

CLASS 28, TEXTILES: MANUFACTURING**SECTION I - CLASS DEFINITION**

This class is (a) generic as to processes of or apparatus for the production of fabric articles or structures by the mechanical interengagement of fibers, threads or the like and (b) residual as to processes of or apparatus for the production and treatment of fabric articles or structures. This class also provides for processes of or apparatus for (a) treating fabric articles or structures in a manner not provided for elsewhere, (b) preparing and handling of a sheet of warp threads or pile threads up to and inclusive of its insertion into a textile product fabricating apparatus, (c) thread finishing or packaging not provided for elsewhere, and (d) stripping bobbins of waste thread, and for subcombinations peculiar to the above which are not provided for elsewhere.

SECTION II - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

- | | |
|---|---|
| <p>8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, appropriate subclass for methods of treating textile fabrics, threads, fibers and the like with a fluid to bleach, dye or chemically alter the treated material either, per se, or combined with a broadly recited textile operation.</p> <p>19, Textiles: Fiber Preparation, appropriate subclass for methods of or apparatus for the preparation of fibers for use in the manufacture of fabrics or thread-like structures. The combination of texturing and staplizing a thread-like structure will be placed in Class 19 if the texturing precedes the staplizing and is performed to enhance a characteristic of the fiber produced as a result of the staplizing operation.</p> <p>26, Textiles: Cloth Finishing, appropriate subclass for the mechanical treatment of a running length of textile fabric to put it into a better marketable condition.</p> <p>34, Drying and Gas or Vapor Contact With Solids, appropriate subclass for methods of and apparatus for drying textile structures.</p> <p>53, Package Making, appropriate subclass especially subclasses 396 and 582+ for methods of and apparatus for the packaging of thread units with material other than a strand-like wrap and where no additional thread finishing operation is recited.</p> | <p>57, Textiles: Spinning, Twisting, and Twining, appropriate subclass for methods of or apparatus for treating and twisting a thread, yarn, and the like, for texturing a thread, yarn, and the like, by a twisting technique, e.g., false twist, etc. or for forming a composite yarn by means of an air jet where one strand is wrapped about another in either a continuous or discontinuous spiral wrap.</p> <p>66, Textiles: Knitting, appropriate subclass for the fabrication of a textile product by the interlacing of yarn or thread in a series of connected loops and for such fabrication combined with "on the machine" treatment of the yarn, thread, or the formed textile product.</p> <p>68, Textiles: Fluid Treating Apparatus, appropriate subclass for apparatus for contacting a textile product with a gas or liquid in a manner not provided for elsewhere.</p> <p>87, Textiles: Braiding, Netting, and Lace Making, appropriate subclass for methods and apparatus (a) for intertwining a plurality of strands to form a plait-like structure, (b) for intertwining or knotting a plurality of strands into an open meshed fabric, or (c) for forming a plurality of strands into an ornamental openwork fabric, and the products formed by such methods or apparatus.</p> <p>112, Sewing, appropriate subclass for producing a thread interlaced textile structure by a thread stitching operation.</p> <p>118, Coating Apparatus, appropriate subclass for apparatus for applying a coating material to textile products, including individual threads, other than a sheet of warp threads.</p> <p>139, Textiles: Weaving, appropriate subclass for the fabrication of a thread interlaced textile product which is formed by arranging one set of threads transversely to another set such that each thread of one set lays above some and below the remainder of the threads of the other set and is clamped in place by this arrangement and for such fabrication combined with "on the machine" treatment of thread or yarn used in product fabrication or of the formed textile product.</p> <p>156, Adhesive Bonding and Miscellaneous Chemical Manufacture, appropriate subclass, especially subclasses 148+ for the formation of a textile fabric or structure by securing a preform, such as a bat, mat, thread, or yarn, and the like, to another preform or to itself by an adhesive bonding technique. Examples of the subject matter to be found in Class 156 are:</p> |
|---|---|

- forming a textile product by weaving or knitting and subsequently treating the component thread of the product to cause it to fuse or otherwise adhesively bind to itself or to another thread at the cross-over point, adhesively securing a backing member to a pile fabric formed by weaving, knitting, or needling, etc.
- 162, Paper Making and Fiber Liberation, appropriate subclass for the fabrication or treatment of paper.
- 165, Heat Exchange, appropriate subclass especially subclasses 89+ for yarn heaters of the heat exchange type.
- 219, Electric Heating, appropriate subclass and especially subclasses 770+ and 469+ for yarn heating apparatus having specific electrical heater structure.
- 223, Apparel Apparatus, subclasses 12+ for felting machines which have means for forming hat structure, e.g., a brim, etc. The mere felting of a parabolic, conical, or cylindrical blank will not exclude a patent from this class (28).
- 242, Winding, Tensioning, or Guiding, appropriate subclass for the winding of strand-like material onto a carrier and especially subclasses 472.8+ for a winding device combined with a guide means for combining a plurality of independent strands into a single untwisted entity which is subsequently wound upon a carrier.
- 264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 103 for a plastic molding or treating operation combined with a step of twining, braiding, plying or twisting multiple elements about each other; subclasses 109+ for the process of forming a bat, mat, and the like, of randomly associated fibers which fibers are fused or adhesively bound to one another at their cross-over points; subclasses 165+ and especially subclass 168 for the extrusion or extrusion and subsequent treatment of a strand-like member; subclasses 280+ for the reshaping of previously formed elements of indeterminate length other than thread, yarn, and the like, except that subclasses 288.4+ takes processes for stretching work of indeterminate length whether or not such work is thread, yarn and the like; and subclasses 342+ for the treatment of a unitary thread formed of distinct, diverse extruded polymeric components which are arranged to run the length of the thread in a side by side fashion and which each shrink at a different rate when treated, to effect distortion of the thread.
- 289, Knots and Knot Tying, appropriate subclass for methods or apparatus for securing the ends of flexible strand-like members by tying and for the product of such a tying operation.
- 419, Powder Metallurgy Processes, appropriate subclasses for processes of forming articles by uniting particulate material containing metal particles.
- 425, Plastic Article or Earthenware Shaping or Treating: Apparatus, appropriate subclass for the extrusion or extrusion and subsequent treatment of a strand-like member and especially subclasses 66 and 76 for the extrusion and subsequent elongation of a strand-like member and the imparting of an irregular denier to a strand-like member, respectively.
- 427, Coating Processes, appropriate subclasses for coating or impregnating processes combined with a broadly recited textile operation.
- 428, Stock Material or Miscellaneous Articles, appropriate subclass for a stock material product which is made by a method or apparatus provided for in this class (28), where such a product is not elsewhere classified.
- 432, Heating, subclasses 8 and 59+ for methods and apparatus for heating running lengths of strand-like material, e.g., yarn, etc., in a manner not provided for elsewhere.

SUBCLASSES

100 TEXTILE PRODUCT FABRICATION OR TREATMENT:

This subclass is indented under the class definition. Method or apparatus wherein (a) fibers, filaments, rovings, slivers, strands, threads, yarns, and the like are brought together to form a discrete textile article or a textile structure of indeterminate length in a manner not elsewhere provided for, (b) a textile article or structure, which is made in a manner provided for elsewhere, is conditioned in a manner which is not provided for in the appropriate manufacture class, or (c) a textile article or structure is conditioned in a manner not elsewhere provided for.

- (1) Note. Included herein is the combination of preconditioning a component of a textile article or structure and subsequent assembly of the article or structure.

- (2) Note. The formation of a nonwoven textile structure of reinforced or cross-laid threads is found herein.

101 Cross laying by rotatable or revolving flyer:
This subclass is indented under subclass 100. Method or apparatus wherein a nonwoven textile article or structure is formed by deposition of a thread component transversely of a longitudinally extended substrate, usually of thread components, by a member which pursues a circular or elliptical path of travel about the substrate.

SEE OR SEARCH CLASS:

- 19, Textiles: Fiber Preparation, subclasses 160 and 163 for deposition of sliver or web, respectively, in a zigzag fashion.
- 66, Textiles: Knitting, subclasses 84+ for feeding a cross-layed weft to a warp knitting machine.
- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclass 177 for methods of adhesively bonding cross-layed webs, and subclasses 439+ for apparatus for adhesively bonding cross-layed webs.

102 Cross laying by divergent thread conveying members:
This subclass is indented under subclass 100. Method or apparatus wherein a nonwoven textile article or structure is formed by deposition of a thread component transversely of a longitudinally extended substrate, usually of thread components, by endless movable means which deviate from a thread-receiving zone of close adjacency to a thread deposition zone wherein the means are further apart to draw out and extend the transverse thread component in transit therebetween.

SEE OR SEARCH CLASS:

- 19, Textiles: Fiber Preparation, subclasses 160 and 163 for deposition of sliver or web, respectively, in a zigzag fashion.
- 66, Textiles: Knitting, subclass 84 for feeding a cross-layed weft to a warp knitting machine.

- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclass 177 for methods of adhesively bonding cross-layed webs, and subclasses 439+ for apparatus for adhesively bonding cross-layed webs.

103 Fiber entangling and interlocking:
This subclass is indented under subclass 100. Method or apparatus wherein the component members of a nonwoven textile article or structure are rearranged to intermingle, one with the other, and are held in such intermingled condition by interfiber friction existing therebetween.

- (1) Note. The term “nonwoven” as utilized herein includes a textile article or structure assembled by operations other than weaving, knitting, braiding, lacing, knotting, or sewing, particularly including a textile article or structure assembled by needling, felting, cross-laying (not found in this subclass), and combinations thereof.
- (2) Note. The term “fiber” as utilized herein generally intends the fundamental unit of determinate, i.e., staple, length in the preparation of a textile article or structure but may also include a thread of substantial determinate or indeterminate length which is either used in the preparation of an individual needled or felted nonwoven article or structure or as a nonwoven entity of a composite needled or felted nonwoven article or structure.
- (3) Note. Fiber entangling and interlocking of a thread or a thread interlaced article or fabric, per se, as by needling or felting for example, is excluded from this subclass since such treatment operations serve to enhance or embellish rather than to create or establish the textile article or structure. However, the preparation of a base, layer, or substrate by a thread interlacing operation, such as by weaving, knitting and the like, which base, layer, or substrate is subsequently utilized in the manufacture of a composite nonwoven article or structure, is included herein.

- (4) Note. Fiber entangling and interlocking by subjecting a nonwoven textile structure under tensionless conditions to the influence of a fluid medium to develop latent shrinkage tendencies of the component members thereof, i.e., relaxation after treatment, is found herein.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 271+, for entangling a running length of thread by fluid jet.
 281, for entangling a running length of thread by latent bulk or crimp development.
 282+, for blooming or dephasing a running length of bulked or crimped tow where the intent is not to create a coherent, entangled, unitary, nonwoven web.

SEE OR SEARCH CLASS:

- 19, Textiles: Fiber Preparation, subclasses 296+ for assembling a web-like structure in a manner not found elsewhere.
 65, Glass Manufacturing, subclasses 443+ and 531+ for processes and apparatus, respectively, for combined glass filament formation and nonwoven web formation with coating or treatment thereto.
 264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclasses 109+ for methods of forming articles by uniting randomly associated particles which are either fused at their cross-over points or adhesively bound to one another.
 419, Powder Metallurgy Processes, appropriate subclasses for processes of forming articles by uniting particulate material containing metal particles.
 425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclasses 80.1+ for air felting type shaping means.

104 By fluid jet needling or perforating:

This subclass is indented under subclass 103. Method or apparatus wherein the rearrangement of the component members of nonwoven textile article or structure is accomplished by

means of a gaseous or liquid stream which impinges against and penetrates the surface of the textile article or structure to either (a) merely effect entangling and interlocking of the component members, or (b) to spread or separate the component members to form a permanent aperture through the textile article or structure.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 106, for forming perforations in a nonwoven textile article or structure by other than fluid jet means.
 107+, for needling a nonwoven textile article or structure by other than fluid jet means.
 271+, for fluid jet texturing of a running length of thread.

SEE OR SEARCH CLASS:

- 26, Textiles: Cloth Finishing, subclass 1 for methods of and apparatus for needling or perforating cloth.
 83, Cutting, appropriate subclass for methods and apparatus of penetrating or cutting work in a manner not provided for elsewhere by application of a fluid current thereto.
 239, Fluid Sprinkling, Spraying, and Diffusing, appropriate subclass for specific nozzle structure.
 427, Coating Processes, subclasses 289+ for a coating step combined with cutting, holing, or severing of the base material to remove a portion thereof.

105 Through backing and support members:

This subclass is indented under subclass 104. Method or apparatus wherein impingement of the fluid stream is applied to the nonwoven textile article or structure while sandwiched between upper and lower permeable or porous sustaining elements which form a rearranging zone for the component members of the article or structure.

- (1) Note. The sustaining elements commonly comprise an apertured forming member through which the fluid stream is first directed and which determines the locations of the fluid stream in the rearranging zone and a permeable backing

member through which the fluid leaves the rearranging zone.

106 To form perforations:

This subclass is indented under subclass 103. Method or apparatus wherein the rearrangement of the component members of the nonwoven textile article or structure is effected by surface penetration thereof to form a permanent aperture or opening therein.

SEE OR SEARCH THIS CLASS, SUBCLASS:

104+, for perforating a nonwoven textile article or structure utilizing a fluid jet.

163+, for producing an ornamental or surface textured perforated thread interlaced textile fabric.

SEE OR SEARCH CLASS:

26, Textiles: Cloth Finishing, subclass 1 for methods of and apparatus for perforating cloth.

83, Cutting, appropriate subclass for methods of or apparatus for penetrating or cutting work in a manner not provided for elsewhere.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclasses 154+ for a method of shaping with an additional step of forming holes or apertures in the shaped article.

425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclasses 290+ for shaping means combined with means to perforate the shaped article.

427, Coating Processes, subclasses 289+ for a coating step combined with contacting the base with a solid member to remove a portion of the base material, inclusive of pricking of the base with small needle-like devices.

107 Needling:

This subclass is indented under subclass 103. Method or apparatus wherein the rearrangement of the component members of the nonwoven textile article or structure is effected by surface penetration thereof by thin, usually barbed, rods, bars, and the like.

(1) Note. The needling operation is usually performed by banks of reciprocating

needles with the feed of the starting material being stepwise between successive needle penetrations to bind together adjacently disposed fibers with respect to themselves and/or to a substrate in the formation of a unitary, coherent article or structure.

(2) Note. The effects of the needling operation may be varied, including the uniting of discrete articles or structures to each other, the creation of an upstanding pile on a substrate, drawing or stretching of the component members of the article or structure in addition to the reorientation or rearrangement thereof, innumerable aesthetic applications in addition to conventional usage.

(3) Note. The needling of a thread interlaced article or fabric, per se, is not proper for this subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:

104+, for fluid jet needling of a nonwoven textile article or structure.

159+, for producing a thread interlaced pile fabric by a needling operation.

163+, for producing an ornamental or surface textured fabric by a needling operation.

165+, for treating a thread interlaced fabric by a needling operation.

SEE OR SEARCH CLASS:

156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 148+ for a process of needling combined with adhesive bonding.

108 To chain entangle:

This subclass is indented under subclass 107. Method or apparatus wherein the needling operation effects the formation of continuously extending links, loops, or stitches of component members or the nonwoven textile article or structure along an axis thereof.

(1) Note. Needling devices termed "interlacers" and provided with hooked, not barbed, needles which are capable of chain entanglement of the fibers of the article or structure will be placed in this

subclass and appropriately cross-referenced herein below.

SEE OR SEARCH CLASS:

66, Textiles: Knitting, appropriate subclass, especially subclasses 85+ for the fabrication of an article or fabric by entangling or interlocked successive loops of thread or yarn.

109 To form decorative article or fabric:

This subclass is indented under subclass 107. Method or apparatus wherein the needling operation produces an ornamental or motif nonwoven textile item, structure, or effect.

SEE OR SEARCH THIS CLASS, SUBCLASS:

163+, for the production of a thread interlaced ornamental or surface textured, thread interlaced textile fabric.

110 To form endless or tubular article or fabric:

This subclass is indented under subclass 107. Method or apparatus wherein the needling operation (a) is performed on, or (b) effects a closed loop item or structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

117, for forming an endless or tubular nonwoven textile article or fabric by uniting or splicing by a compressive manipulation operation.
141, for forming a thread interlaced endless or tubular textile article or fabric by a splicing operation.
142, for the production of an endless or tubular, thread interlaced, textile fabric.

111 Distinct needling stations:

This subclass is indented under subclass 107. Method or apparatus wherein needling is effected at a plurality of separate, discrete locations.

(1) Note. Plural needling locations within a single treating device will not be formed herein.

112 With treatment:

This subclass is indented under subclass 107. Method or apparatus wherein an additional operation is performed upon the needled nonwoven textile article or structure or a component member thereof to enhance a property or characteristic thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:

122, for the additional treatment of a nonwoven textile article or structure produced by compressive manipulation or of a component member thereof.
156, for subsequent treatment of a thread interlaced textile fabric to effect differential shrinkage.
162, for subsequent treatment of a thread interlaced textile fabric by a napping or teasing operation to effect or enhance a pile surface thereof.
165+, for subsequent treatment of a thread interlaced textile fabric in general.
281, for subsequent treatment of a running length of thread, e.g., tow, etc., to effect latent bulk or crimp development.

113 With relative movement of needles:

This subclass is indented under subclass 107. Method or apparatus wherein one of a plurality of needles or banks of needles (a) moves through a cycle different from that of another needle or bank, (b) moves at a different interval of time than another needle or bank, or (c) moves simultaneously with but in a different direction than another needle or bank.

114 With compound motion of needles or supply:

This subclass is indented under subclass 107. Method or apparatus wherein (a) an additional component of movement is applied to the surface penetrating rods, bars, and the like, or (b) wherein a lateral or transverse component of movement is applied to the component members of or substrate for the textile article or structure during the feeding thereof in an axial direction.

115 Needle or needle board feature:

This subclass is indented under subclass 107. Method or apparatus involving (a) the particular structure of a rod, bar, and the like, of (b) the particular arrangement of such elements within the member containing the same.

SEE OR SEARCH CLASS:

163, Needle and Pin Making, appropriate subclass for methods of and apparatus for the manufacture of needles.

116 Compressive manipulation:

This subclass is indented under subclass 103. Method or apparatus wherein fiber entangling and interlocking is accomplished by a frictional working or kneading operation to effect shrinkage, compaction, or contraction of a nonwoven textile article or structure or the attachment thereof to another structure.

- (1) Note. The compressive manipulation may be effected by hand or mechanically, with or without an assisting fluid medium, and commonly referred to in the art as “felting”, “fulling”, or “milling”.

SEE OR SEARCH THIS CLASS, SUBCLASS:

112, for compressive manipulation of a nonwoven textile article or structure prior to a needling operation.
165+, for compressive manipulation of a thread interlaced textile fabric.

SEE OR SEARCH CLASS:

26, Textiles: Cloth Finishing, subclasses 19+ for methods of or an apparatus for fulling an already formed fabric.
68, Textiles: Fluid Treating Apparatus, appropriate subclass for apparatus of general utility for treating a cloth or fabric with a fluid.
223, Apparel Apparatus, subclasses 7+ for apparatus for and methods of operating the same for making or renovating hats. The hat body felting apparatus found herein are combined with means for forming specific hat structures, such as brims.
252, Compositions, subclass 8.61 for fulling compositions.

117 To unite discrete articles or fabrics:

This subclass is indented under subclass 116. Method of apparatus wherein the compressive manipulation operation attaches or secures separate and distinct items or structures or portions thereof to each other in the formation of apparel or composite structures.

SEE OR SEARCH THIS CLASS, SUBCLASS:

110, for forming an endless or tubular nonwoven textile article or fabric by uniting or splicing by a needling operation.
141, for splicing or repair of a thread interlaced textile article or fabric.
142, for the production of an endless or tubular, thread interlaced, textile fabric.

118 Tampon shaping:

This subclass is indented under subclass 116. Method or apparatus wherein fibers are compacted by shaping apparatus into a relatively soft absorbed cylindrical article, which is adapted to be inserted into a body opening.

SEE OR SEARCH THIS CLASS, SUBCLASS:

123+, for compressive manipulation of a nonplanar, nonwoven article or fabric.

SEE OR SEARCH CLASS:

53, Package Making, subclasses 435 and 523+ for packaging methods and apparatus, respectively, including means to compact or stretch the content material.
68, Textiles: Fluid Treating Apparatus, subclass 242 for apparatus for squeezing a mass of textiles to promote drainage of liquid therefrom.
100, Presses, appropriate subclass for processes and apparatus not provided for elsewhere for producing compressed bales of material.
156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 62.2+ for processes of forming a preform by bulk deposition of particles combined with a step of laminating the formed preform to another preform.

- 162, Paper Making and Fiber Liberation, subclasses 218+ and 382+ for forming discrete articles from a liquid suspension of fibers.
- 264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclasses 5+ for formation of particles by liquid comminuting, subclasses 115+ for liberating and forming of fibers by other than liquid comminuting combined with uniting thereof, and subclasses 138+ for molding combined with a cutting operation, particularly subclasses 140+ and 145+.
- 300, Brush, Broom, and Mop Making, appropriate subclasses for machines and processes for compacting fibers into tufts in the manufacture of brushes, brooms, or mops.
- 425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclasses 80.1+ for shaping articles, utilizing an air felting means to distribute particulate stock unto a shaping surface.
- 427, Coating Processes, subclasses 243+ for processes of coating porous products.
- 508, Solid Anti-Friction Devices, Materials Therefor, Lubricant or Separant Compositions for Moving Solid Surfaces, and Miscellaneous Mineral Oil Compositions, particularly subclasses 100+ for lubricants incorporated with a fibrous carrier.
- 604, Surgery, subclasses 11+ for tampon applicators; subclasses 286+ for medicated tampons; subclasses 367+ for materials, fibers, and particles from which tampons are made; subclasses 358+ for absorbent pads, diapers, and tampons; and subclass 904 for tampon cross-reference collection.
- 119 With ejecting:**
This subclass is indented under subclass 118. Method or apparatus including means for forcing the compacted cylindrical article out of the compacting area of the shaping apparatus.
- 120 With string attaching:**
This subclass is indented under subclass 118. Method or apparatus wherein a flexible withdrawing cord or ribbon is secured to the cylindrical article or tampon.
- 121 Compacted fiber article encasing:**
This subclass is indented under subclass 116. Method or apparatus wherein a textile item is formed by wrapping a mass of fibers within a covering and wherein the mass of fibers is compressed into a desired shape prior to, during or after the wrapping occurs.
- SEE OR SEARCH CLASS:
29, Metal Working, appropriate subclass, for methods and apparatus making composite articles.
53, Package Making, appropriate subclass, for the wrapping of articles in packaging material.
- 122 With treatment:**
This subclass is indented under subclass 116. Method or apparatus including performing an additional operation upon the compressively manipulated article or structure or a component member thereof to enhance a property or characteristic thereof.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
112, for the additional treatment of a non-woven textile article or structure produced by needling or of a component member thereof.
156, for subsequent treatment of a thread interlaced textile fabric to effect differential shrinkage.
162, for subsequent treatment of a thread interlaced textile fabric by a napping or treating operation to effect or enhance a pile surface thereon.
165+, for subsequent treatment of a thread interlaced textile fabric in general.
281, for subsequent treatment of a running length of thread to effect latent bulk or crimp development.

- 123 Of nonplanar article or fabric:**
This subclass is indented under subclass 116. Method or apparatus for the compressive manipulation of an item or structure having a three-dimensional configuration.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
118+, for compressive manipulation of fibers to form a tampon.
- 124 While on form:**
This subclass is indented under subclass 123. Method or apparatus wherein the compressive manipulation occurs while the nonplanar item or structure is mounted on a shaping or forming member.
- SEE OR SEARCH CLASS:
19, Textiles: Fiber Preparation, subclass 148 for depositing fibers by means of an air current on a screen of the shape of the object desired.
223, Apparel Apparatus, subclasses 7+ for apparatus for forming hats, including felting apparatus, wherein structure is provided for making a specific hat feature, such as a brim.
- 125 Coil or circular article manipulation:**
This subclass is indented under subclass 123. Method or apparatus wherein the item is wound on itself in roll or cylinder form and worked in such configuration or the working of a round, oval, or cylindrical item.
- 126 By roller pocket:**
This subclass is indented under subclass 125. Method or apparatus including a plurality of cylindrical or round members arranged so as to provide a cavity therebetween for reception and manipulation of a coil or circular item therewithin.
- 127 With progressive feed:**
This subclass is indented under subclass 126. Method or apparatus wherein a coil or circular item is caused to pursue a path of travel during the manipulating operation through the treating device.
- 128 Discontinuous roller surface:**
This subclass is indented under subclass 126. Method or apparatus wherein the exterior item contacting surface of a cylindrical or round cavity or pocket forming member has grooves, projections, or like interruptions about the circumference thereof.
- SEE OR SEARCH CLASS:
492, Roll or Roller, appropriate subclasses for a roll, per se, not elsewhere provided for, and see the notes thereunder.
- 129 With curved or tapered contour:**
This subclass is indented under subclass 128. Method or apparatus wherein the discontinuous exterior article or item contacting surface of a cylindrical or round cavity or pocket forming member gradually varies in profile along its longitudinal axial extent or a portion thereof.
- 130 By driven and opposed surfaces:**
This subclass is indented under subclass 125. Method or apparatus wherein a coil or circular article or item is manipulated between spaced, oppositely adjacent, confronting members, at least one of which is provided with orbital, reciprocatory, or oscillatory movement.
- SEE OR SEARCH CLASS:
74, Machine Element or Mechanism, appropriate subclass for mechanical movements and power-transmission structure.
- 131 With compound movement of driven surface:**
This subclass is indented under subclass 130. Method or apparatus wherein the driven member is provided with orbital and reciprocatory movement or orbital and oscillatory movement.
- 132 Reciprocating or oscillating opposed surfaces:**
This subclass is indented under subclass 130. Method or apparatus wherein both confronting members are provided with reciprocating or oscillating movement.

133 Internally of container:

This subclass is indented under subclass 125. Method or apparatus including the placement of an item within a receptacle or vessel wherein the treatment is accomplished.

134 By multiroller manipulation:

This subclass is indented under subclass 116. Method or apparatus involving the working or kneading of an article or structure between opposed beds of round or cylindrical members such that the article or structure pursues a sinuous path in transit therebetween.

135 With plural multiroller stations:

This subclass is indented under subclass 134. Method or apparatus including two or more separate, discrete multiroller manipulating operations.

136 Having plural superimposed beds:

This subclass is indented under subclass 134. Method or apparatus having at least two vertically aligned treating paths defined by the roller assemblies with provision for directing the article or structure from one to the other.

137 With compound roller motion:

This subclass is indented under subclass 134. Method or apparatus wherein the rollers are provided with either rotary and oscillatory or rotary and reciprocatory movement.

138 By cylinder and opposed conforming bed:

This subclass is indented under subclass 116. Method or apparatus wherein the working or kneading of an article or structure occurs between a rotary drum or roller and an opposing, confronting member, or members arcuately shaped or contoured to conform to a portion of the periphery of the rotary drum or cylinder.

139 By reciprocating member (e.g., platen, etc.):

This subclass is indented under subclass 116. Method or apparatus wherein the working or kneading of an article or structure occurs between opposed, confronting elongate noncircular elements, at least one of which is provided with a to-and-fro movement.

140 Of thread interlaced article or fabric:

This subclass is indented under subclass 100. Method or apparatus for the fabrication or treatment of a textile item or structure formed from thread by a braiding, knitting, x knotting, lacing, sewing, or weaving operation or combinations thereof not otherwise provided for.

(1) Note. The term "thread" as utilized herein generally intends the fundamental unit of substantial determinate or indeterminate length in the preparation of a textile structure rendered coherent by an orderly, predetermined interlinking or intertwining of the unit with respect to itself or another such unit.

(2) Note. "Thread", as utilized herein, generally represents a slender elongate element composed of a fiber, filament, roving, sliver, strand, yarn, and the like, of individual or multiple such elements, having twist therein or twistless, of a single or multi-ply and combinations thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 112, for the manufacture of a thread interlaced article or structure utilized as a substrate in the production of a composite, needled, nonwoven, textile structure.
- 122, for the manufacture of a thread interlaced article or structure utilized as a substrate in the production of a composite, compressively manipulated, nonwoven, textile structure.
- 218, for thread texturing by textile product fabrication-defabrication, e.g., knit-deknit, etc.

SEE OR SEARCH CLASS:

- 66, Textiles: Knitting, appropriate subclass for methods and apparatus for forming a textile product by the interlacing of yarn or thread in series of connected loops and for such fabrication combined with "on the machine" treatment of the yarn, thread, or formed textile product.

- 87, Textiles: Braiding, Netting, and Lace Making, appropriate subclass for methods of and apparatus for (a) intertwining a plurality of strands to form a plait-like structure, (b) for intertwining or knotting a plurality of strands into an open mesh fabric, or (c) forming a plurality of strands into an ornamental openwork fabric.
- 112, Sewing, appropriate subclass for the production of a thread interlaced textile structure by a thread stitching operation.
- 139, Textiles: Weaving, appropriate subclass for the fabrication of a thread interlaced textile product which is formed by arranging one set of threads generally transversely to another set such that each thread of one set lays above some and below other threads of the other set and is thus clamped in position by this arrangement and for such fabrication combined with "on the machine" treatment of the thread or yarn used in product fabrication or of the formed textile product.

141 Splicing or repair:

This subclass is indented under subclass 140. Method or apparatus for (a) the renewal or restoration of a thread interlaced textile article or structure to its original or finished condition, or (b) the uniting of the ends of a thread interlaced textile article or structure to each other or an end thereof of another textile article or structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 110, for forming an endless or tubular nonwoven textile article or fabric by uniting or splicing by a needling operation.
- 117, for uniting discrete nonwoven textile articles or fabrics by compressive manipulation.
- 142, for the production of an endless or tubular, thread interlaced, textile fabric.

SEE OR SEARCH CLASS:

- 57, Textiles: Spinning, Twisting, and Twining, subclasses 22+ and 362 for apparatus for and methods of joining or uniting threads, cores, rope or the like by a twisting or twining operation.
- 66, Textiles: Knitting, subclass 1.5 for methods of and apparatus for repairing holes or runs in knitted fabrics.
- 140, Wireworking, subclasses 111+ for joining wire in an end-to-end relationship.
- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclass 49 for splicing of indefinite length conductors, and subclasses 157+ for processes of adhesively joining elements in an end-to-end relationship to form a lamina of indefinite length.
- 242, Winding, Tensioning, or Guiding, subclasses 475.1+ for winding apparatus having means to unite a reserve thread to the end of an exhausted supply and subclasses 551+ for winding apparatus having means to unite the outer end of a succeeding supply roll to the inner end of a preceding supply roll.

142 Endless or tubular fabric:

This subclass is indented under subclass 140. Method or apparatus for the fabrication or treatment of a continuous, interminable thread interlaced textile structure defining a closed loop.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 110, for the production of an endless or tubular needled, nonwoven textile article or fabric.
- 117, for the production of an endless or tubular nonwoven textile article or fabric including a splicing operation by compressive manipulation.
- 141, for the production of a thread-interlaced endless or tubular article or fabric by a splicing operation.

143 Article:

This subclass is indented under subclass 140. Method or apparatus for the fabrication or treatment of a thread interlaced textile item of finite dimensions, specific configuration, and use.

- (1) Note. The mere act of cutting a thread interlaced structure which is formed as a continuum into a plurality of discrete items, e.g., sweater bodies, etc., or the mere removal of a transitory or temporary thread used to hold such articles together will not be found in this or the indented subclasses.
- (2) Note. Complete disassembly of an article by removal of the component members thereof will not be found in this or the indented subclasses.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 168, for the separation of an article from a thread interlaced structure formed as a continuum by fluid contact.
- 170, for the separation of an article from a thread interlaced structure formed as a continuum by cutting or transitory thread removal other than by fluid contact.
- 171, for the complete disassembly of an article by removal of the component members thereof.

144 Chenille:

This subclass is indented under subclass 143. Method or apparatus for the fabrication or treatment of a thread interlaced elongate thread-like member having a protruding pile surface.

SEE OR SEARCH CLASS:

- 57, Textiles: Spinning, Twisting, and Twining, subclasses 24 and 203 for the formation of chenille by twisting a plurality of strand-like elements together to bind short transverse threads or filaments.

145 Fringe:

This subclass is indented under subclass 143. Method or apparatus for the fabrication or treatment of an ornamental border comprising short straight or twisted thread portions, strips, tassels, tufts and the like projecting from a cut or raveled edge of a thread interlaced item or from a separate fabric band to which such projections have been applied.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 144, for the production of chenille, a thread-like member having protruding thread portions.

SEE OR SEARCH CLASS:

- 112, Sewing, subclass 64 for apparatus for attaching fringes or loops to the edge of a fabric.

146 By fraying or raveling:

This subclass is indented under subclass 145. Method or apparatus wherein the ornamental border or fringe is produced by disintegration or removal of threads or thread portions from an edge of a thread interlaced item or fabric band.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 171, for the complete destruction or disintegration of a thread interlaced textile article or fabric by fraying or raveling.

147 Tuft, tassel or pompon:

This subclass is indented under subclass 143. Method or apparatus for the fabrication or treatment of an ornamental thread interlaced cluster of three-dimensional configuration.

SEE OR SEARCH CLASS:

- 112, Sewing, subclasses 470.23+ for apparatus for sewing one or more pieces of cut yarn together in a bunch or to sew them individually or collectively to a fabric backing without inserting them through the backing.
- 223, Apparel Apparatus, subclass 46 for methods and apparatus for making bows, tassels, and the like, other than binding or thread or yarn in bundles.

148 Slit interlaced:

This subclass is indented under subclass 143. Method or apparatus for the fabrication or treatment of a continuum composed of a plurality of bands, ribbons, strips, webbings, and the like, which are joined to each other by the insertion of a portion of one of the bands, ribbons, and the like, through a slit formed in the next adjacent band, ribbon, and the like.

149 By utilizing thread frame:

This subclass is indented under subclass 143. Method or apparatus wherein a static structure is utilized to retain or tension thread while the interlacing operation is performed thereon.

SEE OR SEARCH CLASS:

- 66, Textiles: Knitting, subclass 4 for thread frames with pins or studs around which the loops of a knitted article are formed during a knitting operation.
- 289, Knots and Knot Tying, subclass 16.5 for macrame frames.

150 Rosette or lace:

This subclass is indented under subclass 149. Method or apparatus wherein thread is interlaced into an ornamental disc-like item of floral design or fine-figured openwork.

SEE OR SEARCH CLASS:

- 66, Textiles: Knitting, subclass 4 for circular thread frames used in knitting a tubular fabric as opposed to single rosette, bow, etc.

151 Woven:

This subclass is indented under subclass 149. Method or apparatus wherein thread is interlaced into a textile item by directing one set of thread components sinuously over and under a second set of such components in a particular pattern to unite same in a coherent manner.

SEE OR SEARCH CLASS:

- 139, Textiles: Weaving, subclasses 29+ and especially subclass 34 for methods of weaving and for thread frames having means specializing them for weaving, e.g., shedding mechanisms, beat up motions, warp feed or take up, etc.

152 Warp and weft retention:

This subclass is indented under subclass 151. Method or apparatus wherein the thread frame has provision for retaining or securing both sets of thread components of the textile item.

153 Garment:

This subclass is indented under subclass 143. Method or apparatus for the fabrication or treatment of thread interlaced apparel or clothing for the body.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 123 and 124, for the production of a compressively, manipulated, nonwoven garment.

SEE OR SEARCH CLASS:

- 2, Apparel, appropriate subclass for apparel and methods for the production thereof and subclasses 243.1+ for devices and processes applicable to garments in general.
- 66, Textiles: Knitting, appropriate subclass for methods and apparatus for the production of a garment upon a knitting machine.
- 87, Textiles: Braiding, Netting, and Lace Making, appropriate subclass for methods and apparatus for the production of a garment by braiding, netting, or lace making.
- 223, Apparel Apparatus, appropriate subclass for methods of and apparatus for the production of garments not elsewhere provided for.

154 Hosiery:

This subclass is indented under subclass 153. Method or apparatus for the fabrication or treatment of a thread-interlaced sock, stocking, or panty-hose.

SEE OR SEARCH CLASS:

- 2, Apparel, subclasses 239+ for nether garments of the stocking type and methods of making same involving more than the fabricating, e.g., knitting operation, etc.
- 66, Textiles: Knitting, subclasses 178+ for nether garments of the stocking

type and methods of making same by hand knitting operations.

- 223, Apparel Apparatus, subclass 60 for methods and apparatus for pressing a stocking; subclasses 75+ for a stocking form; and subclass 112 for a device to remove a stocking from a form.

155 Elastic or crepe fabric:

This subclass is indented under subclass 140. Method or apparatus for the fabrication or treatment of a thread interlaced textile structure (a) capable of shape recovery after deformation, or (b) having a crinkled surface texture.

- (1) Note. The production of elasticity or crepe in localized areas of a thread interlaced fabric is included herein.

SEE OR SEARCH CLASS:

- 8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, subclass 114.5 for methods of chemically producing ornamental effects in fabric by differential creping, and subclass 117 for chemically producing wool-like or crinkle effects in fabric.
- 66, Textiles: Knitting, appropriate subclass for methods or apparatus for the production of an elastic or crepe fabric on a knitting machine.
- 139, Textiles: Weaving, appropriate subclass for methods of or apparatus for the production of an elastic or crepe fabric on a loom.
- 162, Paper Making and Fiber Liberation, subclasses 111+ for processes of creping paper and subclasses 280+ for apparatus for creping paper.
- 264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclasses 282+ for processes of creping or crinkling plastic or nonmetallic material in a manner not provided for elsewhere.

156 By differential shrinkage:

This subclass is indented under subclass 155. Method or apparatus wherein the component members of a thread interlaced textile structure possess dissimilar contractile properties which

upon contraction impart the elasticity or crepe surface to the structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 116, for particulars of a liquid bath to effect shrinkage during compressive manipulation of a nonwoven textile article or structure.

157 Bias or diagonal thread orientation:

This subclass is indented under subclass 155. Method or apparatus wherein sets of component members of the thread interlaced textile structure are inclined or oriented nonorthogonally to each other to impart elasticity to the structure.

SEE OR SEARCH CLASS:

- 26, Textiles: Cloth Finishing, subclasses 51.3+ for methods and apparatus for adjusting the weft angle of a fabric to produce a bias fabric or to return the weft angle to perpendicular relationship with the warp.
- 29, Metal Working, subclasses 2.1+ for the bias cutting of tubular stock.

158 Multi-ply fabric:

This subclass is indented under subclass 140. Method or apparatus for the fabrication or treatment of a textile structure having plural thread interlaced layers interconnected via component members interlaced within the layers and extending therebetween at intervals along an axis of the structure.

SEE OR SEARCH CLASS:

- 26, Textiles: Cloth Finishing, subclasses 13+ for cutting the connecting threads of two-ply fabric to produce two-ply fabrics.
- 66, Textiles: Knitting, subclasses 196+ for multi-ply products of a knitting apparatus.
- 139, Textiles: Weaving, subclasses 408+ for multi-ply fabrics produced by a loom.

159 Pile fabric:

This subclass is indented under subclass 140. Method or apparatus for the fabrication or treatment of a thread interlaced textile structure having an upright or upstanding surface of

fibers, filaments, strands, threads, yarns, and the like.

SEE OR SEARCH CLASS:

- 26, Textiles: Cloth Finishing, subclass 2 for the mechanical treatment of a pile fabric and subclasses 7+ for cutting the loops of a pile fabric.
- 66, Textiles: Knitting, subclasses 91+ for knitting machines having pile loop formers.
- 112, Sewing, subclasses 80.01+ for tufting apparatus and subclass 475.23 for tufting methods.
- 118, Coating Apparatus, subclasses 308+ for means for projecting or spraying solid particulate matter onto a base, e.g., flocking, etc.
- 139, Textiles: Weaving, subclasses 2+ for looms having pile tufting means.
- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclass 72 for methods of setting or embedding tufts or discrete pile elements onto a backing and subclasses 148+ for the production of a pile fabric by weaving, knitting, or needling.
- 427, Coating Processes, subclasses 180+ for deposition of solid particles or fibers upon a base the same, e.g., flocking, etc.

160 Discontinuous or patterned surface:

This subclass is indented under subclass 159. Method or apparatus wherein the upright or upstanding pile surface is nonuniform or irregular along an axis of the thread interlaced textile structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 109, for the production of a decorative, needled, nonwoven textile article or fabric.
- 155+, for the production of a decorative, elastic or crepe, thread-interlaced textile fabric.
- 163+, for the production of an ornamental or surface textured, thread-interlaced textile fabric.
- 184, for pattern setting of thread in the form of a warp sheet in the production of a decorative or ornamental fabric.

214+, for pattern setting or thread utilized as the pile in the production of a patterned axminster carpet or the like.

SEE OR SEARCH CLASS:

- 26, Textiles: Cloth Finishing, subclass 16 for methods and apparatus for producing a discontinuous or patterned pile surface by a shearing operation and subclass 30 for producing such a surface by a napping operation.

161 Separable fastener type:

This subclass is indented under subclass 159. Method or apparatus wherein terminal portions of the upstanding pile surface of the thread interlaced textile structure are modified to enable the pile surface to effectively engage and retain an associated pile surface of similar or looped character.

SEE OR SEARCH CLASS:

- 24, Buckles, Buttons, Clamps, etc., subclasses 442+ for separable fasteners formed from pile fabric (e.g., fabric hook and loop type fastener, etc.).

162 Napped or teased:

This subclass is indented under subclass 159. Method or apparatus wherein the upright or upstanding pile surface of the thread interlaced textile structure is either created or further enhanced by an abrading, brushing, or combing operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 112+, for subsequent treatment of a needled, nonwoven textile article or structure, inclusive of napping or teasing.
- 122+, for subsequent treatment of a compressively manipulated nonwoven textile article or structure, inclusive of napping or teasing.
- 219, for napping or teasing a running length of thread.

SEE OR SEARCH CLASS:

- 26, Textiles: Cloth Finishing, subclasses 29+ for the production of a pile in an already fabricated textile product by napping.

163 Ornamental or surface textured fabric:
This subclass is indented under subclass 140. Method or apparatus for the fabrication or treatment of a thread interlaced textile structure having a decorative or motif appearance.

- (1) Note. The combination of a significantly claimed textile operation and effect coloring, inclusive of printing in localized areas, to produce pattern effects on a thread interlaced textile structure will be found herein.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 109, for the production of a decorative, needled, nonwoven article or fabric.
155+, for the production of a decorative, elastic or crepe, thread-interlaced textile fabric.
160, for the production of a thread-interlaced pile fabric having a discontinuous or patterned surface.

SEE OR SEARCH CLASS:

- 8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, subclasses 114+ for methods of producing an ornamental effect in a textile product by fluid treatment or chemical modification and subclass 117 for the production of wool-like or crinkled effect upon a textile fabric by chemical modification.
26, Textiles: Cloth Finishing, subclass 69 for methods of or an apparatus for producing an ornamental effect by mechanically finishing cloth.
87, Textiles: Braiding, Netting, and Lace Making, appropriate subclass for methods of and apparatus for the production of net or lace fine work.
101, Printing, appropriate subclass for embossing or printing ornamental designs on textile products.

164 By sewing:
This subclass is indented under subclass 163. Method or apparatus wherein the decorative of motif appearance is imparted by stitching designs with thread and the like onto a substrate.

- (1) Note. The fabrication of embroidery by a stitching operation in combination with another textile or nontextile operation, not specifically provided for elsewhere, will be found herein.

SEE OR SEARCH CLASS:

- 112, Sewing, subclasses 78+ for apparatus for embroidering textile products and subclasses 475.18+ for methods of embroidery.

165 Treating:

This subclass is indented under subclass 140. Method or apparatus wherein (a) a thread interlaced textile structure of indeterminate length, made in a manner provided for in some other textile manufacturing class, is conditioned in a manner not specifically provided for in said class, or (b) a thread interlaced textile structure of indeterminate length or some component member thereof is conditioned in a manner not elsewhere provided for.

- (1) Note. The conditioning can occur prior to or subsequent to the interlacing step. Thus, for example, a patent claiming treating a thread of a woven product prior to the weaving operation in a manner not provided for in Class 139 would be placed in this class (28).

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 112, for subsequent treatment of a needled, nonwoven textile article or structure.
122, for subsequent treatment of a compressively manipulated, nonwoven textile article or structure.

SEE OR SEARCH CLASS:

- 8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textile and Fibers, appropriate subclass for the treatments of that class, per se, or combined with a broadly recited textile operation.
66, Textiles: Knitting, subclasses 147+ for treatment of a textile product while on a knitting machine.
139, Textiles: Weaving, subclasses 291+ for treatment of a textile product while on a loom.

- 427, Coating Processes, appropriate subclass for the treatments of that class, per se, or combined with a broadly recited textile operation.
- 432, Heating, subclass 8 for methods of heating a continuum of web-like material and subclasses 59+ for heating means including means to advance a web-like structure through the heating means.

166 By pretreatment of component:

This subclass is indented under subclass 165. Method or apparatus wherein the treatment involves a preparatory conditioning of a component member of the textile structure prior to the interlacing operation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 112, for pretreatment of a component member of a nonwoven textile article or structure prior to a needling operation.
- 122, for pretreatment of a component member of a nonwoven textile article or structure prior to a compressive manipulation operation.
- 217+, for the conditioning of thread, per se.

SEE OR SEARCH CLASS:

- 66, Textiles: Knitting, subclasses 125+ for knitting machines having additional means to pretreat the threads or yarn used in said machine.

167 By fluid contact:

This subclass is indented under subclass 165. Method or apparatus wherein the treatment involves the application of a gaseous or liquid medium to the thread interlaced textile structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 116, for particulars of a liquid bath to effect shrinkage during compressive manipulation of a nonwoven textile article or structure.
- 178, for the fluid treatment of a sheet of warp threads.

SEE OR SEARCH CLASS:

- 8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, appropriate subclass for methods of contacting a textile product with a fluid to treat or chemically modify the textile structure.
- 68, Textiles: Fluid Treating Apparatus, appropriate subclass for apparatus for contacting a textile product with a fluid not provided for elsewhere.
- 423, Chemistry of Inorganic Compounds, subclass 447.1 for methods for carbonizing fibers, fabrics, or textiles.

168 To remove transitory component:

This subclass is indented under subclass 167. Method or apparatus wherein application of the gaseous or liquid medium effects elimination or disintegration of a portion of a component member of the thread interlaced textile structure.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 164, for removal of a transitory thread component to produce an ornamental or surface textured effect in a sewn textile fabric.
- 170, for removal of a transitory thread component to divide or open a thread-interlaced textile fabric other than by fluid contact.

SEE OR SEARCH CLASS:

- 8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, subclass 114.6 for processes of treating a textile product with a liquid to destroy or to remove some of the fibers to produce an ornamental effect and subclass 140 for processes of removing impurities from textiles by destruction thereof.
- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclass 625 for processes of etching or dissolving in general.

169 Coating or dyeing:

This subclass is indented under subclass 167. Method or apparatus wherein the fluid contact involves (a) the application of a finishing, protecting, or enclosing layer to the thread interlaced textile structure, or (b) the application of a coloring thereto.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 163+, for coating or dyeing to produce an ornamental or surface textured effect in a thread-interlaced textile fabric.
- 178+, for coating or dyeing of thread in the form of a warp sheet.
- 218, for coating or dyeing a thread-interlaced textile article or fabric and subsequent disassembly thereof to produce a coated or dyed textured thread.

SEE OR SEARCH CLASS:

- 8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, subclasses 400 through 696 for processes of dyeing textile products.
- 68, Textiles: Fluid Treating Apparatus, appropriate subclass for apparatus for contacting a textile product with a fluid not provided for elsewhere.
- 101, Printing, appropriate subclass for the application of a decorative design to a textile product by an embossing or printing technique.
- 118, Coating Apparatus, appropriate subclass for apparatus for applying a coating material to a base.
- 427, Coating Processes, appropriate subclass for processes of applying a coating material to a base.

170 By cutting or transitory thread removal:

This subclass is indented under subclass 165. Method or apparatus wherein the treatment involves (a) dividing a textile structure, or (b) opening such a structure when in tubular form either by penetrating the structure with a severing device or severing force or by withdrawing a strand which is used to temporarily secure one segment or portion of a textile structure to another.

- (1) Note. "Detacking" i.e., the opening of a thread interlaced textile structure from tubular to planar form by removal of a draw or temporary retaining thread is included herein as is the removal of a draw or temporary retaining thread to separate a thread interlaced textile structure into discrete articles or items.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 164, for removal of a transitory thread component to produce an ornamental or surface textured effect in a sewn textile fabric.
- 168, for removal of a transitory thread component in a thread-interlaced textile fabric by fluid contact.

SEE OR SEARCH CLASS:

- 29, Metal Working, subclasses 412+ for methods of obtaining plural pieces from a unitary piece.
- 83, Cutting, appropriate subclass for cutting implements, per se. Those cutting implements which either include means to treat the raw cut edge of an interlaced textile structure in a manner not elsewhere provided for to prevent raveling or effect such a treatment by the very nature of the cutting operation will be found in this class (28).
- 225, Severing by Tearing or Breaking, appropriate subclass for device for and methods of severing by manually forcing work against a fixed edge or by breaking or tearing.

171 By article or fabric disassembly:

This subclass is indented under subclass 165. Method or apparatus wherein the treatment effects destruction or disintegration of the thread interlaced textile structure by removal of the component members thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 218, for the disassembly of an article or fabric in the production of a textured thread.

172.1 Warp preparing or handling:

This subclass is indented under the class definition. Method or apparatus including either assembling threads into a sheet of warp threads (a warp sheet) or manipulating the assembled sheet prior to or during its insertion into a textile fabricating apparatus.

172.2 With drawing or stretching:

This subclass is indented under subclass 172.1. Method or apparatus for attenuating or elongating a warp sheet beyond its elastic limit.

SEE OR SEARCH THIS CLASS, SUBCLASS:

240+, for apparatus for stretching a thread beyond its elastic limit.

SEE OR SEARCH CLASS:

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclasses 288.4+ for a process of stretching running work or indefinite-length work by applying tension thereto.

173 Clearing:

This subclass is indented under subclass 172. Method or apparatus including removing lint or other foreign matter from the threads of the warp sheet.

SEE OR SEARCH THIS CLASS, SUBCLASS:

222+, for clearing a running length of thread, yarn, and the like, of undesired material.

174 Singeing:

This subclass is indented under subclass 173. Method or apparatus wherein the lint or other foreign matter is removed from the threads of the warp sheet by burning.

SEE OR SEARCH THIS CLASS, SUBCLASS:

239, for singeing a running length of thread, yarn, and the like.

SEE OR SEARCH CLASS:

26, Textiles: Cloth Finishing, subclasses 3+ for methods of or apparatus for burning or scorching the projecting fibers or threads of cloth.

68, Textiles: Fluid Treating Apparatus, subclass 2 for carbonizing apparatus.

118, Coating Apparatus, subclass 47 for coating means combined with means for subjecting either a coated surface or a surface to be coated to a flame or fire.

427, Coating Processes, subclasses 223+ for processes of coating wherein a coating or surface to be coated is subjected to contact with a flame.

175 Chain formation or manipulation:

This subclass is indented under subclass 172.1. Method or apparatus wherein either the warp sheet is compressed into a rope-like continuum or the formed continuum is handled in a manner not elsewhere provided for.

SEE OR SEARCH CLASS:

242, Winding, Tensioning, or Guiding, subclasses 470+ for the winding of a rope-like continuum into masses, balls, or cylindrical packages and subclasses 472.8+ for winding devices combined with guide means for combining a plurality of independent strands into a single untwisted entity which is subsequently wound upon a carrier.

176 Wrapping or unwrapping:

This subclass is indented under subclass 175. Method or apparatus including either winding a thread spirally around a warp chain or removing such a spirally wound thread.

177 Linking:

This subclass is indented under subclass 175. Method or apparatus including the formation of the rope-like continuum into a series of interconnected loops or stitches.

SEE OR SEARCH CLASS:

66, Textiles: Knitting, appropriate subclass and especially subclasses 85+ and 118 for methods and apparatus for forming crochet stitches.

178 With fluid treatment (e.g., sizing, etc.):

This subclass is indented under subclass 172.1. Method or apparatus for applying a gas or liquid to a sheet of warp threads to condition the same.

- (1) Note. Devices or processes for applying a sizing or dyeing compound to a warp sheet will be found herein.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 112, for needling combined with conditioning of a nonwoven fabric or a component thereof.
 122, for compressive manipulation combined with conditioning of a nonwoven fabric or a component thereof.
 167, for fluid treatment of a thread interlaced article or fabric in a manner not provided for elsewhere.
 246, for spaced, differentially driven thread stretching apparatus having intermediate conditioning means.
 261, for knife edge texturing of a running length of thread combined with additional conditioning.
 265, for stuffer box-type texturing of a running length of thread combined with additional conditioning.

SEE OR SEARCH CLASS:

- 8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, appropriate subclass for processes of contacting thread with a fluid to treat or chemically modify the same.
 68, Textiles: Fluid Treating Apparatus, appropriate subclass for apparatus for contacting a textile product with a gas or liquid in a manner not provided for elsewhere.
 118, Coating Apparatus, appropriate subclass for means for applying a coating material to a base.
 427, Coating Processes, appropriate subclass for methods of applying a coating material to a base.

179 With drying:

This subclass is indented under subclass 178. Method or apparatus wherein the fluid treated sheet of warp threads is further treated to remove excess moisture therefrom.

SEE OR SEARCH CLASS:

- 34, Drying and Gas or Vapor Contact With Solids, appropriate subclass for methods of and apparatus for the evaporation of unwanted moisture from a solid.

180 By noncontacting heating means:

This subclass is indented under subclass 179. Method or apparatus wherein the fluid treated sheet of warp threads is dried by a heating device which is physically spaced from the warp sheet.

- (1) Note. A carrier fluid, such as air, may be used to transmit the heat between the heating device and the warp sheet.

181 With preseparation:

This subclass is indented under subclass 179. Method or apparatus wherein the fluid treated sheet of warp threads is divided or leased prior to drying.

182 By immersion:

This subclass is indented under subclass 178. Method or apparatus wherein the warp sheet is introduced into a bath of liquid.

SEE OR SEARCH CLASS:

- 118, Coating Apparatus, subclasses 400+ for immersion or work confining pool-type coating means.
 427, Coating Processes, subclasses 430.1+ for processes of coating a base by immersing or partial immersing the base in a coating material.

183 With squeezing rollers:

This subclass is indented under subclass 182. Method or apparatus wherein the warp sheet passes between squeeze or quetch rolls while or after it is immersed in the liquid bath.

184 Pattern setting:

This subclass is indented under subclass 172.1. Method or apparatus wherein the warp sheet is composed of threads of differing color, texture, and the like, which are arranged in a predetermined manner across the width of the sheet.

- SEE OR SEARCH THIS CLASS, SUB-CLASS:
214+, for similar methods and apparatus used with Axminster tuft material.
- 185 With means responsive to sensed condition:**
This subclass is indented under subclass 172.1. Method or apparatus wherein means are provided to perceive variations in a characteristic which deviate from a set norm, which means activates or regulates additional means to alter the operation of warp preparing or handling device.
- (1) Note. Those devices employing means to regulate the speed at which a warp sheet is taken up by a beam in response to sensed sheet tension will be found herein.
- SEE OR SEARCH CLASS:
226, Advancing Material of Indeterminate Length, subclasses 10+ for means for advancing a running length of work which means is provided with means responsive to the condition of the running length.
242, Winding, Tensioning, or Guiding, subclasses 472.9+, 479.9+, 484.8, and 484.9+ for a helical winding device having a detector or stop and subclasses 333+ for an automated stop in a magnetic tape or image film winding device.
- 186 Stopping:**
This subclass is indented under subclass 185. Method or apparatus wherein the additional means brings the operation of the warp preparing or handling device to a halt.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
225, for stopping structure associated with clearing means for a single strand, and see the search notes thereunder.
- SEE OR SEARCH CLASS:
139, Textiles: Weaving, subclasses 349+ for looms having stopping means which are responsive to the condition of the warp.
- 187 Electrical:**
This subclass is indented under subclass 186. Method or apparatus including electrical actuation of the stop mechanism.
- 188 By arrestable oscillator or vibrator:**
This subclass is indented under subclass 186. Method or apparatus wherein the stopping is effected by an element which is driven to-and-fro through a breakage connection and wherein a thread sensing means is allowed to drop into the path of the element to thus stop its movement when the sensed thread is either broken or exhausted.
- 189 Pivoted detector:**
This subclass is indented under subclass 188. Method or apparatus wherein the thread sensing means is mounted to swing about an axis.
- 190 Reeling or beaming:**
This subclass is indented under subclass 172.1. Method or apparatus including (a) building up or winding an already assembled sheet of warp threads upon a temporary storage drum prior to winding on a warp supply package, or (b) winding a sheet of warp threads onto a warp supply package which is to be used on a loom or other textile machine.
- 191 Section building:**
This subclass is indented under subclass 190. Method or apparatus wherein the sheet of warp threads is assembled on the reeling or beaming means by winding successive narrow segments of warp threads in a side by side fashion until a warp sheet of desired width is formed.
- 192 Narrow warps:**
This subclass is indented under subclass 190. Method or apparatus including winding a sheet of warp threads for fabrication of selvages, ribbons, or similar slender wares.
- 193 Supply replenishing:**
This subclass is indented under subclass 190. Method or apparatus including winding a sheet of warp threads direct from cops with automatic means to supply new cops for those exhausted and to tie the ends of the exhausted and newly supplied threads.

- 194 Tensioning means:**
This subclass is indented under subclass 190. Method or apparatus involving the particulars of the device for imposing a predetermined strain upon the warp sheet as it is wound.
- SEE OR SEARCH CLASS:
242, Winding, Tensioning, or Guiding, subclasses 410+ and 147+ for a tension control or brake in a winding device or device of general use for running material.
- 195 Traversing:**
This subclass is indented under subclass 190. Method or apparatus wherein the beam or a warp sheet guiding means adjacent the beam is reciprocated during winding.
- SEE OR SEARCH CLASS:
242, Winding, Tensioning, or Guiding, subclasses 241, 242, and 273 for fishing rod-type reeling devices with line traversing means and subclasses 474.2+ and 476.7+ for line traversing devices for use with the winding and reeling structure of this class (242) which are not provided for elsewhere.
- 196 Having means contacting beamed warp sheet:**
This subclass is indented under subclass 190. Method or apparatus wherein the threads of the warp sheet are engaged by a member once they have been wound on the beam.
- (1) Note. Devices to compress a warp sheet as it is being wrapped on a beam are found herein.
- SEE OR SEARCH CLASS:
100, Presses, subclass 86 for presses, not provided for elsewhere, in which material is wound on a mandrel and there is an opposed presser roll.
- 197 Warp engaging drive means:**
This subclass is indented under subclass 196. Method or apparatus wherein the beam is rotated by a driving device which propels the beam by making contact with the warp sheet being wound thereon.
- 198 Leasing:**
This subclass is indented under subclass 190. Method or apparatus including dividing or separating the sheet of warp threads into segments by the insertion of separating means.
- (1) Note. Examples of the separating means to be found herein are leasing rods or cords.
- 199 By reed or comb:**
This subclass is indented under subclass 198. Method or apparatus wherein the separation of the threads is effected by a plurality of vertically extending blade-like members over, through, or between which the threads are drawn, which members are either shiftable relative to one another or are so configured that the thread separation is effected.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
212+, for reeds of combs, per se, specialized for use with a warp sheet.
- 200 Having drive means:**
This subclass is indented under subclass 190. Method or apparatus involving the particulars of the means to propel the beaming or reeling apparatus.
- 201 Machine replenishing:**
This subclass is indented under subclass 172.1. Method or apparatus (a) for the insertion of a warp beam or the thread ends of a warp sheet into a textile fabricating apparatus or an element thereof, or (b) for the handling of a warp beam and the threaded textile apparatus element or the beam and the thread ends of the warp sheet preparatory to their insertion into the textile apparatus.
- (1) Note. The term "textile fabricating apparatus" as used herein embraces any device using an exhaustible supply of warp threads in the manufacture of a textile product, as for example, a weaving loom, a warp knitting machine, etc.
- 202 Warp selecting and separating:**
This subclass is indented under subclass 201. Method or apparatus including choosing and segregating a warp thread from a body or sheet

- of unseparated warp threads for presentation to a thread engaging element which subsequently operates upon it.
- 203.1 Drawing:**
This subclass is indented under subclass 201. Method or apparatus including threading or pulling in of warp threads through the textile apparatus or elements thereof.
- 204 Mechanical reeding:**
This subclass is indented under subclass 203.1. Method or apparatus wherein the device which is threaded comprises a comb-like thread guide which has a plurality of flat metal blades or thin wires and wherein a mechanism is provided for automatically inserting the threads of the warp sheet between the blades or wires.
- 205 Heddle or detector manipulation:**
This subclass is indented under subclass 203.1. Method or apparatus wherein the device to be threaded is the thread guide of either a shed manipulating mechanism or a thread sensing means which guide has an eyelet therein and which guide is moved prior to, during, or after the thread has been inserted through the eyelet.
- 206 By indexing blade-type thread guide:**
This subclass is indented under subclass 205. Method or apparatus wherein a substantially flat strip having a thread receiving eyelet or aperture therethrough is moved away from an adjacent strip to facilitate the threading thereof.
- 207 By distortion of blade-type thread guide:**
This subclass is indented under subclass 206. Method or apparatus wherein the strip is twisted to align the eyelet or aperture with a thread inserting instrumentality.
- 207.1 Hand implement:**
This subclass is indented under subclass 203.1. Method or apparatus wherein the threading or pulling in is accomplished with the aid of a manually manipulable device or tool (e.g., a reed hook, etc.).
- 208 Warp end or machine element handling means:**
This subclass is indented under subclass 201. Device wherein means are provided (a) for holding the free ends of the warp threads secure prior to their insertion into the textile fabricating apparatus, or (b) for supporting or manipulating a threaded reed, heddle, or the like prior to its insertion into the textile fabricating apparatus.
- 209 Uniting:**
This subclass is indented under subclass 201. Method or apparatus including joining the individual thread ends of a substantially exhausted warp sheet to the corresponding thread ends of a new warp sheet.
- SEE OR SEARCH CLASS:
156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclass 49 for methods of joining at least two electrical conductors or their coverings end-to-end; subclasses 157+ for methods of adhesively joining laminae of indeterminate length in an end-to-end relationship; and subclasses 433+ for apparatus for adhesively joining laminae in an end-to-end relationship.
242, Winding, Tensioning, or Guiding, subclass 475.1 for bobbin and cop winders with reserve thread uniting means.
- 210 Twisting:**
This subclass is indented under subclass 209. Method or apparatus including uniting the thread ends by twirling them together to form interlocking convolutions.
- 211 Tying:**
This subclass is indented under subclass 209. Method or apparatus including uniting the thread ends by knotting them together.
- SEE OR SEARCH CLASS:
289, Knots and Knot Tying, appropriate subclass for methods of and apparatus for joining ropes, threads, yarns, and the like, by tying their adjacent ends together.
- 212 Thread guide (e.g., comb, etc.):**
This subclass is indented under subclass 172.1. Apparatus consisting of a subcombination of a warp preparing apparatus particularized for separating the individual threads of a warp sheet from one another.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

199, for reeds or combs used to lease a warp sheet when in combination with a warp reeling or beaming apparatus or method.

SEE OR SEARCH CLASS:

139, Textiles: Weaving, subclass 192 for reed type beat-up means.

242, Winding, Tensioning, or Guiding, subclasses 157+ for a thread guide, subclasses 548+ for a convolute winding machine with a particular guide, subclass 566 for an unwinding machine with a particular guide, and subclasses 615+ for an elongated material guide not classifiable elsewhere.

213 Expansible:

This subclass is indented under subclass 212. Apparatus wherein the individual thread segregating elements of the thread guide are mounted for movement towards or away from each other.

214 PILE TUFTING, PATTERN SETTING:

This subclass is indented under the class definition. Method or apparatus for setting or winding colored tuft-pile threads into an arrangement suitable for weaving an Axminster carpet and the like.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

184, for pattern setting of tapestry warp threads.

SEE OR SEARCH CLASS:

112, Sewing, subclasses 80.01+ for tufting-type sewing apparatus.

139, Textiles: Weaving, subclasses 2+ for looms having pile tufting means.

215 With loom replenishing:

This subclass is indented under subclass 214. Method or apparatus for facilitating threading of the tuft-pile threads through tubes of a loom tube frame.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

216, for threading of the tuft tubes, per se.

216 PILE TUFTING, LOOM REPLENISHING:

This subclass is indented under the class definition. Method or apparatus for facilitating threading of tuft-pile threads through tubes of a loom tube frame such as is utilized in an Axminster or similar carpet loom.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

215, for combined pattern setting and tuft-tube threading.

SEE OR SEARCH CLASS:

112, Sewing, subclasses 80.01+ for tufting-type sewing apparatus.

139, Textiles: Weaving, subclasses 2+ for looms having pile tufting means.

217 THREAD FINISHING:

This subclass is indented under the class definition. Method or apparatus involving operations to place slender, elongate textile material composed of fibers or of filaments strands, yarns and the like, hereafter termed "thread", of individual or multiple components, in better marketable condition or to prepare such material for subsequent fabrication into articles or fabrics.

(1) Note. The term thread as used herein is intended to include sliver, roving, and the like.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

112, for treatment, inclusive of thread finishing, of a component member of a nonwoven textile article or structure prior to a needling operation.

122, for treatment, inclusive of thread finishing, of a component member of a nonwoven textile article or structure prior to a felting operation.

166, for treatment, inclusive of thread finishing, of a component member prior to fabrication into a thread interlaced fabric.

178+, for the fluid treatment of a running length of a plurality of threads in the form of a warp sheet.

SEE OR SEARCH CLASS:

- 8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, appropriate subclass for methods of bleaching and dyeing and chemical modification of thread combined with a broadly recited textile operation other than spinning, twisting, or turning.
- 57, Textiles: Spinning, Twisting, and Twining, appropriate subclass for methods of and apparatus for finishing thread combined with spinning, twisting, and twining thereof.
- 65, Glass Manufacturing, subclasses 376+ and 484+, respectively, for methods of or apparatus for making a glass filament or fiber combined with a finishing operation therefor.
- 68, Textiles: Fluid Treating Apparatus, appropriate subclass for apparatus for the fluid treatment of thread in general.
- 118, Coating Apparatus, appropriate subclass for apparatus for coating thread other than in the form of a warp sheet.
- 264, Plastic and Nonmetallic Article Shaping or Treating: Processes, appropriate subclass for methods of finishing a filament combined with the forming thereof and subclasses 342+ for methods of finishing a unitary thread or filament formed of distinct, diverse extruded polymeric components which are arranged to run the length of the thread in a side by side fashion, e.g., a bicomponent filament, etc., to effect distortion thereof by differential shrinkage.
- 423, Chemistry of Inorganic Compounds, subclasses 447.1+ for methods of carbonizing thread.
- 425, Plastic Article or Earthenware Shaping or Treating: Apparatus, appropriate subclass for apparatus for finishing a filament combined with forming means therefor.
- 427, Coating Processes, appropriate subclass for methods of coating thread

combined with a broadly recited textile operation.

451, Abrading, appropriate subclass for a method of or apparatus for abrading of thread, per se.

218 Fabrication-defabrication:

This subclass is indented under subclass 217. Method or apparatus wherein thread is textured by assembly into a textile fabric and subsequently disassembling the fabric back into the component thread.

SEE OR SEARCH THIS CLASS, SUBCLASS:

171, for more disassembly of an article or fabric back to its component thread.

SEE OR SEARCH CLASS:

- 66, Textiles: Knitting, appropriate subclass for the particulars of fabrication of thread into a knitted textile fabric.
- 87, Textiles: Braiding, Netting, and Lace Making, appropriate subclass for the particulars of fabrication of thread into a braided textile fabric.
- 112, Sewing, appropriate subclass for the particulars of fabrication of thread into a sewn textile fabric.
- 139, Textiles: Weaving, appropriate subclass for the particulars of fabrication of thread into a woven textile fabric.

219 Surface modification of running length:

This subclass is indented under subclass 217. Method or apparatus for altering a characteristic or the physical form of a continuously moving or traveling expanse of thread while it is in transit from a source of supply to a take-up or collection site.

- (1) Note. This subclass is the repository for individual or unitary thread finishing operations as, for example, the polishing of a running length of thread by brushing, ironing, or rubbing to smooth fibrils into the surface thereof, the brushing or rubbing of a running length of thread to produce upstanding fibrils on the surface thereof, the assimilating or splicing of a running length of thread without the use of adhesives or fusion, the condensing or shrinking of a running length of thread

without the production of coils, crimps, crinkles, or like linear distentions, etc.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

173+, for the surface modification of a running length of a plurality of threads in the form of a warp sheet.

220 Diverse finishing operations:

This subclass is indented under subclass 219. Method or apparatus including plural thread finishing treatments which differ in kind, effect, or purpose.

- (1) Note. Examples of the types of different thread finishing operations to be found herein are stretching and texturing, texturing and opening, or spreading of tow, etc.
- (2) Note. Where an additional operation merely perfects or enhances a basic thread finishing operation, e.g., heating thread to improve texturing, either to facilitate texturing, to retain the texture, or to fully develop the texture, etc., the patent is placed on the basis of the basic finishing operation.
- (3) Note. Coating or dyeing is considered as "conditioning" and such an operation will be found with the specific type of surface modification of the thread.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

223+, for combined diverse thread clearing operations.

258, for combined diverse thread texturing operations.

221 Including stuffer box texturing:

This subclass is indented under subclass 220. Method or apparatus wherein one of the thread finishing operations includes passing the thread through a zone of axial compression.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

250+, for stuffer box texturing including plug or wad control.

255+, for stuffer box texturing including jet feed to plug.

263+, for stuffer box texturing, per se.

222 Clearing:

This subclass is indented under subclass 219. Method or apparatus for removing or assisting in the removal of material in the nature of either an abrupt enlargement or thickened portion, i.e., a knot or slub, or other projecting flaws, imperfection, impurities, and the like from thread.

- (1) Note. This subclass is the repository for those patents relating to the surface clearing of thread by single, or unitary brushing, rubbing, scraping or cutting devices which do not form a fixed knot or slub entrapment opening of predetermined dimension for passage of the thread therethrough in transit to a take-up or collection site and those patents relating to the clearing of the thread by rubbing engagement upon itself.

223 Combined clearing operations:

This subclass is indented under subclass 222. Method or apparatus including a plurality of separate, spaced, or distinct clearing sites or stations through which the thread sequentially passes in transit to a take-up or collection site.

224 Gap or slot type:

This subclass is indented under subclass 223. Method or apparatus wherein each of the clearing operations involve transit of the thread through an opening of fixed predetermined dimension defined by the exterior boundaries of an element or elements for removal of projecting surface impurities by rubbing or scraping engagement therewith.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

232+, for clearing of thread by a unitary gap or slot type device.

225 With stopping:

This subclass is indented under subclass 222. Method or apparatus wherein a means for advancing a thread is rendered idle or inoperative when a knot or slub is detected in the thread.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

- 186+, for the stopping of a warp preparing or handling operation.
 242, for the stopping of a thread stretching operation.
 248+, for alteration of a thread texturing operation, including stopping.

SEE OR SEARCH CLASS:

- 19, Textiles: Fiber Preparation, subclasses 2+ for means for mechanically isolating and for manipulating fibers including the step of or means for causing cessation of operation in response to some condition occurring in the material being fed, or through a defect in the machine or its operation.
 57, Textiles: Spinning, Twisting, and Twining, subclasses 80+ for spinning or twisting machines provided with means either manually or automatically operated by the condition of the strand or material being operated on, as by failure, exhaustions, too much or too little tension, undue accumulations, etc., to facilitate or to effect the stopping thereof.
 66, Textiles: Knitting, subclasses 158+ for knitting machines provided with means for ceasing the application of power to the driven parts of the knitting mechanism in response to an abnormal condition of a strand used by the mechanism.
 72, Metal Deforming, subclass 5 for randomly actuated stopping of a metal deforming operation responsive to termination or to the tangling of running length work.
 83, Cutting, subclasses 58+ for randomly actuated stopping means for a cutting operation.
 87, Textiles: Braiding, Netting, and Lace Making, subclasses 18+ for braiding netting or lace making apparatus provided with means, either automatically or manually controlled, for stopping or starting the entire apparatus, inclusive of initiation of the operation by means which sense a condition of a strand used by the apparatus.

- 112, Sewing, subclasses 279+ for driving mechanism for sewing machines which include devices to facilitate starting and stopping.
 139, Textiles: Weaving, subclasses 336+ for mechanism to throw the loom out of operation.
 200, Electricity: Circuit Makers and Breakers, subclasses 61.13+ for circuit makers and breakers which are controlled by continuous or indefinite lengths of material such as motion picture film, rope, yarn, endless belts and the like, traveling in a given path or being wound onto or unwound from spools or reels.
 226, Advancing Material of Indeterminate Length, subclasses 10+ for a device for advancing material of indeterminate length provided with detection means for sensing a condition of the advancing material and with a mechanism actuated by said detection means for regulating a part which stops, or guides, or moves the material.
 242, Winding, Tensioning, or Guiding, subclasses 472.9+, 479.9+, 484.8, and 484.9+ for a helical winding device having controls responsive to material condition or the state of a winding operation.
 425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclasses 136+ for means responsive to an abnormal condition to completely stop operation of the machine.

226 **Clamping, severing or shearing:**

This subclass is indented under subclass 222. Method or apparatus wherein (a) the presence of a knot or slub of an undesirable character either directly or indirectly effects parting of the thread either by retention of the knot or slub or an adjacent portion of the thread to break the thread at or about the point of retention or by slicing through the thread with a cutting member, or (b) the thread passes against or through a rigid stripping member which cuts or scrapes away any undesirable protruding material.

- (1) Note. Since there is no structural difference between knot or slub clearing guides and stripping guides used to clear

fibril from thread or yarn and since fibril stripping guides will inherently act to clear a knot or slub too large to pass therethrough, both type of guides will be found herein.

SEE OR SEARCH CLASS:

- 72, Metal Deforming, subclass 16 for a control means energized in response to activator stimulated by a condition sensor which is responsive to lateral dimension, e.g., thickness, etc.
- 83, Cutting, subclass 371 for a cutting operation controlled by detector means responsive to work indicium or irregularity.
- 425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclass 141 for control means responsive to or actuated by means sensing a condition, e.g., product thickness, etc., and subclass 142 wherein the control means controlled is a severing element.
- 227 By electronic or pneumatic detection of know or slub:**
This subclass is indented under subclass 226. Method or apparatus wherein sensing of the presence of the abrupt enlargement or thickened portion creates or alters fluid or electric current flow to energize or initiate a thread parting or separating operation.
- SEE OR SEARCH CLASS:
- 73, Measuring and Testing, subclass 37.7 for checking dimensions, shape, or size of a moving sheet, cable, or filament, or the spacing of selected portions thereof, having at least one unit for the direct application of fluid pressure thereto and utilizing the escape of fluid about the specimen as an index of its dimension, shape, size, or spacing and subclasses 159+ for testing or inspecting of filaments or strands for defects, etc., other than mere inspection or visual examination.
- 83, Cutting, subclass 365 for a cutting operation controlled by photoelectric detector means responsive to the work.
- 250, Radiant Energy, subclasses 559.4+ for a circuit responsive to a photocell
- and wherein the photocell is arranged relative to the material so that circuit provides an output indicative of flaws in the form of voids, holes, discoloration, and the like, and for a photocell and additional pre-photocell structure positioned to detect imperfections.
- 324, Electricity: Measuring and Testing, subclasses 600+ for determining impedance, admittance, and related quantities of material, inclusive of strands.
- 340, Communications: Electrical, indicating subclasses 675+ for an electrical condition responsive system automatically responsive to the feeding of a web, sheet, or work, inclusive of a strand or thread.
- 356, Optics: Measuring and Testing, subclasses 430+ for optically measuring or testing a moving web or thread for flaws or imperfections, and subclass 238.1 for optical inspection of cloth or thread for flaws or imperfections.
- 228 By feeler engagement with knot or slub:**
This subclass is indented under subclass 226. Method or apparatus wherein a thread parting or separating operation is actuated or initiated upon detection or sensing of the abrupt enlargement or thickened portion in the thread by a movable member resting thereon.
- SEE OR SEARCH CLASS:
- 83, Cutting, subclasses 66+ for a detector supported on or urged against the work for generating a signal or impulse for stopping of the cutting operation.
- 229 By knot or slub biased wedging member:**
This subclass is indented under subclass 226. Method or apparatus wherein the abrupt enlargement or thickened portion of the thread directly engages and moves one of a pair of opposed gap defining members in the path thereof toward the other of such members to pinch and entrap the enlargement or thickened portion or an adjacent thread portion of therebetween to effect a thread parting or separating operation.

- 230 Arcuately contoured wedge:**
This subclass is indented under subclass 229. Method or apparatus wherein the knot or slub biased wedging member is provided with a curved surface so shaped that the wedging or pinching action on the thread increases in intensity as the surface approaches the opposing, gap defining member.
- 231 By knot or slub deflecting slot:**
This subclass is indented under subclass 226. Method or apparatus wherein the presence of the abrupt enlargement or thickened portion directs the thread along the length of an elongated, narrow passage formed by the exterior boundaries of an element or elements to a clamping or cutting zone for effecting parting of the thread.
- SEE OR SEARCH CLASS:
57, Textiles: Spinning, Twisting, and Twining, subclass 353 for guiding devices provided with means to catch and hold strands to prevent entangling when they leave the normal path of travel or become broken, kinked, or knotted, during the twisting operation.
- 232 By opposed, gap defining surfaces (e.g., stripping guide, etc.):**
This subclass is indented under subclass 226. Method or apparatus wherein the thread passes in transit through an opening of fixed, predetermined dimension defined by the exterior boundaries of an element or elements which either superficially clears the thread by rubbing or scraping contact therewith or which effects parting of the thread by blocking the passage of any knot or slub therethrough beyond a predetermined size.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
224, for combined diverse clearing operations of the gap or slot type.
- SEE OR SEARCH CLASS:
242, Winding, Tensioning, or Guiding, subclasses 157, 548+, 566, and 615+ for a guide for elongated material.
- 233 Selectively usable gaps:**
This subclass is indented under subclass 232. Method or apparatus including a plurality of surfaces forming at least two distinct, alternately utilizable openings of differing dimension or alternately utilizable surfaces capable of varying the opening to differing dimension.
- 234 Including toothed or serrated surface:**
This subclass is indented under subclass 232. Method or apparatus wherein the opening is an elongate, narrow passage which includes notches, sharp-pointed projections, prongs, and the like, for engagement with a knot, slub, and the like.
- 235 Adjustable slot forming surface:**
This subclass is indented under subclass 232. Method or apparatus wherein the opening is an elongate, narrow passage and one of the exterior boundaries forming the elongate, narrow passage is movable relative to the other such boundary to a predetermined, desired position to alter or vary the dimension of the elongate passage.
- 236 By eccentric mount:**
This subclass is indented under subclass 235. Method or apparatus wherein one of the surfaces forming the elongate, narrow passage is moved to an adjusted position through the arcuate movement of a displacement means which rotates about an axis which is not coincident with the geometric center thereof.
- 237 By pin and slot mount:**
This subclass is indented under subclass 235. Method or apparatus wherein one of the surfaces forming the elongate, narrow passage is carried by a member having a slit therein into which a protrusion extends so that the protrusion coacts with the slit to limit the amount that one surface can be moved relative to the other.
- 238 By internally threaded surface:**
This subclass is indented under subclass 235. Method or apparatus wherein a screw-like member is provided which coacts with a bore having a helical ridge formed therein to effect or allow movement of the passage defining surfaces to thereby alter passage width.

239 By singeing:

This subclass is indented under subclass 222. Method or apparatus involving the removal of laterally projecting fibrils, fuzz, and the like, from the surface of the thread by combustion or by the application of heat thereto of sufficient temperature or intensity to induce melting or flow of such impurities if of a plastic nature.

SEE OR SEARCH THIS CLASS, SUBCLASS:

174, for singeing of a plurality of threads in the form of a warp sheet.

SEE OR SEARCH CLASS:

26, Textiles: Cloth Finishing, subclasses 3+ for burning or scorching the projecting fibers or threads of cloth.

69, Leather Manufactures, subclass 7.5 for machines for searing leather.

118, Coating Apparatus, subclass 47 for coating apparatus including means to subject either the coated surface or the surface to be coated to a flame or fire.

219, Electric Heating, appropriate subclass for electric heater structure, per se, and subclass 223 for electrical heating means adapted to contact the hair or to be used with additional structure to transmit its heat to the hair for the purpose of hair singeing.

427, Coating Processes, subclasses 223+ for subjecting a coating or surface to be coated to contact with a flame.

431, Combustion, appropriate subclass for burner structure, per se.

240 Stretching apparatus:

This subclass is indented under subclass 219. Apparatus for attenuating or elongating a thread beyond the elastic limit thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:

220+, for combined diverse thread finishing operations, including stretching.

SEE OR SEARCH CLASS:

8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, subclass 132 for swelling or plasticizing of artificial

fibers combined with a stretching operation.

57, Textiles: Spinning, Twisting, and Twining, subclasses 287+ and 310 for spinning, twisting, or twining devices combined with means to stretch the thread being twisted concomitantly with or subsequent to the twisting operation and subclass 362 for processes for making strand structures either wholly or in part from synthetic filaments or fibers by a combined spinning, twisting, or twining and stretching operation.

65, Glass Manufacturing, subclasses 535+ for apparatus for glass fiber or filament formation combined with stretching or drawing means.

66, Textiles: Knitting, subclasses 125+ for treating, including stretching, and feeding thread to a knitting machine.

72, Metal Deforming, subclass 376 for processes of attenuating or elongating metal work by application of tensile forces.

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclasses 165+ for formation of continuous or indefinite length filaments combined with a stretching thereof, and subclasses 288.4+ for process of stretching by applying tension.

425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclass 66 for combined filament forming and stretching apparatus.

241 Control means responsive to sensed condition:

This subclass is indented under subclass 240. Apparatus wherein means are provided which sense or perceive variations from a set norm in thread or in machine operation and which means activates or regulates additional means to alter operation of the machine when such variations occur.

SEE OR SEARCH THIS CLASS, SUBCLASS:

185+, for means responsive to a sensed condition in the preparation or handling of a plurality of threads in the form of a warp sheet.

- 225, for means responsive to a sensed condition to stop a thread clearing operation.
- 226+, for means responsive to a knot or slub to effect clamping or severing of thread.
- 248+, for means responsive to a sensed condition in the texturing of thread.
- 242 With stopping:**
This subclass is indented under subclass 241. Apparatus including means activated for initiated by the sensing means for ceasing operation of the stretching apparatus.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 186+, for the stopping of a warp preparing or handling operation.
- 225, for the stopping of a thread clearing operation.
- 248+, for alteration of a thread texturing operation, including stopping.
- 243 Variable denier:**
This subclass is indented under subclass 240. Apparatus including means to effect irregular or discontinuous attenuation or elongation of thread to produce variations in the nature of abrupt enlargements, knobs, knots, slubs, thick and thin portions, and the like, along the length thereof.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 252+, for producing discontinuous or irregular coils, crimps, crinkles, or like distortions in thread during a texturing operation.
- SEE OR SEARCH CLASS:
- 72, Metal Deforming, subclass 260 for forming a nonuniform cross-section or nonlinear product by extrusion and subclass 276 for producing a nonuniform product by pulling a work-piece through a closed periphery die, e.g., rod, tube or wire drawing.
- 264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 167 for processes of forming filaments of irregular denier.
- 425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclass 66 for apparatus for forming irregular denier by forming and stretching filaments and subclass 76 for imparting irregular denier to filaments by altering orifice size or by varying flow rate.
- 244 Progressively lengthening lateral path:**
This subclass is indented under subclass 240. Apparatus wherein attenuation or elongation of thread is effected by stretching means providing a thread path which extends along and is transverse of the longitudinal axis of such means and which path continuously or successively increases in length as the thread moves therethrough and along the stretching means.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 219, for shrinking of thread without the production of coils, crimps, crinkles, and like linear distentions, by similar apparatus having progressively decreasing lateral thread paths.
- 245 Between spaced, differentially driven surfaces:**
This subclass is indented under subclass 240. Apparatus wherein attenuation or elongation is effected by sequential engagement of thread with revolving or rotating elements separated along the path of travel of the thread and powered progressively increasing rates of speed.
- 246 With intermediate treating:**
This subclass is indented under subclass 245. Apparatus including means located intermediate a pair of spaced attenuating or elongating elements for conditioning thread therebetween to enhance the characteristics or properties thereof or to facilitate the thread stretching operation.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
- 178+, for conditioning a running length of thread in the form of a warp sheet.
- 261, for conditioning a running length of thread during an asymmetric texturing operation.

- 265+, for conditioning a running length of thread during a stuffer box texturing operation.
- 281, for latent bulk or crimp development of a running length of thread.

247 Texturing (e.g., crimping, etc.):

This subclass is indented under subclass 219. Method or apparatus involving the production of interlaced or intertwined adjacent thread portions or coils, crimps, crinkles, or like distortions in thread or portions thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 220+, for combined diverse thread finishing operations, including texturing.
- 286, for texturing of thread while in package form.

SEE OR SEARCH CLASS:

- 8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, subclass 114.5 for fluid or chemical treatment of yarns and fabrics having yarns or areas of different physical or chemical characteristics, to produce crepe effects thereon and subclass 117 for treating cellulose fibrous materials or fabrics with agents to impart the chemical properties of wool thereto or with acid or alkaline gelatinizing or shrinking agents without tension, so as to cause the same to curl up and take on the physical appearance of wool.
- 19, Textiles: Fiber Preparation, subclasses .46+ for staplizing of continuous filamentary material combined with prior treatment, inclusive of crimping or curling; subclasses .56+ for staplizing of continuous filamentary material combined with other operations, inclusive of crimping or curling; and subclass 66.1 for crimping or curling of fibers in mass or sheet form.
- 57, Textiles: Spinning, Twisting, and Twining, subclass 29 for apparatus for twisting hair, grass, and the like, to form yarn or cordage therefrom, including means to insert additional hard twist to cause the strand to curl or coil about its longitudinal axis; sub-

classes 261+ for devices for performing spinning, twisting, or twining operations combined with other operations, inclusive of texturing, and not elsewhere classified; subclasses 332+ for false twist devices for texturing strands; and subclass 362 for processes for making textured strand structures either wholly or in part from synthetic filaments or fibers by a spinning, twisting, or twining operation.

- 65, Glass Manufacturing, subclasses 437, 438, and 506 for glass filament or fiber making combined with means having functions other than filament or fiber forming which serve to perfect the filament or fiber for its intended purpose, e.g., crimping or curling, etc.
- 72, Metal Deforming, appropriate subclass for method or apparatus for deforming metal.
- 101, Printing, subclasses 3.1+ for apparatus for producing characters or designs on surfaces by dies adapted to deform or remove portions of the material.
- 132, Toilet, subclasses 210+ and 223 for crimping or curling the hair or straightening kinky hair.
- 140, Wireworking, subclasses 105+ for forming crimps or kinks in wire or wire fabrics.
- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclass 183 for methods of bonding flexible filamentary material while in indefinite or running length with creping, wrinkling, or crinkling, and subclasses 459+ for surface bonding means for an indefinite or running length flexible web with bending, folding, winding, and wrapping means.
- 162, Paper Making and Fiber Liberation, subclasses 111+ for methods of producing a nonuniform, irregular, or con-figured web or sheet, and subclasses 280+ for apparatus for producing or treating a creped or crinkled water or liquid laid fibrous web.
- 223, Apparel Apparatus, subclasses 28+ for apparatus for plaiting, fluting, and

- shirring fabrics in the manufacture of garments, ornaments therefor, and similar material.
- 264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 168 for the combination of forming and crimping or crinkling of strands of filaments, and subclasses 280+ for reshaping running or indefinite length work.
- 425, Plastic Article or Earthenware Shaping or Treating: Apparatus, appropriate subclass and particularly subclass 66 for combined continuous filament forming or film casting means with stretching means comprising product advancing means, inclusive of crimping or curling means.
- 248 Control means responsive to sensed condition:**
This subclass is indented under subclass 247. Method or apparatus wherein means are provided which perceive variations from a set norm in the thread or in machine operation and which means activates or regulates additional means to alter the operation of the machine when such a variation occurs.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
185+, for means responsive to a sensed condition in the preparation or handling of a plurality of threads in the form of a warp sheet.
- 225, for means responsive to a sensed condition to stop a thread clearing operation.
- 226+, for means responsive to a knot or slub to effect clamping or severing of thread.
- 241+, for means responsive to a sensed condition in a thread stretching operation.
- 249 Temperature:**
This subclass is indented under subclass 248. Method or apparatus wherein variations in sensible heat are used to regulate the machine.
- 250 Plug or wad control:**
This subclass is indented under subclass 248. Method of apparatus for texturing thread wherein the sensing means regulates the operation of means for maintaining a desired volume of material within a texturing chamber or box.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
264+, for plug or wad control by an internal chamber retarder.
- 251 By alternation of drive:**
This subclass is indented under subclass 250. Method or apparatus wherein the maintenance of a desired volume within the texturing chamber or box is effected by controlling the relative rate of feed or withdrawal of material from the texturing chamber or box.
- 252 Discontinuous or irregular:**
This subclass is indented under subclass 247. Method or apparatus wherein the thread is textured in a predetermined intermittent or non-uniform manner such that the production of coils, crimps, crinkles, or like distentions, is varied along the length of the thread.
- (1) Note. This subclass usually contains those devices modified to produce a pattern or program controlled discontinuous or irregular texture in thread. The production of a discontinuous or irregular textured thread without design, as by those devices which by their very nature produce such effect in a random manner, e.g., fluid jet texturizers utilized to interlace thread as a twist substitute, etc., will be found elsewhere.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
243, for producing irregular or variable denier in thread during a stretching operation.
- 271+, and particularly 275, for producing discontinuous or irregular entangling or interlacing of thread due to resonance in fluid jet texturing.
- 253 By shifting thread or texturing device to or from contact:**
This subclass is indented under subclass 252. Method or apparatus wherein a means is provided for moving either the strand to be textured or the means to effect texturing towards or away from each other such that the strand

- and the texturing device alternately engage and disengage in a rhythmic fashion.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
280, for relative movement between reciprocating sinkers and a running length thread to effect texturing.
- 254 Jet feed to impact surface:**
This subclass is indented under subclass 247. Method or apparatus wherein texturing is effected by impinging thread against an object by a fluid stream.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
262+, for texturing thread against an impacting surface by other than a fluid jet.
271+, for particulars of the fluid jet.
289, for feeding thread against a deflecting surface during packaging.
- SEE OR SEARCH CLASS:
264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclass 309 for spraying or flinging molding material against a shaping surface.
- 255 Plug impact surface:**
This subclass is indented under subclass 254. Method or apparatus wherein the object against which the thread impinges is a wad of previously delivered processed thread.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
263+, for impacting thread against a plug or wad thereof by other than a jet feed.
- 256 Traveling plug conveying means:**
This subclass is indented under subclass 255. Method or apparatus wherein the wad of previously processed thread is engaged and advanced by forwarding element or surface such that it moves away from the point of impingement.
- 257 Traveling impact surface:**
This subclass is indented under subclass 254. Method or apparatus wherein thread is impinged against a moving object which advances the axially compressed thread mass away from the point of impingement.
- 258 Diverse texturing operations:**
This subclass is indented under subclass 247. Method or apparatus wherein thread is subjected to a plurality of different types of distorting or interlacing operations.
- (1) Note. Latent bulk or crimp development of thread is construed as a conditioning or perfecting operation, not a texturing operation for this subclass.
- 259 Asymmetric:**
This subclass is indented under subclass 247. Method or apparatus wherein thread is textured by conditioning only one side of a running length of thread or by conditioning said side in a manner which is different from the manner in which the other side is conditioned to thereby induce a nonuniform molecular structure across the cross section of the thread.
- 260 By knife edge:**
This subclass is indented under subclass 259. Method or apparatus wherein the nonuniform molecular structure of the thread is induced by passing the thread over a sharp surface.
- 261 With treating:**
This subclass is indented under subclass 260. Method or apparatus wherein thread is subjected to a conditioning operation before or after passing over the sharp surface either to prepare the thread for texturing or to alter or enhance a characteristic or property of the thread.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
178+, for conditioning a running length of thread in the form of a warp sheet.
246, for conditioning a running length of thread during a stretching operation.
265+, for conditioning a running length of thread during a stuffer box texturing operation.
281, for conditioning a running length of thread to develop latent bulk or crimp.
- 262 Axial compression:**
This subclass is indented under subclass 247. Method or apparatus wherein texturing is effected by subjecting thread to compression

along its longitudinal axis to induce crimps, folds, and the like, therein.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

254+, for axial compression of thread by jet feed thereof against an impact surface.

289+, for axial compression of thread against a deflecting surface during packaging.

SEE OR SEARCH CLASS:

26, Textiles: Cloth Finishing, subclass 18.6 for shrinking fabric by compacting or compressing the thread components thereof.

263 **Stuffer box:**

This subclass is indented under subclass 262. Method or apparatus wherein the axial compression is effected by the impingement of the thread against a mass of previously processed thread which is formed into a plug or wad within a thread confining chamber.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

221, for combined diverse thread finishing operations, including stuffer box texturing.

250+, for stuffer box texturing including plug or wad control.

255+, for stuffer box texturing including jet feed to plug.

SEE OR SEARCH CLASS:

8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, subclass 152 for processes of feeding continuously moving warps, open width fabrics or ropes by pleating, plaiting, or folding them into a treating liquid receptacle.

26, Textiles: Cloth Finishing, subclass 21 for continuous web fulling machines of the pleating type.

68, Textiles: Fluid Treating Apparatus, subclasses 177+ for web or rope pleating in a fixed liquid receptacle.

226, Advancing Material of Indeterminate Length, subclasses 118.1+, for plural material moving means with intermediate storage.

264 **Internal chamber retarder:**

This subclass is indented under subclass 263. Method or apparatus including means intermediate the entrance and exit of the thread confining chamber to impede the passage of the thread plug or wad therethrough.

265 **With treating:**

This subclass is indented under subclass 263. Method or apparatus wherein thread is subjected to a conditioning operation before, after, or during the axial compression either to prepare the thread for texturing or to alter or enhance a characteristic or property thereof.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

178+, for conditioning a running length of thread in the form of a warp sheet.

246, for conditioning a running length of thread during a stretching operation.

261, for conditioning a running length of thread in an asymmetric texturing operation.

266 **Post treatment:**

This subclass is indented under subclass 265. Method or apparatus wherein the conditioning operation occurs after the thread has passed through the thread confining chamber.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

281, for conditioning a running length of thread to develop latent bulk or crimp.

267 **By direct fluid application to chamber plug:**

This subclass is indented under subclass 265. Method or apparatus wherein a gas or liquid contacts the plug or wad while in transit through the thread confining chamber.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

249, for control means responsive to a sensed condition to alter the temperature of a fluid medium being applied to the chamber plug.

- 268 Thread feeding feature:**
This subclass is indented under subclass 263. Method or apparatus involving the particular structure of the means for forwarding the thread into the confining chamber.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
251, for alteration in the feeding of thread to the stuffer box to maintain plug or wad control.
- 269 Nip roll mount or construction (e.g., wear plate, etc.):**
This subclass is indented under subclass 268. Method or apparatus involving the particular structure of opposed, rotary elements which forward the thread passing therebetween directly into the confining chamber or the supporting means therefor, inclusive of ancillary means associated therewith.
- SEE OR SEARCH CLASS:
226, Advancing Material of Indeterminate Length, subclasses 181+ for constructional details of a rotary pinch pair.
- 270 Including traversing:**
This subclass is indented under subclass 269. Method or apparatus involving the particular structure of the ancillary means for directing or guiding the thread in a sinusoidal or zigzag path, such that the point at which the thread contacts the rotary elements is constantly shifted back and forth across the width of said rotary elements prior to the entry thereof into the confining chamber.
- SEE OR SEARCH CLASS:
242, Winding, Tensioning, or Guiding, subclasses 472.2 and 476.7+ for a traverse mechanism in a helical winding machine, and subclasses 397.2+ for a traverse mechanism in a reeling device.
- 271 Fluid jet:**
This subclass is indented under subclass 247. Method or apparatus wherein texturing of the thread is effected by the turbulence generated from a gaseous or liquid stream applied thereto.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
254+, for fluid jet feeding of thread against an impact surface.
- SEE OR SEARCH CLASS:
57, Textiles: Spinning, Twisting, and Twining, subclasses 3+ and 362 for apparatus and methods, respectively, for producing a composite yarn by fluid apparatus and methods, respectively, for splicing thread by fluid current and subclasses 332+ for false-twisting devices utilizing fluid current.
226, Advancing Material of Indeterminate Length, appropriate subclass which may include a nominal recitation of a supply or take-up coil (e.g., less than a support for such a coil or a cooperative relationship between a tension or exhaust detector and reel driving or reel stopping means, etc.), subclass 7 for a process of or subclasses 97.1+ for an apparatus using fluid current to advance the material.
- 272 With threading:**
This subclass is indented under subclass 271. Method or apparatus for facilitating or initiating string-up of the fluid jet.
- SEE OR SEARCH THIS CLASS, SUB-CLASS:
268, for threading of a stuffer box texturing device.
- 273 Flow restrictor type, (e.g., venturi, etc.):**
This subclass is indented under subclass 271. Method or apparatus wherein the turbulence is induced by passing the thread and fluid through an inhibiting orifice connecting a converging entrance passageway with a diverging exit passageway or connecting a high pressure zone with a low pressure, thread bulking or expansion zone usually within the fluid jet.
- 274 Having orthogonally arranged flow paths:**
This subclass is indented under subclass 271. Method or apparatus wherein the turbulence is induced by projecting a fluid stream through or against the thread at a right angle to the longitudinal axis thereof.

275 Opposed resonance chamber:

This subclass is indented under subclass 274. Method or apparatus wherein a recess is positioned opposite the point of entry of the fluid stream for receiving and altering the flow characteristics of the fluid after passage of the same through or against the thread to thus modify the degree of turbulence to which the thread is subjected.

- (1) Note. Such chambers are usually provided to prevent disorderly secondary gas currents from interfering with thread entanglement by the jet.

276 Plural opposed fluid passageways:

This subclass is indented under subclass 274. Method or apparatus wherein the turbulence is induced by projecting fluid streams against opposite sides of the thread.

277 Peening:

This subclass is indented under subclass 247. Method or apparatus wherein texturing is effected by subjecting the thread to repetitive mechanical impacts or shocks along the length thereof.

278 Shaping member:

This subclass is indented under subclass 247. Method or apparatus wherein texturing is effected by engagement of the thread with mechanical means which transversely deforms the thread into a patterned nonlinear configuration, the shape of which is determined by the profile of the mechanical deforming means.

279 Opposed intermeshing traveling members:

This subclass is indented under subclass 278. Method or apparatus wherein the texturing is effected by passing the thread between interdigitated or interlocked moving elements which forward and mechanically shape the thread passing therebetween.

SEE OR SEARCH CLASS:

- 19, Textiles: Fiber Preparation, subclass 66.2 for methods of or apparatus for crimping fibers in mass or sheet form.
72, Metal Deforming, subclass 196 for an orbitally-moving tool face moving in a circular orbit cooperating with a

complementary, e.g., conjugate, tool face in the deformation of metal, etc.

- 156, Adhesive Bonding and Miscellaneous Chemical Manufacture, subclasses 200+, for methods of bending or reshaping running or continuous length work combined with surface bonding or assembly therefor, and subclasses 461+ for means for longitudinally bending an indefinite or running length web combined with surface bonding means or assembly means therefor.

- 264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclasses 286+ for methods of corrugating running or indefinite length work.

- 425, Plastic Article or Earthenware Shaping or Treating: Apparatus, subclasses 369+ for means corrugating a preform.

280 Relatively moppable sinkers:

This subclass is indented under subclass 279. Method or apparatus wherein the texturing is effected by deflecting elements which are reciprocally mounted in a support and which each coact with an aligned thread receiving recess into which the thread is displaced by the deflecting elements.

SEE OR SEARCH CLASS:

- 66, Textiles: Knitting, subclasses 104+ for particulars of sinkers or web holders in the knitting of thread into fabric.

281 Latent bulk or crimp development:

This subclass is indented under subclass 247. Method or apparatus wherein the texturing is effected by developing or releasing internal strains or stresses in the thread to cause nonlinear deformation.

SEE OR SEARCH THIS CLASS, SUBCLASS:

- 103, for fiber entangling and interlocking by latent bulk or crimp development in a nonwoven article or structure.

SEE OR SEARCH CLASS:

264, Plastic and Nonmetallic Article Shaping or Treating: Processes, subclasses 342+ for treating a shaped or treated article, inclusive of thread, to decrease the surface area thereof.

282 Tow opening or spreading:

This subclass is indented under subclass 219. Method or apparatus for effecting lateral distention, expansion, or separation of a condensed or grouped number of parallel continuous filaments by flattening out and forcing apart the component members thereof.

- (1) Note. Included herein are opening or spreading operations performed on tows of crimped or textured continuous filaments which, in addition to expanding and widening the tow, effect leveling, dephasing, or deregistering of the crimps throughout the width of the tow band or sheet to improve the characteristics thereof.
- (2) Note. Ancillary functions of the opening or spreading operation include the removal of folds or twist from the tow imposed therein by prior processing.

SEE OR SEARCH THIS CLASS, SUBCLASS:

103+, for rearrangement of a tow into a coherent, entangled unitary nonwoven web.

213, for an expansible thread comb or guide for altering the width of a sheet of threads in the form of a warp.

220+, for tow opening or spreading combined with another diverse thread finishing operation.

271+, for fluid jet texturing, i.e., bulking or crimping of a tow.

287+, for opening or separating thread in hank or skein form.

283 By fluid:

This subclass is indented under subclass 282. Method or apparatus wherein the opening or spreading of the tow is assisted or effected by a gaseous or liquid stream which causes the individual component, continuous filaments to sep-

arate and move apart to effect flattening and widening of the tow.

- (1) Note. Fluid tow opening devices are commonly referred to in the art as "banding jets".

284 Bobbin, cheese, or cop:

This subclass is indented under subclass 217. Method or apparatus including the finishing of a package or unit of wound thread composed of overlapping layers of cylindrical configuration or form, usually supported by an internal flangeless core.

SEE OR SEARCH THIS CLASS, SUBCLASS:

290+, for the formation of thread into a wound package involving more than mere winding.

SEE OR SEARCH CLASS:

8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, subclasses 155+ for manipulative fluid treatment of wound yarn packages.

29, Metal Working, appropriate subclass for removal of the internal supporting core of a thread package, inclusive of the replacement thereof with another differing supporting core, i.e., a perforate or porous core or spring, for dyeing purposes.

68, Textiles: Fluid Treating Apparatus, subclass 8 for gas, steam, or mist treating of a textile on a cylinder and subclasses 150, 189, and 198 for fluid treating devices for wound packages wherein the liquid flows axially of the package or holder.

285 With thermal treating:

This subclass is indented under subclass 284. Method or apparatus wherein the thread finishing operation includes the application of heat or a heated gaseous or liquid medium to the thread package or unit to alter or enhance the characteristics thereof or to effect drying or setting thereof.

SEE OR SEARCH THIS CLASS, SUBCLASS:

118+, for conditioning of a tampon.

286 Including bulking, crimping, or shrinking:
This subclass is indented under subclass 285. Method or apparatus wherein the thermal conditioning causes or effects contraction or reduction in length of the thread of which the package or unit is composed, inclusive of the production of crimps, crinkles, and the like, in the thread.

287 Hank or skein:
This subclass is indented under subclass 217. Method or apparatus including the finishing of a bound, collapsible and coreless, wound thread unit having a multiplicity of superposed, elongate loops in parallel relation to each other.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

291, for the formation of thread into a hank or skein involving more than mere winding.

SEE OR SEARCH CLASS:

8, Bleaching and Dyeing; Fluid Treatment and Chemical Modification of Textiles and Fibers, subclass 155.2 for manipulative fluid treatment of skeins, cakes, or cheeses.

57, Textiles: Spinning, Twisting, and Twining, subclasses 25+ for apparatus for twisting determinate lengths of strands by rotating one or both ends.

68, Textiles: Fluid Treating Apparatus, subclass 149 for liquid flow-type treating devices having a rotatable skein supporting stick; subclasses 159+ for movable carrier in vat type treating devices having a skein carrying stick or frame; subclass 188 for fixed liquid receptacle-type treating devices wherein sticks are provided for supporting skeins; and subclass 206 for liquid applying tricklers and sprinklers with skein supporting sticks.

288 With positive feed:
This subclass is indented under subclass 287. Method or apparatus wherein the hank or skein is continuously or intermittently moved about on internal member suspending or sustaining same.

289 PACKAGING:
This subclass is indented under the class definition. Method or apparatus for forming a unit of thread of desired or determinate length portion into an article of commerce in a manner not provided for elsewhere.

(1) Note. Devices for forming units of thread into folds or coils, per se, e.g., plaiters, etc., will be found herein.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

175+, for the formation of a warp sheet into rope-like, continuous package form.

217+, for the finishing of a thread package in general.

SEE OR SEARCH CLASS:

19, Textiles: Fiber Preparation, subclasses 157+ for the packaging of silver.

53, Package Making, appropriate subclass for depositing thread, yarn, and the like, into a container which will be subsequently removed from the packaging apparatus, and subclasses 396+ and 582+ for making a package by encircling the contents with a cover material in one direction only while leaving the contents exposed on two sides or ends, where there is no thread finishing operation combined with the packaging operation. For a further statement of the line between Class 53 and this class (28) see the (2) Note, section IV in the class definition of Class 53.

57, Textiles: Spinning, Twisting, and Twining, appropriate subclass for combined spinning and packaging of thread.

65, Glass Manufacturing, subclasses 477+, especially subclass 481 for glass fiber or filament making combined with winding.

100, Presses, subclass 5 for binding combined with winding or folding; subclass 40 for pressing methods combined with winding or folding; and subclasses 76+ for pressing apparatus combined with means for winding or folding a sheet, web or stand.

- 242, Winding, Tensioning, or Guiding, appropriate subclass for winding and reeling of thread.
- 427, Coating Processes, subclasses 177+ for a coating process combined with winding, balling, rolling, or coiling.
- 290 Wound package:**
This subclass is indented under subclass 289. Method or apparatus wherein the formation of the thread unit is effected by looping, winding, or wrapping thread of a desired or determinate length portion about preceding coils, layers, loops, or wraps thereof, usually about an internal core.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
284+, for the finishing of a wound thread package in the form of a bobbin, cheese, or cop.
- SEE OR SEARCH CLASS:
57, Textiles: Spinning, Twisting, and Twining, subclass 2.5 for component winding devices with untwisting and separating; subclasses 58.65+, for take-up devices for unitary multiple twist-ers; subclasses 58.72+ for package control means; and subclass 62 for winding devices for delivery twist-type twist-ers.
- 242, Winding, Tensioning, or Guiding, subclasses 470+ for a device for helically winding thread and other elongate material into packages; subclasses 159+ for wound packages, per se, subclasses 118+ for bobbins and spools, per se; and 129.5 for supporters for strand material holders.
- 291 Hank or skein:**
This subclass is indented under subclass 290. Method or apparatus wherein the formation of the wound thread unit is effected by looping, winding, or wrapping thread of a desired or determinate length portion into a multiplicity of superposed collapsible, coreless, elongate coils or loops in parallel relation to each other and including binding of the resulting unit at, at least one point to retain the elongate coils or loops in position.
- SEE OR SEARCH THIS CLASS, SUBCLASS:
287+, for finishing of a hank or skein.
- SEE OR SEARCH CLASS:
57, Textiles: Spinning, Twisting, and Twining, subclass 362 for a process for forming an endless band by a twisting or twining operation only.
- 206, Special Receptacle or Package, subclass 388 for nonspooled filamentary material (e.g., skein, etc.).
- 242, Winding, Tensioning, or Guiding, subclass 472.5 for a device for helically winding material to form a coreless bundle of material, and subclass 127 for skein holders.
- 292 BOBBIN STRIPPING:**
This subclass is indented under the class definition. Method or apparatus for removing thread residue from a textile thread carrier.
- SEE OR SEARCH CLASS:
139, Textiles: Weaving, subclasses 224+ for bobbin stripping combined with loom replenishing.
- 293 By unwinding:**
This subclass is indented under subclass 292. Method or apparatus wherein the thread residue is removed from the carrier by withdrawal of thread therefrom in continuous or running length form.
- 294 Fluid assist or removal:**
This subclass is indented under subclass 293. Method or apparatus wherein the unwinding of the thread residue from the carrier is aided or effected by gaseous or liquid medium.
- 295 By cutting:**
This subclass is indented under subclass 292. Method or apparatus wherein the thread residue is removed from the carrier by effecting relative movement between the carrier and a thread severing agent.
- 296 By stapilizing:**
This subclass is indented under subclass 292. Method or apparatus wherein the thread residue is removed from the carrier by pulling,

shredding, or tearing the thread into fibers of determinate, i.e., staple length.

SEE OR SEARCH THIS CLASS, SUB-CLASS:

293+, for subsequent staplization of waste thread unwound from a bobbin or carrier.

297 By axial removal of thread residue (e.g., slipping off, etc.):

This subclass is indented under subclass 292. Method or apparatus wherein a mass of the thread residue is removed as a unit from an end of the carrier by effecting relative sliding movement between the carrier and the thread mass.

SEE OR SEARCH CLASS:

29, Metal Working, appropriate subclass for methods of or apparatus for thread package core or carrier removal or replacement by relative movement between the core or carrier and the wound thread mass thereon.

298 Traveling stripping jaws:

This subclass is indented under subclass 297. Method or apparatus wherein the removal of the residue is effected by engagement of the thread mass with grasping means which slip or slide the mass as a unit off the carrier during movement of the grasping means relative to the carrier.

299 MISCELLANEOUS:

This subclass is indented under the class definition. Method or apparatus under the class definition involving textile manufacturing operations not otherwise provided for.

END