

**CLASS 19, TEXTILES: FIBER PREPARATION****SECTION I - CLASS DEFINITION**

Means for mechanically isolating and for manipulating fibers so as to place them in condition for the purpose for which they are to be utilized. Includes the bringing together of the fibers into laps, slivers, and the like, but not twisting or interlacing into permanent form.

- (1) Note. Patents directed to the feeding of material to a named fiber treating machine, combined with fiber treatment, are classified in the appropriate subclasses in this class.

**SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS**

Mere cutting, i.e., mechanical shearing or abrading of a filament or bundle of filaments unaccompanied by any textile handling or treating operation, comprises subject matter of Class 83, Cutting or Class 451, Abrading. For further statement of the line between Classes 19 and 83 see the reference to Class 19 in "Relationship to other classes including, per se, cutting, severing, or incising" in section III of the class definition of Class 83.

**SECTION III - REFERENCES TO OTHER CLASSES****SEE OR SEARCH CLASS:**

- 162, Paper Making and Fiber Liberation, appropriate subclasses for methods and apparatus for fiber liberation involving some chemical treatment whether or not combined with mechanical treatment. See the definition of Class 162 for the scope of processes and apparatus provided therein.
- 193, Conveyors, Chutes, Skids, Guides, and Ways, appropriate subclasses for a chute for guiding material.
- 198, Conveyors: Power-Driven. for a power-driven conveyor.
- 209, Classifying Separating, and Assorting Solids, appropriate subclasses for a beater which enhances a cleaning or separating operation, i.e., removal of dirt from fibers.
- 222, Dispensing, appropriate subclass for means to feed material to a machine.

- 406, Conveyors: Fluid Current, appropriate subclasses, particularly subclasses 134+ for a beater which enhances a pneumatic conveying operation.

**SUBCLASSES**

- .2 This subclass is indented under the class definition. Method or apparatus including the step of or means for causing cessation of operation of a machine of this class or a part thereof in response to some condition occurring in the material being fed, or through a defect in the machine or its operation.

**SEE OR SEARCH CLASS:**

- 200, Electricity: Circuit Makers and Breakers, subclasses 61.13+ for an electrical switch which is controlled by a thread or strand: subclass 61.14, wherein the switch is controlled by a knot or change in the diameter of the thread or strand; and subclass 61.18, wherein the switch is controlled by the slack or run out or failure of the strand to travel along its intended path, in order to stop the machine.

- .21 This subclass is indented under subclass .2. Method or apparatus wherein the cessation of operation is caused by light responsive means which energizes an electric circuit upon occurrence of an undesired condition.

**SEE OR SEARCH CLASS:**

- 192, Clutches and Power-Stop Control, subclass 127 or 129+ for photo safety stop mechanisms.
- 200, Electricity: Circuit Makers and Breakers, subclasses 61.2+ for photo-responsive detection operating a switch means.
- 356, Optics: Measuring and Testing, subclass 638 for the photoelectric mensuration of a moving object by means of changes in visible light caused by the object; subclasses 429 through 431 for the photoelectric monitoring of webs or threads for light reflection or flaws, and subclass 242.1 for visual thread counters.

- .22** This subclass is indented under subclass .2. Method or apparatus including a step of or means for giving an audible or visible response to the cessation of operation.
- SEE OR SEARCH CLASS:  
 116, Signals and Indicators, subclasses 67+ for an alarm or indicator; subclasses 137+ for a horn; subclasses 147+ for a siren and subclasses 148+ for a bell.  
 340, Communications: Electrical, subclasses 500+ for an electric alarm.
- .23** This subclass is indented under subclass .2. Method or apparatus wherein means are employed to detect variations in the weight or size of a sliver and to stop the mechanism upon substantial variation of the weight per unit volume of the moving sliver.
- .24** This subclass is indented under subclass .23. Method or apparatus wherein a roll means detects the variation in density of the sliver passing thereunder and stops the machine in response to said variation.
- .25** This subclass is indented under subclass .2. Method or apparatus wherein the condition detecting means comprises a feeler element resting upon the sliver which detects any parting of the sliver mass or failure of the sliver supply.
- SEE OR SEARCH CLASS:  
 200, Electricity: Circuit Makers and Breakers, subclass 61.18 for a strand slack, run out or failure actuated control switch.  
 226, Advancing Material of Indeterminate Length, subclasses 10+ for means to stop a machine in response to a defect in material being fed.
- .26** This subclass is indented under subclass .25. Method or apparatus wherein the sliver soils or convolutes about a roll causing the package of roll and strand to thicken about its circumference thus causing the cessation of operation.
- SEE OR SEARCH CLASS:  
 200, Electricity: Circuit Makers and Breakers, subclass 61.17 and 61.18 for running length web or strand breakage, misalignment or decrease in spool, reel or idler rotation which cause a circuit breaking.
- .27** This subclass is indented under the class definition. Method or apparatus including, in addition to a treating step or means, a step of, or means for applying heat, in order to remove excess moisture from the fibers, to render them adaptable for subsequent treatment.
- SEE OR SEARCH CLASS:  
 28, Textiles: Manufacturing, subclasses 247+, especially subclasses 249, 261 and 265+ for thread texturing combined with heating.  
 34, Drying and Gas or Vapor Contact With Solids, subclasses 148+ for drying of a sheet, web, or strand.
- .3** Processes and apparatus for severing filaments of indefinite length, before such filaments are incorporated into a fabric, to produce fibers approximating in length the staple fibers of natural origin.
- (1) Note. Although this and the indented subclasses do not include inventions relating to the severing of continuous filaments after they have been incorporated into a fabric, it does include those directed to the breaking of filaments united in a yarn or other twisted bundle.
- (2) Note. Mere cutting, i.e., mechanical shearing or abrading of a filament or bundle of filaments unaccompanied by any textile handling or treating operation is not within the scope of this or the indented subclasses. See Lines With Other Classes in the class definition of this class.
- (3) Note. For classification in this or the indented subclasses, the severing operation must be claimed significantly. That is, some detail of the severing apparatus or process must be set forth in a patent claim, so that the claim expresses a more

specific embodiment of this subject matter than that imparted by the mere recitation of such terms as “stapilizing”, “breaking” or “severing”.

SEE OR SEARCH CLASS:

- 30, Cutlery, appropriate subclasses for cutter elements, per se, and for hand cutting implements(e.g., razors).
- 57, Textiles: Spinning, Twisting, and Twining, subclasses 252+ for staplized yarns and for yarns fabricated at least partly from stapled fibers.
- 65, Glass Manufacturing, subclasses 454+ and 470+ for processes of forming glass or slag fibers or filaments and especially subclasses 476+ for glass or slag fiber attenuation; subclasses 484+ for fiber forming apparatus, especially subclasses 535+ for attenuation and severing.
- 99, Foods and Beverages: Apparatus, subclasses 635+ for cutting or removing the end section from a fruit or vegetable.
- 131, Tobacco, subclass 46, 63, 64.1+, 65, 83.1, and 91 for processes and apparatus directed to cigar and cigarette end trimming or cutting in combination with other cigar or cigarette making operations, and subclasses 117 and 118 for methods of and means for trimming or cutting associated with the formation of a compressed tobacco charge.
- 164, Metal Founding, appropriate subclasses for apparatus and processes for cutting continuous filamentary material by a mechanical shearing operation.
- 241, Solid Material Comminution or Disintegration, appropriate subclasses for methods and means for material comminution including animal and vegetable.
- 425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclasses 6+ for means for making particulate material (e.g., fibers, etc.) directly from liquid or molten material, subclass 66 for filament forming and stretching means, subclasses 67+ for filament forming means including an immersed shaping orifice discharg-

ing directly into a liquid bath or shower means, subclasses 72+ a filament spinner combined into a downstream gaseous treating means, and subclasses 461+ for a filament spinning nozzle, per se.

- 428, Stock Material or Miscellaneous Articles, subclasses 357+ for a structurally defined or coated fiber or filament and especially subclasses 359+ for staple length fiber, or a mass thereof.
- 451, Abrading, for apparatus for abrading continuous filamentary material, noting particularly subclasses 182+, 183, and 319+; and subclasses 28+ for a method of abrading continuous filamentary material.

**.35**

This subclass is indented under subclass .3. Processes and apparatus according to which the severing is produced by the application of oppositely directed forces to the continuous filaments substantially longitudinally thereof.

- (1) Note. This type of staplizing is often referred to by those working in the art as “stretch breaking”, although no substantial stretching of the filamentary material need be accomplished by the employment of the inventions herein classified. (see patent number 2,096, 795 to Dreyfus in subclass .37 indented hereunder).
- (2) Note. The typical tension breaking apparatus comprises plural sets of drafting rolls, the peripheral speed of the delivery rolls being considerably greater than that of the feed rolls, causing the drafted filaments to be stressed beyond the breaking point, the length of the stapled fibers produced being determined (at least in part) by the spacing or ratch of the roll pairs. Classification in this and the indented subclasses, however, does not require that the breaking forces be so supplied.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 236+, for textile drafting apparatus and processes of general application.

## SEE OR SEARCH CLASS:

- 225, Severing by Tearing or Breaking, subclasses 1+ for processes and subclasses 93+ for apparatus for breaking or tearing sheet, web, or rodlike material.
- 254, Implements or Apparatus for Applying Pushing or Pulling force, appropriate subclasses for pulling implements of general application.

**.37** This subclass is indented under subclass .35. Processes and apparatus characterized by a weakening of the continuous filaments before, or while, being subjected to the breaking forces.

- (1) Note. An example of weakening which takes place while the weakened filament is being subjected to the breaking forces is that produced by means located within the ratch of breaking roll pairs. (See patent number 2,077,320 to Hale, here classified).
- (2) Note. Such weakening is resorted to mainly for the purpose of minimizing the requisite magnitude of the breaking forces and the consequent loss of fiber extensibility, and for the purpose of predetermining the points along their length at which certain filaments will be broken.

## SEE OR SEARCH CLASS:

- 225, Severing by Tearing or Breaking, subclass 2 for processes and subclass 96 for apparatus for weakening a workpiece on an intended line of severance, and then breaking or tearing along such weakened line.

**.39** This subclass is indented under subclass .35. Processes and apparatus in which the filamentary material is subjected to tension breaking operation and the product thereof is subjected to a second such operation.

**.41** This subclass is indented under subclass .35. Processes and apparatus and in which the continuous filaments are deflected from a straight line or planar path in the zone of application of the opposed breaking forces.

- (1) Note. The deflection is usually provided to ensure an effective grasp of the filaments by the breaking means.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- .37, for filament deflecting means which function to weaken the filaments.

**.43** This subclass is indented under subclass .35. Processes and apparatus in which either (1) a variegated starting material is submitted to the stapilizing operation or (2) the operation is so carried out that the stapilizing effect varies either laterally (i.e., from filament to filament of the substantially parallel filaments making up the stapilized bundle) or longitudinally (i.e., along the length of the stapilized fibrous product in the direction of the opposed breaking forces).

- (1) Note. The mere random staggering of fiber ends inherently produced by the severing operation, and which is necessary to the production or preservation of a continuous top or yarn, is not sufficient variation or differential effect to meet the above definition of this subclass.
- (2) Note. Variations in starting material may be based on any of the characteristics of textile strands, such as color, texture, chemical composition, denier or count, breaking strength, etc.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

- 144+, and 145+, for fiber blending methods and means, per se.

**.46** This subclass is indented under subclass .3. Processes and apparatus which include some treatment, ancillary to the stapilizing, of the continuous filaments before they enter the stapilizing zone.

- (1) Note. The term "treatment" as used herein does not embrace the formation of the filaments of their treatment or working in the uncoagulated state, for which see Class 18, subclasses 8 and 54.

- (2) Note. For a more detailed statement of the line with the textile treating classes see (3) Note to subclass .3 and see the reference to each of Classes 8 and 68 under "SEARCH CLASS" in the definition of subclass .56.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- .37, for prior treatment apparatus and processes effective to weaken filaments about to be subjected to stretch breaking.

SEE OR SEARCH CLASS:

- 8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, appropriate subclasses, for particular processes for chemically treating textiles.  
68, Textiles: Fluid Treating Apparatus, appropriate subclasses for textile fluid treating apparatus.

- .48** This subclass is indented under subclass .46. Processes and apparatus in which the prior treatment comprises aligning the continuous filaments, separating or spacing them from one another, or both.

SEE OR SEARCH CLASS:

- 28, Textiles: Manufacturing, subclasses 198+ for means for separating adjacent strands of a warp sheet, one up and one down.  
139, Textiles: Weaving, subclass 98 for devices for separating adjacent warp strands while they are being fed in a loom.  
226, Advancing Material of Indeterminate Length, appropriate subclasses for methods of, and apparatus for, feeding material without utilizing the leading or trailing ends to effect movement of the material.

- .51** This subclass is indented under subclass .3. Processes and apparatus in which the severing operation is combined with a subsequent overlapping of the stapled fibers to form a sliver, top or other longitudinally cohesive, substantially continuous product.

- (1) Note. Mere rearranging, as by drafting, of the fibers of an already cohesive, substantially continuous stapled fiber product is not such overlapping as will of itself result in placement of an invention in this subclass. There must be a placing of severed fiber ends into overlapping relationship to form a cohesive product from individual fibers, bundles or web sections. (The mere fact, however, that a patent claims or discloses a drafting operation in addition to such overlapping will not keep the patent from this subclass).

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 236+, for fibrous product drafting apparatus and processes of general application.

- .56** This subclass is indented under subclass .3. Processes and apparatus constituting combinations of staplizing means and methods with those directed to other operations.

- (1) Note. All preceding subclasses must be investigated for particular combinations as shown by the preceding subclass titles.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 66, 72, 80+, for processes and means for fiber bundle opening, per se.  
144, 145 and 146, for fiber mixing apparatus and methods, per se.

SEE OR SEARCH CLASS:

- 8, Bleaching and Dyeing: Fluid Treatment and Chemical Modification of Textiles Fibers, appropriate subclasses for the combination, with a staplizing method not claimed significantly, of a significantly claimed method of bleaching, dyeing, or chemically treating either the starting material or the product of such staplizing method. See (3) Note to the definition of subclass .3 above.  
28, Textiles: Manufacturing, subclasses 217+ for thread finishing apparatus and processes. Where a thread-like member is finished, e.g., texturized,

- preparatory to its being staplized and the staplizing is the last operation performed on the thread-like member, then the patent is placed in this class (19). Where the staplizing is just one of many operations used in a thread finishing or fabric production operation, then the patent is placed in Class 28 unless it is provided for elsewhere.
- 68, Textiles: Fluid Treating Apparatus, appropriate subclasses for the combination of significantly claimed textile fluid treating apparatus with staplizing apparatus which is not claimed significantly. See (3) Note to the definition of subclass .3 above.
- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclass 62.4 for combined staplizing and adhering of stapled fibers to form webs by the application of binding material.
- 241, Solid Material Comminution of Disintegration, subclass 4 for processes, and subclasses 31+ for apparatus for opening spicules or bundles of parallel fibers (such as asbestos) by a comminuting operation, e.g., by flexing the bundle under pressure.
- 264, Plastic and Nonmetallic Article Shaping or Treating: Processes, for processes for the molding and shaping of plastic materials, particularly subclass 6 and 109+ pertaining to the formation, deposition and uniting of particulate material.
- 425, Plastic Article or Earthenware Shaping or Treating: Apparatus appropriate subclasses. For the combination of staplizing means and apparatus for working plastic filaments; also see (3) Note. and the search note to Class 425 in subclass .3 above.
- .58** This subclass is indented under subclass .3. Processes and apparatus in which the filamentary starting material moves in an axial direction and is both laterally and longitudinally cohesive and, as a whole, remains so during the staplizing operation.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- .46+, for inventions relating to the staplizing of continuously flowing filamentary material, characterized by the treatment of the material prior to or preparatory to severing.
- .56, for processes and apparatus for staplizing continuously running material, the performance or use of which results in some additional treatment of the material subsequent to or during the staplizing.
- 35+, for staplizing apparatus and methods effective to break continuously running filamentary material by application of opposed longitudinal forces.
- SEE OR SEARCH CLASS:
- 28, Textiles: Manufacturing, subclasses 172+ for methods and apparatus for manipulating sheets of parallel strands, the sheet generally having a thickness of one strand.
- 226, Advancing Material of Indeterminate Length, appropriate subclasses for methods of, and apparatus for, feeding material without utilizing the leading or trailing ends to effect movement of the material; where a group of strands constitutes a discrete sheet or web in and of itself, the mere feeding thereof is proper subject matter for Class 226, the feeding of a multiplicity of such groups being considered a plural web feeding.
- .6** This subclass is indented under subclass .58. Processes and apparatus in which the severing is accomplished by mechanical shearing or fraying means.
- SEE OR SEARCH CLASS:
- 83, Cutting, appropriate subclasses for apparatus and processes for cutting substantially continuous filaments, either individually or in sheets or bundles, into staple fiber lengths involving no additional operation other than feeding the filamentary material or handling the stapled fibers for mere collection and/or transportation.

- .62** This subclass is indented under subclass .6. Processes and apparatus in which a bundle or web of filaments travelling in a plane parallel to the axis of a rotating cutter comes into contact with the cutter at a translational speed differing from the peripheral speed of such cutter.
- (1) Note. The cutter may be provided with a helical cutting blade or blades or some other form of blade which is inclined to the cutter axis.
- .64** This subclass is indented under subclass .6. Inventions in which the staplizing is accomplished by drawing the continuous filamentary material past a sharp edged cutting member so that the material maintains rubbing contact with such member.
- (1) Note. The cutting member may comprise an abrasive or other roughened surface.
- (2) Note. The filamentary material is often given a component of motion effective to vary more or less continuously, the transverse portion of the surface which is presented to the cutter.
- SEE OR SEARCH CLASS:  
28, Textiles: Manufacturing, subclasses 219+ and 259+, means for finishing strand material by rubbing the surface thereof.  
451, Abrading, particularly subclasses 182+, 183, and 319+ for apparatus operative merely to abrade running filamentary material without effecting any typically textile result than the filament or fiber abrading itself and without utilizing means peculiar to the textile arts; and subclasses 28+ for a corresponding process of abrading.
- 1** The freeing of the fibers by mechanical means from the parts with which they have been produced in nature.
- SEE OR SEARCH CLASS:  
131, Tobacco, subclasses for 311 and 312 for tobacco leaf disintegrating.
- 2** The fibers being of animal origin.
- 3** Removing silk from cocoons or similar operations.
- SEE OR SEARCH CLASS:  
8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, for degumming and desizing silk fibers, subclass 138.  
435, Chemistry: Molecular Biology and Microbiology, if using enzymatic action.
- 4** The separating of the feathers into fiber-like elements, usually preliminary to making "featherbone".
- SEE OR SEARCH CLASS:  
57, Textiles: Spinning, Twisting, and Twining, particularly subclass 4 for devices for covering or wrapping quillstock.  
223, Apparel Apparatus, subclass 47 for devices for preparing feathers for plumes, dusters, etc., for curling feathers, and otherwise preparing feather ornaments not otherwise provided for.
- 5** The liberation of stalk and leaf fibers of plants.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
115+, for apparatus usually known as "hackles" when not designed to operate on pulpy plants and when not combined with other means especially adapted for decortication.
- SEE OR SEARCH CLASS:  
162, Paper Making and Fiber Liberation, subclass 20 for processes of decortication of mechanical preparation of textile fibers combined with a chemical fiber liberation, subclasses 21+ to 28 for other combinations of mechanical defibration and chemical fiber liberation processes, and subclasses 234+ for digesters combined with mechanical defiberizing means.  
241, Solid Material Comminution or Disintegration, for fiber liberation involving comminution and see section 5 of

- the main class definition of that class (241) for the line.
- 6** Including means for stripping the seeds or leaves from the plant.
- SEE OR SEARCH CLASS:  
460, Crop Threshing or Separating, sub-class 24 for the removal of the seeds, per se.
- 7** There being some liquid employed in the operation.
- 8** Removing material of a soft moist nature. Usually for treatment of endogens, such as Manila hemp, agaves, New Zealand flax, etc.
- 9** Air being projected into the material to facilitate the operation.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
58+, where a blast or suction is used to clear a saw cylinder.  
72+, for the conveying of the material by pneumatic means.
- 10** There being means peculiarly adapted to act on each stalk to split it open. Usually for removing the bast of exogens.
- 11** The material is grasped by a means which moves with it through the decorticator.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
117, for similar feeds.
- 12** The material being carried substantially at right angles to the longitudinal axis of the fibers.
- 13** The material being suspended in a vertical plane passing through the zone of action of the decorticating element.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
125, for similar feeds.
- 14** For removing material of a soft moist nature.
- 15** For removing material of a soft moist nature.
- 16** There being only one rotating decorticator employed. Sometimes the material is returned for more than one treatment.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
26, and 27, for other single rotor decorticators.
- 17** For removing material of a soft moist nature.
- 18** At least one of the decorticators being rotary.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
24+, for other rotary decorticators.
- 19** Decorticators of the endless-belt type.
- 20** For removing material of a soft moist nature.
- 21** There being a plurality of different decorticators, one of which breaks the material to be removed by a vibratory motion.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
22, and 23, for reciprocating brakes, per se.
- 22** Limited to means for breaking the material to be removed by a vibratory motion.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
21, for other reciprocating brakes.
- 23** There being means for moving the material through the region of operation in one direction.
- 24** The decorticator being a rotating body.
- 25** The decorticator being given a to-and-fro movement in an axial direction.
- 26** The decorticating elements being mounted in only one rotary member.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
16, for other single rotary decorticators.



- 27** For removing material of a soft moist nature. SEE OR SEARCH THIS CLASS, SUB-CLASS:
- 28** For removing material of a soft moist nature. 56, for similar devices forming a part of a saw gin, and 85+ for machines which are not especially modified for this purpose, but which are capable of beating the bolly cotton until the pod is eliminated.
- 29** Having at least one rotor for crimping and breaking the material to be removed and another one with comb teeth to enter between the fibers and pull off the pieces.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
30, 31, and 32, for other brakes, and 128, for other combs.
- 30** Having at least one rotor for crimping and breaking the material to be removed and another rapidly-moving one for knocking off the broken material.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
29, 31, and 32, for other brakes, and 33, for other beaters.
- 31** The rotors are adapted to crimp the material to be removed, and thereby break it.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
29, and 30, for other brakes.
- 32** The direction of the rotation being first one way and then the other.
- 33** There being a plurality of rapidly-moving rotors for knocking the material off the fibers.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
30, for other beaters.
- 34** For removing material of a soft moist nature. Mostly endogens.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
8, 14-18, 20, 27, and 28, for other depulping machines.
- 35** The elimination of the pod in which seed fiber, like cotton, is grown.
- 36** Having means for breaking open the pod and a rotating member to continually throw back the material until the fibers are separated from the open boll.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
37, for other knocker-rolls, and 38 for other breakers.
- 37** Having a rotating member to continually throw back the material until the fibers are separated from the pod.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
36, for other knocker-rolls, and 53, for knocker-rolls which are adapted to remove the seed from the fiber.
- 38** Having a means peculiarly adapted for breaking open the pods.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
36, for other breakers.
- 39** Detaching seed from cotton and like fibers.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
304+, for gin condensers.
- 40** The fibers being very short. Usually the longer fibers have been ginned off.
- 41** The structure of the delinting mechanism.
- SEE OR SEARCH CLASS:  
99, Foods and Beverages: Apparatus, subclasses 600+, for apparatus for delinting cottonseed.

- 426, Food or Edible Material: Processes, Compositions, and Products, sub-class 288 and 481+ for processes including delinting cottonseed.
- 42** The seed with the attached lint is placed in a chamber into which the lint-engaging member enters and from which it withdraws, pulling the lint out of the chamber and detaching it from the seed, which cannot follow, the lint being then doffed in the outside chamber.
- 43** There being a cylindrical surface of such a nature that the lint will cling to it, the surface rotating so close to a bar that the seed cannot follow the lint and will be detached.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
50+, for analogous structure.
- 44** A chamber inclosing a rotating delinting member is adapted to receive the seed and attached lint, the delinting occurring while both seed and lint are within the chamber.
- 45** The axis of the rotor being vertical.
- 46** The rotor being of an open nature, which permits much of the lint-seed mass to be worked otherwise than against the chamber wall.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
47, for other skeleton rotors.
- 47** The rotor being of an open nature, which permits much of the lint-seed mass to be worked otherwise than against the chamber wall.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
47, for other skeleton rotors.
- 48** The structure of the gin proper.
- 49** The fiber is caught and drawn along between two surfaces in rolling contact, the angle of contact being such that the seed will not enter, but will be held back and detached.
- 50** There being a cylindrical surface of such a nature that the fiber will cling to it, the surface rotating so close to a bar that the seed cannot follow the fiber and will be detached.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
43, for analogous structure.
- 51** With means moving to and fro along the bar to engage the seed and aid in detaching it.
- 52** With means moving to and fro transversely of the bar to engage the seed and aid in detaching it.
- 53** With means rotating near the bar to engage the seed and aid in detaching it.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
36, and 37, for knocker rolls adapted to remove hulls from seed cotton.
- 54** The structure of the cylindrical surfaces to which the fibers cling and are drawn along.
- SEE OR SEARCH CLASS:  
492, Roll or Roller, for a roll, per se, not elsewhere provided for, and see the notes thereunder.
- 55** A bank of circular saws slightly spaced apart is caused to rotate with each saw projecting through a slit in a plate or rib bank and engaging the seed fiber. The fibers cling to the saw teeth as the teeth pass back through the slits between the ribs and are detached, the slits being so narrow that the seeds cannot follow.
- 56** Provided with means for eliminating the pod in which the seed fiber is grown prior to the ginning action.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
35+, for boll hullers, per se.
- 57** There being a plurality of saw banks.
- 58** Limited to the means for detaching the gin fiber from the saws and discharging it from the gin. Frequently includes means for eliminating pieces of pod and the like that are still clinging to the fibers.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 303, for combined fiber detaching from gin saws, cleaning and condensing thereof in web form.  
 305+, for combined fiber detaching from gin saws and condensing thereof in web form.
- 59** The fiber being detached from the saws by means of an air current.
- 60** Limited to brush structure adapted for detaching the fibers from the saws and producing a blast for conveying the fibers through and out of the gin.
- SEE OR SEARCH CLASS:  
 15, Brushing, Scrubbing, and General Cleaning, appropriate subclasses, for brush structure not peculiarly adapted for this purpose.
- 61** Limited to that portion of the ginning chamber which holds the fiber mass against the saws and controls the escape of the seeds.
- 62** The structure of the means which prevents the seeds or bolls following the fiber caught by the saws.
- 63** The structure of the cylindrical saw bank or the saw elements.
- 64** Means for removing undesirable matter from the saws.
- 64.5** This subclass is indented under subclass 39. Method or apparatus wherein means are employed to present the cotton to a ginning apparatus.
- (1) Note. Patents including distribution of cottonseed to several gins will be placed in this subclass.
- (2) Note. Refer to (1) Note under the class definition for further search fields.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 97.5, for feeding to a picking device.  
 105, for feeding to a carding device.
- 204+, for feeding to a cleaning device.
- 65** Method and apparatus for disentangling, cleaning, straightening, or performing other operations on fibers to place them in condition for use.
- (1) Note. Means for producing laps and slivers, though intended to be used with machines found in this group, are placed in the subclasses indented under subclass 144 of this class.
- SEE OR SEARCH CLASS:  
 241, Solid Material Comminution or Disintegration, appropriate subclasses, for fiber working, including comminution, and see section 5 of the class definition of that class (241) for the line.
- 66** The fibers are treated with fluids or are curled, crimped, or operated upon for some other purpose than to make them straight or parallel.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 .56, for the combination of staplizing and the opening of bundles of substantially parallel, staple length fibers.
- SEE OR SEARCH CLASS:  
 8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, for bleaching, dyeing and chemical treating of textile fibers. See particularly subclass 112 for improving felting properties of fibers and furs (carroting).  
 28, Textiles: Manufacturing, subclasses 247+ for methods and apparatus for imparting a nonlinear configuration to yarn or strand material composed of fibers or filaments.  
 57, Textiles: Spinning, Twisting, and Twining, for spinning, twisting or twining operations combined with coating or impregnating.  
 68, Textiles: Fluid Treating Apparatus, for Liquid treatment in general of textiles and fibers.  
 118, Coating Apparatus, appropriate subclasses, for apparatus for coating fibers, and see section III of the class

- definition of Class 118, for the Line between Class 19 and Class 118,
- 162, Paper Making and Fiber Liberation, subclasses 1+ for chemical Liberation of fibers, particularly subclass 9 for combinations therewith physical modification of the fiber, e.g., curling, puffing, etc.
- 239, Fluid Sprinkling, Spraying, and Diffusing, appropriate subclasses, for structures used to discharge a fluid on wool and the like fiber, when such structures are limited to the fluid discharger per se.
- 427, Coating Processes, for a process of coating in general, and note especially subclasses 212+ for processes of coating particles, flakes, or granules.
- 66.1** This subclass is indented under subclass 66. Method or apparatus wherein the fluid or special treatment involves the production of coils, crinkles, kinks or like distortions on fibers.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- .46, for staplizing combined with some treatment, inclusive of crimping or curling, ancillary to the staplizing, of the continuous filaments before they enter the staplizing zone.
- .56, for combinations of staplizing and other operations, inclusive of crimping or curling.
- SEE OR SEARCH CLASS:
- 28, Textiles: Manufacturing, subclasses 247+ for surface modification by crimping or curling of running thread lengths, and see the search notes thereunder.
- 66.2** This subclass is indented under subclass 66.1. Method or apparatus wherein the crimping or curling is effected by passing fibers between interdigitated or interlocked moving members which forward and mechanically shape the fibers passing therebetween.
- SEE OR SEARCH CLASS:
- 28, Textiles: Manufacturing, subclasses 279+ for crimping or curling a running length of thread by opposed intermeshing traveling members, and
- see the search notes referred to therein.
- 80** Separating and cleaning fibers by means of blades or teeth which strike or pull the material and not falling under the groups of Carding or Combing.
- 81** The picking instrument is other than a rotating member.
- 82** The fibers to be separated having been twisted or interlaced into a strand or fabric.
- 83** The feeding means holds onto the material while the picking means separates the fibers.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
84, 86+, and 96, for other gripping-feed pickers.
- 84** Means adapted to remove plant burs from wool, having a gripping feed.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
83, 86+, and 96, for other gripping-feed pickers.
- 85** The material is struck by a rapidly-rotating member, therebeing an opposing member against which the material is thrown and in combination with which the rotating member is adapted to obtain a separation of foreign matter from the material.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
70, for the automatic feed control.
- 86** Feeding means holds onto the material while the beater knocks off the fibers.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
83, 84, and 96, for gripping-feed pickers.
- 87** There being a plurality of rotating beaters.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
93, for other multiple-rotor beaters.

- 88** With means to collect the picked fibers together into a web or lap.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
89, for related structure.
- 89** With means to collect the picked fibers together into a web or lap.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
88, for related structure.  
308, for condensing screens, per se.
- SEE OR SEARCH CLASS:  
156, Adhesive Bonding and Miscellaneous Chemical Manufacture, appropriate subclasses for processes for making laminated boards.
- 90** The material being carried along axially of the beating rotor as it is acted upon.
- 91** There being a plurality of rotating beaters.
- 92** Means for feeding batches to the beater, the feed being stopped between batches.
- 93** There being a plurality of rotating beaters.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
87+, 88, and 91, for other multiple-rotor beaters.
- 94** Limited to the structure of the rotary beating member.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
97, for nonbeater rotors.
- 95** Gratings against which the beaters work the fiber and through which the dirt passes.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
77, for related structure.
- 96** Feeding means holds onto the material while the picking means separates the fiber.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
83, 84, and 86+, for other gripping-feed pickers.
- 97** Limited to the structure of the rotary picking member.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
94, for beater rotors.
- SEE OR SEARCH CLASS:  
492, Roll or Roller, for a roll, per se, not elsewhere provided for, and see the notes thereunder.
- 97.5** This subclass is indented under subclass 80. Method or apparatus wherein means are employed to present the fibers to a picking device.
- (1) Note. The patents in this subclass are restricted to delivery of the fibers to the picking means. The feeding of the fibers, combined with the holding of said fibers by the feeding means while the fibers are picked, would be classified in subclass 96 of this class.
- (2) Note. Refer to (1) Note under the class definition for further fields of search.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
64.5, for feeding to a ginning device.  
105, for feeding to a carding device.  
204+, for feeding to a cleaning device.
- 98** Passing cotton or wool type fibers between relatively moving surfaces which are almost in contact, the surfaces being composed of closely lying points or teeth, usually, wire ends. The engagement of the fibers is substantially between the surfaces rather than between the sides of the teeth.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
144, and indented subclasses for inventions relating to the combining of different materials or the forming of webs, sliv-

- ers, and the like, even when carried out on a card.
- SEE OR SEARCH CLASS:  
57, Textiles: Spinning, Twisting, and Twining, subclass 327 for combined carding and spinning operations.
- 119, Animal Husbandry, subclass 632 for a "card" used to groom an animal.
- 131, Tobacco, subclasses 109.1+, 321 for tobacco working machines employing carding.
- 451, Abrading, subclasses 416+ for an attachment for a carding machine for grinding a card thereof, in situ.
- 99** This group includes inventions peculiarly adapted to (1) other than the conventional card which has a large main cylinder, a feeding means at one side, a doffing means at the opposite side, and working means over the top of the cylinder between the feeding and the doffing means, and (2) cards having a specific type of working means.
- 100** Fibers carried on the main cylinders are caught and detached in part by a small worker cylinder. These fibers are then stripped from the worker cylinder by another cylinder and returned to the main cylinder.
- 101** The fibers passing over a plurality of worker cylinders before returning to the main cylinder.
- 102** The working surface which cooperates with the cylinder is composed of bars arranged to travel in an endless circuit for presenting their working surfaces to cleaners or strippers.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
113, for inventions relating to flat structure, per se.
- 103** Limited to the curved track on which the flats ride as they pass over the cylinder.
- 104** The working surface is composed of bars which remain stationary when in operative position.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
113, for inventions relating to flat structure, per se.
- 105** Means for picking off the fibers from the lap or supply and presenting them to the carding surface.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
157+, 160, 161, and 163, for means for assembling slivers and webs which may be fed to a card, but not peculiar thereto.
- 106** Means for removing the carded fleece.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
151+, for devices for converting the fleece into a sliver.
- 107** Means for handling fibers that had escaped during the carding or were separated as not in proper shape for further advanced treatment.
- 108** Means for removing the card clothing the waste fibers and dirt that have become embedded therein.
- 109** An air current being employed for the purpose.
- 110** Means for cleaning the flats.
- 111** The flats being caused to travel in an endless circuit.
- 112** The structure of the cylindrical members of the card.
- SEE OR SEARCH CLASS:  
492, Roll or Roller, for a roll, per se, not elsewhere provided for, and see the notes thereunder.
- 113** The structure of the flat. Does not including peculiar to the movement or mounting of the flat.
- 114** The structure of the covering employed on the working surfaces of the card.

- SEE OR SEARCH CLASS:  
451, Abrading, for an apparatus for sharpening or a process of sharpening card clothing by grinding, particularly subclass 416 and 417 for an attachment to a textile machine to abrade a card.
- 115** This subclass is indented under subclass 65. Method or apparatus wherein means are employed to cause the fibers to assume a parallel direction.
- SEE OR SEARCH CLASS:  
132, Toilet, subclasses 219+ for combs designed to be used by inserting the teeth into the hair on a person.
- 122** The combing members are of annular disk shape with the teeth in a plane on the side.
- 123** One circle comb working within another. Generally known as the Noble wool comb.
- 124** Means for causing the fiber to engage with the comb.
- SEE OR SEARCH CLASS:  
15, Brushing, Scrubbing, and General Cleaning, appropriate subclasses for structure of brush, per se, when not peculiarly adapted for this purpose.
- 125** The fibers are grasped by and suspended in a vertical plane from a means which moves bodily along carrying the fibers through the comb.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
13, and 14, for similar feeds.
- 126** The combing means includes both a traveling endless belt and a rotating cylinder.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
127, for apron combs.  
128, for cylinder combs.
- 127** The comb teeth being mounted on a traveling endless belt.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
126, for other apron combs.
- 128** The comb teeth being mounted on a rotating cylinder.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
29, for combs of this type combined with decorticators.  
126, for other cylinder combs.
- SEE OR SEARCH CLASS:  
492, Roll or Roller, for a roll, per se, not elsewhere provided for, and see the notes thereunder.
- 129** The comb teeth are mounted on bars which are caused to travel in a circuit by means of screw feeds.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
.6+, for gills operative to cut filaments of indefinite length and draft the resulting fibers.
- 144** The bringing together of the fibers either with relation to each other or with some other material.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
.51, for the combination of staplizing and overlapping of the stapled fibers.  
.56, for the combination of staplizing and mixing or blending the resulting fibers.
- SEE OR SEARCH CLASS:  
156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 62+ for laminating processes including the step of forming a lamina by bulk deposition of discrete particles.  
264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclasses 109+ for processes for forming articles by uniting randomly associated particles. Where the claims recite

only air laying of fibers the line with Class 264 is as follows:

(a) Sole disclosure is that the fibers are tacky or adhesive coated before air laying (Class 264).

(b) Disclosure that air layed batt is subsequently rendered adhesive or tacky after air laying (Class 19).

(c) Disclosure that the fibers may or may not be coated with adhesive before air laying (Class 19).

419, Powder Metallurgy Processes, subclasses 1+ for processes for forming articles by powder metallurgy with heating or sintering wherein the powder particles may be fibrous or filamental in form; and subclasses 61+ for processes for forming articles by uniting randomly associated metal particles which may be fibrous or filamental in form.

425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclasses 80.1+ for apparatus including air-felting means for forming self-sustaining bodies of particulate material.

**145** Either the fibers assembled are of different nature or they are assembled with some other material.

(1) Note. The claimed addition of a binder to a fibrous mass is sufficient to cause placement of a patent elsewhere. This class takes mechanical entanglement of fibers unless otherwise provided for (for example, see felting in Class 28).

SEE OR SEARCH CLASS:

2, Apparel, subclass 175.9 for a felt hat and a method of making a felt hat.

366, Agitating, appropriate subclasses for mixing cement with fibers.

**145.3** This subclass is indented under subclass 145. Method of apparatus wherein the fibers are assembled to the end portion(s) of a relatively thin, elongated, rigid member.

(1) Note. The article being assembled is usually denoted as a cotton swab.

**145.5** This subclass is indented under subclass 145. Method or apparatus wherein the fibers are assembled by a mixing together of the fibers of different nature, as distinguished from the assembly of preformed fiber assemblages (e.g., bats or webs).

SEE OR SEARCH CLASS:

8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, appropriate subclasses, for methods of dyeing mixed fibers.

**145.7** This subclass is indented under subclass 145.5. Method or apparatus wherein the mixing of the fibers is accomplished by passing the fibers of different nature between relatively moving surfaces which are almost in contact, the surfaces being composed of closely lying points or teeth.

SEE OR SEARCH THIS CLASS, SUBCLASS:

98+, for carding devices.

**148** The fibers are deposited by means of an air current on a screen of the shape of the object desired.

SEE OR SEARCH THIS CLASS, SUBCLASS:

308, for other screen condensers.

**149** A strip of fiber is wound on a form of the shape of the article desired.

SEE OR SEARCH CLASS:

100, Presses, subclasses 76+ for presses which additionally treat the material by winding or folding a sheet, web or strand, not elsewhere provided for.

242, Winding, Tensioning, or Guiding, for other winding apparatus; e.g., subclasses 430+ for method and apparatus for winding flexible material upon a core to make an article which is a composite thereof.



- 150** The forming of a round strand of fibers by merely pressing or rubbing them together without continuous twisting.
- 151** Means for dividing a very thin web of fibers into strips usually as it is being delivered from a card preparatory to condensing the strips into slivers.
- 152** The sliver is carried between rolls which are given axial reciprocation so as to rub the fibers together.
- 153** The sliver is passed between aprons which are given a motion transversely to the travel of the sliver for rubbing the fibers together.
- SEE OR SEARCH CLASS:  
428, Stock Material or Miscellaneous Articles, appropriate subclasses for stock material in form of a single plural layer web or sheet.  
474, Endless Belt Power Transmission Systems or Components, particularly subclasses 237+ for a friction drive belt in an endless belt power transmission.
- 157** Producing packages or structures from round untwisted fiber strand.
- SEE OR SEARCH CLASS:  
242, Winding, Tensioning, or Guiding, subclasses 472.1+ for winding a sliver onto a spindle or the like.
- 159** Laying the sliver in a coil in a receptacle.
- SEE OR SEARCH CLASS:  
100, Presses, subclasses 82+ for presses which treat the material by winding or folding and which employ an eccentric opening through which the material is circularly deposited, and not elsewhere provided for.
- 160** Moving the sliver to and from substantially transversely to the movement of a base upon which the sliver is being deposited.
- SEE OR SEARCH CLASS:  
100, Presses, subclasses 80+ for pressing apparatus which, additionally, treats
- the material by folding it in zigzag formation, and not elsewhere provided for.
- 161.1** This subclass is indented under subclass 144. Method or apparatus for producing packages or structures from a flat fiber strip.
- SEE OR SEARCH CLASS:  
28, Textiles: Manufacturing, subclasses 103+ for method or apparatus for entangling and interlocking the component members of a nonwoven textile structure, e.g., a formed web.
- 163** Moving the webs to and fro substantially transversely to the movement of a base upon which the web is being deposited.
- SEE OR SEARCH CLASS:  
100, Presses, subclasses 80+ for presses which, additionally, treat the material by folding it in zigzag formation, not elsewhere provided for.
- 200** This subclass is indented under subclass 66. Method or apparatus wherein fibers are treated for the purpose of removing undesirable material therefrom, without otherwise working the fibers or assembling them into a blend or structure.
- SEE OR SEARCH CLASS:  
8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, subclasses 137+ for cleaning or laundering.  
15, Brushing, Scrubbing, and General Cleaning, subclass 256.6 for strand cleaning, and see (1) Note to subclass 262 of this class.  
131, Tobacco, for tobacco disintegrating and cleaning.  
241, Solid Material Comminution or Disintegration, appropriate subclasses for crushing foreign material from fibers.
- 201** This subclass is indented under subclass 200. Method or apparatus wherein the cleaning is accomplished by the addition of a highly active, liquid or powder, agent brought into contact with the fibers.

## SEE OR SEARCH CLASS:

8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, subclass 130 for saponification of cellulose ester or ether fibers.

**202** This subclass is indented under subclass 200. Method or apparatus wherein the cleaning action occurs through deposit of the fibers upon a foraminous member or by the passage of the fibers to a rotating saw element wherein the fibers attach to the saw teeth.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

304+, for the making of a foraminous deposit to form a permanent bat or web on the screen; and subclass 57 for gin saws in a cotton gin environment.

## SEE OR SEARCH CLASS:

209, Classifying, Separating, and Assorting Solids, appropriate subclasses for separation of undesired material from fibers, in which no textile operation is claimed.

**203** This subclass is indented under subclass 202. Method and apparatus wherein means are employed to remove the fibers from the foraminous or saw element.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

58+, for doffing of a gin saw.  
106+, for doffing in a carding machine.  
262+, for clearing of a drafting device.

**204** This subclass is indented under subclass 200. Method or apparatus wherein means are employed to convey the fibers to the cleaning mechanism.

(1) Note. The feeding of a textile fiber with a textile treatment will cause placement of the patents in Class 19. See (1) Note under class definition for further information.

## SEE OR SEARCH THIS CLASS, SUBCLASS:

64.5, for feeding to a gin.

97.5, for feeding to a picking device.

## SEE OR SEARCH CLASS:

226, Advancing Material of Indeterminate Length, for feeding of material of indeterminate length.

**205** This subclass is indented under subclass 204. Method or apparatus wherein the conveying means is a fluid propelling current.

## SEE OR SEARCH CLASS:

209, Classifying, Separating, and Assorting Solids, subclasses 132+ for feeding by fluid suspension, and subclass 250 for fluid current feeding.  
406, Conveyors: Fluid Current, appropriate subclasses for a pneumatic conveyor.

**215** This subclass is indented under subclass 115. Method or apparatus comprising a step of, or means for, drawing the fibers through the teeth in approximately fiber length bunches. Figures 1 through 4, below, are illustrative of a tuft combing operation.

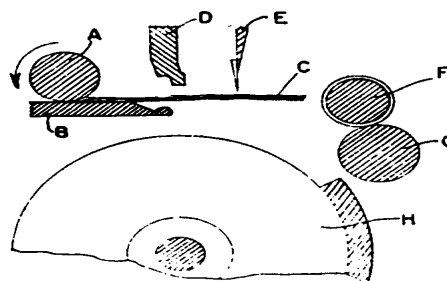


FIG. 1

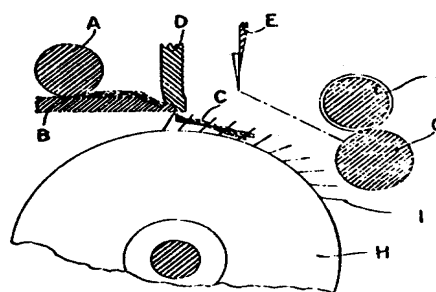
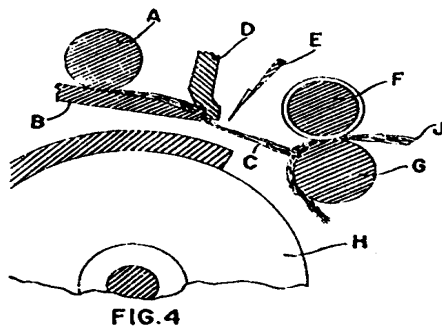
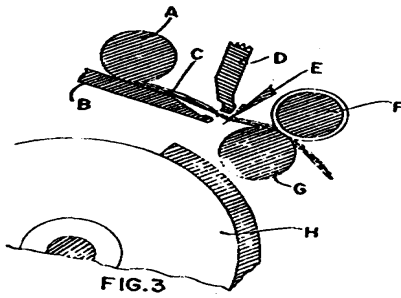


FIG. 2



- (1) Note. The following description of a tuft combing device, is typical, though not restrictive or essential (of subclass 215): In general the apparatus is one in which a fiber lap (C) is delivered to nipper (B, D) comprising a pair of gripping jaws, which jaws are operated in sequence to allow the forward end of the lap (C) to pass therethrough and then to close upon it and grasp it firmly, permitting a portion of the lap (C) (which ultimately makes up the tuft) to lie in the path of the comb teeth (1) on a comb cylinder (H) whereby the forward end of such projecting portion is combed. In carrying out the attenuation of this forward end, the comb cylinder (H) presents the forward end to a pair of detaching cylinders (F, G) (which may also be mounted for oscillation - one or both - toward and away from the comb cylinder). These cylinders (F, G) seize the front end portion and by their forward rotation form a tuft, by separating the projecting portion of the lap (C), and pull it through the teeth of a top comb (E) which may be lowered for this purpose. By such top

combing action, the tail end of the tuft is combed. The combed front end of the tuft and the tail end of a preceding tuft are overlapped and pieced together to form a continuous fleece (J).

- 216 This subclass is indented under subclass 215. Method or apparatus wherein each fiber length bunch is carried through a combing area in such a manner that the length of such bunch (i.e., tuft) is substantially perpendicular to its direction of travel (in the combing zone) and the tuft is presented broadside to the comb teeth.

- (1) Note. The tuft translating element usually has means for clamping the tuft. A typical patent disclosure in this subclass (216) relates to fibers clamped in a moving frame which has a nonrotary direction of movement.

- 217 This subclass is indented under subclass 216. Method or apparatus wherein the fiber bunches are carried by a gripping cylinder from which they project toward the comb teeth, said cylinder traveling in a fixed orbital path throughout the entire combing operation.

- 218 This subclass is indented under subclass 215. Method of apparatus including a step of, or means for, removing short fibers and foreign matter from any portion of the tuft combing apparatus.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 262, for clearing means in combination with drafting means.  
263, for pneumatic clearers.  
264, bottom roll(s) clearers.

SEE OR SEARCH CLASS:

- 15, Brushing, Scrubbing, and General Cleaning, subclasses 256.5+ for cleaning means which through contact scrapes, wipes, or brushes a machine element, subclasses 256.6+ for cleaning means acting upon a strand and subclasses 300.1+ for air blast or suction cleaning.

- 219** This subclass is indented under subclass 215. Method or apparatus in which means, other than a nipper, are provided to press the tuft into intimate contact with a comb cylinder.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
215, See (1) Note of subclass 215 for the definition of a nipper.  
235, wherein a nipper means serves to press the tuft into contact with the comb cylinder.
- 220** This subclass is indented under subclass 215. Method or apparatus wherein the combing means employed, to comb the trailing portion of a fiber length bunch, are mounted and secured on a plate or bar which may be movable into the space between a nipper and a comb cylinder upon release of said tuft portion from the nipper jaw.
- (1) Note. The nonrotary comb is usually designated by the art term "top comb". (See (1) Note, subclass 215 for the definition of a nipper).
- 221** This subclass is indented under subclass 220. Method or apparatus wherein the combing means employed remains in a fixed position during the passage of the trailing tuft portion through its teeth.
- 223** This subclass is indented under subclass 221. Method or apparatus wherein movement of the combing means into its working position is synchronized with the movement of a grasping and/or detaching means.
- (1) Note. Refer to (1) Note of subclass 215 for a description of the grasping and/or detaching means and the operation.
- 224** This subclass is indented under subclass 221. Method or apparatus wherein means are employed to vary the distance between the combing means and the trailing end of the tuft.
- 225** This subclass is indented under subclass 215. Method or apparatus wherein the gripping jaws' opening and closing motion is supplemented by an additional to-and-fro motion towards and/or away from either a comb or
- detaching means. See (1) Note subclass 215 for the function of the gripping jaw, and for the definition of the detaching means.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
235, for a nipper, per se.
- 226** This subclass is indented under subclass 225. Method or apparatus wherein a second nipper pair is provided and means are employed for opening jaws of one nipper pair while closing the other nipper pair, in sequence.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
235, for structure of the nipper, per se.
- 227** This subclass is indented under subclass 225. Method or apparatus wherein the nipper jaws are biased into or out of contacting engagement.
- 228** This subclass is indented under subclass 225. Method or apparatus wherein the limit of the nipper's to and fro motion is varied by changing the amplitude of such motion.
- 229** This subclass is indented under subclass 215. Method or apparatus including a step of, or means for separating a combed fiber-length bunch from a supply (lap) of the fiber to which it is attached.
- 230** This subclass is indented under subclass 229. Method or apparatus wherein the tuft engaging surface, of at least one of the tuft engaging means, is an endless band.
- 231** This subclass is indented under subclass 229. Method or apparatus wherein the separating is accomplished by a pair of rolls.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
230, for detaching accomplished by an endless belt.
- 232** This subclass is indented under subclass 231. Method and apparatus wherein at least one roll of the detaching roll pair is bodily moved toward and away from the fiber-length bunch.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
223, for a detaching roll pair moved in time relation to the combing means.
- 233** This subclass is indented under subclass 215. Method or apparatus in which the combing of a protruding or leading edge of a lap, which constitutes the bunch or tuft, is accomplished by a cylinder or drum, in which the comb teeth are mounted, rotating about a fixed orbital axis.
- 234** This subclass is indented under subclass 233. Method or apparatus wherein the comb teeth, mounted upon the rotating cylinder or drum, are limited to a segment of the drum, or to less than 360° of the outside circumference of the rotating member.
- 235** This subclass is indented under subclass 215. Apparatus provided with a pair of opposed jaw means for gripping a fiber lap and holding the projecting end thereof in the path of a comb cylinder.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
225+, for an oscillating or reciprocating nipper and subclass 223 for nipper motion timed with respect to combing means.
- 236** This subclass is indented under subclass 65. Methods or apparatus wherein the working comprises feeding a fiber strip by applying force at some area or point along the strip length and simultaneously retarding said strip at an area or point along the strip length removed from that at which the feeding force is applied, thereby causing said strip to become attenuated.
- (1) Note. The distance between these two areas or points is usually referred to as the "ratch".
- (2) Note. In addition to patents restricted by claim to drafting, there will be found in this and indented subclasses patents to subcombinations not considered to be of general utility, e.g., saddles.
- SEE OR SEARCH CLASS:  
425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclass 66 for filament forming and stretching means.
- 237** This subclass is indented under subclass 236. Method or apparatus wherein are provided a step of or apparatus for producing cyclical or random variations in the thickness of the strip by changing the relative displacement of the fibers produced by the drafting action.
- (1) Note. Such devices produce a thickness or slub in the fibers, thereby adapting the material to the production of slubbed or fancy yarns.
- SEE OR SEARCH CLASS:  
57, Textiles: Spinning, Twisting, and Twining, subclasses 317+ for variable drafting means combined with significant twisting (including false twisting) means.
- 238** This subclass is indented under subclass 237. Method or apparatus wherein is provided a step of or apparatus for increasing or decreasing the rate of feed of the fibers into the drafting zone.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
260+, for roll speed adjusting.
- 239** This subclass is indented under subclass 236. Process or apparatus including a step of or means for detecting the presence or absence of a condition of the work material, so as to bring about a change in the drafting operation (other than the mere cessation thereof) in response to such detection.
- (1) Note. Such change in the drafting operation may be, typically, machine speed variation in response to a condition in the work.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
.2+, for means to stop the machine in response to some defect in the work or the machine.

- SEE OR SEARCH CLASS:  
 73, Measuring and Testing, for pneumatic testing of strand thickness, pressure on a top roll, and drafting force.  
 226, Advancing Material of Indeterminate Length, subclasses 10+ for means to stop a machine in response to a defect in material being fed.
- 240** This subclass is indented under subclass 239. Method or apparatus wherein the change in the drafting operation is brought about by a change in the rate of rotation of at least one pair of drafting rolls.
- SEE OR SEARCH CLASS:  
 74, Machine Element or Mechanism, subclasses 325+ for speed changing.  
 475, Planetary Gear Transmission Systems or Components, for planetary gear transmissions.  
 476, Friction Gear Transmission Systems or Components, for friction gear transmissions.
- 241** This subclass is indented under subclass 240. Apparatus in whose accomplishment or operation the rotary speed change is brought about by moving a web (or chain) like power transmitting element with respect to its mating power transmitting element.
- (1) Note. Typically, a roll-shaft-driving belt is moved axially along a truncated cone cylinder, whereby the change in the diameter of the cylinder causes the speed variation.
- SEE OR SEARCH CLASS:  
 474, Endless Belt Power Transmission Systems or Components, various subclasses for control of speed change, including belt shifting mechanism, for endless belt power transmission.
- 242** This subclass is indented under subclass 236. Method or apparatus wherein individual fibers are elongated during the drafting, in order to parallelize or straighten, but without breaking thereof.
- (1) Note. Many patents placed in this subclass disclose that this stretching is for the purpose of imparting increased luster or brilliance to the fibers.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 66+, for special treatment of fibers (i.e.) for purposes other than parallelization or straightening.
- 243** This subclass is indented under subclass 236. Method or apparatus wherein a plurality of strips are directed into the drafting zone and integrated into a single strip (e.g., sliver).
- 244** This subclass is indented under subclass 236. Method and apparatus wherein the drafting action is accomplished by at least one endless belt, guided or trained about a roll cooperating with a roll or another belt.
- SEE OR SEARCH CLASS:  
 160, Flexible or Portable Closure, Partition, or Panel, appropriate subclasses for aprons.  
 198, Conveyors: Power-Driven, subclass 604 and 626+ for opposed, load-gripping belt type conveyors.  
 428, Stock Material or Miscellaneous Articles, appropriate subclasses for stock material in the form of a single or plural layer web or sheet.  
 474, Endless Belt Power Transmission Systems or Components, particularly subclasses 237+ for a friction drive belt in an endless belt power transmission.
- 245** This subclass is indented under subclass 244. Method or apparatus including a step of or means for removing undesirable material from the endless belt.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 262+, for clearing means acting on a roll element.
- SEE OR SEARCH CLASS:  
 15, Brushing, Scrubbing, and General Cleaning, subclasses 256.5+ for cleaning means acting upon a moving surface, in general; and particularly subclass 256.6 for cleaning means acting upon a running strand and sub-

- classes 300.1+ for pneumatic cleaning means.
- 198, Conveyors: Power-Driven, subclasses 494+ for a conveyor having installed as part or its structure a means for cleaning a component of the conveyor.
- 246** This subclass is indented under subclass 244. Method or apparatus wherein additional means are employed in close proximity to the drafting zone to assure that the marginal fibers of the strip are moved back into the main body of fibers in order that these marginal fibers may be given a proper drafting or attenuation.
- 247** This subclass is indented under subclass 244. Method or apparatus wherein additional means are employed to parallelize, or make straight, the path of the fibers through the drafting zone.
- SEE OR SEARCH THIS CLASS, SUBCLASS:  
288, wherein means are employed to guide the strip through the drafting operation.
- 248** This subclass is indented under subclass 244. Method or apparatus wherein means are employed to restrain the fibers approximately stationary in relation to the moving apron until they are gripped at the exit drafting rollers.
- 249** This subclass is indented under subclass 244. Method or apparatus including a step or means for holding the belt against gravity, intermediate its end limits, to insure the proper drafting of the short as well as the long fibers.
- SEE OR SEARCH CLASS:  
198, Conveyors: Power-Driven, subclasses 837+ for means for supporting an endless belt conveyor.
- 250** This subclass is indented under subclass 244. Method or apparatus where-in pressure is applied through a yieldable means to the endless belt to stretch or tension the belt along its length in order to secure a better grip upon the fibers as they pass therebetween.
- SEE OR SEARCH CLASS:  
198, Conveyors: Power-Driven, subclass 709 and 813+ for means for tensioning an endless belt conveyor.
- 251** This subclass is indented under subclass 250. Method or apparatus wherein the tensioning or stretching of the endless belt is accomplished by cylindrical weighted means about whose axis the endless belt is trained.
- 252** This subclass is indented under subclass 244. Method or apparatus wherein means are employed to direct the endless belt along a path of travel and prevent a lateral shift of the belt during the travel.
- SEE OR SEARCH CLASS:  
198, Conveyors: Power-Driven, subclasses 806+ and 840 for means for maintaining an endless belt conveyor on its conveying path.
- 253** This subclass is indented under subclass 252. Apparatus wherein the means employed to direct the endless belt along its closed loop path is a bar structure whose length is greater than the width of the belt and said bar is modified in some way to prevent excessive lateral movement of the belt upon its return over the bar.
- 254** This subclass is indented under subclass 252. Apparatus wherein the endless belt and its roll guide or drive are supported by an element consisting of two generally parallel side plates, arranged separated from one another and (usually connected together at a point on each of their extremities by a cross bar), at a distance slightly greater than the width of the endless belt and its roll guide, in order to support and guide the endless belt both in its movement about the closed loop and in its lateral movement.
- 255** This subclass is indented under subclass 254. Device wherein the guide and support element accommodates several endless belts and their roll guides.
- 256** This subclass is indented under subclass 244. Method or apparatus wherein a variation in position of pressure of an element of the apron

can be made with respect to (each other) or with respect to the element support.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

282, for adjustment of spring applying pressure.

283, for adjustment of pressure applying member.

**257** This subclass is indented under subclass 236. Method or apparatus wherein one of the strip retarding means is a body or block like structure which has a contour, usually concave, which cooperates with the strip retarding means to attenuate the strip in its travel.

**258** This subclass is indented under subclass 236. Method or apparatus wherein the simultaneous feeding and retarding of a fiber strip is accomplished by a series of cooperating roll pairs, spaced apart, which causes said strip to become attenuated lengthwise upon its travel through the series.

SEE OR SEARCH CLASS:

198, Conveyors: Power-Driven, subclasses 604+ and 624+ for opposed, load-gripping conveyor rolls.

464, Rotary Shafts, Gudgeons, Housing, and Flexible Couplings for Rotary Shafts, appropriate subclasses for a flexible coupling between a torque transmitting shaft and a member driven by the shaft.

492, Roll or Roller, subclass 48 for a roll cover, per se, not elsewhere provided for, and subclasses 57+ for a single annular roll member of specific composition.

**259** This subclass is indented under subclass 258. Method or apparatus wherein a roll pair, usually free floating and frictionally driven, permits the passage of a strip there-between, without any appreciable pressure upon or drafting of said strip.

**260** This subclass is indented under subclass 258. Method and apparatus wherein means are employed for changing the rate of rotation of a roll of one of the pairs, or changing the spacing of such a roll with respect to either its mate in the pair or a roll of another pair.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

239+, for speed changing features responsive to material sensing.

**261** This subclass is indented under subclass 260. Method and apparatus wherein the change of the roll spacing is the relocation of one cooperating roll pair of a drafting frame with respect to another roll pair of the frame.

(1) Note. The patents placed herein usually disclose the relocation of the roll pairs in order to permit drafting of fibers of variable length.

**262** This subclass is indented under subclass 258. Method or apparatus comprising a step of, or means for, removing undesirable material from a drafting roll.

(2) Note. Subclasses 265 and 264 are restricted to clearing a top roll and clearing a bottom roll, respectively. Patents placed in this subclass 262 are directed to clearing method or means which, as claimed, are effective upon both a top and bottom roll.

(3) Note. Many of the patents placed in subclass 263 are directed to pneumatic clearing of both top and bottom rolls; hence a search for clearing both rolls should include that subclass.

SEE OR SEARCH CLASS:

15, Brushing, Scrubbing, and General Cleaning, subclasses 256.5+ for cleaning means in physical contact with a moving surface. Class 15 takes no more structure of the roller(s) or arrangement thereof, claimed than that which constitutes the cleaned area or that necessary to accommodate the cleaning means. Class 15 takes claimed roller or pair(s) of rollers as the object cleaned. Plural rollers or pairs of rollers with only enough of the roller arrangement claimed to accommodate or necessitate the cleaning means. Claims to plural cleaning means will be placed in Class 15, subclass 105.



198, Conveyors: Power-Driven, subclasses 494+ for a conveyor having installed as part of its structure a means for cleaning a component of the conveyor.

**263** This subclass is indented under subclass 262. Method or apparatus wherein the undesirable material is removed from the rolls by a system of imbalanced air pressures.

SEE OR SEARCH CLASS:

15, Brushing, Scrubbing, and General Cleaning, subclasses 300.1+ for pneumatic means to clean a work surface.

**264** This subclass is indented under subclass 262. Method or apparatus wherein the undesirable material is removed from the bottom roll only.

SEE OR SEARCH THIS CLASS, SUBCLASS:

262, for method or means for removing dirt, trash, etc., from both upper and lower rolls.

SEE OR SEARCH CLASS:

15, Brushing, Scrubbing, and General Cleaning, subclasses 256.5+ for cleaning means in physical contact with a moving surface to be cleaned.

**265** This subclass is indented under subclass 262. Method or apparatus wherein the undesirable material is removed from the upper roll only.

SEE OR SEARCH THIS CLASS, SUBCLASS:

262, for method or means for clearing upper and lower rolls.

264, for cleaning a bottom roll only.

**266** This subclass is indented under subclass 258. Method or means including a step of, or means for, continually urging a roll of a roll pair into engagement with the other roll of the pair to effect a working cooperation.

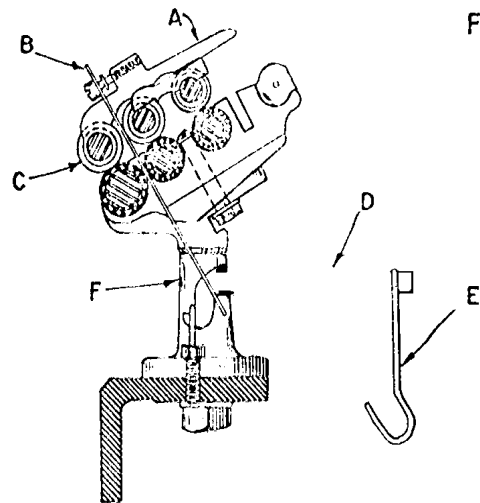


FIG. 5

(1) Note. Pressure applying device - Figure 5 denotes a specimen of a typical pressure applying device as used in the textile art. In Figure 5, above, "A" denotes a saddle; "B" denotes a stirrup; "C" denotes pressure rolls; "D" denotes a pivoted fulcrumed lever; "E" denotes a pressure applying attachment means; "F" denotes a roll stand, the pressure is transmitted to the pressure roll "C" through the pivoted fulcrumed lever "D", which is pivoted to a fixed center, and in turn through the stirrup "B" through the saddle "A".

SEE OR SEARCH THIS CLASS, SUBCLASS:

290, for method or apparatus involving the pressing or running material against a roll (as distinguished from pressing one roll of a pair against the other).

SEE OR SEARCH CLASS:

267, Spring Devices, appropriate subclasses 113 through 182 for a spring pressure device, in general.

**267** This subclass is indented under subclass 266. Method or means in which a step of or means for rendering ineffective the pressure applying device so that such device applies no force to the roll(s).

**268** This subclass is indented under subclass 267. Method or means in which the pressure releasing step or means is initiated or activated by movement of one roll of a roll pair from its position of cooperation with the other roll of the pair.

**269** This subclass is indented under subclass 267. Method or means, in which the pressure applying device is a mass whose weight constitutes the source of roll-urging force, and including a step of or means for elevating such mass to render the weight ineffective upon the roll.

**270** This subclass is indented under subclass 266. Method or means including a step of or means for giving a visible or audible response to the pressure or force imposed by the pressure applying device.

**271** This subclass is indented under subclass 266. Method or means including a step of or means for distributing the pressure equally to each of a plurality of roll pairs.

- (1) Note. The force so applied to one roll pair is equal to that so applied to any other roll pair, irrespective of the distance between the roll pairs.

**272** This subclass is indented under subclass 266. Method or means in which that property of mass (greater than molecular size) being repelled or attracted by an electrical field of force is employed to urge a roll into working cooperation with another roll of a pair, or the roll is urged by a fluid pressure means.

- (1) Note. The term fluid pressure is inclusive of air or a liquid pressure.

**273** This subclass is indented under subclass 266. Method or means in which the force or pressure exerted by the urging means is transmitted to the roll through a stirrup and saddle.

- (1) Note. The word "and" means that the roll pressure applied through both a stirrup and saddle.

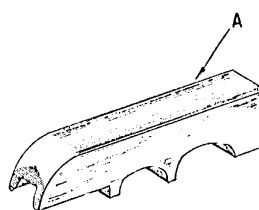


FIG.6

- (2) Note. Letter "A" in Figure 6, above, denotes a saddle used in the textile art for straddling and bearing upon two or more drawing roll axles in such a manner that a pressure load is applied through the saddle to the drawing roll axles. In Figure 5, under subclass 266, the saddle is also designated as letter "A".

**274** This subclass is indented under subclass 273. Method or means in which the force exerted by the pressure applying means is applied through a pivoted arm linking means which is pivoted to a fixed center and to which means the stirrup and pressure applying means are both pivotally connected.

**275** This subclass is indented under subclass 274. Method or means in which the rolls are continually urged by a mass whose weight is the source of pressure.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 269, for release of pressure applied by gravity means.  
283+, for application of pressure by gravity in the absence of either a stirrup or saddle.

**276** This subclass is indented under subclass 275. Method or means in which the roll pressure is adjustable.

- (1) Note. The selected degree of roll pressure may be accomplished by adjustment of: (a) the fulcrum point; (b) lever arm length; (c) the location of the stirrup\*

- upon the pivoted arm or saddle\* and (d) the relocation of the suspended mass upon the pivoted arm.
- 277** This subclass is indented under subclass 273. Method or means in which solid resilient means supplies the roll pressure.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 279, for application of pressure by spring means through a saddle.  
 281+, for application of pressure by spring means in the absence of either a stirrup or saddle.
- 278** This subclass is indented under subclass 266. Method or means in which pressure is transmitted to the roll through means acting upon or carried by a saddle.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 273+, for application of pressure through a saddle and stirrup.
- 279** This subclass is indented under subclass 278. Method or means in which solid resilient means supplies the roll pressure.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 272, for application of pressure by hydraulic or pneumatic means.  
 277, for application of pressure by resilient means through a stirrup and saddle.  
 281+, for application of pressure by resilient means in the absence of either a stirrup or saddle.
- 280** This subclass is indented under subclass 279. Method or means in which the pressure applied to the roll by the resilient means, directly or indirectly, may be varied.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 282, for application of adjustable pressure by spring means in the absence of either a stirrup or saddle.
- 281** This subclass is indented under subclass 266. Method or means in which solid resilient means supplies the roll pressure.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 272, for application of pressure by hydraulic or pneumatic means.  
 277, for application of pressure by resilient means through a stirrup and saddle.  
 279+, for application of pressure by resilient means through a saddle.
- 282** This subclass is indented under subclass 281. Method or means in which the pressure applied to the roll by the solid resilient means directly or indirectly, may be varied.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 280, for application of adjustable pressure by resilient means through a saddle.
- 283** This subclass is indented under subclass 266. Method or means wherein source of pressure is a weight.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
 269, for release of pressure applied by gravity.  
 273+, for application of pressure, from a gravity source, through a stirrup and saddle.  
 275+, for application of pressure from a gravity source, through a fulcrumed lever, stirrup and saddle.
- 284** This subclass is indented under subclass 266. Means which comprises a saddle\* as such.
- 285** This subclass is indented under subclass 284. Device in which means is employed to diminish frictional contact between the bearing surface of a saddle and the shaft of a roll.
- 286** This subclass is indented under subclass 258. Method or apparatus including a step of compacting or compressing the flowing work material by means of a generally cylindrical, rotating body, or means comprising such a body and fulfilling such function.
- (1) Note. Such a roll may also have an attenuating function and therefore serve as a member of a drafting couple.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:  
288+, for condenser of the trumpet variety.
- 287** This subclass is indented under subclass 258. Method or apparatus wherein the strip, in its travel through the drafting machine, has an additional lateral back and forth motion imparted to it by the guide or condenser roll.
- (1) Note. These patents disclose means to cause the sliver to have a to-and-fro motion during the feeding thereof.
- 288** This subclass is indented under subclass 258. Method or apparatus wherein the drafting step or means is accompanied by a step of or means for, passively directing or channeling the flow of work material, compacting or compressing the moving material, or retarding its flow.
- (1) Note. The concept of passive direction includes the action of a movable channeling device or an obstruction (such as an idler roll), but excludes the imparting of motion.
- 289** This subclass is indented under subclass 288. Method or apparatus wherein the step of guiding is accompanied by a step of, or wherein the guiding means also performs the function of, turning back upon itself a longitudinal edge portion or area of the material being worked on.
- 290** This subclass is indented under subclass 288. Method or apparatus in which the guide also serves to urge the work into contact with a drafting roll by establishing a bight between the roll and itself, so that any section of the work material will, during its travel past the guide, engage both the roll and the presser guide.
- 291** This subclass is indented under subclass 288. Method and apparatus in which the guiding step is carried out by, or the guiding means comprises, an element other than a closed periphery tube.
- 292** This subclass is indented under subclass 288. Method and apparatus in which the guiding step is carried out by, or the guiding means comprises, a device whose mounting, or the relationship of whose parts, may be altered at will.
- 293** This subclass is indented under subclass 258. Method or apparatus wherein the drive of the drafting or feed rolls is accomplished through a system of gearing or through contact of a non-driven roll with a driven roll.
- SEE OR SEARCH CLASS:  
74, Machine Element or Mechanism, subclasses 325+ for speed changing means.  
474, Endless Belt Power Transmission Systems or Components, appropriate subclasses for belt and pulley power transmission.  
475, Planetary Gear Transmission Systems or Components, for planetary gear transmission.  
476, Friction Gear Transmission Systems or Components, for friction gear transmissions.
- 294** This subclass is indented under subclass 258. Apparatus wherein means are provided to support the roll or rolls of a drafting frame against the force of gravity.
- SEE OR SEARCH CLASS:  
384, Bearings, subclasses 276+ for sleeves, or liners.
- 295** This subclass is indented under subclass 294. Apparatus wherein the claimed support means operates to support only the upper roll of a roll pair.
- 296** **Web forming:**  
This subclass is indented under subclass 144. Method or apparatus for forming a flat non-woven batt, mat, or strip of fibers or filaments, the configuration of which is retained solely by interfiber or interfilament friction.
- (1) Note. This and the indented subclasses constitute the repository for subcombinations concerned with the formation of a nonwoven web from fibers or filaments. Excluded from this and the indented subclasses are the following:

web formation from bulk deposition of particulate material other than fibers or filaments;

web formation from bulk deposition of fibers from a liquid suspension or slurry;

web formation from bulk deposition of fibers or filaments combined with either:(1) formation of the fibers or filaments from liquid or molten material; or (2) bonding or uniting of the constituents of the web; or (3) mechanical manipulation of the web to rearrange the constituents thereof.

- (2) Note. For proper inclusion in this and the indented subclasses, the disclosure must be limited to web formation or bulk deposition of fibers or filament. A disclosure of general utility or applicability to fiber or filaments and other particulate material as powders, flakes, granules, and the like excludes placement herein.
- (3) Note. Comminuted wood, i.e., lignocellulose, as prepared by an attrition mill or defiberizer in the form of chips, flakes, shavings, wafers, or "wood fibers" for the manufacture of composition panels, fiberboard, wallboard, and the like are not construed as textile "fibers" proper for this and the indented subclasses even though such material may be referred to as "fibrous".

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- .51, and .56, for combined fibrous web forming and significantly claimed filament staplizing operations.
- 80+, for combined fibrous web forming and picking, i.e., fiber liberation or separation and cleaning.
- 98+, for formation of a fibrous nonwoven web by a carding operation.
- 160, for formation of a fibrous nonwoven web by deposition of a sliver to-and-fro transversely of a moving or traveling, collecting or receiving surface.
- 163, for formation of a fibrous nonwoven web by deposition of a nonwoven web to-and-fro transversely of a moving or

traveling, collecting or receiving surface.

**SEE OR SEARCH CLASS:**

- 28, Textiles: Manufacturing, subclasses 103+ for mechanical manipulation as by felting, fulling, needling, or the like of a nonwoven article or structure of fibers or filaments to rearrange and retain the constituents thereof into altered positions by interfiber or interfilament friction, inclusive of initial formation of the nonwoven web.
- 65, Glass Manufacturing, subclasses 443+ for batt-forming means combined with means to form a glass filament or fiber.
- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 62.2+ for processes including the formation of a lamina by assembling individually distinct fibers from a fluent mass, adhesively bonding the fibers to each other, and then uniting the lamina thus formed to itself or another lamina; and subclasses 166+ and 433+ for processes and apparatus, respectively, for bonding or uniting of flexible filamentary material while in indefinite or running length form.
- 162, Paper Making and Fiber Liberation, subclasses 100+ for processes of forming a fibrous web by deposition from liquid suspension; and subclasses 232+ for apparatus for producing water or liquid laid fibrous webs.
- 209, Classifying, Separating, and Assorting Solids, appropriate subclasses for processes and apparatus for separating solid materials, inclusive of fibers, and assorting or segregating them in grades or classes according to physical characteristics.
- 242, Winding, Tensioning, or Guiding, subclasses 520+ for processes and apparatus for the winding of self-sustaining masses of entangled fibers, which masses have substantial width with respect to their thicknesses and are of indefinite length.
- 264, Plastic and Nonmetallic Article Shaping of Treating: Processes, subclasses 5+ for forming fibers from a liquid or molten mass, other than glass, and

- bulk assembly thereof; subclass 437 for application of electrical or wave energy to fibers for effecting deposition or orientation thereof combined with an operation of this class (264); subclasses 517+ vacuum deposition, collection, or assembly of fibers combined with an operation of this class (264) or for the vacuum deposition of particulate material not provided for elsewhere; subclasses 109+ for the formation of a nonwoven web by uniting discrete bulk assembled fibers without the direct application of fluid pressure; subclass 143 for the formation of continuous, running, or indefinite length filaments, cutting or severing the filaments into staple fibers and deposition collection or a assembly thereof into web form; and subclasses 165+ for the formation of continuous or indefinite filaments and deposition, collection, or assembly thereof into web form when not combined with a cutting step.
- 419, Powder Metallurgy Processes, subclasses 1+ for processes for forming articles by powder metallurgy with heating or sintering wherein the powder particles may be fibrous or filamental in form; and subclasses 61+ for similar processes.
- 425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclasses 6+ for apparatus to divide or comminute liquid material, other than glass, to form discrete fibers and bulk assembly thereof; subclass 66 for continuous filament forming with stretching means, including deposition thereof in web form; subclasses 80.1+ for the deposition of fibers or other particulate material on a shaping surface from a gaseous suspension when not provided for elsewhere or when such deposition is combined with apparatus for performing an operation of this class (425); and subclass 224 for means to cast or deposit filaments of indefinite length on a forming surface to form an indefinite length web.
- 297 With fiber sampling:**  
This subclass is indented under subclass 296. Method or apparatus including the collection or formation of a representative fiber array or specimen during a web forming operation.
- 298 With split lap preventing:**  
This subclass is indented under subclass 296. Method or apparatus wherein means are provided for preventing undesired division or parting of the nonwoven web during either fabrication or processing.
- 299 Including continuous filaments:**  
This subclass is indented under subclass 296. Method or apparatus wherein the nonwoven web is formed of, or includes, elongate, slender thread, or threadlike constituents of indeterminate or running length.
- SEE OR SEARCH CLASS:
- 28, Textiles: Manufacturing, subclasses 100+ for forming a nonwoven web by deposition of filamentary material transversely of a longitudinally extending substrate, usually of filamentary components; subclasses 103+ for contraction, relaxation, or shrinkage of a nonwoven web of filamentary material to alter or enhance interfilamentary entanglement; and subclasses 282+ for the formation of a nonwoven web of filamentary material by lateral distention, expansion, or separation of a tow.
- 65, Glass Manufacturing, subclasses 443+ and 529+ for processes and apparatus, respectively, for combined glass filament formation and nonwoven web formation with coating or treatment thereto.
- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 166+ and 433+ for the formation of a nonwoven web of filamentary material and bonding or uniting of the constituents thereof.
- 264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclasses 165+ for the formation of continuous or indefinite length filaments and assembly, collection, or deposition thereof into web form; and subclass

342 for shrinkage of a nonwoven web of bicomponent or biconstituent filamentary material.

**300 Control means responsive to sensed condition or program:**

This subclass is indented under subclass 296. Method or apparatus wherein variations from a set norm in the nonwoven web or constituent supply or in machine operation alters operation of the machine, or wherein readily changeable data or information in a preset arrangement or design controls the sequence of machine operations or an element thereof.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 2+, for stopping a web-forming operation in response to some condition occurring in the material or through a defect in the web-forming machine or its operation.
- 239+, for alteration of a fiber drafting operation responsive to material sensing other than mere cessation of the operation.

**301 Irregular, nonuniform, or patterned receiving surface:**

This subclass is indented under subclass 296. Method or apparatus wherein the formation of the nonwoven web is effected by assembly or deposition of fibers on a collecting member which is so arranged, configured, or designed as to produce a web of varying fiber accumulation, density, or shape, or as to produce discrete or subdivided web portions.

**302 Stratified or multilayer:**

This subclass is indented under subclass 296. Method or apparatus wherein the nonwoven web is formed (a) by sequential deposition of layers of similar fibers in such a manner that a line of demarcation is presented between the deposited layers; (b) by deposition of diverse fibers in such a manner as to form distinguishable layers; or (c) by superimposition of a plurality of preformed web.

- (1) Note. Nonwoven web formation by a plurality of adjacent, oppositely disposed condensers supplied from a single supply source wherein the fibers collected thereon are combined or merged into a

single, coherent web at the nip therebetween, as double condenser cylinder machines, for example, is excluded from this subclass. However, combining of nonwoven unitary webs emerging from the nips of a plurality of such multiple condensers is provided for herein.

**SEE OR SEARCH CLASS:**

- 162, Paper Making and Fiber Liberation, subclasses 123+ for processes for producing multilayer water laid fibrous webs or sheets; and subclasses 298+ for apparatus for application of plural separate fiber streams to a foraminous forming surface.
- 264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclasses 112+ for forming stratified or layered nonwoven webs by uniting randomly associated fibers as provided by this class (264).
- 425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclass 81.1 for air felting type shaping means for forming stratified products combined with an operation of this class (425).

**303 With divided fiber stream or separate handling of trash or fugitive fiber:**

This subclass is indented under subclass 296. Method or apparatus wherein (a) fibers are deposited on a fluid permeable condenser by a gaseous stream which has several paths of travel to the condenser; (b) stray fibers caught on the outside of the condenser are returned to one of the air streams for recirculation to the condenser; or (c) unwanted material is removed from the apparatus.

- (1) Note. The mere recitation that unwanted materials as dirt, dust, and the like passes through the fluid permeable condenser with the gaseous stream is insufficient to warrant placement herein. The subject matter recited must specify special provision for the separation of handling of the unwanted material.

**SEE OR SEARCH THIS CLASS, SUBCLASS:**

- 64, for waste removal from the saws of a gin.

- 107, for waste, i.e., fugitive fiber recovery during a carding operation.
- 200+, for the removal of undesirable material from fibers without otherwise working the fibers or assembling them into a blend or structure.
- 218, for waste clearing during tuft combing of fibers.
- 245, and 262+, for removal of undesirable material during a fiber drafting operation.

### 304 **Fluid propelled to condenser:**

This subclass is indented under subclass 296. Method or apparatus wherein fibers are carried or conveyed in a gaseous stream for accumulation, assembly, or collection in web form upon a foraminous or perforate receiving surface or across a fiber entrapment area formed by a plurality of spaced receiving surfaces.

- (1) Note. This group of subclasses is distinguished from subclasses 202+ wherein a batt or sheet is formed and subsequently disintegrated; the product of subclasses 304+ is a permanent sheet, web, or batt.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 88, and 89, for combined picking, i.e., fiber liberation or separation, cleaning, and fiber condensing.
- 148, for assembly of a fibrous article by screen condensing.
- 202+, for combined fiber cleaning and condensing.
- 205, for conveying fibers in a fluid propelling current or stream to a cleaning operation.

SEE OR SEARCH CLASS:

- 209, Classifying, Separating, and Assorting Solids, subclasses 12.1+, 133+, and 250 for delivery of solid material suspended in a fluid to sifters for purpose of this class (209).
- 264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclasses 517+ for vacuum deposition, collection, or assembly of fibers to form a nonwoven web combined with an operation of this class (264): and subclass 121 for projecting fibers in a moving gas stream in the formation of

a nonwoven web by uniting randomly associated fibers as provided for by this class (264).

- 406, Conveyors: Fluid Current, Appropriate subclasses for mere entrainment and conveyance of fibers in a gaseous medium.

### 305 **With fiber liberation:**

This subclass is indented under subclass 304. Method or apparatus including the removal or separation of discrete fibers, aggregates, or clumps thereof from a fibrous accumulation in the form of a batt, mass, or web for projection into the gaseous stream.

- (1) Note. The liberation of fibers (a) from their natural state, i.e., from seed; (b) from the surface of a serrated or toothed cylinder on which the fibers repose in web form, e.g., a carding or combing cylinder; or (c) from a batt or mat thereof as by a eater, lickerin, picker, or the like is included herein.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- .3+, for liberating fibers from a continuous filament or yarn by staplizing; and subclasses .51 and .56 wherein the liberating or staplizing is combined with another operation, inclusive of web formation.
- 1+, for liberating fibers by mechanical means from the parts with which they have been produced in nature.
- 80+, for liberation or separation of fibers by blades or teeth and cleaning.
- 98+, for liberation or separation of fibers and carding.

SEE OR SEARCH CLASS:

- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclass 62.4 for the formation of a nonwoven web with formation or liberation of fibers combined with uniting of the fibers of the web to each other and uniting of the lamina thus formed to itself or another lamina.
- 162, Paper Making and Fiber Liberation, appropriate subclasses for fiber liberation or separation involving some



- chemical treatment whether or not combined with mechanical treatment.
- 241, Solid Material Comminution or Disintegration, subclass 4 and 28 for processes of comminuting fibrous mineral material and wood and similar natural fibrous vegetable material, respectively; and subclasses 31+ for apparatus for comminuting fibrous material including other treatments combined therewith where such combinations are not otherwise provided for.
- 264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclasses 115+ for methods of forming articles by uniting randomly associated particles where the particles either are formed or are liberated from a mass of previously formed particles; and subclass 143 for the extrusion and stapling of a filament during the formation of a nonwoven web.
- 425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclass 82.1 for air felting type shaping means with fiber liberating means combined with an operation of this class (425).

**306 Gripping feed to fiber separator:**

This subclass is indented under subclass 305. Method or apparatus wherein the trailing portion of a forwardly moving fibrous accumulation, batt, or mass is nipped or snubbed while the leading portion is divided or separated by a toothed or serrated moving member into discrete fibers, aggregates, or clumps thereof for projection into the gaseous stream.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 64.5, for feeding fibrous material to a ginning operation.
- 83, 84, 86+, and 96, for gripping feed during fiber picking, i.e., fiber liberation or separation and cleaning.
- 97.5, for feeding fibrous material to a picking operation.
- 105, for feeding fibrous material to a carding operation.
- 204+, for feeding fibrous material to a cleaning operation.

**307 Rotary condenser:**

This subclass is indented under subclass 306. Method or apparatus wherein the condenser comprises or includes a foraminous or perforate revolving cylindrical member.

SEE OR SEARCH CLASS:

- 209, Classifying, Separating, and Assorting Solids, subclasses 285+ for hollow cylinder or drum sifters having means for delivering material, inclusive of fibers, to the outside of the drums or cylinders for undersized particles to be passed inside the sifting walls and the oversize particles to be retained on the outside.

**308 Rotary condenser:**

This subclass is indented under subclass 304. Method or apparatus wherein the condenser comprises or includes a foraminous or perforate revolving cylindrical member.

END