devices to particular locations.

SEE OR SEARCH THIS CLASS, SUBCLASS:
319, for adjustable plural superposed plane, horizontal or inclined sifters.
421, for sifters adapted to be mounted on a vehicle.

414 This subclass is indented under subclass 412. Frameworks or structures for supporting sifters or frames carrying sifting elements which are adapted to be taken apart and reassembled at will.

415 This subclass is indented under subclass 409. Hangers and standards specially adapted for the support of sifting devices, generally reciprocating sifters or which constitute essential elements of sifting devices.

SEE OR SEARCH THIS CLASS, SUBCLASS:
191, through 207, for amalgamators involving the use of reciprocating or moving members.

416 This subclass is indented under subclass 409. Devices or structures whereby positions of sifters are automatically maintained constant relatively to a horizontal plane when the supports change positions relatively to the horizontal plane.

417 This subclass is indented under subclass 409. Sifters having structure or means specially adapting them for manual support.

SEE OR SEARCH THIS CLASS, SUBCLASS:
236, for sifting devices adapted for distribution or spreading material.

418 This subclass is indented under subclass 417. Special constructions of manually supported and operated sifters adapted to scoop up the material to be sifted by insertion of the sifter or a portion thereof into a mass of the material and lifting the sifter away with a portion of the material thereon.

(1) Note. Where the devices of this subclass are provided with handles, they are of such limited dimension as not properly to be shovel handles. Devices having extended handles are ordinarily classified in subclass 419. Scoops, the scooping element of which is the conventional type without some special modification, are ordinarily classified according to the structure of the sifting element, and in such cases search should be made in the

appropriate Sifter subclasses according to the structure of the sifting element.

SEE OR SEARCH THIS CLASS, SUBCLASS:

282, and 283, for concave or convex sifters having reciprocating or rotating agitators.

357, and 358, for horizontal or inclined plane sifters with reciprocating or rotating agitators.

419, (see (1) Note).

419 This subclass is indented under subclass 417. Sifters associated with shovels or having the general structure of shovels and adapted to sift the material taken up, and generally characterized by a shovel edge adjacent the sifting element and an extended handle or other means by which the device may be supported and operated.

(1) Note. The device may be adapted for scooping and sifting only or may have structure adapting to be converted at will into a shovel only or into a shovel sifter. This subclass may also receive some sifting shovel cases where the sifting shovel may be part of an excavating machine, but is not limited thereto.

420 This subclass is indented under subclass 409. Sifters so mounted or supported as to be movable from place to place other than by manual support.

(1) Note. Devices of this subclass are generally mounted on frames provided with wheels, skids, or equivalent devices or on scows or wheeled vehicles.

421 This subclass is indented under subclass 420. Sifters especially constructed or adapted to be mounted, generally detachable, upon particular vehicles which have some function independent of the sifting.

422 This subclass is indented under the class definition. Methods and apparatus by which mixtures of materials having components of different mass, due to differences in size, specific gravity, or both, are assorted by being caused to stratify and at least one stratum collected separately from the rest of the material.

(1) Note. This subclass takes such methods and apparatus as are not definitely classifiable in the subclasses indented hereunder.

(2) Note. The distinction between the subclasses indented hereunder which involve fluid treatment and those preceding involving fluid suspension is that in the former the material is not all subjected to free suspension by the fluid in such wise as to be all transported substantial distances and separated by settling out from the fluid suspension at varying distances from the points of initial application of the fluid or all subjected to free suspension and the heavier permitted to drop out of the suspension in such wise as not to form a stratum. Where the heaviest components form a stratum and the others form one or more strata or are carried off by the fluid, the device is classified as a stratifier, while where there is no definite stratum of heaviest components it is classified as a fluid suspension device.

SEE OR SEARCH CLASS:

241, Solid Material Comminution or Disintegration, subclasses 15+ and 38+ for comminutors combined with stratifiers.

423 This subclass is indented under subclass 422. Devices and methods involving the use of a constant flow of liquid through a mass of material containing constituents of different mass supported on a perforated or permeable bed or table, through which perforations the liquid flows toward the material supported thereon, the material's heaviest constituents forming a stratum on the support and the lighter constituents either forming one or more strata above the other or being carried away by the liquid.

424 This subclass is indented under subclass 423. Devices and methods in which the different strata or the stratum of the heaviest constituents and the material carried away by the liquid move away from each other in diverging or opposite directions.

425 This subclass is indented under subclass 422. Devices and methods in which a pulsating or interrupted flow of liquid is sent through a permeable or perforated support and through material thereon to agitate the material in such manner that the constituents are arranged in strata with the heaviest in the lowest stratum, or the heaviest is formed into a stratum and the lightest carried away by the liquid.

(1) Note. This subclass takes such processes and apparatus as are not classifiable in the indented subclasses, generally cases in which there is no definite horizontal movement of the heaviest material.

426 This subclass is indented under subclass 425. Devices and methods in which a pulsating or interrupted flow of liquid through a permeable or perforated support and mixed material thereon to form strata and the upper and lower strata are separated by flowing in divergent or opposite directions.

427 This subclass is indented under subclass 425. Devices and methods in which a pulsating or interrupted flow of liquid through a permeable or perforated support and material thereon to cause the components of the material to form overlying strata, and these strata as formed are caused to travel together to a place of position where they are separately discharged.

428 This subclass is indented under subclass 422. Devices and methods wherein material having constituents of different masses is delivered with liquid accompanying said material or added thereto on the belt to a rotating endless belt on which the heaviest constituents settle as a stratum and the lighter either settle as a stratum or are carried away by the liquid.

(1) Note. The subclass receives such processes and apparatus as are not classifiable in the indented subclasses.

SEE OR SEARCH CLASS:

428, Stock Material or Miscellaneous Articles, appropriate subclasses for a stock material product in the form of a single or plural layer web or sheet which is not specifically provided for in any other class.

474, Endless Belt Power Transmission Systems or Components, particularly subclasses 202+ for a positive drive belt; and subclasses 237+ for a friction drive belt.

429 This subclass is indented under subclass 428. Belts on which the heaviest and the lighter material move in divergent directions to points of discharge.

430 This subclass is indented under subclass 428. Belts on which the lighter and the heavier material move in opposite directions to points of discharge.

431 This subclass is indented under subclass 428. Endless rotating belts on which material is treated with accompanying or added liquid, so that the heaviest constituents may settle as a stratum on the belts and the lighter either form an overlying stratum or are carried away by the liquid, are mounted on the support so that they may be given a reciprocating movement in addition to their rotating movement.

432 This subclass is indented under subclass 331. Endless rotating belts on which the heaviest and the lighter materials move in divergent directions, so that they may be separately discharged.

433 This subclass is indented under subclass 331. Endless rotating belts on which the lightest and the heaviest constituents move in opposite directions to discharge.

434 This subclass is indented under subclass 422. Devices and methods wherein material having constituents of different mass is treated with accompanying or added liquid on moving chutes or tables of spiral form, on which the heaviest constituents settle as a stratum and the lighter either form overlying strata or are carried away by the liquid.

(1) Note. The motion of the chutes or tables may be either reciprocatory or rotary.

435 This subclass is indented under subclass 422. Chutes or tables having both reciprocating and rotating motion on which material having constituents differing in mass is treated with accompanying or added liquid, the heaviest

constituents settling as a stratum and the lighter either forming an overlying stratum or being carried away by the liquid.

436 This subclass is indented under subclass 435. Chutes or tables on which the heavier and the lighter materials move in diverging or opposing directions to discharge.

437 This subclass is indented under subclass 422. Tables or chutes having reciprocating motion on which material having constituents differing in mass is treated with accompanying or added liquid, the heaviest constituents settling as a stratum and the lighter either forming an overlying stratum or being carried away by the liquid.

(1) Note. This subclass receives such structures as are not classifiable in the indented subclasses, generally devices of the kind defined in which there is no definite travel of both the heaviest and the lighter along the chute or table surface, the heavier being generally retained or discharged through the bottom in proximity to the region of settlement.

438 This subclass is indented under subclass 437. Chutes or tables of annular or circular form having reciprocating motion on which material having constituents differing in mass is treated with accompanying or added liquid, so that the heaviest constituents settle as a stratum while the lighter form an overlying stratum or are carried away by the liquid.

(1) Note. This subclass takes devices in which there is no definite travel of both the heaviest and the lighter along the surface of the chutes or tables or in which there is travel of both such heaviest and lighter constituents in the same direction. This subclass will also take devices in which the heaviest and the lighter settle as strata in successive zones in the direction of flow of liquid along the surfaces.

439 This subclass is indented under subclass 438. Chutes or tables on which the heaviest and the lighter constituents move in divergent or opposite directions to discharge.

440 This subclass is indented under subclass 437. Chutes or tables having associated therewith means or devices for agitating the material thereon.

441 This subclass is indented under subclass 437. Reciprocating noncircular chutes or tables , on which the heaviest and the lighter constituents move in diverging direction to discharge.

442 This subclass is indented under subclass 437. Reciprocating noncircular chutes or tables , on which the lighter and the heaviest constituents move in opposite directions along the chutes or tables to discharge.

443 This subclass is indented under subclass 437. Reciprocating noncircular chutes or tables , on which the heaviest and lighter constituents move in the same direction toward discharge.

444 This subclass is indented under subclass 422. Rotating chutes or tables on which material having constituents of differing mass is treated with accompanying or added liquid, so that the heaviest constituents may settle as a stratum, while the lighter either form overlying strata or may be carried away by the liquid.

(1) Note. Cases in which the lighter constituents form strata succeeding the stratum of heaviest in the direction of liquid flow may be included.

SEE OR SEARCH THIS CLASS, SUBCLASS:
435, for chutes and tables which both reciprocate and rotate.

Stratifiers, With liquid treatment, Receptacles.
The receptacles of the hereinunder indented subclasses are distinguished from the tables or chutes of the immediately preceding subclasses mainly in that they have substantial depth and are adapted to retain liquid and mixed material in substantial depth without the same degree of freedom for gravital flow as is usual with tables or chutes.

445 This subclass is indented under subclass 422. Receptacles having both reciprocating and rotating motion in which material having con-

stituents differing in mass is treated mingled with liquid, which may accompany or be added to the material, so that the heaviest constituents may settle as a stratum, while the lighter either form overlying strata or may be carried away by the liquid.

446 This subclass is indented under subclass 422. Reciprocating receptacles of substantial depth in which material mingled with liquid, accompanying the material or added, may be treated so that the heavier constituents of the material may settle as a stratum, while the lighter either form overlying strata or may be carried away by the liquid.

447 This subclass is indented under subclass 446. Receptacles adapted to be supported and reciprocated manually.

(1) Note. This subclass the so-called "miners' pans" and "bateas" which are supported and operated by hand.

448 This subclass is indented under subclass 446. Receptacles associated with agitators for the material other than such as are classifiable in the hereinunder-indented subclasses.

449 This subclass is indented under subclass 448. Receptacles wherein the agitators are reciprocating.

450 This subclass is indented under subclass 448. Receptacles associated with rotating agitators for the material.

451 This subclass is indented under subclass 422. Receptacles of nontabular form rotating on horizontal or inclined axes in which material mingled with liquid, either added or accompanying, is so treated that the heaviest constituents settle out as a stratum, while the lighter either form overlying strata or are carried away by the liquid.

452 This subclass is indented under subclass 451. Receptacles are associated with agitating means for the material, which agitating means may be conveyors for one or more strata.

453 This subclass is indented under subclass 422. Receptacles of nontubular form (having substantial depth) rotating on vertical axes in which material is treated with mingled liquid, either accompanying or added, so that the heaviest constituents may settle as a stratum, while the lighter either form overlying strata or are carried off by the liquid.

(1) Note. Agitators for the material may be present on or absent.

454 This subclass is indented under subclass 422. Apparatus including stationary perforated or permeable supports to which material is delivered and through which constant currents of liquid are sent so that the heaviest constituents of the material may settle as a stratum while the lighter either form overlying strata or are carried away by the liquid.

SEE OR SEARCH CLASS:

210, Liquid Purification or Separation, appropriate subclasses, particularly subclass 162 for fixed strainers in a flume stream, and subclasses 409+ for fluid cleaning of fixed strainers.

455 This subclass is indented under subclass 422. Apparatus including stationary perforated or permeable supports to which material is delivered and having means whereby liquid is sent in pulsating or interrupted currents through the support and material thereon, so that the heaviest constituents of the material may settle as a stratum, while the lighter may either form overlying strata or be carried away by the liquid.

456 This subclass is indented under subclass 455. Apparatus and having means whereby the lighter and the heaviest constituents are caused to move in divergent or opposite directions to discharge.

457 This subclass is indented under subclass 455. Apparatus in which the heaviest and lighter constituents are moved in the same direction to discharge.

458 This subclass is indented under subclass 422. Stationary chutes or tables on which material with mingled liquid, accompanying or added, is so treated that the heaviest constituents of the material may settle as a stratum, while the lighter may form overlying strata or be carried off by the liquid.

(1) Note. This subclass includes noncircular chutes or tables on which there is no substantial travel of the heaviest constituents along the surface of the chutes or tables.

459 This subclass is indented under subclass 458. Stationary circular, annular, or spiral tables or chutes on which material with mingled, accompanying or added, liquid is treated, so that the heaviest constituents may settle as a stratum, while the lighter form relatively displaced strata or are carried away by the liquid.

460 This subclass is indented under subclass 458. Stationary noncircular tables or chutes on which material with mingled liquid, accompanying or added, is treated, so that the heaviest constituents may settle as a stratum, while the lighter may form relatively displaced strata or be carried away by liquid, and the heaviest and lighter constituents are moved in diverging or opposite directions to discharge.

461 This subclass is indented under subclass 422. Stationary receptacles having substantial depth in which material mingled with liquid, either accompanying or added, is treated, so that the heaviest constituents of the material may settle as a stratum, while the lighter constituents may either form relatively displaced strata or be moved away by the liquid, said receptacles being associated with agitators of types not classifiable under the hereinunder-indented subclasses.

SEE OR SEARCH CLASS:
210, Liquid Purification or Separation, subclasses 413+ for fixed filter mediums and a movable stirrer or cleaner.

462 This subclass is indented under subclass 461. Receptacles wherein the agitators are reciprocating.

463 This subclass is indented under subclass 461. Stationary receptacles associated with rotating agitators of a type not classifiable in the hereinunder-indented subclasses.

(1) Note. This subclass takes, in general, those devices of the type indicated which include agitators or the rotary endless-belt species or devices including combinations of different species of rotary agitators which are not all included in one of the indented subclasses.

464 This subclass is indented under subclass 463. Receptacles wherein the rotating agitators have horizontal or inclined axes.

465 This subclass is indented under subclass 463. Stationary receptacles, said receptacles being associated with rotating agitators having vertical axes.

466 This subclass is indented under subclass 422. Apparatus including movable perforated or permeable supports for material, other than rotating endless belts, and means for sending constant gaseous currents through the supports and the material, so that the heaviest constituents of the material may settle as a stratum while the lighter may either form relatively displaced strata or be removed by the gaseous currents, there being either no substantial movement of the heaviest constituents along the support or both the heaviest and the lighter moving in the same direction toward discharge.

SEE OR SEARCH THIS CLASS, SUBCLASS:
470, for endless belt type of pneumatic stratifier.

467 This subclass is indented under subclass 466. Apparatus, the structure being so adapted that the heaviest and the lighter constituents may move in diverging or opposite directions toward discharge.

SEE OR SEARCH THIS CLASS, SUBCLASS:
470, for endless belt type of pneumatic stratifier.

468 This subclass is indented under subclass 422. Apparatus including movable permeable or perforated supports for material, other than rotating endless belts, and means for sending pulsating or interrupted gaseous currents through the support and the material, so that the heaviest constituents of the material may settle as a stratum, while the lighter constituents may either form relatively displaced strata or be removed by the gaseous currents, there

being no substantial movement of the heaviest constituents along the support or the heaviest and the lighter constituents both moving in the same direction toward discharge.

469 This subclass is indented under subclass 468. Apparatus so arranged that both the heaviest and the lighter constituents move in diverging or opposite directions toward discharge.

SEE OR SEARCH THIS CLASS, SUBCLASS:
470,

470 This subclass is indented under subclass 422. Apparatus including endless rotating belts, either permeable, or impermeable which support material and means for so treating the material by gaseous current that the heaviest constituents settle as a stratum on the support, while the lighter constituents either form relatively displaced strata or are carried away by the gaseous currents.

SEE OR SEARCH CLASS:
428, Stock Material or Miscellaneous Articles, appropriate subclasses for a stock material product in the form of a single or plural layer web or sheet which is not specifically provided for in any other class.
474, Endless Belt Power Transmission Systems or Components, particularly subclasses 202+ for a positive drive belt; and subclasses 237+ for a friction drive belt.

471 This subclass is indented under subclass 422. Apparatus including impermeable movable receptacles, chutes, or tables not of endless-belt or drum form associated with means for treating material thereon with gaseous currents, so that the heaviest constituents may settle as a stratum, while the lighter constituents either form relatively displaced strata or are carried away by the gaseous currents, there being no substantial movement of the heaviest constituents along the support, or both the heaviest and the lighter constituents moving in the same direction toward discharge.

472 This subclass is indented under subclass 471. Apparatus in which the heaviest and the lighter constituents move in diverging or opposite directions.

473 This subclass is indented under subclass 422. Apparatus including rotating drums in which material is subjected to gaseous currents, so that the heaviest constituents of the material may settle or remain as a stratum, while the lighter constituents either form relatively displaced strata or are removed by the gaseous currents.

SEE OR SEARCH THIS CLASS, SUBCLASS:
152, (see (1) Note thereto for the line).

SEE OR SEARCH CLASS:
241, Solid Material Comminution or Disintegration, appropriate subclasses, especially subclass 54 for rotary drum comminutors having a gaseous current therethrough.

474 This subclass is indented under subclass 422. Apparatus including stationary perforated or permeable supports for material through which constant gaseous currents are sent to cause the heaviest constituents of the material to settle as stratum, while the lighter constituents either form relatively displaced strata or are removed by the gaseous currents.

475 This subclass is indented under subclass 422. Apparatus including stationary perforated or permeable supports for material and means for sending pulsating or interrupting gaseous currents through the supports and the material thereon, so that the heaviest constituents of the material may settle as a stratum, while the lighter constituents either form relatively displaced strata or are moved away by the gaseous currents, there being no substantial movement of the heaviest along the support or both the heaviest and the lighter moving in the same direction toward discharge.

476 This subclass is indented under subclass 475. Apparatus in which the heaviest and lighter constituents move in divergent or opposite directions toward discharge.

477 This subclass is indented under subclass 422. Apparatus including stationary impermeable receptacles, chutes, and tables which receive material and means for subjecting the material to gaseous currents, so that the heaviest constituents of the material may settle as a stratum and the lighter constituents either form relatively displaced strata or are removed by the gaseous current.

478 This subclass is indented under subclass 422. Apparatus including supports for material associated with magnets which so operate as to apparently increase or decrease the specific gravity of magnetically-influenced constituents, so that said magnetically-influenced constituents will settle downward into a stratum as if they were the heaviest constituents when the magnetic pull is downward or will move into an upper stratum when the magnetic pull is upward.

(1) Note. The distinction between this subclass and the magnetic separator subclasses ante is that in this subclass the magnets merely assist in the stratifying the material and the separation after stratification is effected is by other than magnetic means, while in the other subclasses the magnet complete a separation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

38, 39 and 40, for combinations of magnetic separation with sifting, fluid suspension separation or stratifying.

479 This subclass is indented under subclass 422. Apparatus including moveable receptacles, chutes, or tables, other than drums, in or on which material is treated dry and without application of gaseous currents, so that the heaviest constituents of the material will settle as a stratum and the lighter either form relatively displaced strata or move away.

480 This subclass is indented under subclass 479. Apparatus in which the heaviest and the lighter constituents move in divergent directions to discharge.

SEE OR SEARCH THIS CLASS, SUBCLASS:

441, for stratifiers with liquid treatment employing chutes or tables involving divergent travel of material.

481 This subclass is indented under subclass 479. Apparatus in which the heaviest constituents and the lighter constituents move in opposite directions to discharge.

SEE OR SEARCH THIS CLASS, SUBCLASS:

442, for stratifiers with liquid treatment employing chutes or tables involving opposite travel of material.

691+, for separating items while contacting an inclined surface of a moving support.

482 This subclass is indented under subclass 422. Movable drums, generally rotating in which material is so treated dry and without the application of gaseous currents that the heaviest constituents may settle as a stratum, while the lighter either form relatively displaced strata or are moved away.

483 This subclass is indented under subclass 422. Stationary receptacles, chutes, or tables in or on which material is treated dry and without the application of gaseous currents, so that the heaviest constituents may settle as a stratum while the lighter either form relatively displaced strata or are moved away.

484 This subclass is indented under subclass 422. Parts or subcombinations of stratifiers which are not classifiable in the hereinunder-indented subclasses.

485 This subclass is indented under subclass 484. Devices or special constructions which form supports upon which the heaviest constituents of material form strata.

(1) Note. This subclass includes impermeable supports.

(2) Note. This subclass is to be distinguished from subclasses 506 and 507 in that in this subclass riffles either are not involved or are merely elements of a

subcombination. Where the essential or special construction involved is that of the riffles, per se, the structure involved is classifiable in either subclass 506 or subclass 507.

SEE OR SEARCH THIS CLASS, SUBCLASS:
506, (see (2) Note).

486 This subclass is indented under subclass 485. Special or specific constructions of permeable or perforated supports on which material is stratified by fluid currents passed through the supports.

487 This subclass is indented under subclass 484. Devices for cleaning surfaces upon which material has been stratified of material adhering thereto and which is not gravitally discharged.

(1) Note. This subclass does not include conveyors which move strata along the stratifying supports to points of discharge, but will include generally devices which remove from belt or drum surfaces material adhering thereto after gravital discharge of the stratified material and devices for finally cleaning the surfaces of other types of stratifiers after gravital or other discharge of the heaviest constituents.

488 This subclass is indented under subclass 484. Elements or structures which are employed both in feeding and discharging stratifiers.

489 This subclass is indented under subclass 488. Devices for both feeding and discharging stratifiers which are adapted to automatically control both the feed and the discharge, the feeding and discharging elements being generally so interrelated that when one is interrupted the other is set into operation.

490 This subclass is indented under subclass 484. Apparatus under methods for discharging material from stratifiers not classifiable in the hereinunder-indented subclasses.

491 This subclass is indented under subclass 490. Apparatus and methods for automatically controlling the discharge from stratifiers, other than automatically-controlled ports or valves.

492 This subclass is indented under subclass 490. Apparatus and methods wherein conveying devices are employed for or specially adapted for the removal of stratified material from stratifiers.

SEE OR SEARCH THIS CLASS, SUBCLASS:
448, 461-465, and all subclasses under stratifiers, having permeable beds, for combinations of stratifiers and discharge conveyors.

493 This subclass is indented under subclass 490. Devices for dividing two or more strata for separate discharge from a stratifier or for removing a surface stratum or layer from a mass of stratified material.

SEE OR SEARCH THIS CLASS, SUBCLASS:
423, 427, 443, 454, 457, 458, 466, 468, 471, 474, and 475, for stratifiers in which the strata travel together in the same direction and employ dividing devices to secure separate discharge of the strata.

494 This subclass is indented under subclass 490. Special constructions of discharge passages adapted to discharge one or more grades or classes of material from stratifiers.

495 This subclass is indented under subclass 494. Discharging devices controlling the discharge of material through exit passages which are positively actuated, generally by mechanical drive either continuously or at definite intervals, which operation is not directly affected automatically by variations in the progress of stratification.

496 This subclass is indented under subclass 494. Automatically-controlled devices for discharging material through exits from stratifiers, the control or variation of the discharge being automatically accomplished by the progress of

the stratification, generally by accumulation of bulk or weight of a given stratum.

497 This subclass is indented under subclass 484. Means and methods for feeding material to stratifiers which are not classifiable in subclasses 488, 489, or the here inunder-indented subclasses.

(1) Note. Such means and methods to find a place in this subclass should be specially adapted for stratifiers or be elements of a stratifier subclass.

498 This subclass is indented under subclass 497. Devices for distributing or spreading material to or on one or more stratifying devices which form elements of stratifying combinations or are specially adapted for stratifiers.

499 This subclass is indented under subclass 497. Devices for controlling rate or quantity of material supply which are elements of stratifier combinations or specially adapted for use with stratifiers.

500 This subclass is indented under subclass 484. Liquid-supply means constituting elements of stratifier combinations or specially adapted for use with stratifiers and which are not elsewhere classifiable.

501 This subclass is indented under subclass 500. Stratifier combinations including means for repeated return and reuse of the liquid employed to promote stratification, generally including special means for removing solids suspended in the liquid.

SEE OR SEARCH CLASS:
210, Liquid Purification or Separation, subclasses 167+ and 194+ for filters having recirculation means.

502 This subclass is indented under subclass 484. Special devices for the supply or control of gaseous fluid to stratifiers which are not elsewhere classifiable and stratifier combinations including special gases supply and control means.

503 This subclass is indented under subclass 484. Operating means specially adapted for the operation of stratifiers not elsewhere classifiable.

(1) Note. To be placed in this subclass the means should be an element of a stratifier combination or specially adapted for the operation of stratifiers and not obviously capable of other uses.

504 This subclass is indented under subclass 503. Means for reciprocating stratifiers specially adapted for such and not obviously capable of other uses or which form elements of stratifier combinations.

(1) Note. Reciprocating devices for stratifiers so frequently include special supporting devices or structures as an element of the actuating means that search in this class, subclass 508, should invariably be carried into this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:
508, (see (1) note).

505 This subclass is indented under subclass 503. Means for rotating stratifiers which are elements of stratifier combinations or are specially adapted for stratifiers, not classifiable elsewhere or obviously capable of other use.

506 This subclass is indented under subclass 484. Devices including special constructions of projections, channels, or depressions on or in stratifying supports for material which effect the collection or affect the stratifications of the heavier material.

507 This subclass is indented under subclass 506. Devices including projections extending from above into material being stratified or which do not extend to the material supporting surfaces and which affect the stratification of the material or the flow of the lighter constituents.

508 This subclass is indented under subclass 484. Special devices or structures which support stratifying devices.

(1) Note. Search in this subclass should invariably be extended into the operating mechanism subclasses ante, for the reason that special supports are very frequently part of the operating mechanisms or associated with such.

SEE OR SEARCH THIS CLASS, SUBCLASS:
503, for stratifier operating means.

509 SORTING SPECIAL ITEMS, AND CERTAIN METHODS AND APPARATUS (E.G., POCKET TYPE AND LIGHT RESPONSIVE SORTING, ETC.) FOR SORTING ANY ITEMS:

This subclass is indented under the class definition. Methods and apparatus which separate special items by means other than electrostatic, or which separate any items by the means named in indents hereunder.

(1) Note. Included as "special" items are the following: fruits and vegetables such as nuts, oranges, apples, potatoes, and tomatoes; food items such as fish, poultry, eggs, and potato chips; manufactured items of all kinds, including, for example, ball bearings, tools, light bulbs, razor blades, silverware, pellets, bullets, shoe heels, rivets, and electronic components; and items such as railroad ties, cut flowers, seeds, lumber, etc.

(2) Note. Bulk materials (such as grains and ore) are not considered special items and are generally sorted by methods and apparatus of the type classifiable in subclasses 1-3, 4-44, 45-70 and 127.1-508. However, includible in subclasses indented under subclass 509 are methods and apparatus not provided for in the subclasses listed in the preceding sentence, and bulk material sorting (as well as special item sorting) effected by use of such methods and apparatus will be classified in these indented subclasses.

(3) Note. Classifiable in Class 209 are devices which discriminate between items on the basis of a physical difference therein and separate them accordingly. For devices which sense a difference in position or orientation of articles and separate them accordingly, see appropriate subclasses in Class 198, Conveyors: Power-Driven.

(4) Note. A patent claiming in an apparatus claim sensing or analyzing means of the type provided for in Class 33, 73, 235, 250, 324, 340, 356, and 374, for example, coupled with a mere recitation of a "reject signal", "reject means", "sorting means", or the like, but not claiming a specific feature of the reject, separating, or sorting means, will be classifiable in the class taking the sensing or analyzing means.

(5) Note. This class does not include methods and apparatus wherein an operator selects a destination for an item and utilizes a device such as a keyboard to actuate a separating means directing the item to the selected destination. Such methods and apparatus are classifiable in Class 414, Material or Article Handling, subclasses 134+. Where an operator marks or tags items for subsequent automatic separation of the items on the basis of such marking or tagging, see subclass 3.3 of this class (209).

(6) Note. This class does not include the combination of testing containers for fluid leakage and rejecting those items failing to pass such testing. Such methods and apparatus are classifiable in Class 73, Measuring and Testing, subclasses 37+. However, where physical defects (e.g., such as flaws in the rim of a container) are sensed by the application of a fluid pressure or vacuum to items, see subclasses 522+ (bottles) and 591 (other items) of this class.

(7) Note. This class does not include methods and apparatus for separating items carried on a conveyor wherein a code or distinguishing marking is placed on the conveyor or on a special receptacle used for holding an item while it is on the conveyor (containers such as envelopes and mailbags which are used in handling an item after it is removed from a conveyor are not included as "special"

receptacles used with a conveyor). Such methods and apparatus are classifiable in Class 198, Conveyors: Power-Driven.

(8) Note. Included in this class is a patent claiming a process wherein items are separated by sensing physical differences therein and wherein the step of separating the items is only nominally recited, even where no specific separating means is disclosed in the patent.

SEE OR SEARCH THIS CLASS, SUBCLASS:

127.1+, for electrostatic methods and apparatus for sorting either special or non-special items.

SEE OR SEARCH CLASS:

15, Brushing, Scrubbing, and General Cleaning, for sorting followed by cleaning of the sorted items.

73, Measuring and Testing, subclasses 40+ for the combination of testing containers for leakage and the rejection of those failing the test.

83, Cutting, particularly subclasses 27, 79+, and 102+ for methods and devices which involve a cutting operation followed by sorting. This subclass and subclasses indented thereunder (i.e., subclasses 509+ of Class 209) include apparatus for cutting combined with inspecting and sorting where the cutting apparatus is nominally recited, or no significant relation of the cutter to the sorting means is recited. Classified in Class 83 is apparatus in which a cutting device operates in synchronous (i.e., timed) relation to a sorting device, or which includes details of the cutter. However, a recitation of the spatial location of a sorting means relative to a cutter (e.g., stating that a sorting device is longitudinally spaced a certain distance from a cutting device) is not considered significant to cause classification in Class 83. Class 83 includes apparatus in which the operation of a sorting device is initiated by a cutting device, and also includes all methods reciting a cutting step, regardless of scope, in combination with a sorting step.

198, Conveyors: Power-Driven, subclass 398 for means distinguishing between alternatively faced (e.g., right side up or inverted) items and conveying only uniformly faced items.

199, Type Casting, subclass 40 for type casting machines with font sorting means.

234, Selective Cutting (e.g., Punching), subclass 40 for a sorting device combined with a selective punch device (e.g., to segregate “error” cards, or to stack master and detail cards separately).

300, Brush, Broom, and Mop Making, subclass 18 for devices for sorting bristles according to their length in brush manufacture.

374, Thermal Measuring and Testing, subclasses 4+ for details of a thermal leakage test combined with a sorting arrangement responsive to the test.

453, Coin Handling, subclasses 3+ for coin sorting devices.

470, Threaded, Headed Fastener, or Washer Making: Process and Apparatus, subclasses 164+ for machines for feeding blanks to nail, nut, rivet, or screw making machines, and separating the finished article from imperfect work, chips, etc.

510 Sorting eggs or components thereof:

This subclass is indented under subclass 509. Methods and apparatus for separating eggs.

511 Radiant energy sensing means controls separating means:

This subclass is indented under subclass 510. Methods and apparatus including means utilizing radiant energy for sensing a condition of eggs and controlling separating means in accordance therewith.

SEE OR SEARCH CLASS:

250, Radiant Energy, subclasses 223+ and 226 for a conveyor-carried article sensed by a photodetector, the latter subclass specifically including color detectors.

356, Optics: Measuring and Testing, subclasses 402+ for color detecting apparatus and methods; subclasses 432+ for apparatus sensing light transmitted or absorbed by articles; subclasses 445+ for apparatus sensing reflected light; and subclasses 52+ for egg candling apparatus, per se.

512 By weight:
This subclass is indented under subclass 510. Methods and apparatus wherein eggs are separated into groups of different weight.

SEE OR SEARCH CLASS:
177, Weighing Scales, appropriate subclasses for weighting apparatus, per se.

513 Sensing egg weight and controlling separating means in accordance therewith:
This subclass is indented under subclass 512. Methods and apparatus including means for sensing weight of eggs and controlling separating means in accordance therewith.

514 Orbiting or rotating carrier responsive to egg weight:
This subclass is indented under subclass 512. Methods and apparatus wherein an egg is supported on an orbiting or rotating carrier responsive to weight of the egg, as, for example, by being depressible by an egg of particular weight.

515 Carrier tilted by means (e.g., trip, cam, etc.) adjacent travel path when depressed to particular elevation:
This subclass is indented under subclass 514. Methods and apparatus wherein the egg is discharged from the carrier when the latter is depressed by the egg to a particular level and is caused to tilt by means located along its path of travel.

516 Same eggs successively placed on means (e.g., balance beams, etc.) responsive to different weights:
This subclass is indented under subclass 512. Methods and apparatus wherein eggs are successively placed on means responsive to different weights, as, for example, by being depressible by eggs of different weight.

517 Sorting lumber, logs, pipes, rails, or like items:
This subclass is indented under subclass 509. Methods and apparatus for separating lumber, logs, pipes, rails, or like large, elongated items.

SEE OR SEARCH CLASS:
414, Material or Article Handling, subclasses 745+ for pipe handling apparatus, per se.

518 Condition responsive means controls separating means:
This subclass is indented under subclass 517. Methods and apparatus including means for sensing a condition of items and controlling separating means in accordance therewith.

519 Relatively movable calipers closed against item:
This subclass is indented under subclass 518. Methods and apparatus wherein the sensing means comprises relatively movable calipers closable against an item.

SEE OR SEARCH CLASS:
33, Geometrical Instruments, subclasses 783+ for calipering devices, per se.

520 Sensor responsive to item contact:
This subclass is indented under subclass 518. Methods and apparatus wherein the sensing means responds to contact by an item, e.g., a switch engaged by an item of particular size.

521 With endless conveyor belt:
This subclass is indented under subclass 517. Methods and apparatus including an endless conveyor belt which is either itself part of an item separator or conveys an item to or from the latter.

(1) Note. Included here are endless belts having item pushing elements thereon as well as apron type endless belts.

SEE OR SEARCH THIS CLASS, SUBCLASS:
518+, for separating means controlled by a sensor responsive to a condition of lumber, logs, pipes, rails, or like items and combined with, or consisting of, an endless conveyor belt.

522 Sorting bottles, ampoules, jars, drinking vessels, or like ceramic or glass containers:
This subclass is indented under subclass 509. Methods and apparatus for sorting bottles, ampoules, jars, drinking vessels, or like ceramic or glass containers.

523 Condition responsive means controls separating means:
This subclass is indented under subclass 522. Methods and apparatus including means for sensing a condition of items and controlling separating means in accordance therewith.

524 Sensing radiant energy reflected, absorbed, emitted, or obstructed by item or adjunct (e.g., label, cap, etc.) thereof:
This subclass is indented under subclass 523. Methods and apparatus including means utilizing radiant energy reflected, absorbed, emitted, or obstructed by an item, or by an article associated therewith, for sensing a condition of said item or article.

525 Sizing with visible light beam:
This subclass is indented under subclass 524. Methods and apparatus wherein a beam of visible light is used in sensing a dimension of items so that the items can be separated into groups of different size.

SEE OR SEARCH CLASS:
356, Optics: Measuring and Testing, subclass 625 for size or dimension measuring apparatus, per se.

526 Detecting internal flaw (e.g., air bubble, crack, etc.) in wall of item:
This subclass is indented under subclass 524. Methods and apparatus wherein an internal flaw in the wall of an item is sensed.

SEE OR SEARCH CLASS:
356, Optics: Measuring and Testing, subclasses 237.1+ for flaw inspecting devices, per se.

527 By means of radio frequency radiation:
This subclass is indented under subclass 526. Methods and apparatus utilizing radio frequency energy for sensing a flaw in said item or article.

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, subclasses 658+ for capacitative reactance measuring apparatus, per se.

528 Detecting flaw in, or absence or misplacement of, label on item:
This subclass is indented under subclass 524. Methods and apparatus including means for sensing a flaw in, or absence or misplacement of, a label on an item.

529 Sensing position, shape, or presence of closure:
This subclass is indented under subclass 523. Methods and apparatus wherein the position, shape, or presence of a closure for an item is sensed.

530 Sensor contacts item:
This subclass is indented under subclass 523. Methods and apparatus wherein the sensing means responds to contact by an item, e.g., a switch engaged by an item of particular size.

531 Gauge:
This subclass is indented under subclass 530. Methods and apparatus wherein the sensing means senses a dimension of an item.

SEE OR SEARCH CLASS:
33, Geometrical Instruments, appropriate subclasses for gauging apparatus, per se.

532 Plug:
This subclass is indented under subclass 531. Methods and apparatus wherein means enters a perforation or recess in an item to sense a dimension thereof.

533 Relatively movable calipers closed against item:
This subclass is indented under subclass 531. Methods and apparatus wherein the sensing means comprises relatively movable calipers closable against an item.

SEE OR SEARCH CLASS:
33, Geometrical Instruments, subclasses 143+ for calipering devices, per se.

534 Sorting paper money:
This subclass is indented under subclass 509. Methods and apparatus for separating paper money.

SEE OR SEARCH CLASS:
194, Check-Actuated Control Mechanisms, subclasses 4+ for currency validating apparatus, per se.

535 Sorting cigarettes, cigars, or packages thereof:
This subclass is indented under subclass 509. Methods and apparatus for separating cigarettes, cigars, or packages thereof.

SEE OR SEARCH CLASS:
131, Tobacco, subclasses 280+ for cigar and cigarette making apparatus, per se.

536 Sensing radiant energy reflected, absorbed, emitted, or obstructed by item or adjunct thereof:
This subclass is indented under subclass 535. Methods and apparatus including means utilizing radiant energy reflected, absorbed, emitted, or obstructed by an item, or by an article associated therewith, for sensing a condition of said item or article and controlling separating means in accordance therewith.

SEE OR SEARCH CLASS:
250, Radiant Energy, subclasses 223+ and 226 for a conveyor-carried article sensed by a photodetector, the latter subclass specifically including color detectors.
356, Optics: Measuring and Testing, subclasses 402+ for color detecting apparatus and methods; subclasses 432+ for apparatus sensing light transmitted or absorbed by articles; and subclasses 445+ for apparatus sensing reflected light.

537 Fluid or vacuum sensing means controls separating means:
This subclass is indented under subclass 535. Methods and apparatus including means utilizing a fluid stream, or a vacuum, for sensing a condition of an item and controlling separating means in accordance therewith.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclasses 37+ for testing apparatus utilizing fluid pressure.

538 Nonconveying driven means for turning item at separating or inspecting station to facilitate sorting:
This subclass is indented under subclass 509. Methods and apparatus including driven means which does not convey an item but turns it at a separating or inspecting station to assist in sorting items.

SEE OR SEARCH CLASS:
198, Conveyors: Power-Driven, subclass 411 for a conveyor and driven means for turning conveyed items.

539 Traveling items shifted to form line, or into end or edge alignment, to facilitate inspection or separation:
This subclass is indented under subclass 509. Methods and apparatus wherein traveling items are shifted into a line, or ends or edges thereof are brought into alignment.

SEE OR SEARCH CLASS:
198, Conveyors: Power-Driven, subclasses 434+ for a conveyor system for rearranging a stream of items.

540 Traveling item turned to predetermined position:
This subclass is indented under subclass 509. Methods and apparatus wherein traveling items are turned so that they face in a particular direction, e.g., items are inverted.

SEE OR SEARCH THIS CLASS, SUBCLASS:
538, for means which turns an item at a separating or inspecting station to facilitate separating the item from other items, the means not being a conveyor.
701, for means which turns a traveling item but does not face it in a particular direction.

SEE OR SEARCH CLASS:

193, Conveyors, Chutes, Skids, Guides, and Ways, subclasses 44+ for gravity conveyors with means for turning conveyed articles to a different position.

198, Conveyors: Power-Driven, subclasses 373+ for a conveyor having means for changing the attitude of a conveyed item relative to the conveying direction.

221, Article Dispensing, subclasses 156+ for dispensing apparatus combined with article orienting means.

541 Plural orienting means:
This subclass is indented under subclass 540. Methods and apparatus including plural means for turning items.

542 This subclass is indented under subclass 540. Reciprocable or pivotable orienting means: Methods and apparatus wherein the items are turned by a reciprocating or pivoting means.

543 Fluid orienting means:
This subclass is indented under subclass 540. Methods and apparatus wherein the items are turned by a fluid means, e.g., an air jet.

544 Means orienting item moved by gravity:
This subclass is indented under subclass 540. Methods and apparatus wherein the items are turned by a means along which they move under the force of gravity, e.g., a twisted chute.

545 Driven orienting means:
This subclass is indented under subclass 540. Methods and apparatus wherein the items are turned by a driven means.

546 Signalling, indicating, or display means:
This subclass is indented under subclass 509. Methods and apparatus including a signalling, indicating, or display device by means of which an operator receives information about items being separated or about the separating apparatus itself.

(1) Note. A light source which illuminates an item so that it can be more easily inspected is not considered a display means includible herein. Cross-reference collection 938 includes such means.

SEE OR SEARCH CLASS:

116, Signals and Indicators, appropriate subclasses for indicating and display apparatus, per se.

340, Communications: Electrical, subclasses 500+ for alarms, per se.

547 Indicia associated with cards, file folders, or like coded items, or with sorting means therefor (including cards, per se, with edge coding):
This subclass is indented under subclass 546. Methods and apparatus including indicia placed on cards, file folders, or like items coded to facilitate sorting, or indicia placed on means for sorting such items. Included are cards, per se, having indicia in the form of edge coding such as notches.

SEE OR SEARCH CLASS:

235, Registers, subclass 487 for record cards coded by means other than edge coding, e.g., perforations.

548 Operation of apparatus stopped:
This subclass is indented under subclass 546. Methods and apparatus wherein the operation of a separating means stops if an abnormal condition exists in the working of said means or in an item sorted thereby.

549 Signal lamp or audible alarm:
This subclass is indented under subclass 546. Methods and apparatus including a signal light or audible alarm.

SEE OR SEARCH CLASS:

116, Signals and Indicators, appropriate subclasses for indicating and display apparatus, per se.

340, Communications: Electrical, subclasses 500+ for alarms, per se.

550 Indicating scale:
This subclass is indented under subclass 546. Methods and apparatus including a graduated series of indicia, e.g., a dial.

SEE OR SEARCH CLASS:
116, Signals and Indicators, appropriate subclasses for indicating and display apparatus, per se.

551 Item counter:
This subclass is indented under subclass 546. Methods and apparatus including means for indicating to an operator the number of items which have been separated into one or more classes.

SEE OR SEARCH CLASS:
198, Conveyors: Power-Driven, subclass 959 for a conveyor having means for counting the number of load units conveyed.
235, Registers, appropriate subclasses for counting devices, per se.

552 Condition responsive means controls separating means:
This subclass is indented under subclass 509. Methods and apparatus including means for sensing a condition of items and controlling separating means in accordance therewith.

SEE OR SEARCH THIS CLASS, SUBCLASS:
513, 518 and 523, for apparatus including condition responsive means for sorting eggs, lumber, and bottles, respectively.

553 Cards or sheets separated by rotatable suction drum:
This subclass is indented under subclass 552. Methods and apparatus wherein cards or sheets are separated by means of a rotatable drum against which said items are held by suction until delivered to particular locations.

554 Sorting cards or sheets coded by perforation:
This subclass is indented under subclass 552. Methods and apparatus for separating cards or sheets coded by means of holes formed therein.

555 Diverse:
This subclass is indented under subclass 552. Methods and apparatus including different types of sensing or separating means.

556 Diverse electrical tests:
This subclass is indented under subclass 555. Methods and apparatus including diverse electrical tests for sensing at least one condition of an item, e.g., a test of the capacitance of an item to measure thickness of a wall thereof and a test of the resistance of the item to measure its structural continuity.

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, appropriate subclasses for miscellaneous electrical testing.

557 Including noncondition-responsive separating means:
This subclass is indented under subclass 555. Methods and apparatus including means which separates items without being under the control of a separate means for sensing a condition of the items.

SEE OR SEARCH THIS CLASS, SUBCLASS:
606+, for separating means, per se.

558 At single station:
This subclass is indented under subclass 555. Methods and apparatus wherein the diverse sensing or separating means are at the same location.

559 Means (e.g., information storing device, timer, delaying relay, etc.) delaying actuation of separating means:
This subclass is indented under subclass 552. Methods and apparatus including means for delaying the operation of said separating means after the condition of an item has been sensed by said sensing means.

560 Mechanical:
This subclass is indented under subclass 559. Methods and apparatus wherein said delaying means is mechanically operated.

SEE OR SEARCH CLASS:
74, Machine Element or Mechanism, for automatic mechanical control means, per se.

561 Rotatable pin carrier:
This subclass is indented under subclass 560. Methods and apparatus wherein said delaying means comprises a rotatable disk or other rotatable support carrying a pin which actuates said separating means when moved to an operative position.

562 Magnetic:
This subclass is indented under subclass 559. Methods and apparatus wherein said delaying means is magnetically operated.

SEE OR SEARCH CLASS:
360, Dynamic Magnetic Information Storage or Retrieval, appropriate subclasses for magnetic information storing apparatus, per se.

563 Electrical:
This subclass is indented under subclass 562. Methods and apparatus wherein said delaying means is electrically operated.

564 Electronic:
This subclass is indented under subclass 563. Methods and apparatus wherein said delaying means is electronically operated.

565 Shift register:
This subclass is indented under subclass 564. Methods and apparatus wherein said delaying means comprises a shift register.

SEE OR SEARCH CLASS:
377, Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, subclasses 57 and 64 for shift registers, per se.

566 Controlled by article:
This subclass is indented under subclass 565. Methods and apparatus wherein a shift pulse is generated for said shift register by detection of movement of an item past a particular point.

567 Magnetic test sensing property of item:
This subclass is indented under subclass 552. Methods and apparatus wherein a magnetic means senses a condition of items.

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, subclasses 34+ for magnetic measuring and testing apparatus, per se.

568 Magnetic core tested:
This subclass is indented under subclass 567. Methods and apparatus wherein a magnetic core is tested.

569 Reading indicia:
This subclass is indented under subclass 567. Methods and apparatus for reading indicia on an item, e.g., magnetic coding.

570 Permeability:
This subclass is indented under subclass 567. Methods and apparatus wherein the permeability of an item is sensed.

571 Electrical test sensing property of item:
This subclass is indented under subclass 552. Methods and apparatus wherein an electrical test senses a condition of items.

SEE OR SEARCH CLASS:
324, Electricity: Measuring and Testing, appropriate subclasses for electrical measuring and testing apparatus, per se.

572 Detecting flaw in dielectric:
This subclass is indented under subclass 571. Methods and apparatus wherein items are tested for a flaw in dielectric material included therein.

573 Electrical component tested:
This subclass is indented under subclass 571. Methods and apparatus wherein an electrical component is tested.

574 Resistor or capacitor:
This subclass is indented under subclass 573. Methods and apparatus wherein the electrical component is a resistor or a capacitor.

575 Lamp or battery:
This subclass is indented under subclass 573. Methods and apparatus wherein the electrical component is a lamp or a battery.

SEE OR SEARCH CLASS:

315, Electric Lamp and Discharge Devices: Systems, subclasses 364+ for systems, apparatus, and methods which test electric lamps or electric space discharge devices but do not involve sorting.

576 Sensing radiant energy reflected, absorbed, emitted, or obstructed by item or adjunct thereof:

This subclass is indented under subclass 552. Methods and apparatus including means utilizing radiant energy reflected, absorbed, emitted, or obstructed by an item, or by an article associated therewith, for sensing a condition of said item or article.

SEE OR SEARCH THIS CLASS, SUBCLASS:

511, 524 and 536, for apparatus utilizing radiant energy sensing means for separating eggs, bottles, and cigarettes, respectively.

524, for use of radiant energy sensing means for sorting bottles, ampoules, jars, drinking vessels, or like ceramic or glass containers.

552, for a condition responsive device controlling sorting by sensing light obstruction of a gauge part or other means associated with the sorting apparatus itself.

SEE OR SEARCH CLASS:

181, Acoustics, appropriate subclasses for sonic and ultrasonic measuring and testing apparatus, per se.

250, Radiant Energy, subclasses 281+ for methods and apparatus pertaining to mass spectroscopy or calutrons; subclasses 306+ for methods and apparatus for inspecting solids or liquids by charged particles; subclasses 336.1+ for methods and apparatus for testing material wherein material subjected to invisible radiation converts the latter to a different form of radiation which is used to generate an electrical signal; subclasses 200+ and the classes specified in the notes thereto, for photocell electrical circuits and apparatus responsive to radiant energy, particularly subclass 223 for photocells which sense objects on a conveyor or chute; and subclasses 458.1+ for luminophor radiation detecting apparatus, per se.

372, Coherent Light Generators, appropriate subclasses for lasers, per se.

356, Optics: Measuring and Testing, sub 402 through 425 for color detecting apparatus and methods; subclasses 432 through 444 for apparatus sensing light transmitted or absorbed by articles; subclasses 445 through 448 for apparatus sensing reflected light; subclass 51 for ultraviolet or infrared measuring and testing apparatus, per se; subclasses 625 for dimension measuring apparatus, per se; and subclass 237.1 through 237.6 for flaw detecting apparatus, per se.

577 Infrared, visible light, or ultraviolet:

This subclass is indented under subclass 576. Methods and apparatus utilizing infrared, visible light, or ultraviolet radiation.

(1) Note. To be included in this subclass and its indented subclasses as a patent involving visible light, the patent must (1) state that the radiant energy employed is light, or (2) set out specific wavelengths known to be visible.

578 Ultraviolet:

This subclass is indented under subclass 577. Methods and apparatus utilizing ultraviolet radiation.

579 Laser:

This subclass is indented under subclass 577. Methods and apparatus utilizing a laser source.

580 Color detection:

This subclass is indented under subclass 577. Methods and apparatus wherein color of items is sensed.

581 Intensity:

This subclass is indented under subclass 580. Methods and apparatus wherein color intensity of items is sensed.

582 Measuring ratio of sensed intensities:
This subclass is indented under subclass 581. Methods and apparatus wherein the ratio between color intensities of items is measured.

583 Reading indicia:
This subclass is indented under subclass 577. Methods and apparatus for reading indicia on an item.

584 On mail:
This subclass is indented under subclass 583. Methods and apparatus for reading indicia on mail.

585 Mirror or prism in optical path:
This subclass is indented under subclass 577. Methods and apparatus including a mirror or prism in the optical path of said radiation.

586 Sizing:
This subclass is indented under subclass 577. Methods and apparatus wherein said radiation senses a dimension of items so that they can be separated into groups of different size.

SEE OR SEARCH THIS CLASS, SUBCLASS:
518, and 525, for apparatus sizing lumber and bottles with a visible light beam, respectively.

587 Reflected for item:
This subclass is indented under subclass 577. Methods and apparatus wherein said radiation is reflected from an item.

588 Transmitted through item:
This subclass is indented under subclass 577. Methods and apparatus wherein said radiation passes through an item.

589 X-Ray or gamma ray:
This subclass is indented under subclass 576. Methods and apparatus utilizing X-ray or gamma ray radiation.

SEE OR SEARCH CLASS:
378, X-Ray or Gamma Ray Systems or Devices, appropriate subclasses for specific sources or detectors of x- or gamma rays.

590 Sonic or supersonic energy:
This subclass is indented under subclass 576. Methods and apparatus utilizing sonic or supersonic radiation.

(1) Note. To be included here, a patent must (1) state that the radiant energy is sonic or supersonic, or (2) set out specific frequencies which are known to be sonic or supersonic, i.e., frequencies above 12-15 per second.

591 Sensing by applying fluid or vacuum to item:
This subclass is indented under subclass 552. Methods and apparatus wherein said sensing means applies a fluid stream or a vacuum to an item.

SEE OR SEARCH THIS CLASS, SUBCLASS:
537, for apparatus sorting cigarettes, cigars, or packages by means of fluid or vacuum sensing means.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclasses 37+ for testing apparatus utilizing fluid pressure.

592 Responsive to weight of item:
This subclass is indented under subclass 552. Methods and apparatus wherein weight of an item is sensed.

SEE OR SEARCH THIS CLASS, SUBCLASS:
513, for egg sorting apparatus in which a weight sensing means controls a separating means.

SEE OR SEARCH CLASS:
177, Weighing Scales, subclasses 52+ for means weighing and handling successive receivers; and subclasses 60+ for weight responsive material control.
194, Check-Actuated Control Mechanisms, subclass 103 for weight testers associated with machines within the class.

593 Detecting movement of item support with electrical sensor:
This subclass is indented under subclass 592. Methods and apparatus including an electrical sensor which detects movement of a support under the weight of an item.

594 Photodetector:
This subclass is indented under subclass 593. Methods and apparatus wherein said sensor is a photodetector.

595 Switch:
This subclass is indented under subclass 593. Methods and apparatus wherein said sensor is a switch.

596 Pusher or deflector controls movement of item on separate support:
This subclass is indented under subclass 592. Methods and apparatus wherein said separating means comprises a pusher or deflector controlling movement of an item on a separate support.

597 Sensing position, shape, or presence of closure or end wall on container:
This subclass is indented under subclass 552. Methods and apparatus wherein the position, shape, or presence of a closure, or an end wall, of a container is sensed.

SEE OR SEARCH CLASS:
53, Package Making, subclass 53 for apparatus sensing defective packages in filling machines.

598 Sensing contour of item having no missing parts:
This subclass is indented under subclass 552. Methods and apparatus wherein the contour of an item having no missing parts is sensed.

SEE OR SEARCH CLASS:
33, Geometrical Instruments, subclasses 501.7+ for apparatus sensing item contour.

599 Sorting items according to susceptibility to deform (e.g., malleability, hardness, compressibility, etc.), rupture, or vibrate:
This subclass is indented under subclass 552. Methods and apparatus wherein the susceptibility of an item to deform, rupture, or vibrate is sensed.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclasses 12.01+ for impact testing apparatus; subclasses 67+ for vibration testing apparatus; subclasses 78+ for hardness detecting apparatus; subclasses 87+ for ductility or brittleness testing apparatus; and subclasses 760+ for stress or strain testing apparatus, particularly subclasses 788+ which include deformation testing due to a stress intentionally applied to the specimen.

600 Sensor contacts item:
This subclass is indented under subclass 552. Methods and apparatus wherein the sensing means responds to contact by an item.

SEE OR SEARCH THIS CLASS, SUBCLASS:
520, and 530, for item contacting sensors utilized in separating lumber and bottles, respectively.

601 Gauge:
This subclass is indented under subclass 600. Methods and apparatus wherein the sensing means senses a dimension of an item.

602 Relatively movable calipers closed against item:
This subclass is indented under subclass 601. Methods and apparatus wherein the sensing means comprises relatively movable calipers closable against an item.

SEE OR SEARCH THIS CLASS, SUBCLASS:
519, and 533, for calipers utilized in separating lumber and bottles, respectively.

SEE OR SEARCH CLASS:
33, Geometrical Instruments, subclasses 783+ for calipering devices, per se.

603 Sheet gauging:
This subclass is indented under subclass 601. Methods and apparatus wherein thickness of a sheet is sensed.

(1) Note. Included here are sensors which detect superposed sheets and control means for separating the latter from single sheets.

SEE OR SEARCH CLASS:
200, Electricity: Circuit Makers and Breakers, subclasses 61.13+ for sheet actuated switches.
271, Sheet Feeding or Delivering, subclasses 262 and 263 for apparatus sensing excess thickness of articles.

604 Sensor generates electrical signal:
This subclass is indented under subclass 601. Methods and apparatus wherein the sensing means produces an electrical signal for controlling the separating means.

SEE OR SEARCH CLASS:
200, Electricity: Circuit Makers and Breakers, subclasses 61.4+ for stationary feeler detecting a transient object.

605 Items separated into at least three classes:
This subclass is indented under subclass 604. Methods and apparatus wherein items are separated into three or more classes.

606 Separating means:
This subclass is indented under subclass 509. Methods and apparatus of a particular type.

607 Corn silk separator:
This subclass is indented under subclass 606. Methods and apparatus for separating silk from corn kernels.

SEE OR SEARCH CLASS:
460, Crop Threshing or Separating, subclasses 26+ for corn husking machines.

608 Sorting items according to edge coding:
This subclass is indented under subclass 606. Methods and apparatus for separating items according to distinguishing characteristics placed at edge portions thereof, e.g., notches.

SEE OR SEARCH THIS CLASS, SUBCLASS:
598, for apparatus sensing contour of articles having no missing parts and separating the articles in accordance therewith.

609 Magnet attracts or repels item:
This subclass is indented under subclass 608. Methods and apparatus wherein a magnet attracts or repels an item to separate, or to facilitate separation of, the item from other items.

610 Keyboard control:
This subclass is indented under subclass 608. Methods and apparatus including a keyboard controlling a separating means.

(1) Note. Included here are finger manipulated push buttons, slide bars, and like mechanisms.

611 Cards, file folders, or like items sorted by means of necked-down notch thereon:
This subclass is indented under subclass 608. Methods and apparatus for separating cards, file folders, or like items by means of a necked-down notch thereon.

SEE OR SEARCH THIS CLASS, SUBCLASS:
547, for cards which are sorted by means of edge coding thereon, e.g., notches.

612 Cards, file folders, or like items alternatively having notch or hole at particular location thereon:
This subclass is indented under subclass 608. Methods and apparatus wherein cards, file folders, or like items are separated by means of a notch or a hole alternatively placed at edge portions thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:
547, for cards which are sorted by means of edge coding thereon, e.g., notches.

SEE OR SEARCH CLASS:
235, Registers, subclass 487 for record cards, per se, which are coded by perforations therein.

613 Sorting cards, file folders, or like items having coded sorting holes:
This subclass is indented under subclass 606. Methods and apparatus wherein cards, file folders, or like items are separated by means of a hole therein.

SEE OR SEARCH THIS CLASS, SUBCLASS:
547, for cards which are sorted by means of edge coding thereon, e.g., notches.
554, for condition responsive means for sorting cards coded by perforations.
608+, for means for sorting cards, file folders, or like items according to an edge coding thereon, e.g., a series of notches on the edge of a data.

SEE OR SEARCH CLASS:
235, Registers, subclass 487 for record cards, per se, which are coded by perforations therein.

614 Hand supported implements:
This subclass is indented under subclass 606. Methods and apparatus wherein a hand-supported tool separates items.

SEE OR SEARCH CLASS:
294, Handling: Hand and Hoist-Line Implements, appropriate subclasses for various hand manipulated implements.

615 Brush, flail, or rake used other than as one of opposed pair of gauge elements to separate, or to facilitate separation of, items:
This subclass is indented under subclass 606. Methods and apparatus wherein a brush, flail, or rake separates, or facilitates separation of, items without being used in opposition with another element to form a gauge.

SEE OR SEARCH THIS CLASS, SUBCLASS:
672, for a pair of spindles or rollers which are disposed in spaced, opposed relation and which have projecting elements, such as tines or bristles, spaced circumferentially thereof, the space between the projecting elements of said spindles or rollers constituting a gauging passage through which an item of sufficiently small size will pass.

616 Rotatable:
This subclass is indented under subclass 615. Methods and apparatus wherein said brush, flail, or rake is rotatable.

SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclasses 36 through 38 and 43 for rotary boll hulling and delinting apparatus.

617 Item gripped between opposed elements:
This subclass is indented under subclass 606. Methods and apparatus including elements between which an item is gripped to separate it from other items.

(1) Note. Included here are (1) elements which selectively grip only particular items, and (2) elements which grip all items being sorted but release them at different points to effect their separation.

618 Rollers:
This subclass is indented under subclass 617. Methods and apparatus wherein said gripping elements are rollers.

619 Gauge enters hole in item:
This subclass is indented under subclass 606. Methods and apparatus wherein items are separated according to their ability to permit movement of gauge means, such as a bar of a particular diameter, into and out of a perforation or recess in each item.

SEE OR SEARCH THIS CLASS, SUBCLASS:
532, for a plug-type gauge which enters the neck opening of a bottle.

620 Gauging passage between orbiting belts:
This subclass is indented under subclass 606. Methods and apparatus including orbiting belts disposed in spaced relation along at least a portion of their travel paths to provide a gauging

passage through which an item of sufficiently small size passes to separate it from larger items.

621 Rotating or orbiting carrier having expandable gauging passage passing items of different size at different points along carrier travel path:
This subclass is indented under subclass 606. Methods and apparatus including a rotating or orbiting carrier the structure of which defines an expandable passage, items of different size passing through the latter at different points along the travel path of the carrier.

622 Belt:
This subclass is indented under subclass 621. Methods and apparatus wherein said carrier is a belt.

623 With gauging pocket for individual item:
This subclass is indented under subclass 622. Methods and apparatus wherein said expandable passage of said carrier belt is defined by a pocketlike structure which holds an item separate from other items until the passage expands sufficiently to release it.

624 Pocket formed by rollers, disks, or wheels spaced transversely of belt or by contoured transverse rollers, bar, or slat:
This subclass is indented under subclass 623. Methods and apparatus wherein items are separately held between rollers, disks, or wheels spaced transversely of said carrier belt, or in pockets formed by a contoured roller, bar, or slat transversely mounted on the carrier belt.

625 Gauge with clearer other than continuous feeder:
This subclass is indented under subclass 606. Methods and apparatus including a gauge provided with means for moving therefrom or therealong items that are too large to be accepted by the gauge, such gauge clearing means not including, however, feeding means moving items with continuous motion along a gauge.

(1) Note. In accordance with the definition for this subclass, a pusher which intermittently moves an item along a gauge is included here. However, a pusher which moves an item along the same type of gauge with continuous motion is not included.

SEE OR SEARCH THIS CLASS, SUBCLASS:
379+, for means for clearing or keeping open the passages of sifters classifiable in subclasses 233+.
684, for a table having therein pockets for receiving items of a particular size from a mixture flowing across the table, the table being tiltable to discharge those items lodging in the pockets.

626 Spacing between gauge elements increased to free item:
This subclass is indented under subclass 625. Methods and apparatus including gauge elements that release an over-size item therefrom by moving away from each other.

627 Rotatable or pivotable clearer:
This subclass is indented under subclass 625. Methods and apparatus wherein said gauge clearing means comprises a rotatable or pivotable element.

628 Stationary clearer:
This subclass is indented under subclass 625. Methods and apparatus wherein said gauge clearing means is fixed.

629 Diverse:
This subclass is indented under subclass 606. Methods and apparatus including different types of item separating operations.

SEE OR SEARCH THIS CLASS, SUBCLASS:
555+, for diverse separating means including a condition responsive means controlling a separating means.

630 Including means supporting items for manual sorting or allowing operator to control item destination:
This subclass is indented under subclass 629. Methods and apparatus including means, such as a table, supporting items for separation by hand, or means allowing an operator to control the destination to which items are delivered.

631 Including separation effected by items following different trajectories through space:
This subclass is indented under subclass 629. Methods and apparatus including separation effected by items following different trajectories as they travel through space.

632 Including separation effected by item of particular size passing through gauging passage between separate elements:
This subclass is indented under subclass 629. Methods and apparatus including separation effected by movement of an item of sufficiently small size through a gauging passage between separate elements, e.g., opposed bars.

633 Stationary elements:
This subclass is indented under subclass 632. Methods and apparatus wherein said elements are fixed.

634 Including separation effected by item of particular size passing through gauging aperture in wall (e.g., perforated panel, etc.):
This subclass is indented under subclass 629. Methods and apparatus including separation effected by movement of an item of sufficiently small size through an aperture in a wall.

635 Including separation effected by different items traveling in different directions while contacting a surface:
This subclass is indented under subclass 629. Methods and apparatus including separation effected by different items traveling in different directions on a surface.

636 Magnet attracts or repels item:
This subclass is indented under subclass 606. Methods and apparatus wherein items are separated by magnetic attraction or repulsion.

SEE OR SEARCH THIS CLASS, SUBCLASS:
212, and 213+, for means for separating bulk material by use of a magnetic force.

637 Items thrown or falling through space strike surface and only some rebound:
This subclass is indented under subclass 606. Methods and apparatus wherein items thrown or falling through space separate by striking a surface from which only some items rebound.

638 Items separate by following different trajectories through space:
This subclass is indented under subclass 606. Methods and apparatus wherein items separate by following different trajectories as they travel through space.

SEE OR SEARCH THIS CLASS, SUBCLASS:
657, for a deflector movable into or out of the path of an item thrown or falling through space, the item thus being directed to different points depending upon the position of the deflector.

639 Fluid jet changes trajectory of item:
This subclass is indented under subclass 638. Methods and apparatus wherein a stream of fluid impinges upon an item to change its trajectory.

SEE OR SEARCH THIS CLASS, SUBCLASS:
24, through 27, 32-35, 134-137, 145, 156, and 157, for bulk material classifying by use of a gaseous suspension in a horizontal or inclined current.

640 Items thrown or falling through space strike surface and rebound with different trajectories:
This subclass is indented under subclass 638. Methods and apparatus wherein items thrown or falling through space strike a surface and rebound in different directions.

641 Takeoff ramp adjustable to different angular positions relative to horizontal plane:
This subclass is indented under subclass 638. Methods and apparatus wherein items are projected from a ramp the angle of which can be adjusted relative to a horizontal plane.

642 Thrower:
This subclass is indented under subclass 638. Methods and apparatus wherein said items are thrown into space.

SEE OR SEARCH CLASS:
124, Mechanical Guns and Projectors, subclass 4 for centrifugal guns or projectors.
198, Conveyors: Power-Driven, subclasses 638+ for thrower-type box car loaders and general thrower-type conveyors.
241, Solid Material Comminution or Disintegration, subclasses 5, 39+, and 275 for comminutors utilizing a throwing of material.
273, Amusement Devices: Games, subclasses 120 and 129 for projector-type games.
406, Conveyors: Fluid Current, subclass 71 for thrower-type material intakes for fluid current conveyors.

643 Suction:
This subclass is indented under subclass 606. Methods and apparatus wherein items are separated by applying suction thereto.

644 Fluid jet:
This subclass is indented under subclass 606. Methods and apparatus wherein items are separated by impinging a stream of fluid thereon.

SEE OR SEARCH THIS CLASS, SUBCLASS:
44.2, for fluid jet separating means combined with separating apparatus within the class definition but not included in subclasses 509 through 707.
537, for apparatus sorting cigarettes, cigars, or packages thereof by means of fluid or vacuum sensing means.
591, for condition responsive means utilizing fluid or vacuum sensing means.

645 Sorting items by weight:
This subclass is indented under subclass 606. Methods and apparatus wherein items are separated into groups of different weight.

SEE OR SEARCH THIS CLASS, SUBCLASS:
512, for apparatus sorting eggs by weight.
592, for a weight responsive sorting apparatus.

SEE OR SEARCH CLASS:
177, Weighing Scales, subclasses 52+ for means weighing and handling successive receivers; and subclasses 60+ for weight responsive material control.
194, Check-Actuated Control Mechanisms, subclass 103 for weight testers associated with machines within the class.
198, Conveyors: Power-Driven, subclasses 504+ for a conveyor having weighing or weight actuated means associated therewith.

646 Orbiting or rotating carrier responsive to item weight:
This subclass is indented under subclass 645. Methods and apparatus wherein an item is supported on an orbiting or rotating carrier responsive to weight of the item, as, for example, by being depressible to a particular level by a particular weight.

647 Counterbalance on balance beam moved until beam tilts to item discharging position:
This subclass is indented under subclass 646. Methods and apparatus wherein said carrier comprises a balance beam on one end of which an item is supported and a counterbalance which is moved along said balance beam until it reaches a position at which the balance beam tilts to an item discharging position.

648 Carrier tilted by means (e.g., trip, cam, etc.) adjacent travel path when depressed to particular elevation:
This subclass is indented under subclass 646. Methods and apparatus wherein the item is discharged from the carrier when the latter is depressed by the item to a particular level and is caused to tilt by means located along its path of travel.

649 Same items successively placed on means (e.g., balance beams, etc.) responsive to different weights:
This subclass is indented under subclass 645. Methods and apparatus wherein items are successively placed on means responsive to different weights, as, for example, by being depressible by items of different weights.

650 Item support swings about fixed horizontal axis to discharge at different vertically spaced points:
This subclass is indented under subclass 645. Methods and apparatus including an item support which pivots about a fixed horizontal axis to discharge the item at different vertically spaced points depending on its weight.

651 Pusher moving item on separate surface:
This subclass is indented under subclass 606. Methods and apparatus wherein items are separated from other items supported on the same surface by means of a selectively actuatable pusher.

SEE OR SEARCH CLASS:
198, Conveyors: Power-Driven, subclasses 717+ for pusher-type conveyors.

652 Pivotable:
This subclass is indented under subclass 651. Methods and apparatus wherein said pusher pivots.

653 Reciprocable:
This subclass is indented under subclass 651. Methods and apparatus wherein said pusher reciprocates.

SEE OR SEARCH THIS CLASS, SUBCLASS:
652, for an item separating pusher pivotally mounted on a reciprocating means.

SEE OR SEARCH CLASS:
198, Conveyors: Power-Driven, subclasses 736+ for a reciprocating type pusher conveyor.

654 Rotatable:
This subclass is indented under subclass 651. Methods and apparatus wherein said pusher rotates.

655 Gravity-type conveyor (e.g., chute, etc.) movable between different discharge positions:
This subclass is indented under subclass 606. Methods and apparatus wherein items are separated by a gravity conveyor movable to different positions at which different items are discharged.

656 Movement of items along different paths controlled by passive deflector:
This subclass is indented under subclass 606. Methods and apparatus wherein items are moved along different paths by selective engagement with a passive deflector such as a fixed bar or a nondriven roller.

657 Deflector movable into and out of path of item:
This subclass is indented under subclass 656. Methods and apparatus wherein said deflector is movable into and out of the path of an item.

658 Deflector spaced above conveying means to pass item of particular size thereunder:
This subclass is indented under subclass 656. Methods and apparatus wherein said deflector is spaced above a conveying means on which items are supported, short items passing under the deflector and tall items striking it and being deflected thereby.

659 Sorting items by size:
This subclass is indented under subclass 606. Methods and apparatus for separating items into groups of different size.

SEE OR SEARCH THIS CLASS, SUBCLASS:
233+, for sifters for bulk material.

SEE OR SEARCH CLASS:
119, Animal Husbandry, subclasses 840+ for apparatus for sorting live animals by size.
453, Coin Handling, subclasses 3+ for machines which sort coins according to their size.

660 Item of particular size passed through gauging passage between separate elements:
This subclass is indented under subclass 659. Methods and apparatus including separate elements spaced apart to provide therebetween a gauging passage through which an item of sufficiently small size passes to separate it from larger items.

661 Gauging passage between stationary element (e.g., bar, slat, etc.) and orbiting belt:
This subclass is indented under subclass 660. Methods and apparatus wherein said passage is situated between a fixed element and an orbiting belt.

662 Gauging passage between stationary element (e.g., bar, slat, etc.) and roller:
This subclass is indented under subclass 660. Methods and apparatus wherein said passage is situated between a fixed element and a roller.

663 Gauging passage between orbiting belt and roller or wheel:
This subclass is indented under subclass 660. Methods and apparatus wherein said passage is situated between an orbiting belt and either a roller or a wheel.

664 Gauging passage between elements of rotating cage:
This subclass is indented under subclass 660. Methods and apparatus wherein said passage is situated between elements of a rotating cage, e.g., bars spaced apart circumferentially of the perimeter of a structure having the form of a circular treadmill.

665 Gauging passage between elements of orbiting belt:
This subclass is indented under subclass 660. Methods and apparatus wherein said passage is situated between elements of an orbiting belt, e.g., rollers extending transversely of such a belt.

SEE OR SEARCH THIS CLASS, SUBCLASS:
622+, for a belt having elements, such as transverse bars, which move away from one another as the belt travels to provide expanding gauging passages through which items of different size pass at different points along the orbital path of said belt.
659, for a belt formed of plural elements (e.g., rings) each of which alone provides a gauge opening but is not like a wall in structural form.
681, for an apron-type belt having a gauging aperture in the wall thereof.

666 This subclass is indented under subclass 660. Item moves along curved gauging passage: Methods and apparatus wherein an item moves along a curved gauging passage.

(1) Note. Included here, inter alia, are rings spaced apart to provide a gauging passage therebetween, and a disk having its edge spaced from a curved bar.

667 This subclass is indented under subclass 660. Gauging passage between rotatable elements: Methods and apparatus wherein said passage is situated between rotatable elements.

(1) Note. Includible here are (1) a gauge passage between two elements each rotating about an axis passing therethrough, and (2) a gauge passage between two elements rotating about an axis outside the elements.

SEE OR SEARCH CLASS:
193, Conveyors, Chutes, Skids, Guides, and Ways, subclasses 35+ for non-driven rollerways.
198, Conveyors: Power-Driven, subclasses 780+ for driven roller conveyors.
492, Roll or Roller, for a roll, per se, not elsewhere provided for.

668 Element adjustable to change width of gauging passage:
This subclass is indented under subclass 667. Methods and apparatus wherein at least one of said elements can be moved to vary the width of said passage.

669 Helical roller:
This subclass is indented under subclass 667. Methods and apparatus wherein at least one of said elements is a roller, the periphery of which is helical in form.

670 Items move longitudinally of gauging passage varying in width along length thereof:
This subclass is indented under subclass 667. Methods and apparatus wherein items move lengthwise of a tapered passage until they either pass therethrough or are rejected.

671 Spindle or roller having projecting elements spaced circumferentially thereof:
This subclass is indented under subclass 667. Methods and apparatus wherein at least one of said elements is a shaft or roller having projecting elements such as tines spaced about the circumference thereof.

672 Spindle or roller having axially spaced, flat-sided circumferential elements (e.g., flanges, disks, wheels, etc.) projecting therefrom:
This subclass is indented under subclass 667. Methods and apparatus wherein at least one of said elements is a shaft or roller having flat-sided elements spaced apart axially thereon and extending circumferentially thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:
361, for flat vertical sifters which rotate about a horizontal axis and separate bulk materials.

673 Cylindrical rollers:
This subclass is indented under subclass 667. Methods and apparatus wherein said elements are rollers having substantially cylindrical peripheries.

SEE OR SEARCH THIS CLASS, SUBCLASS:
618, for rollers which grip an item to carry it through a gap between the rollers.

674 Gauging passage between moving elements (e.g., vibrating bars, slats, etc):
This subclass is indented under subclass 660. Methods and apparatus wherein said passage is situated between moving elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:
393+, for bar-type elements for sifting bulk material.

SEE OR SEARCH CLASS:
460, Crop Threshing or Separating, subclasses 87 and 90, respectively, for shaking table and walking rake type grain separators.

675 Gauging passage between stationary elements (e.g., bars, slats, etc):
This subclass is indented under subclass 660. Methods and apparatus wherein said passage is situated between fixed elements.

SEE OR SEARCH THIS CLASS, SUBCLASS:
393+, for bar-type elements for sifting bulk material.
674, for a gauging passage between moving elements, such as the bars of a vibrating screen.

676 Element adjustable to change width of gauging passage:
This subclass is indented under subclass 675. Methods and apparatus wherein at least one of said elements can be moved to vary the width of said passage.

677 Items move longitudinally of elongate elements:
This subclass is indented under subclass 675. Methods and apparatus wherein said elements are elongated and items move lengthwise thereof until they either pass through said passage or are rejected.

678 With means moving, or regulating movement of, items along elements:
This subclass is indented under subclass 677. Methods and apparatus including means for moving, or controlling movement of, items along said elements.

679 Width of gauging passage varies:
This subclass is indented under subclass 677. Methods and apparatus wherein the width of said passage varies.

680 Item of particular size passed through gauging aperture in wall (e.g., perforated panel, etc.):
This subclass is indented under subclass 659. Methods and apparatus including a wall having therein a gauging aperture through which an

item of sufficiently small size passes to separate it from larger items.

(1) Note. Generally a gauging aperture classifiable in this subclass is formed in a single piece of material. Separate plates joined together by welding are considered to be a single piece of material.

SEE OR SEARCH THIS CLASS, SUBCLASS:

233+, for sifting apparatus for bulk material.

660+, for a gauging passage between separate elements, including separate pieces of material which contact along edge portions thereof but which are spaced apart between these contacting portions to provide therebetween an opening used as a gauging passage.

681 Aperture in orbiting belt:

This subclass is indented under subclass 680. Methods and apparatus wherein said aperture is in an orbiting belt.

SEE OR SEARCH THIS CLASS, SUBCLASS:

307+, for endless belt sifters.

682 Aperture in chute or trough:

This subclass is indented under subclass 680. Methods and apparatus wherein said aperture is in a chute or trough.

683 Aperture in circumferential wall of hollow body (e.g., tube, etc.) rotatable about longitudinal axis thereof:

This subclass is indented under subclass 680. Methods and apparatus wherein said aperture is in the circumferentially extending wall of a hollow body rotatable about its longitudinal axis.

SEE OR SEARCH THIS CLASS, SUBCLASS:

44.3, for drum-type sifters combined with separating apparatus within the class definition, but not included in subclasses 509 through 707.

684 Item of particular size or shape enters pocket:

This subclass is indented under subclass 659. Methods and apparatus including a pocket of such dimensions that an item of a particular size or shape may enter it and be retained for movement relative to an item which cannot fit into the pocket.

685 On orbiting belt:

This subclass is indented under subclass 684. Methods and apparatus wherein said pocket is on an orbiting belt.

686 On exterior of drumlike body (e.g., roller, etc.) rotatable about longitudinal axis thereof:

This subclass is indented under subclass 684. Methods and apparatus wherein said pocket is on the exterior of a drumlike body rotatable about its longitudinal axis.

687 On interior of hollow drumlike body (e.g., tube, etc.) rotatable about longitudinal axis thereof:

This subclass is indented under subclass 684. Methods and apparatus wherein said pocket is on the interior of a hollow drumlike body rotatable about its longitudinal axis.

688 Means pierces, or enters preformed hole in, item:

This subclass is indented under subclass 606. Methods and apparatus including means which pierces, or enters a preformed hole in, an item while another item is not so penetrated, this action effecting separation of the items.

(1) Note. Means entering an item to convey it, after the item has been separated from other items, is not considered a separating means classifiable in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

532, for a plug-type gauge which enters the neck opening of a bottle.

619, for a gauging element which enters a hole in an item.

SEE OR SEARCH CLASS:

198, Conveyors: Power-Driven, subclasses 692+ for a conveyor having article impaling elements.

221, Article Dispensing, subclasses 213+ for impaling type discharge assistants, per se.

689 Items separate by traveling in different directions while contacting drumlike body (e.g., roller, hollow cylinder, etc.) turning about longitudinal axis thereof:

This subclass is indented under subclass 606. Methods and apparatus wherein items separate by traveling in different directions on the circumferentially extending surface of a drumlike body turning about its longitudinal axis.

SEE OR SEARCH THIS CLASS, SUBCLASS:

686, and 687, for drums having item retaining pockets thereon.

690 Items travel circumferentially and longitudinally of turning axis:

This subclass is indented under subclass 689. Methods and apparatus wherein some items travel circumferentially of the axis of rotation of said body, while other items travel in the direction of said axis.

691 Items separate by traveling in different directions while contacting same inclined surface of moving support:

This subclass is indented under subclass 606. Methods and apparatus wherein items separate by traveling in different directions on an inclined surface of a moving support.

692 Items contact inclined reach of orbiting belt:

This subclass is indented under subclass 691. Methods and apparatus wherein said support is an inclined stretch of an orbiting belt.

693 Item separating reach inclined only in direction of belt movement:

This subclass is indented under subclass 692. Methods and apparatus wherein said belt stretch is inclined only in the direction of movement of the belt.

694 Translating support:

This subclass is indented under subclass 691. Methods and apparatus wherein said support translates.

695 Items separate by traveling in different directions while contacting same horizontal surface of moving support:

This subclass is indented under subclass 606. Methods and apparatus wherein items separate by traveling in different directions on a horizontal surface of a moving support.

696 Items separate by traveling in different directions while contacting same inclined surface of static support:

This subclass is indented under subclass 606. Methods and apparatus wherein items separate by traveling in different directions on an inclined surface of a fixed support.

697 Helical ramp:

This subclass is indented under subclass 696. Methods and apparatus wherein said support is helical in form.

698 Means movable between horizontal item-supporting position and gravity discharge position:

This subclass is indented under subclass 606. Methods and apparatus including means movable between a position wherein it is horizontal and supports an item and a position wherein the item is discharged therefrom by the force of gravity.

(1) Note. Included here are (1) supports that swing downwardly to discharge an item, and (2) supports that move horizontally away from each other so that they are removed from supporting position under an item.

699 Sorting items according to susceptibility to deform (e.g., malleability, hardness, compressibility, etc.), rupture, or vibrate:

This subclass is indented under subclass 606. Methods and apparatus wherein items are separated according to their susceptibilities to deform, rupture, or vibrate.

SEE OR SEARCH THIS CLASS, SUBCLASS:

599, for sensing means responsive to the difference in the susceptibilities of different items to deform, rupture, or vibrate.

SEE OR SEARCH CLASS:

73, Measuring and Testing, subclasses 12.01+ for impact testing apparatus; subclasses 67+ for vibration testing apparatus; subclasses 78+ for hardness detecting apparatus; subclasses 87+ for ductility or brittleness testing apparatus; and subclasses 760+ for stress or strain testing apparatus, particularly subclasses 788+ which include deformation testing due to a stress intentionally applied to the specimen.

100, Presses, subclass 91 for presses not elsewhere provided for and having additional means for removing one solid substance from another; and subclass 99 for presses not elsewhere classified and having a test means.

700 Sorting items according to roughness or adhesiveness:

This subclass is indented under subclass 606. Methods and apparatus wherein items are separated according to their roughness or adhesiveness.

SEE OR SEARCH CLASS:

198, Conveyors: Power-Driven, subclasses 688+ for conveyor structure including means to enhance the adherence of a load to the conveyor.

701 Item turned while traveling:

This subclass is indented under subclass 606. Methods and apparatus wherein an item turns while traveling.

SEE OR SEARCH THIS CLASS, SUBCLASS:

538, for means which turns an item at a separating or inspecting station to facilitate separating the item from other items, the means not being a conveyor.

540+, for means which turn an item to a predetermined position as the item is traveling.

SEE OR SEARCH CLASS:

198, Conveyors: Power-Driven, subclasses 234+ for conveyor structure including means for orienting articles.

221, Article Dispensing, appropriate subclasses, particularly subclass 156 for dispensing apparatus including means for orienting dispensed articles.

702 Manual sorting:

This subclass is indented under subclass 606. Methods and apparatus wherein like items are separated from unlike items directly by hand.

SEE OR SEARCH THIS CLASS, SUBCLASS:

614, for hand supported sorting implements, such as a rake provided with a handgrip and used for removing nails of a particular size from an assortment of nails.

SEE OR SEARCH CLASS:

294, Handling: Hand and Hoist-Line Implements, subclass 64.1 for handling implements utilizing vacuum cup elements.

703 Item supported on table or chute:

This subclass is indented under subclass 702. Methods and apparatus wherein items are supported on a table or chute to facilitate their separation.

704 Rotated about vertical axis:

This subclass is indented under subclass 703. Methods and apparatus wherein said table or chute rotates about a vertical axis.

(1) Note. Included here are rigid, rotatable platforms, usually annular or disk shaped.

SEE OR SEARCH THIS CLASS, SUBCLASS:

705, for an orbiting belt-type carrier the article supporting surface of which is disposed in a horizontal plane, articles supported on the carrier being manu-

ally sorted by workers positioned beside the carrier.

705 Item supported on orbiting or rotating carrier:
This subclass is indented under subclass 702. Methods and apparatus wherein items are supported on an orbiting or rotating carrier to facilitate their separation.

706 Specific compartment of receptacle brought into alignment with feed means by operator:
This subclass is indented under subclass 606. Methods and apparatus including a receptacle having compartments which can be brought, under the control of an operator, into alignment with an item feeding means to thereby place different items in different compartments.

707 Items separated by tipping, rolling, or sliding off support under force of gravity:
This subclass is indented under subclass 606. Methods and apparatus wherein certain items on a support are separated from other items by tipping, rolling, or sliding off the support under the force of gravity.

SEE OR SEARCH THIS CLASS, SUBCLASS:
651+, for means for pushing an item off a conveyor to separate it from an item left on the conveyor.

710 Plural individual interconnected separation means having swirling currents:
This subclass is indented under subclass 143. Methods and apparatus including multiple, discrete rotary stream creating separating phases to either (1) treat the total entrained or suspended material sequentially, (2) treat multiple fractions of the entrained or suspended material simultaneously, or (3) treat the entrained or suspended material by a combination of sequential and simultaneous operations, to promote deposition of entrained or suspended material from the gaseous suspension due to resultant centrifugal or centripetal forces.

(1) Note. Included in this subclass and those indented hereunder as a discrete separating phase is the feature of filtering a resultant gaseous suspension from a prior discrete separating phase to extract the entrained or suspended material therefrom and provide substantially purified gas for either release to the environs or for reuse.

(2) Note. The preceding subclasses which involve gaseous suspension and deposition should be searched for the separation of entrained or suspended material subjected to a suspending and classifying action of an impinging gaseous current or a combination therewith.

SEE OR SEARCH THIS CLASS, SUBCLASS:
12.1+, for combinations of diverse types of separating operations including gaseous suspension separation.
725+, for analogous subject matter for liquid suspension separation. See (1) Note in Class 209 subclass 155.

SEE OR SEARCH CLASS:
55, Gas Separation, appropriate subclasses, for the complete removal of entrained or suspended material without separation into a plurality of grades or classes; especially, subclass 317 for a serial arrangement of plural gas separators including one separator having a rotating member; subclasses 342+ for combinations of distinct gas separators provided with individual inlets and outlets; and subclasses 401+ for arrangements of plural gas separator devices each having rotating members.
95, Gas Separation: Processes, appropriate subclasses, for methods involving the complete removal of entrained or suspended material without separation into a plurality of grades or classes; especially, subclasses 267+ for gas separation processes involving deflection to create a swirling motion.
210, Liquid Purification or Separation, appropriate subclasses, for analogous subject matter involving indiscriminate solids removal from liquid suspension. See (3) Note in Class 209 subclass 132 and (1) Note in Class 209 subclass 155.
406, Conveyors: Fluid Current, appropriate subclasses, for delivering

entrained or suspended material from a gaseous current conveyor.

711 Fluidically induced, oppositely directed axial flows only (e.g., multiple cyclone arrangements, etc.):

This subclass is indented under subclass 710. Methods and apparatus wherein, in each of the separating phases, coaxial, counter traveling spiraling streams are established to effect separation of entrained or suspended material from the gaseous suspension into overflow and underflow fractions due to resultant centrifugal or centripetal forces.

SEE OR SEARCH THIS CLASS, SUBCLASS:

728, for analogous subject matter for liquid suspension separation. See (1) Note in Class 209 subclass 155.

SEE OR SEARCH CLASS:

55, Gas Separation, subclasses 338+ for a continuous gas flow path with a recirculation of the separated gas to the inlet of the system; and subclasses 346+ for plural parallely connected gas separators each employing a rotary current. See (3) Note in Class 209 subclass 132.

95, Gas Separation: Processes, subclasses 267+ for method of separation or purification of a gaseous suspension employing centrifugal or centripetal forces

210, Liquid Purification or Separation, subclass 512.2 for plural cyclonic devices for indiscriminately removing solids from a liquid suspension; and subclasses 787+ for a cyclonic process of liquid-solid separation. See (3) Note in Class 209 subclass 132.

406, Conveyors: Fluid Current, subclass 173 for a cyclone separator employed as a fluid conveyor outlet means.

712 Serial arrangement:

This subclass is indented under subclass 711. Methods and apparatus wherein a separated fraction from an upstream separating phase becomes an input of a subsequent separating phase.

(1) Note. The separated fraction is not restricted to an axially discharged fraction.

SEE OR SEARCH THIS CLASS, SUBCLASS:

729, for analogous subject matter for liquid suspension separation. See (1) Note in Class 209 subclass 155.

SEE OR SEARCH CLASS:

55, Gas Separation, appropriate subclasses, for indiscriminate removal of entrained or suspended material; particularly, subclasses 338+ for a continuous gas flow path with a recirculation of the separated gas to either (1) the inlet of the system or (2) to an inlet of one of the discrete separator devices in the serial arrangement; and subclass 345 for plural sequentially connected gas separators each employing a rotary current. See (3) Note in Class 209 subclass 132.

713 Mechanically induced swirling:

This subclass is indented under subclass 143. Methods and apparatus wherein a movable member creates a rotary stream to promote deposition of entrained or suspended material from the gaseous suspension due to resultant centrifugal or centripetal forces.

(1) Note. The preceding subclasses which involve gaseous suspension and deposition should be searched for the separation of entrained or suspended material subjected to a suspending and classifying action of an impinging gaseous current or a combination therewith.

(2) Note. A fan, impeller or pump for the sole purpose of creating the material entrained or suspended current and not for effecting deflection to create the rotary stream is not proper for classification in this or the subclass indented hereunder. Such mechanical element, external to the separating means, is classifiable with the fluidically induced separation means of subclasses 711+ when employed in combination with a plurality of interconnected separation means

or in an appropriate subclass subsequent hereto.

SEE OR SEARCH THIS CLASS, SUBCLASS:

710, for a combination of plural rotary stream creating separating phases including a separating phase having a movable member.

711+, see (2) note supra.

715+, see (2) note supra.

SEE OR SEARCH CLASS:

55, Gas Separation, appropriate subclasses for indiscriminate removal of entrained or suspended material; particularly, subclasses 400+ for a gas separation device including a movable means for assisting in removal of a constituent of a gaseous material flow; and subclasses 437+ for a gas separation device including means for effecting the gas flow. See (3) Note in Class 209 subclass 132.

95, Gas Separation: Processes, subclass 270 for a gas separation process involving mechanical deflection to create a swirling motion. See (3) Note in Class 209 subclass 132.

210, Liquid Purification or Separation, subclasses 787+ for processes and subclass 512.3 for apparatus for indiscriminate removal of entrained or suspended material from a liquid suspension analogous hereto.

714 Eduction rotor:

This subclass is indented under subclass 713. Methods and apparatus wherein the movable member provides an egress path for a separated fraction.

(1) Note. The movable member is usually coaxial to the rotary stream created but is not limited thereto. So-called "air-sifters", not employing an impinging gaseous current, are classified here because the movable member provides an egress path for a separated fraction. See subclasses 134+ for "air-sifters" having a horizontally directed impinging current and subclasses 138+ for "air-sifters" having a vertically directed impinging current.

SEE OR SEARCH THIS CLASS, SUBCLASS:

134+, see (1) Note supra.

138+, see (1) Note supra.

SEE OR SEARCH CLASS:

55, Gas Separation, subclasses 406+ for a gas separation device including a movable means for assisting in the separation and removal of a separated constituent of a gaseous material flow. See (3) Note in Class 209 subclass 132.

95, Gas Separation: Processes, subclass 270 for a gas separation process involving mechanical deflection to create a swirling motion. See (3) Note in Class 209 subclass 132.

715 Fluidically induced, oppositely directed axial flows (e.g., reverse free-vortexes formed, cyclone, etc.):

This subclass is indented under subclass 143. Methods and apparatus wherein coaxial, counter traveling spiraling streams are generated solely due to the configuration of the flow path to effect separation of entrained or suspended material from the gaseous suspension into overflow and underflow fractions due to resultant centrifugal or centripetal forces.

(1) Note. The preceding subclasses which involve gaseous suspension and deposition should be searched for the separation of entrained or suspended material subjected to a suspending and classifying action of an impinging gaseous current or a combination therewith.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12.1+, for combinations of diverse types of separating operations including gaseous suspension separation classifiable in this subclass or those indented hereunder.

711+, for plural, individual and distinct, interconnected fluidically generated counter-current flow separator devices.

727+, for analogous subject matter for liquid suspension separation. See (1) Note in Class 209 subclass 155.

SEE OR SEARCH CLASS:

55, Gas Separation, appropriate subclasses, for indiscriminate removal of entrained or suspended material; particularly, subclasses 447+ for a gas separation device involving deflection of the gas flow by a static member to effect a separation. See (3) Note in Class 209 subclass 132.

95, Gas Separation: Processes, subclasses 267+ for a gas separation process involving deflection to create a swirling motion. See (3) Note in Class 209 subclass 132.

210, Liquid Purification or Separation, subclasses 512.1+ for a cyclonic device for indiscriminate solids removal from a liquid suspension; and subclasses 787+ for a cyclonic process of liquid-solid separation. See (3) Note in Class 209 subclass 132.

716 Including auxiliary fluid:

This subclass is indented under subclass 715. Methods and apparatus provided with a secondary fluid to facilitate the deposition of a selective fraction.

(1) Note. The secondary fluid may be either gaseous or liquid.

(2) Note. The secondary fluid must be provided to enable or enhance the separation rather than operate as an input carrier fluid or as an output conveyance fluid.

SEE OR SEARCH THIS CLASS, SUBCLASS:

730+, for analogous subject matter for liquid suspension separation. See (1) Note in Class 209, subclass 155.

SEE OR SEARCH CLASS:

96, Gas Separation: Apparatus, subclasses 243+ for gas separation apparatus having gas and liquid contact means and subclasses 372+ for gas separation apparatus including inlet means for diverse gas or solid for gas treatment. See (3) Note in Class 209, subclass 132.

717 Including inlet characteristic (e.g., helix, spiral, volute, etc.):

This subclass is indented under subclass 715. Methods and apparatus provided with a passage formation for directing the gaseous suspension to enter the separation device.

SEE OR SEARCH THIS CLASS, SUBCLASS:

734, for analogous subject matter for liquid suspension separation. See (1) Note in Class 209, subclass 155.

SEE OR SEARCH CLASS:

95, Gas Separation: Processes, subclasses 267+ for a gas separation process involving deflection. See (3) Note in Class 209, subclass 132.

96, Gas Separation: Apparatus, appropriate subclasses, for gas separation apparatus for indiscriminate removal of entrained or suspended material in gaseous suspension. See (3) Note in Class 209, subclass 132.

210, Liquid Purification or Separation, appropriate subclasses, for analogous subject matter for indiscriminate liquid-solid separation. See (3) Note in Class 209, subclass 132.

718 Guide vane:

This subclass is indented under subclass 717. Methods and apparatus provided with a baffle member for directing the gaseous suspension to enter the separation device.

(1) Note. The baffle member usually imparts spiraling motion to the suspension.

SEE OR SEARCH THIS CLASS, SUBCLASS:

734, for analogous subject matter for liquid suspension separation. See (3) Note in Class 209 subclass 132.

SEE OR SEARCH CLASS:

55, Gas Separation, subclass 456 for a gas separator device including a helical vane or baffle for deflecting a gas flow. See (3) Note in Class 209 subclass 132.

210, Liquid Purification or Separation, appropriate subclasses, for analogous subject matter for liquid-solid separation. See (3) Note in Class 209, subclass 132.

719 Tangential:

This subclass is indented under subclass 717. Methods and apparatus provided with a connection tangent to the separation device for directing the gaseous suspension into the separation device.

(1) Note. A nominal recitation of tangential infeed is sufficient for classification in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

734, for analogous subject matter involving liquid suspension. See (1) Note in Class 209 subclass 155.

SEE OR SEARCH CLASS:

55, Gas Separation, subclasses 459.1+ for a gas separation device including a tangential inlet.

95, Gas Separation: Processes, subclass 271 for a gas separation method including tangential gas inflow.

210, Liquid Purification or Separation, subclass 788 for processes and subclasses 512.1+ for apparatus for indiscriminate liquid-solid separation including tangential introduction. See (3) Note in Class 209 subclass 132 and (1) Note in Class 209 subclass 155.

720 Including specific underflow outlet feature (e.g., apex discharge, etc.):

This subclass is indented under subclass 715. Methods and apparatus provided with details of a passage formation for discharge of heavier or larger constituent that is contained in an outer spiraling stream.

(1) Note. A nominal recitation of an underflow outlet without further particulars is not proper for classification in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

733, for analogous subject matter involving liquid suspensions. See (1) Note in Class 209, subclass 155.

SEE OR SEARCH CLASS:

55, Gas Separation, subclass 435 for a gas separation device including wear liners or surface characteristics.

210, Liquid Purification or Separation, appropriate subclasses, for analogous subject matter for liquid-solid separation. See (3) Note in Class 209 subclass 132 and (1) Note in Class 209 subclass 155.

721 Including specific overflow outlet feature (e.g., adjustable vortex finder, shape, size, etc.):

This subclass is indented under subclass 715. Methods and apparatus provided with details of a passage formation for discharge of lighter or smaller constituent that is contained in an inner spiraling stream.

(1) Note. A nominal recitation of an overflow outlet or a vortex finder, per se, is not sufficient for proper classification in this subclass. However, a nominal recitation of an attribute of such overflow outlet or vortex finder is proper for classification in this subclass; e.g., a named “vortex finder” is not proper for classification in this subclass whereas a named “adjustable vortex finder” is properly classified in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

732, for analogous subject matter involving liquid suspension. See (1) Note in Class 209, subclass 155.

SEE OR SEARCH CLASS:

55, Gas Separation, appropriate subclass under subclasses 434+ for a gas separation device including outlet passage formations for purified gas. See (3) Note in Class 209, subclass 132.

95, Gas Separation: Processes, subclasses 267+ for gas separation methods involving deflection. See (3) Note in Class 209 subclass 132

210, Liquid Purification or Separation, subclass 788 for processes and subclasses 512.1+ for apparatus for indiscriminate liquid-solid separation. See (3) Note in Class 209 subclass 132 and (1) Note in Class 209 subclass 155.

722 Fluidically induced unidirectional swirling (e.g., axial or radial or tangential separation, free-vortex, etc.):

This subclass is indented under subclass 143. Methods and apparatus wherein a rotary stream is generated solely due to the configuration of the flow path for movement in a continuous direction along or about the rotational axis from an inlet toward an outlet to promote deposition of entrained or suspended material due to resultant centrifugal or centripetal forces.

(1) Note. The preceding subclasses which involve gaseous suspension and deposition should be searched for the separation of entrained or suspended material subjected to a suspending and classifying action of an impinging gaseous current or a combination therewith.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12.1+, for combinations of diverse types of separating operations including gaseous suspension separation.

710, for plural, individual and distinct, fluidically induced unidirectional swirling separating means or a combination including other rotary stream gaseous suspension separating means.

725, for analogous subject matter involving liquid suspension separation. See (1) Note in Class 209 subclass 155.

SEE OR SEARCH CLASS:

55, Gas Separation, subclasses 434+ for a gas separation device involving deflection of the gas flow to effect a separation. See (3) Note in Class 209 subclass 132 and (1) Note in Class 209 subclass 155.

95, Gas Separation: Processes, subclasses 267+ for a gas separation process involving deflection to create a swirling motion. See (3) Note in Class 209 subclass 132 and (1) Note in Class 209 subclass 155.

210, Liquid Purification or Separation, appropriate subclasses, for analogous subject matter for liquid-solid separation. See (3) Note under Class 209 subclass 132 and (1) Note in Class 209 subclass 155.

723 Plural extractions at diverse locations along flow path:

This subclass is indented under subclass 722. Methods and apparatus wherein multiple fractions are withdrawn during the course of travel at discrete positions.

(1) Note. The multiple fractions merely requires withdrawal at different positions rather than being distinct grades or classes separately collected.

SEE OR SEARCH THIS CLASS, SUBCLASS:

710, for plural, individual and distinct, interconnected fluidically induced unidirectional swirling separating means.

725, for analogous subject matter involving liquid suspension separation. See (1) Note in Class 209 subclass 155.

SEE OR SEARCH CLASS:

55, Gas Separation, subclass 452 for a gas separator device wherein a plurality of egress openings are provided in a whirl chamber. See (3) Note in Class 209 subclass 132.

210, Liquid Purification or Separation, appropriate subclasses, for analogous subject matter for liquid-solid separation. See (3) Note in subclass 132 and (1) Note in Class 209 subclass 155.

724 Including circularly flowing liquid separation agent:

This subclass is indented under subclass 208. Methods and apparatus wherein material, as particulate, pulp, slurry or suspension, is delivered to a liquid assorting medium as either (1) a volumetric mass having a rotary movement

or (2) as a swirling current to promote deposition due to resultant centrifugal or centripetal forces.

(1) Note. The liquid assorting medium is usually water or an aqueous suspension.

(2) Note. The moving liquid assorting medium is essential to the generation of centrifugal or centripetal forces, not merely additive or supplemental to any such forces generated by the material movement itself. Accordingly, the liquid assorting medium and the material must intersect, rather than travel coincidentally.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12.1+, for combinations of diverse types of separating operations including liquid suspension separating operations; particularly subclasses 13, 16, 17, and 18.

133+, for material acted upon by a gaseous assorting medium.

155+, for material acted upon by a linearly directed current of liquid assorting medium.

172+, wherein material is delivered to a static volumetric mass of liquid assorting medium for gravitational separation relative to the specific gravity of the liquid assorting medium (i.e., sink-float separation).

725+, particularly subclasses 730+ for centrifugal or centripetal force grading deposition of a liquid suspension including the use of additive or supplemental liquid which travels coincidentally with the liquid suspension. See (2) Note supra.

725 Rotational hydrodynamic extraction (e.g., unidirectional hydrocyclone, vortical, whirlpool, etc.):

This subclass is indented under subclass 208. Methods and apparatus wherein a liquid suspension of material is caused to circulate about an axis creating sufficient centrifugal or centripetal forces to promote deposition of entrained or suspended material into respective grades or classes of solids.

(1) Note. Gravitational sedimentation from a circularly moving liquid suspension of material is included herein.

(2) Note. See (1) Note in Class 209 subclass 155.

SEE OR SEARCH THIS CLASS, SUBCLASS:

12.1+, for a combination of diverse types of separating operations including a liquid suspension separating operation.

208, for gravitational sedimentation from a linearly flowing liquid suspension of material.

210, wherein a mechanical deflector promotes the circulation of the liquid suspension.

422+, for methods and apparatus wherein one or more materials of liquid suspension of materials settles as a layer or layers. See (2) Note in Class 209 subclass 132.

710+, for analogous subject matter involving gaseous suspension separations including plural, individual and distinct, interconnected separating means. See (1) Note in Class 209 subclass 155.

722, for analogous subject matter involving gaseous suspension separation. See (1) Note in Class 209 subclass 155.

SEE OR SEARCH CLASS:

95, Gas Separation: Processes, subclasses 267+, for analogous methods for indiscriminate removal of solids from gaseous suspension. See (3) Note in Class 209 subclass 132.

96, Gas Separation: Apparatus, appropriate subclasses for analogous subject matter for indiscriminate removal of solids from gaseous suspension. See (3) Note in Class 209, subclass 132.

210, Liquid Purification or Separation, subclasses 787+ for processes and subclasses 512.1+ for apparatus employing cyclonic or centrifugal force effects for indiscriminately removing solids from a liquid suspension. See (3) Note in Class 209 subclass 132.

494, Imperforate Bowl: Centrifugal Separators, appropriate subclasses wherein centrifugal force is generated by rapid rotation of a vessel containing liquid suspension.

726 Including condition responsive control: This subclass is indented under subclass 725. Methods and apparatus wherein an operational parameter or status is sensed and a reactionary procedure is executed.

(1) Note. The sensing and reactionary procedure features may be performed by a unitary device (e.g., check valve, etc.) or by distinct interconnected devices (e.g., pressure detector actuating a valve controller, etc.).

SEE OR SEARCH THIS CLASS, SUBCLASS:

1, for a specifically provided, readily distinguishable body undergoing the separating operation used to indicate separating operation efficiency (e.g., coded tracers, tags, etc.).

12.1+, for combinations of diverse types of separating operations including liquid suspension separating, particularly subclasses 44.1+.

548, for halting operation of a separating operation as a result of sensing an abnormal or improper operational parameter or status. See (7) note of the class definition and subclass 509 definition including the notes appended thereto for the statement of classification control.

549, for actuation of a signal lamp or alarm in response to sensing an improper operational parameter or status. See (7) note of the class definition and subclass 509 definition including the notes appended thereto for the statement of classification control.

SEE OR SEARCH CLASS:

95, Gas Separation: Processes, subclasses 1+ for analogous methods for indiscriminate removal of solids from gaseous suspension including condition responsive control. See (3) Note in Class 209 subclass 132.

96, Gas Separation: Apparatus, subclasses 397+ for gas separation apparatus having automatic control means for gas or nongaseous constituent discharge. See (3) Note in Class 209, subclass 132.

210, Liquid Purification or Separation, subclasses 739+ for processes of indiscriminate removal of solids from a liquid suspension including condition responsive control. See (3) Note in Class 209 subclass 132.

727 Including oppositely directed axial flows around evacuated core (e.g., hydrocyclone having reverse free-vortexes formed, etc.): This subclass is indented under subclass 725. Methods and apparatus wherein the liquid suspension of material circulation creates coaxial, counter traveling spiral currents about a reduced pressure or vacuum central region.

(1) Note. A named hydrocyclone exhibiting the required coaxial, counter traveling spiral currents is appropriate for classification in this subclass.

(2) Note. A named hydrocyclone producing only a single vortex is classified in subclass 725.

SEE OR SEARCH THIS CLASS, SUBCLASS:

715, for analogous subject matter involving a gaseous suspension of material. See (1) Note in Class 209 subclass 155.

SEE OR SEARCH CLASS:

55, Gas Separation, subclasses 434+ for apparatus for analogous subject matter for the indiscriminate removal of solids from a gaseous suspension. See (3) Note in Class 209 subclass 132.

95, Gas Separation: Processes, appropriate subclasses, for analogous methods for indiscriminate removal of solids from gaseous suspension. See (3) Note in Class 209 subclass 132.

210, Liquid Purification or Separation, subclasses 787+ for processes and subclasses 512.1+ for apparatus employing cyclonic or centrifugal

force effects for indiscriminately removing solids from a liquid suspension. See (3) Note in Class 209 subclass 132.

728 Plural individual interconnected, oppositely directed axial flow producing separation phases (e.g., system arrangements, multiple hydrocyclones, etc.):

This subclass is indented under subclass 727. Methods and apparatus employing multiple, discrete separating means associated in an operative configuration wherein each separating means produces coaxial, counter traveling spiral currents about a reduced pressure or vacuum central region.

SEE OR SEARCH THIS CLASS, SUBCLASS:

710, for analogous subject matter involving gaseous suspension separation. See (1) Note in Class 209 subclass 155.

727, for combinations of hydrodynamic extraction separation and a hydrocyclone separator.

SEE OR SEARCH CLASS:

55, Gas Separation, subclasses 346+ for plural parallely connected gas separators for indiscriminate solids removal from a gaseous suspension. See (3) Note Class 209 subclass 132.

95, Gas Separation: Processes, appropriate subclasses, for analogous methods for indiscriminate removal of solids from gaseous suspension. See (3) Note in Class 209 subclass 132.

210, Liquid Purification or Separation, subclasses 787+ for processes and subclasses 512.1+ for apparatus employing cyclonic or centrifugal force effects for indiscriminately removing solids from a liquid suspension. See (3) Note in Class 209 subclass 132.

729 Serially connected:

This subclass is indented under subclass 728. Methods and apparatus wherein the total liquid suspension is treated sequentially through the multiple separating means.

SEE OR SEARCH THIS CLASS, SUBCLASS:

712, for an analogous configuration employed for separating a gaseous suspension. See (1) Note in Class 209 subclass 155.

SEE OR SEARCH CLASS:

55, Gas Separation, appropriate subclasses for analogous subject matter involving indiscriminate removal of entrained or suspended material from a gaseous suspension; particularly, subclasses 338+ for a continuous gas flow path with a recirculation of the separated gas to either (1) the inlet of the system or (2) to an inlet of one of the discrete separator devices in the serial arrangement; and subclass 345 for plural sequentially connected gas separators each employing a rotary current. See (3) Note in Class 209 subclass 132.

210, Liquid Purification or Separation, subclasses 787+ for processes and subclass 512.2 for apparatus employing plural cyclonic or centrifugal force effects for indiscriminately removing solids from a liquid suspension. See (3) Note Class 209 in subclass 132.

730 Including auxiliary fluid (e.g., air or gas core, dilution water, elutriation liquid, etc.):

This subclass is indented under subclass 727. Methods and apparatus provided with a secondary fluid to facilitate the deposition of a select fraction of the liquid suspension.

(1) Note. The secondary fluid may be either gaseous or liquid.

(2) Note. The secondary fluid must be provided to enable or enhance the hydrodynamic extraction rather than merely operate as an input carrier fluid or as an output conveyance fluid.

SEE OR SEARCH THIS CLASS, SUBCLASS:

716, for analogous subject matter for gaseous suspension separation. See (1) Note in Class 209 subclass 155.

724, for grading deposition of a liquid suspension employing a circularly flowing liquid separation agent. See (2) note thereunder.

SEE OR SEARCH CLASS:

96, Gas Separation: Apparatus, subclasses 243+ for gas separation apparatus having gas and liquid contact means and subclasses 372+ for gas separation apparatus including inlet means for diverse gas or solid for gas treatment.

210, Liquid Purification or Separation, subclasses 787+ for process and subclasses 512.1+ for apparatus employing cyclonic or centrifugal force effects for indiscriminately removing solids from a liquid suspension. See (3) Note in Class 209 subclass 132.

731 Adjacent or subsequent to underflow discharge (e.g., dilution water, elutriation liquid, sedimentation chamber, sump, etc.):

This subclass is indented under subclass 730. Methods and apparatus wherein the secondary fluid acts upon heavier or larger material carried in an outer spiraling current.

SEE OR SEARCH THIS CLASS, SUBCLASS:

733, for particular underflow discharge features without the introduction of secondary fluid. See (2) Note therein.

732 Including specific overflow discharge feature (e.g., adjustable vortex finder, shape, size, etc.):

This subclass is indented under subclass 727. Methods and apparatus having details of the passage formation for egress of lighter or smaller material carried in an inner spiraling current.

(1) Note. A mere recitation of an overflow discharge without further attribute is not proper for classification in this subclass. However, the mere naming of a further attribute is sufficient to attain classification in this subclass; e.g., a named "vortex finder" is not proper for classification in this subclass whereas a named "adjustable vortex finder" is properly classified in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

721, for analogous subject matter involving gaseous suspension separation. See (1) Note in Class 209 subclass 155.

SEE OR SEARCH CLASS:

55, Gas Separation, appropriate subclasses, for analogous subject matter for indiscriminate removal of solids from a gaseous suspension. See (3) Note in Class 209 subclass 132.

210, Liquid Purification or Separation, appropriate subclasses, for indiscriminate removal of solids from a liquid suspension. See (3) Note in Class 209 subclass 132.

733 Including specific underflow discharge feature (e.g., apex construction, secondary vortex chamber, etc.):

This subclass is indented under subclass 727. Methods and apparatus having details of the passage formation for the egress of heavier or larger material carried in an outer spiraling current.

(1) Note. A mere recitation of an underflow discharge without any further attribute is not proper for classification in this subclass.

(2) Note. The inclusion of secondary fluid acting upon the underflow discharge is not proper for classification in this subclass but rather belongs in subclass 731.

SEE OR SEARCH THIS CLASS, SUBCLASS:

731, see (2) Note above.

SEE OR SEARCH CLASS:

55, Gas Separation, appropriate subclasses, for analogous subject matter for indiscriminate removal of solids from a gaseous suspension. See (3) Note in Class 209 subclass 132.

210, Liquid Purification or Separation, appropriate subclasses, for indiscriminate removal of solids from a liquid suspension. See (3) Note in Class 209 subclass 132.

734 Including specific inlet feature (e.g., shape, size, etc.):
This subclass is indented under subclass 727. Methods and apparatus having details of a passage formation for delivering the liquid suspension.

(1) Note. The mere recitation of a particular infeed feature, such as a "tangential", without further attribute is not proper for classification in this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

717+, for analogous subject matter involving gaseous suspension separation. See (1) Note in Class 209 subclass 155.

724, for passage formation details when delivering material, as particulate, pulp, slurry or suspension, to a circularly flowing liquid separation agent.

725, for passage formation details when feeding the liquid suspension in a manner to create a swirling current without the creation of coaxial, counter traveling spiral currents.

730+, for secondary fluid passage formation details.

CROSS-REFERENCE ART COLLECTIONS

900 SORTING FLAT-TYPE MAIL:
Methods and apparatus for sorting flat mail such as letter envelopes.

901 FROTH FLOTATION; COPPER:
Froth flotation methods of separating copper from an ore.

902 FROTH FLOTATION; PHOSPHATE:
Froth flotation methods of separating phosphate from an ore.

903 FEEDER CONVEYOR HAVING OPPOSED GRIPPERS:
Feed conveyors which hold articles by clamping them between opposed gripping elements thereon.

904 FEEDER CONVEYOR HOLDING ITEM BY MAGNETIC ATTRACTION:
Feeder conveyors which hold articles by magnetic attraction.

905 FEEDER CONVEYOR HOLDING ITEM BY SUCTION:
Feed conveyors which hold articles by suction.

906 PNEUMATIC OR LIQUID STREAM FEEDING ITEM:
Means for feeding an item by use of gaseous or liquid streams.

907 MAGNETIC FEEDER:
Means employing magnetic force to feed an article.

908 ITEM FED BY FREE FALL:
Feeding of articles by permitting them to drop freely through space.

909 ITEM HOLDING FEED MAGAZINE INSERTABLE IN SORTING APPARATUS:
Sorting apparatus with a magazine removably attachable thereto for feeding articles.

910 FEED HOPPER:
Apparatus having a hopper for feeding articles.

911 FEED MEANS SUPPORTING OR GUIDING ITEM MOVING UNDER INFLUENCE OF GRAVITY:
Chutes and other gravity-type conveyors for feeding articles under the force of gravity.

912 ENDLESS FEED CONVEYOR WITH MEANS FOR HOLDING EACH ITEM INDIVIDUALLY:
Loop-type feed conveyors on which articles are held in separate relation.

913 SCREW FEED CONVEYOR:
Feed conveyors of helical form.

914 DIVERSE SEQUENTIAL FEEDING STEPS:
Apparatus in which different types of article feeding operations are employed in succession.

915 CENTRIFUGAL FEEDER:
Means employing centrifugal force to feed an article.

916 RECIPROCATING PUSHER FEEDING ARTICLE:
Feed conveyors which reciprocate and push the conveyed articles along separate support means.

917 ENDLESS BELT PUSHER FEEDING ITEM:
Feed conveyors in the form of endless belts which push the conveyed articles, either by direct contact of the belts with the articles or through separate pushing elements attached thereto.

918 SWINGING OR ROTATING PUSHER FEEDING ITEM:
Feed conveyors which pivot or rotate and push the conveyed articles along separate support means.

919 ROTARY FEED CONVEYOR:
Feed conveyors in the form of rotatable supports such as disks.

920 VIBRATORY FEED CONVEYOR:
Feed conveyors which vibrate.

921 RECIPROCATING OR OSCILLATING FEED CONVEYOR:
Feed conveyors which move back and forth, either by reciprocating or swinging.

922 MISCELLANEOUS FEED CONVEYORS:
Feed conveyors not includible in other cross-reference collections of this class.

923 FEED TROUGH INCLUDING AT LEAST ONE ENDLESS CONVEYOR:
Feed means including a channel in which at least one endless conveyor is operated.

924 GRAVITY CONVEYOR MOVING ITEM FROM SEPARATING STATION:
Apparatus in which a gravity conveyor moves articles away from a point where they have been separated from other articles.

925 DRIVEN OR FLUID CONVEYOR MOVING ITEM FROM SEPARATING STATION:
Apparatus in which a driven conveyor or fluid stream moves articles away from a point where they have been separated from other articles.

926 SILVERWARE SORTER:
Apparatus for sorting knives, forks, and spoons used in dining.

927 COP SORTER:
Apparatus for sorting cops used in textile manufacture.

SEE OR SEARCH CLASS:
470, Threaded, Headed Fastener, or Washer Making: Process and Apparatus, subclasses 164+ for the combination of sorting means with machines for feeding screw, nut, nail blanks or stock to machines for making articles of Class 470 within the sorting involves separating finished article from imperfect work or chips.

928 CONTAINER CLOSURE SORTER:
Apparatus for sorting closures which seal containers, e.g., bottle caps.

929 FASTENER SORTER:
Apparatus for sorting fasteners such as nails, pins, screws, etc.

930 MUNICIPAL SOLID WASTE SORTING:
Apparatus for sorting trash, e.g., separating metal or glass containers from waste paper.

931 MATERIALS OF CONSTRUCTION:
Sorting apparatus having a component formed of a particular material to enhance its operational efficiency.

932 FLUID APPLIED TO ITEMS:
Apparatus in which a fluid, such as water or air, is contacted with items being sorted.

933 ACCUMULATOR RECEIVING SEPARATED ITEMS:
Sorting apparatus having means for accumulating in a particular place items separated from other items.

934 MOVING ITEMS TO SORTING MEANS IN SPACED RELATION LENGTHWISE OF FEED PATH:
Means for feeding items to a sorting apparatus so that they arrive at a sorting means one after another with a space therebetween along the feed path.

935 AMBULANT:
Sorting apparatus having wheels or other means which enables it to be moved readily to different places.

936 PLURAL ITEMS TESTED AS GROUP:
Apparatus in which a plurality of items are simultaneous tested for some characteristic used as a basis for sorting.

937 LAUNDRY SORTING:
Apparatus for sorting laundry.

938 ILLUMINATING MEANS FACILITATING VISUAL INSPECTION:
Means for directing light onto items so that they can be more readily inspected for sorting.

939 VIDEO SCANNING:
Sorting apparatus in which a television system transmits a view of items to a person such as an operator.

940 NONCONDITION RESPONSIVE SORTING BY CONTOUR:
Apparatus which sorts items into different groups in accordance with the shape thereof, without utilizing a condition responsive type sensor which controls a separating means.

941 ITEM CARRYING BRIDGE RAISABLE TO EXPOSE DISCHARGE OPENING:
Item separating means comprising a bridge movable between a first position wherein items travel thereover and a second raised position wherein a discharge opening is uncovered to receive items.

942 OPERATOR SELECTS DESTINATION OF ITEM:
Sorting apparatus in which an item is directed to different destinations under the control of an operator.

END