SUMMARY

**[04]** Various configurations of an article of footwear may have an upper and a sole structure secured to the upper. The upper includes a knit element and a tongue. The knit element defines a portion of an exterior surface of the upper and an opposite interior surface of the upper, with the interior surface defining a void for receiving a foot. The tongue is formed of unitary knit construction with the knit element and extends through a throat area of the upper.

**[05]** Methods of manufacturing a knitted component for an article of footwear may include knitting a tongue with a knitting machine. The tongue is held on needles of the knitting machine. A first portion of a knit element is formed with the knitting machine while the tongue is held on the needles. The tongue is then joined to the first portion of the knit element. Additionally, a second portion of the knit element is formed with the knitting machine.

**[06]** Methods of knitting may also include providing a knitting pattern with a modifiable field. The modifiable field is updated with data representing a first alphanumeric character. A first component with a knit structure of the first alphanumeric character is formed. The modifiable field is updated with data representing a second alphanumeric character, the second alphanumeric character being different than the first alphanumeric character. Additionally, a second component with a knit structure of the second alphanumeric character is formed.

**[07]** The advantages and features of novelty characterizing aspects of the invention are pointed out with particularity in the appended claims. To gain an improved understanding of the advantages and features of novelty, however, reference may be made to the following descriptive matter and accompanying figures that describe and illustrate various configurations and concepts related to the invention.

FIGURE DESCRIPTIONS

**[08]** The foregoing Summary and the following Detailed Description will be better understood when read in conjunction with the accompanying figures.

**[09]** Figure 1 is a perspective view of an article of footwear.

**[10]** Figure 2 is a lateral side elevational view of the article of footwear.

**[11]** Figure 3 is a medial side elevational view of the article of footwear.

**[12]** Figures 4A-4C are cross-sectional views of the article of footwear, as defined by section lines 4A-4C in Figures 2 and 3.

**[13]** Figure 5 is a top plan view of a first knitted component that forms a portion of an upper of the article of footwear.

**[14]** Figure 6 is a bottom plan view of the first knitted component.

**[15]** Figures 7A-7E are cross-sectional views of the first knitted component, as defined by section lines 7A-7E in Figure 5.

**[16]** Figures 8A and 8B are plan views showing knit structures of the first knitted component.

**[17]** Figure 9 is a top plan view of a second knitted component that may form a portion of the upper of the article of footwear.

**[18]** Figure 10 is a bottom plan view of the second knitted component.

**[19]** Figure 11 is a schematic top plan view of the second knitted component showing knit zones.

**[20]** Figures 12A-12E are cross-sectional views of the second knitted component, as defined by section lines 12A-12E in Figure 9.

**[21]** Figures 13A-13H are loop diagrams of the knit zones.

**[22]** Figures 14A-14C are top plan views corresponding with Figure 5 and depicting further configurations of the first knitted component.

**[23]** Figure 15 is a perspective view of a knitting machine.

**[24]** Figures 16-18 are elevational views of a combination feeder from the knitting machine.

**[25]** Figure 19 is an elevational view corresponding with Figure 16 and showing internal components of the combination feeder.

**[26]** Figures 20A-20C are elevational views corresponding with Figure 19 and showing the operation of the combination feeder.

**[27]** Figures 21A-21I are schematic perspective views of a knitting process utilizing the combination feeder and a conventional feeder.

**[28]** Figures 22A-22C are schematic cross-sectional views of the knitting process showing positions of the combination feeder and the conventional feeder.

**[29]** Figure 23 is a schematic perspective view showing another aspect of the knitting process.

**[30]** Figure 24 is a perspective view of another configuration of the knitting machine.

**[31]** Figure 25 is a top plan view of the first knitted component with a first knitted tongue.

**[32]** Figure 26 is a partial top plan view of the first knitted component with the first knitted tongue.

**[33]** Figure 27 is a cross-sectional view of the first knitted tongue, as defined by section line 27 in Figure 26.

**[34]** Figure 28 is a top plan view of the second knitted component with a second knitted tongue.

**[35]** Figure 29 is a partial top plan view of the second knitted component with the second knitted tongue.

**[36]** Figure 30 is a cross-sectional view of the second knitted tongue, as defined by section line 30 in Figure 29.

**[37]** Figure 31 is a top plan view of a third knitted component with a third knitted tongue.

**[38]** Figure 32 is a partial top plan view of the third knitted component with the third knitted tongue.

**[39]** Figure 33 is a cross-sectional view of the third knitted tongue, as defined by section line 33 in Figure 32.

**[40]** Figure 34 is a top plan view of a fourth knitted component with a fourth knitted tongue.

**[41]** Figure 35 is a cross-sectional view of the fourth knitted component and fourth knitted tongue, as defined by section line 35 in Figure 34.

**[42]** Figures 36A-36G are schematic elevational views of a knitting process for forming the first knitted component with the first knitted tongue.

**[43]** Figure 37 is a schematic elevational view depicting a further example step of the knitting process.

**[44]** Figure 38 is a schematic block diagram of the knitting machine.

**[45]** Figures 39A-39C are partial top plan views corresponding with Figure 26 and depicting sequential variations in the first knitted tongue.

DETAILED DESCRIPTION

**[46]** The following discussion and accompanying figures disclose a variety of concepts relating to knitted components and the manufacture of knitted components. Although the knitted components may be utilized in a variety of products, an article of footwear that incorporates one of the knitted components is disclosed below as an example. In addition to footwear, the knitted components may be utilized in other types of apparel (e.g., shirts, pants, socks, jackets, undergarments), athletic equipment (e.g., golf bags, baseball and football gloves, soccer ball restriction structures), containers (e.g., backpacks, bags), and upholstery for furniture (e.g., chairs, couches, car seats). The knitted components may also be utilized in bed coverings (e.g., sheets, blankets), table coverings, towels, flags, tents, sails, and parachutes. The knitted components may be utilized as technical textiles for industrial purposes, including structures for automotive and aerospace applications, filter materials, medical textiles (e.g. bandages, swabs, implants), geotextiles for reinforcing embankments, agrotextiles for crop protection, and industrial apparel that protects or insulates against heat and radiation. Accordingly, the knitted components and other concepts disclosed herein may be incorporated into a variety of products for both personal and industrial purposes.

**[47]** Footwear Configuration

**[48]** An article of footwear 100 is depicted in Figures 1-4C as including a sole structure 110 and an upper 120. Although footwear 100 is illustrated as having a general configuration suitable for running, concepts associated with footwear 100 may also be applied to a variety of other athletic footwear types, including baseball shoes, basketball shoes, cycling shoes, football shoes, tennis shoes, soccer shoes, training shoes, walking shoes, and hiking boots, for example. The concepts may also be applied to footwear types that are generally considered to be non-athletic, including dress shoes, loafers, sandals, and work boots.

Accordingly, the concepts disclosed with respect to footwear 100 apply to a wide variety of footwear types.

**[49]** For reference purposes, footwear 100 may be divided into three general regions: a forefoot region 101, a midfoot region 102, and a heel region 103. Forefoot region 101 generally includes portions of footwear 100 corresponding with the toes and the joints connecting the metatarsals with the phalanges. Midfoot region 102 generally includes portions of footwear 100 corresponding with an arch area of the foot. Heel region 103 generally corresponds with rear portions of the foot, including the calcaneus bone. Footwear 100 also includes a lateral side 104 and a medial side 105, which extend through each of regions 101-103 and correspond with opposite sides of footwear 100. More particularly, lateral side 104 corresponds with an outside area of the foot (i.e. the surface that faces away from the other foot), and medial side 105 corresponds with an inside area of the foot (i.e., the surface that faces toward the other foot). Regions 101-103 and sides 104-105 are not intended to demarcate precise areas of footwear 100. Rather, regions 101-103 and sides 104-105 are intended to represent general areas of footwear 100 to aid in the following discussion. In addition to footwear 100, regions 101-103 and sides 104-105 may also be applied to sole structure 110, upper 120, and individual elements thereof.

**[50]** Sole structure 110 is secured to upper 120 and extends between the foot and the ground when footwear 100 is worn. The primary elements of sole structure 110 are a midsole 111, an outsole 112, and a sockliner 113. Midsole 111 is secured to a lower surface of upper 120 and may be formed from a compressible polymer foam element (e.g., a polyurethane or ethylvinylacetate foam) that attenuates ground reaction forces (i.e., provides cushioning) when compressed between the foot and the ground during walking, running, or other ambulatory activities. In further configurations, midsole 111 may incorporate plates, moderators, fluid-filled chambers, lasting elements, or motion control members that further

attenuate forces, enhance stability, or influence the motions of the foot, or midsole 21 may be primarily formed from a fluid-filled chamber. Outsole 112 is secured to a lower surface of midsole 111 and may be formed from a wear-resistant rubber material that is textured to impart traction. Sockliner 113 is located within upper 120 and is positioned to extend under a lower surface of the foot to enhance the comfort of footwear 100. Although this configuration for sole structure 110 provides an example of a sole structure that may be used in connection with upper 120, a variety of other conventional or nonconventional configurations for sole structure 110 may also be utilized. Accordingly, the features of sole structure 110 or any sole structure utilized with upper 120 may vary considerably.

**[51]** Upper 120 defines a void within footwear 100 for receiving and securing a foot relative to sole structure 110. The void is shaped to accommodate the foot and extends along a lateral side of the foot, along a medial side of the foot, over the foot, around the heel, and under the foot. Access to the void is provided by an ankle opening 121 located in at least heel region 103. A lace 122 extends through various lace apertures 123 in upper 120 and permits the wearer to modify dimensions of upper 120 to accommodate proportions of the foot. More particularly, lace 122 permits the wearer to tighten upper 120 around the foot, and lace 122 permits the wearer to loosen upper 120 to facilitate entry and removal of the foot from the void (i.e., through ankle opening 121). In addition, upper 120 includes a tongue 124 that extends under lace 122 and lace apertures 123 to enhance the comfort of footwear 100. In further configurations, upper 120 may include additional elements, such as (a) a heel counter in heel region 103 that enhances stability, (b) a toe guard in forefoot region 101 that is formed of a wear-resistant material, and (c) logos, trademarks, and placards with care instructions and material information.

**[52]** Many conventional footwear uppers are formed from multiple material elements (e.g., textiles, polymer foam, polymer sheets, leather, synthetic leather) that are joined through stitching or bonding, for example. In contrast, a majority of upper 120 is formed from a knitted component 130, which extends through each of regions 101-103, along both lateral side 104 and medial side 105, over forefoot region 101, and around heel region 103. In addition, knitted component 130 forms portions of both an exterior surface and an opposite interior surface of upper 120. As such, knitted component 130 defines at least a portion of the void within upper 120. In some configurations, knitted component 130 may also extend under the foot. Referring to Figures 4A-4C, however, a strobel sock 125 is secured to knitted component 130 and an upper surface of midsole 111, thereby forming a portion of upper 120 that extends under sockliner 113.

**[53]** Knitted Component Configuration

**[54]** Knitted component 130 is depicted separate from a remainder of footwear 100 in Figures 5 and 6. Knitted component 130 is formed of unitary knit construction. As utilized herein, a knitted component (e.g., knitted component 130) is defined as being formed of "unitary knit construction" when formed as a one-piece element through a knitting process. That is, the knitting process substantially forms the various features and structures of knitted component 130 without the need for significant additional manufacturing steps or processes. Although portions of knitted component 130 may be joined to each other (e.g., edges of knitted component 130 being joined together) following the knitting process, knitted component 130 remains formed of unitary knit construction because it is formed as a one-piece knit element. Moreover, knitted component 130 remains formed of unitary knit construction when other elements (e.g., lace 122, tongue 124, logos, trademarks, placards with care instructions and material information) are added following the knitting process.

**[55]** The primary elements of knitted component 130 are a knit element 131 and an inlaid strand 132. Knit element 131 is formed from at least one yarn that is manipulated (e.g., with a knitting machine) to form a plurality of intermeshed loops that define a variety of courses and wales. That is, knit element 131 has the structure of a knit textile. Inlaid strand 132 extends through knit element 131 and passes between the various loops within knit element 131. Although inlaid strand 132 generally extends along courses within knit element 131, inlaid strand 132 may also extend along wales within knit element 131. Advantages of inlaid strand 132 include providing support, stability, and structure. For example, inlaid strand 132 assists with securing upper 120 around the foot, limits deformation in areas of upper 120 (e.g., imparts stretch-resistance) and operates in connection with lace 122 to enhance the fit of footwear 100.

**[56]** Knit element 131 has a generally U-shaped configuration that is outlined by a perimeter edge 133, a pair of heel edges 134, and an inner edge 135. When incorporated into footwear 100, perimeter edge 133 lays against the upper surface of midsole 111 and is joined to strobel sock 125. Heel edges 134 are joined to each other and extend vertically in heel region 103. In some configurations of footwear 100, a material element may cover a seam between heel edges 134 to reinforce the seam and enhance the aesthetic appeal of footwear 100. Inner edge 135 forms ankle opening 121 and extends forward to an area where lace 122, lace apertures 123, and tongue 124 are located. In addition, knit element 131 has a first surface 136 and an opposite second surface 137. First surface 136 forms a portion of the exterior surface of upper 120, whereas second surface 137 forms a portion of the interior surface of upper 120, thereby defining at least a portion of the void within upper 120.

**[57]** Inlaid strand 132, as noted above, extends through knit element 131 and passes between the various loops within knit element 131. More particularly, inlaid strand 132 is located within the knit structure of knit element 131, which may

have the configuration of a single textile layer in the area of inlaid strand 132, and between surfaces 136 and 137, as depicted in Figures 7A-7D. When knitted component 130 is incorporated into footwear 100, therefore, inlaid strand 132 is located between the exterior surface and the interior surface of upper 120. In some configurations, portions of inlaid strand 132 may be visible or exposed on one or both of surfaces 136 and 137. For example, inlaid strand 132 may lay against one of surfaces 136 and 137, or knit element 131 may form indentations or apertures through which inlaid strand passes. An advantage of having inlaid strand 132 located between surfaces 136 and 137 is that knit element 131 protects inlaid strand 132 from abrasion and snagging.

**[58]** Referring to Figures 5 and 6, inlaid strand 132 repeatedly extends from perimeter edge 133 toward inner edge 135 and adjacent to a side of one lace aperture 123, at least partially around the lace aperture 123 to an opposite side, and back to perimeter edge 133. When knitted component 130 is incorporated into footwear 100, knit element 131 extends from a throat area of upper 120 (i.e., where lace 122, lace apertures 123, and tongue 124 are located) to a lower area of upper 120 (i.e., where knit element 131 joins with sole structure 110. In this configuration, inlaid strand 132 also extends from the throat area to the lower area. More particularly, inlaid strand repeatedly passes through knit element 131 from the throat area to the lower area.

**[59]** Although knit element 131 may be formed in a variety of ways, courses of the knit structure generally extend in the same direction as inlaid strands 132. That is, courses may extend in the direction extending between the throat area and the lower area. As such, a majority of inlaid strand 132 extends along the courses within knit element 131. In areas adjacent to lace apertures 123, however, inlaid strand 132 may also extend along wales within knit element 131. More particularly, sections of inlaid strand 132 that are parallel to inner edge 135 may extend along the wales.

**[60]** As discussed above, inlaid strand 132 passes back and forth through knit element 131. Referring to Figures 5 and 6, inlaid strand 132 also repeatedly exits knit element 131 at perimeter edge 133 and then re-enters knit element 131 at another location of perimeter edge 133, thereby forming loops along perimeter edge 133. An advantage to this configuration is that each section of inlaid strand 132 that extends between the throat area and the lower area may be independently tensioned, loosened, or otherwise adjusted during the manufacturing process of footwear 100. That is, prior to securing sole structure 110 to upper 120, sections of inlaid strand 132 may be independently adjusted to the proper tension.

**[61]** In comparison with knit element 131, inlaid strand 132 may exhibit greater stretch-resistance. That is, inlaid strand 132 may stretch less than knit element 131. Given that numerous sections of inlaid strand 132 extend from the throat area of upper 120 to the lower area of upper 120, inlaid strand 132 imparts stretch-resistance to the portion of upper 120 between the throat area and the lower area. Moreover, placing tension upon lace 122 may impart tension to inlaid strand 132, thereby inducing the portion of upper 120 between the throat area and the lower area to lay against the foot. As such, inlaid strand 132 operates in connection with lace 122 to enhance the fit of footwear 100.

**[62]** Knit element 131 may incorporate various types of yarn that impart different properties to separate areas of upper 120. That is, one area of knit element 131 may be formed from a first type of yarn that imparts a first set of properties, and another area of knit element 131 may be formed from a second type of yarn that imparts a second set of properties. In this configuration, properties may vary throughout upper 120 by selecting specific yarns for different areas of knit element 131. The properties that a particular type of yarn will impart to an area of knit element 131 partially depend upon the materials that form the various filaments and fibers within the yarn. Cotton, for example, provides a soft hand,

natural aesthetics, and biodegradability. Elastane and stretch polyester each provide substantial stretch and recovery, with stretch polyester also providing recyclability. Rayon provides high luster and moisture absorption. Wool also provides high moisture absorption, in addition to insulating properties and biodegradability. Nylon is a durable and abrasion-resistant material with relatively high strength. Polyester is a hydrophobic material that also provides relatively high durability. In addition to materials, other aspects of the yarns selected for knit element 131 may affect the properties of upper 120. For example, a yarn forming knit element 131 may be a monofilament yarn or a multifilament yarn. The yarn may also include separate filaments that are each formed of different materials. In addition, the yarn may include filaments that are each formed of two or more different materials, such as a bicomponent yarn with filaments having a sheath-core configuration or two halves formed of different materials. Different degrees of twist and crimping, as well as different deniers, may also affect the properties of upper 120. Accordingly, both the materials forming the yarn and other aspects of the yarn may be selected to impart a variety of properties to separate areas of upper 120.

**[63]** As with the yarns forming knit element 131, the configuration of inlaid strand 132 may also vary significantly. In addition to yarn, inlaid strand 132 may have the configurations of a filament (e.g., a monofilament), thread, rope, webbing, cable, or chain, for example. In comparison with the yarns forming knit element 131, the thickness of inlaid strand 132 may be greater. In some configurations, inlaid strand 132 may have a significantly greater thickness than the yarns of knit element 131. Although the cross-sectional shape of inlaid strand 132 may be round, triangular, square, rectangular, elliptical, or irregular shapes may also be utilized. Moreover, the materials forming inlaid strand 132 may include any of the materials for the yarn within knit element 131, such as cotton, elastane, polyester, rayon, wool, and nylon. As noted above, inlaid strand 132 may exhibit greater stretch-resistance than knit element 131. As such, suitable materials for

inlaid strands 132 may include a variety of engineering filaments that are utilized for high tensile strength applications, including glass, aramids (e.g., para-aramid and meta-aramid), ultra-high molecular weight polyethylene, and liquid crystal polymer. As another example, a braided polyester thread may also be utilized as inlaid strand 132.

**[64]** An example of a suitable configuration for a portion of knitted component 130 is depicted in Figure 8A. In this configuration, knit element 131 includes a yarn 138 that forms a plurality of intermeshed loops defining multiple horizontal courses and vertical wales. Inlaid strand 132 extends along one of the courses and alternates between being located (a) behind loops formed from yarn 138 and (b) in front of loops formed from yarn 138. In effect, inlaid strand 132 weaves through the structure formed by knit element 131. Although yarn 138 forms each of the courses in this configuration, additional yarns may form one or more of the courses or may form a portion of one or more of the courses.

**[65]** Another example of a suitable configuration for a portion of knitted component 130 is depicted in Figure 8B. In this configuration, knit element 131 includes yarn 138 and another yarn 139. Yarns 138 and 139 are plated and cooperatively form a plurality of intermeshed loops defining multiple horizontal courses and vertical wales. That is, yarns 138 and 139 run parallel to each other. As with the configuration in Figure 8A, inlaid strand 132 extends along one of the courses and alternates between being located (a) behind loops formed from yarns 138 and 139 and (b) in front of loops formed from yarns 138 and 139. An advantage of this configuration is that the properties of each of yarns 138 and 139 may be present in this area of knitted component 130. For example, yarns 138 and 139 may have different colors, with the color of yarn 138 being primarily present on a face of the various stitches in knit element 131 and the color of yarn 139 being primarily present on a reverse of the various stitches in knit element 131. As another example, yarn 139 may be formed from a yarn that is softer and more

comfortable against the foot than yarn 138, with yarn 138 being primarily present on first surface 136 and yarn 139 being primarily present on second surface 137.

**[66]** Continuing with the configuration of Figure 8B, yarn 138 may be formed from at least one of a thermoset polymer material and natural fibers (e.g., cotton, wool, silk), whereas yarn 139 may be formed from a thermoplastic polymer material. In general, a thermoplastic polymer material melts when heated and returns to a solid state when cooled. More particularly, the thermoplastic polymer material transitions from a solid state to a softened or liquid state when subjected to sufficient heat, and then the thermoplastic polymer material transitions from the softened or liquid state to the solid state when sufficiently cooled. As such, thermoplastic polymer materials are often used to join two objects or elements together. In this case, yarn 139 may be utilized to join (a) one portion of yarn 138 to another portion of yarn 138, (b) yarn 138 and inlaid strand 132 to each other, or (c) another element (e.g., logos, trademarks, and placards with care instructions and material information) to knitted component 130, for example. As such, yarn 139 may be considered a fusible yarn given that it may be used to fuse or otherwise join portions of knitted component 130 to each other. Moreover, yarn 138 may be considered a non-fusible yarn given that it is not formed from materials that are generally capable of fusing or otherwise joining portions of knitted component 130 to each other. That is, yarn 138 may be a non-fusible yarn, whereas yarn 139 may be a fusible yarn. In some configurations of knitted component 130, yarn 138 (i.e., the non-fusible yarn) may be substantially formed from a thermoset polyester material and yarn 139 (i.e., the fusible yarn) may be at least partially formed from a thermoplastic polyester material.

**[67]** The use of plated yarns may impart advantages to knitted component 130. When yarn 139 is heated and fused to yarn 138 and inlaid strand 132, this process may have the effect of stiffening or rigidifying the structure of knitted

component 130. Moreover, joining (a) one portion of yarn 138 to another portion of yarn 138 or (b) yarn 138 and inlaid strand 132 to each other has the effect of securing or locking the relative positions of yarn 138 and inlaid strand 132, thereby imparting stretch-resistance and stiffness. That is, portions of yarn 138 may not slide relative to each other when fused with yarn 139, thereby preventing warping or permanent stretching of knit element 131 due to relative movement of the knit structure. Another benefit relates to limiting unraveling if a portion of knitted component 130 becomes damaged or one of yarns 138 is severed. Also, inlaid strand 132 may not slide relative to knit element 131, thereby preventing portions of inlaid strand 132 from pulling outward from knit element 131. Accordingly, areas of knitted component 130 may benefit from the use of both fusible and non-fusible yarns within knit element 131.

**[68]** Another aspect of knitted component 130 relates to a padded area adjacent to ankle opening 121 and extending at least partially around ankle opening 121. Referring to Figure 7E, the padded area is formed by two overlapping and at least partially coextensive knitted layers 140, which may be formed of unitary knit construction, and a plurality of floating yarns 141 extending between knitted layers 140. Although the sides or edges of knitted layers 140 are secured to each other, a central area is generally unsecured. As such, knitted layers 140 effectively form a tube or tubular structure, and floating yarns 141 may be located or inlaid between knitted layers 140 to pass through the tubular structure. That is, floating yarns 141 extend between knitted layers 140, are generally parallel to surfaces of knitted layers 140, and also pass through and fill an interior volume between knitted layers 140. Whereas a majority of knit element 131 is formed from yarns that are mechanically-manipulated to form intermeshed loops, floating yarns 141 are generally free or otherwise inlaid within the interior volume between knitted layers 140. As an additional matter, knitted layers 140 may be at least partially formed from a stretch yarn. An advantage of this configuration is that knitted layers will effectively compress floating yarns 141 and provide an

elastic aspect to the padded area adjacent to ankle opening 121. That is, the stretch yarn within knitted layers 140 may be placed in tension during the knitting process that forms knitted component 130, thereby inducing knitted layers 140 to compress floating yarns 141. Although the degree of stretch in the stretch yarn may vary significantly, the stretch yarn may stretch at least one-hundred percent in many configurations of knitted component 130.

**[69]** The presence of floating yarns 141 imparts a compressible aspect to the padded area adjacent to ankle opening 121, thereby enhancing the comfort of footwear 100 in the area of ankle opening 121. Many conventional articles of footwear incorporate polymer foam elements or other compressible materials into areas adjacent to an ankle opening. In contrast with the conventional articles of footwear, portions of knitted component 130 formed of unitary knit construction with a remainder of knitted component 130 may form the padded area adjacent to ankle opening 121. In further configurations of footwear 100, similar padded areas may be located in other areas of knitted component 130. For example, similar padded areas may be located as an area corresponding with joints between the metatarsals and proximal phalanges to impart padding to the joints. As an alternative, a terry loop structure may also be utilized to impart some degree of padding to areas of upper 120.

**[70]** Based upon the above discussion, knitted component 130 imparts a variety of features to upper 120. Moreover, knitted component 130 provides a variety of advantages over some conventional upper configurations. As noted above, conventional footwear uppers are formed from multiple material elements (e.g., textiles, polymer foam, polymer sheets, leather, synthetic leather) that are joined through stitching or bonding, for example. As the number and type of material elements incorporated into an upper increases, the time and expense associated with transporting, stocking, cutting, and joining the material elements may also increase. Waste material from cutting and stitching processes also accumulates

to a greater degree as the number and type of material elements incorporated into the upper increases. Moreover, uppers with a greater number of material elements may be more difficult to recycle than uppers formed from fewer types and numbers of material elements. By decreasing the number of material elements utilized in the upper, therefore, waste may be decreased while increasing the manufacturing efficiency and recyclability of the upper. To this end, knitted component 130 forms a substantial portion of upper 120, while increasing manufacturing efficiency, decreasing waste, and simplifying recyclability.

**[71]** Further Knitted Component Configurations

**[72]** A knitted component 150 is depicted in Figures 9 and 10 and may be utilized in place of knitted component 130 in footwear 100. The primary elements of knitted component 150 are a knit element 151 and an inlaid strand 152. Knit element 151 is formed from at least one yarn that is manipulated (e.g., with a knitting machine) to form a plurality of intermeshed loops that define a variety of courses and wales. That is, knit element 151 has the structure of a knit textile. Inlaid strand 152 extends through knit element 151 and passes between the various loops within knit element 151. Although inlaid strand 152 generally extends along courses within knit element 151, inlaid strand 152 may also extend along wales within knit element 151. As with inlaid strand 132, inlaid strand 152 imparts stretch-resistance and, when incorporated into footwear 100, operates in connection with lace 122 to enhance the fit of footwear 100.

**[73]** Knit element 151 has a generally U-shaped configuration that is outlined by a perimeter edge 153, a pair of heel edges 154, and an inner edge 155. In addition, knit element 151 has a first surface 156 and an opposite second surface 157. First surface 156 may form a portion of the exterior surface of upper 120, whereas second surface 157 may form a portion of the interior surface of upper 120, thereby defining at least a portion of the void within upper 120. In many

configurations, knit element 151 may have the configuration of a single textile layer in the area of inlaid strand 152. That is, knit element 151 may be a single textile layer between surfaces 156 and 157. In addition, knit element 151 defines a plurality of lace apertures 158.

**[74]** Similar to inlaid strand 132, inlaid strand 152 repeatedly extends from perimeter edge 153 toward inner edge 155, at least partially around one of lace apertures 158, and back to perimeter edge 153. In contrast with inlaid strand 132, however, some portions of inlaid strand 152 angle rearwards and extend to heel edges 154. More particularly, the portions of inlaid strand 152 associated with the most rearward lace apertures 158 extend from one of heel edges 154 toward inner edge 155, at least partially around one of the most rearward lace apertures 158, and back to one of heel edges 154. Additionally, some portions of inlaid strand 152 do not extend around one of lace apertures 158. More particularly, some sections of inlaid strand 152 extend toward inner edge 155, turn in areas adjacent to one of lace apertures 158, and extend back toward perimeter edge 153 or one of heel edges 154.

**[75]** Although knit element 151 may be formed in a variety of ways, courses of the knit structure generally extend in the same direction as inlaid strands 152. In areas adjacent to lace apertures 158, however, inlaid strand 152 may also extend along wales within knit element 151. More particularly, sections of inlaid strand 152 that are parallel to inner edge 155 may extend along wales.

**[76]** In comparison with knit element 151, inlaid strand 152 may exhibit greater stretch-resistance. That is, inlaid strand 152 may stretch less than knit element 151. Given that numerous sections of inlaid strand 152 extend through knit element 151, inlaid strand 152 may impart stretch-resistance to portions of upper 120 between the throat area and the lower area. Moreover, placing tension upon lace 122 may impart tension to inlaid strand 152, thereby inducing the portions of upper 120 between the throat area and the lower area to lay against the foot.

Additionally, given that numerous sections of inlaid strand 152 extend toward heel edges 154, inlaid strand 152 may impart stretch-resistance to portions of upper 120 in heel region 103. Moreover, placing tension upon lace 122 may induce the portions of upper 120 in heel region 103 to lay against the foot. As such, inlaid strand 152 operates in connection with lace 122 to enhance the fit of footwear 100.

**[77]** Knit element 151 may incorporate any of the various types of yarn discussed above for knit element 131. Inlaid strand 152 may also be formed from any of the configurations and materials discussed above for inlaid strand 132. Additionally, the various knit configurations discussed relative to Figures 8A and 8B may also be utilized in knitted component 150. More particularly, knit element 151 may have areas formed from a single yarn, two plated yarns, or a fusible yarn and a non-fusible yarn, with the fusible yarn joining (a) one portion of the non-fusible yarn to another portion of the non-fusible yarn or (b) the non-fusible yarn and inlaid strand 152 to each other.

**[78]** A majority of knit element 131 is depicted as being formed from a relatively untextured textile and a common or single knit structure (e.g., a tubular knit structure). In contrast, knit element 151 incorporates various knit structures that impart specific properties and advantages to different areas of knitted component 150. Moreover, by combining various yarn types with the knit structures, knitted component 150 may impart a range of properties to different areas of upper 120. Referring to Figure 11, a schematic view of knitted component 150 shows various zones 160-169 having different knit structures, each of which will now be discussed in detail. For purposes of reference, each of regions 101-103 and sides 104 and 105 are shown in Figure 11 to provide a reference for the locations of knit zones 160-169 when knitted component 150 is incorporated into footwear 100.

**[79]** A tubular knit zone 160 extends along a majority of perimeter edge 153 and through each of regions 101-103 on both of sides 104 and 105. Tubular knit zone 160 also extends inward from each of sides 104 and 105 in an area approximately located at an interface regions 101 and 102 to form a forward portion of inner edge 155. Tubular knit zone 160 forms a relatively untextured knit configuration. Referring to Figure 12A, a cross-section through an area of tubular knit zone 160 is depicted, and surfaces 156 and 157 are substantially parallel to each other. Tubular knit zone 160 imparts various advantages to footwear 100. For example, tubular knit zone 160 has greater durability and wear resistance than some other knit structures, especially when the yarn in tubular knit zone 160 is plated with a fusible yarn. In addition, the relatively untextured aspect of tubular knit zone 160 simplifies the process of joining strobel sock 125 to perimeter edge 153. That is, the portion of tubular knit zone 160 located along perimeter edge 153 facilitates the lasting process of footwear 100. For purposes of reference, Figure 13A depicts a loop diagram of the manner in which tubular knit zone 160 is formed with a knitting process.

**[80]** Two stretch knit zones 161 extend inward from perimeter edge 153 and are located to correspond with a location of joints between metatarsals and proximal phalanges of the foot. That is, stretch zones extend inward from perimeter edge in the area approximately located at the interface regions 101 and 102. As with tubular knit zone 160, the knit configuration in stretch knit zones 161 may be a tubular knit structure. In contrast with tubular knit zone 160, however, stretch knit zones 161 are formed from a stretch yarn that imparts stretch and recovery properties to knitted component 150. Although the degree of stretch in the stretch yarn may vary significantly, the stretch yarn may stretch at least one-hundred percent in many configurations of knitted component 150.

**[81]** A tubular and interlock tuck knit zone 162 extends along a portion of inner edge 155 in at least midfoot region 102. Tubular and interlock tuck knit zone 162 also

forms a relatively untextured knit configuration, but has greater thickness than tubular knit zone 160. In cross-section, tubular and interlock tuck knit zone 162 is similar to Figure 12A, in which surfaces 156 and 157 are substantially parallel to each other. Tubular and interlock tuck knit zone 162 imparts various advantages to footwear 100. For example, tubular and interlock tuck knit zone 162 has greater stretch resistance than some other knit structures, which is beneficial when lace 122 places tubular and interlock tuck knit zone 162 and inlaid strands 152 in tension. For purposes of reference, Figure 13B depicts a loop diagram of the manner in which tubular and interlock tuck knit zone 162 is formed with a knitting process.

**[82]** A 1x1 mesh knit zone 163 is located in forefoot region 101 and spaced inward from perimeter edge 153. 1x1 mesh knit zone has a C-shaped configuration and forms a plurality of apertures that extend through knit element 151 and from first surface 156 to second surface 157, as depicted in Figure 12B. The apertures enhance the permeability of knitted component 150, which allows air to enter upper 120 and moisture to escape from upper 120. For purposes of reference, Figure 13C depicts a loop diagram of the manner in which 1x1 mesh knit zone 163 is formed with a knitting process.

**[83]** A 2x2 mesh knit zone 164 extends adjacent to 1x1 mesh knit zone 163. In comparison with 1x1 mesh knit zone 163, 2x2 mesh knit zone 164 forms larger apertures, which may further enhance the permeability of knitted component 150. For purposes of reference, Figure 13D depicts a loop diagram of the manner in which 2x2 mesh knit zone 164 is formed with a knitting process.

**[84]** A 3x2 mesh knit zone 165 is located within 2x2 mesh knit zone 164, and another 3x2 mesh knit zone 165 is located adjacent to one of stretch zones 161. In comparison with 1x1 mesh knit zone 163 and 2x2 mesh knit zone 164, 3x2 mesh knit zone 165 forms even larger apertures, which may further enhance the permeability of knitted component 150. For purposes of reference, Figure 13E

depicts a loop diagram of the manner in which 3x2 mesh knit zone 165 is formed with a knitting process.

**[85]** A 1x1 mock mesh knit zone 166 is located in forefoot region 101 and extends around 1x1 mesh knit zone 163. In contrast with mesh knit zones 163-165, which form apertures through knit element 151, 1x1 mock mesh knit zone 166 forms indentations in first surface 156, as depicted in Figure 12C. In addition to enhancing the aesthetics of footwear 100, 1x1 mock mesh knit zone 166 may enhance flexibility and decrease the overall mass of knitted component 150. For purposes of reference, Figure 13F depicts a loop diagram of the manner in which 1x1 mock mesh knit zone 166 is formed with a knitting process.

**[86]** Two 2x2 mock mesh knit zones 167 are located in heel region 103 and adjacent to heel edges 154. In comparison with 1x1 mock mesh knit zone 166, 2x2 mock mesh knit zones 167 forms larger indentations in first surface 156. In areas where inlaid strands 152 extend through indentations in 2x2 mock mesh knit zones 167, as depicted in Figure 12D, inlaid strands 152 may be visible and exposed in a lower area of the indentations. For purposes of reference, Figure 13G depicts a loop diagram of the manner in which 2x2 mock mesh knit zones 167 are formed with a knitting process.

**[87]** Two 2x2 hybrid knit zones 168 are located in midfoot region 102 and forward of 2x2 mock mesh knit zones 167. 2x2 hybrid knit zones 168 share characteristics of 2x2 mesh knit zone 164 and 2x2 mock mesh knit zones 167. More particularly, 2x2 hybrid knit zones 168 form apertures having the size and configuration of 2x2 mesh knit zone 164, and 2x2 hybrid knit zones 168 form indentations having the size and configuration of 2x2 mock mesh knit zones 167. In areas where inlaid strands 152 extend through indentations in 2x2 hybrid knit zones 168, as depicted in Figure 12E, inlaid strands 152 are visible and exposed. For purposes of reference, Figure 13H depicts a loop diagram of the manner in which 2x2 hybrid knit zones 168 are formed with a knitting process.

**[88]** Knitted component 150 also includes two padded zones 169 having the general configuration of the padded area adjacent to ankle opening 121 and extending at least partially around ankle opening 121, which was discussed above for knitted component 130. As such, padded zones 169 are formed by two overlapping and at least partially coextensive knitted layers, which may be formed of unitary knit construction, and a plurality of floating yarns extending between the knitted layers.

**[89]** A comparison between Figures 9 and 10 reveals that a majority of the texturing in knit element 151 is located on first surface 156, rather than second surface 157. That is, the indentations formed by mock mesh knit zones 166 and 167, as well as the indentations in 2x2 hybrid knit zones 168, are formed in first surface 156. This configuration has an advantage of enhancing the comfort of footwear 100. More particularly, this configuration places the relatively untextured configuration of second surface 157 against the foot. A further comparison between Figures 9 and 10 reveals that portions of inlaid strand 152 are exposed on first surface 156, but not on second surface 157. This configuration also has an advantage of enhancing the comfort of footwear 100. More particularly, by spacing inlaid strand 152 from the foot by a portion of knit element 151, inlaid strands 152 will not contact the foot.

**[90]** Additional configurations of knitted component 130 are depicted in Figures 14A-14C. Although discussed in relation to kitted component 130, concepts associated with each of these configurations may also be utilized with knitted component 150. Referring to Figure 14A, inlaid strands 132 are absent from knitted component 130. Although inlaid strands 132 impart stretch-resistance to areas of knitted component 130, some configurations may not require the stretch-resistance from inlaid strands 132. Moreover, some configurations may benefit from greater stretch in upper 120. Referring to Figure 14B, knit element 131 includes two flaps 142 that are formed of unitary knit construction with a

remainder of knit element 131 and extend along the length of knitted component 130 at perimeter edge 133. When incorporated into footwear 100, flaps 142 may replace strobel sock 125. That is, flaps 142 may cooperatively form a portion of upper 120 that extends under sockliner 113 and is secured to the upper surface of midsole 111. Referring to Figure 14C, knitted component 130 has a configuration that is limited to midfoot region 102. In this configuration, other material elements (e.g., textiles, polymer foam, polymer sheets, leather, synthetic leather) may be joined to knitted component 130 through stitching or bonding, for example, to form upper 120.

**[91]** Based upon the above discussion, each of knitted components 130 and 150 may have various configurations that impart features and advantages to upper 120. More particularly, knit elements 131 and 151 may incorporate various knit structures and yarn types that impart specific properties to different areas of upper 120, and inlaid strands 132 and 152 may extend through the knit structures to impart stretch-resistance to areas of upper 120 and operate in connection with lace 122 to enhance the fit of footwear 100.

**[92]** Knitting Machine And Feeder Configurations

**[93]** Although knitting may be performed by hand, the commercial manufacture of knitted components is generally performed by knitting machines. An example of a knitting machine 200 that is suitable for producing either of knitted components 130 and 150 is depicted in Figure 15. Knitting machine 200 has a configuration of a V-bed flat knitting machine for purposes of example, but either of knitted components 130 and 150 or aspects of knitted components 130 and 150 may be produced on other types of knitting machines.

**[94]** Knitting machine 200 includes two needle beds 201 that are angled with respect to each other, thereby forming a V-bed. Each of needle beds 201 include a plurality of individual needles 202 that lay on a common plane. That is, needles

202 from one needle bed 201 lay on a first plane, and needles 202 from the other needle bed 201 lay on a second plane. The first plane and the second plane (i.e., the two needle beds 201) are angled relative to each other and meet to form an intersection that extends along a majority of a width of knitting machine 200. As described in greater detail below, needles 202 each have a first position where they are retracted and a second position where they are extended. In the first position, needles 202 are spaced from the intersection where the first plane and the second plane meet. In the second position, however, needles 202 pass through the intersection where the first plane and the second plane meet.

**[95]** A pair of rails 203 extend above and parallel to the intersection of needle beds 201 and provide attachment points for multiple standard feeders 204 and combination feeders 220. Each rail 203 has two sides, each of which accommodates either one standard feeder 204 or one combination feeder 220. As such, knitting machine 200 may include a total of four feeders 204 and 220. As depicted, the forward-most rail 203 includes one combination feeder 220 and one standard feeder 204 on opposite sides, and the rearward-most rail 203 includes two standard feeders 204 on opposite sides. Although two rails 203 are depicted, further configurations of knitting machine 200 may incorporate additional rails 203 to provide attachment points for more feeders 204 and 220.

**[96]** Due to the action of a carriage 205, feeders 204 and 220 move along rails 203 and needle beds 201, thereby supplying yarns to needles 202. In Figure 15, a yarn 206 is provided to combination feeder 220 by a spool 207. More particularly, yarn 206 extends from spool 207 to various yarn guides 208, a yarn take-back spring 209, and a yarn tensioner 210 before entering combination feeder 220. Although not depicted, additional spools 207 may be utilized to provide yarns to feeders 204.

**[97]** Standard feeders 204 are conventionally-utilized for a V-bed flat knitting machine, such as knitting machine 200. That is, existing knitting machines

incorporate standard feeders 204. Each standard feeder 204 has the ability to supply a yarn that needles 202 manipulate to knit, tuck, and float. As a comparison, combination feeder 220 has the ability to supply a yarn (e.g., yarn 206) that needles 202 knit, tuck, and float, and combination feeder 220 has the ability to inlay the yarn. Moreover, combination feeder 220 has the ability to inlay a variety of different strands (e.g., filament, thread, rope, webbing, cable, chain, or yarn). Accordingly, combination feeder 220 exhibits greater versatility than each standard feeder 204.

**[98]** As noted above, combination feeder 220 may be utilized when inlaying a yarn or other strand, in addition to knitting, tucking, and floating the yarn. Conventional knitting machines, which do not incorporate combination feeder 220, may also inlay a yarn. More particularly, conventional knitting machines that are supplied with an inlay feeder may also inlay a yarn. A conventional inlay feeder for a V-bed flat knitting machine includes two components that operate in conjunction to inlay the yarn. Each of the components of the inlay feeder are secured to separate attachment points on two adjacent rails, thereby occupying two attachment points. Whereas an individual standard feeder 204 only occupies one attachment point, two attachment points are generally occupied when an inlay feeder is utilized to inlay a yarn into a knitted component. Moreover, whereas combination feeder 220 only occupies one attachment point, a conventional inlay feeder occupies two attachment points.

**[99]** Given that knitting machine 200 includes two rails 203, four attachment points are available in knitting machine 200. If a conventional inlay feeder were utilized with knitting machine 200, only two attachment points would be available for standard feeders 204. When using combination feeder 220 in knitting machine 200, however, three attachment points are available for standard feeders 204. Accordingly, combination feeder 220 may be utilized when inlaying a yarn or

other strand, and combination feeder 220 has an advantage of only occupying one attachment point.

**[100]** Combination feeder 220 is depicted individually in Figures 16-19 as including a carrier 230, a feeder arm 240, and a pair of actuation members 250. Although a majority of combination feeder 220 may be formed from metal materials (e.g., steel, aluminum, titanium), portions of carrier 230, feeder arm 240, and actuation members 250 may be formed from polymer, ceramic, or composite materials, for example. As discussed above, combination feeder 220 may be utilized when inlaying a yarn or other strand, in addition to knitting, tucking, and floating a yarn. Referring to Figure 16 specifically, a portion of yarn 206 is depicted to illustrate the manner in which a strand interfaces with combination feeder 220.

**[101]** Carrier 230 has a generally rectangular configuration and includes a first cover member 231 and a second cover member 232 that are joined by four bolts 233. Cover members 231 and 232 define an interior cavity in which portions of feeder arm 240 and actuation members 250 are located. Carrier 230 also includes an attachment element 234 that extends outward from first cover member 231 for securing feeder 220 to one of rails 203. Although the configuration of attachment element 234 may vary, attachment element 234 is depicted as including two spaced protruding areas that form a dovetail shape, as depicted in Figure 17. A reverse dovetail configuration on one of rails 203 may extend into the dovetail shape of attachment element 234 to effectively join combination feeder 220 to knitting machine 200. It should also be noted that second cover member 234 forms a centrally-located and elongate slot 235, as depicted in Figure 18.

**[102]** Feeder arm 240 has a generally elongate configuration that extends through carrier 230 (i.e., the cavity between cover members 231 and 232) and outward from a lower side of carrier 230. In addition to other elements, feeder arm 240 includes an actuation bolt 241, a spring 242, a pulley 243, a loop 244, and a dispensing area 245. Actuation bolt 241 extends outward from feeder arm 240

and is located within the cavity between cover members 231 and 232. One side of actuation bolt 241 is also located within slot 235 in second cover member 232, as depicted in Figure 18. Spring 242 is secured to carrier 230 and feeder arm 240. More particularly, one end of spring 242 is secured to carrier 230, and an opposite end of spring 242 is secured to feeder arm 240. Pulley 243, loop 244, and dispensing area 245 are present on feeder arm 240 to interface with yarn 206 or another strand. Moreover, pulley 243, loop 244, and dispensing area 245 are configured to ensure that yarn 206 or another strand smoothly passes through combination feeder 220, thereby being reliably-supplied to needles 202. Referring again to Figure 16, yarn 206 extends around pulley 243, through loop 244, and into dispensing area 245. In addition, yarn 206 extends out of a dispensing tip 246, which is an end region of feeder arm 240, to then supply needles 202.

**[103]** Each of actuation members 250 includes an arm 251 and a plate 252. In many configurations of actuation members 250, each arm 251 is formed as a one-piece element with one of plates 252. Whereas arms 251 are located outside of carrier 230 and at an upper side of carrier 230, plates 252 are located within carrier 250. Each of arms 251 has an elongate configuration that defines an outside end 253 and an opposite inside end 254, and arms 251 are positioned to define a space 255 between both of inside ends 254. That is, arms 251 are spaced from each other. Plates 252 have a generally planar configuration. Referring to Figure 19, each of plates 252 define an aperture 256 with an inclined edge 257. Moreover, actuation bolt 241 of feeder arm 240 extends into each aperture 256.

**[104]** The configuration of combination feeder 220 discussed above provides a structure that facilitates a translating movement of feeder arm 240. As discussed in greater detail below, the translating movement of feeder arm 240 selectively positions dispensing tip 246 at a location that is above or below the intersection of needle beds 201. That is, dispensing tip 246 has the ability to reciprocate

through the intersection of needle beds 201. An advantage to the translating movement of feeder arm 240 is that combination feeder 220 (a) supplies yarn 206 for knitting, tucking, and floating when dispensing tip 246 is positioned above the intersection of needle beds 201 and (b) supplies yarn 206 or another strand for inlaying when dispensing tip 246 is positioned below the intersection of needle beds 201. Moreover, feeder arm 240 reciprocates between the two positions depending upon the manner in which combination feeder 220 is being utilized.

**[105]** In reciprocating through the intersection of needle beds 201, feeder arm 240 translates from a retracted position to an extended position. When in the retracted position, dispensing tip 246 is positioned above the intersection of needle beds 201. When in the extended position, dispensing tip 246 is positioned below the intersection of needle beds 201. Dispensing tip 246 is closer to carrier 230 when feeder arm 240 is in the retracted position than when feeder arm 240 is in the extended position. Similarly, dispensing tip 246 is further from carrier 230 when feeder arm 240 is in the extended position than when feeder arm 240 is in the retracted position. In other words, dispensing tip 246 moves away from carrier 230 when in the extended position, and dispensing tip 246 moves closer to carrier 230 when in the retracted position.

**[106]** For purposes of reference in Figures 16-20C, as well as further figures discussed later, an arrow 221 is positioned adjacent to dispensing area 245. When arrow 221 points upward or toward carrier 230, feeder arm 240 is in the retracted position. When arrow 221 points downward or away from carrier 230, feeder arm 240 is in the extended position. Accordingly, by referencing the position of arrow 221, the position of feeder arm 240 may be readily ascertained.

**[107]** The natural state of feeder arm 240 is the retracted position. That is, when no significant forces are applied to areas of combination feeder 220, feeder arm remains in the retracted position. Referring to Figures 16-19, for example, no

forces or other influences are shown as interacting with combination feeder 220, and feeder arm 240 is in the retracted position. The translating movement of feeder arm 240 may occur, however, when a sufficient force is applied to one of arms 251. More particularly, the translating movement of feeder arm 240 occurs when a sufficient force is applied to one of outside ends 253 and is directed toward space 255. Referring to Figures 20A and 20B, a force 222 is acting upon one of outside ends 253 and is directed toward space 255, and feeder arm 240 is shown as having translated to the extended position. Upon removal of force 222, however, feeder arm 240 will return to the retracted position. It should also be noted that Figure 20C depicts force 222 as acting upon inside ends 254 and being directed outward, and feeder arm 240 remains in the retracted position.

**[108]** As discussed above, feeders 204 and 220 move along rails 203 and needle beds 201 due to the action of carriage 205. More particularly, a drive bolt within carriage 205 contacts feeders 204 and 220 to push feeders 204 and 220 along needle beds 201. With respect to combination feeder 220, the drive bolt may either contact one of outside ends 253 or one of inside ends 254 to push combination feeder 220 along needle beds 201. When the drive bolt contacts one of outside ends 253, feeder arm 240 translates to the extended position and dispensing tip 246 passes below the intersection of needle beds 201. When the drive bolt contacts one of inside ends 254 and is located within space 255, feeder arm 240 remains in the retracted position and dispensing tip 246 is above the intersection of needle beds 201. Accordingly, the area where carriage 205 contacts combination feeder 220 determines whether feeder arm 240 is in the retracted position or the extended position.

**[109]** The mechanical action of combination feeder 220 will now be discussed. Figures 19-20B depict combination feeder 220 with first cover member 231 removed, thereby exposing the elements within the cavity in carrier 230. By comparing Figure 19 with Figures 20A and 20B, the manner in which force 222 induces

feeder arm 240 to translate may be apparent. When force 222 acts upon one of outside ends 253, one of actuation members 250 slides in a direction that is perpendicular to the length of feeder arm 240. That is, one of actuation members 250 slides horizontally in Figures 19-20B. The movement of one of actuation members 250 causes actuation bolt 241 to engage one of inclined edges 257. Given that the movement of actuation members 250 is constrained to the direction that is perpendicular to the length of feeder arm 240, actuation bolt 241 rolls or slides against inclined edge 257 and induces feeder arm 240 to translate to the extended position. Upon removal of force 222, spring 242 pulls feeder arm 240 from the extended position to the retracted position.

**[110]** Based upon the above discussion, combination feeder 220 reciprocates between the retracted position and the extended position depending upon whether a yarn or other strand is being utilized for knitting, tucking, or floating or being utilized for inlaying. Combination feeder 220 has a configuration wherein the application of force 222 induces feeder arm 240 to translate from the retracted position to the extended position, and removal of force 222 induces feeder arm 240 to translate from the extended position to the retracted position. That is, combination feeder 220 has a configuration wherein the application and removal of force 222 causes feeder arm 240 to reciprocate between opposite sides of needle beds 201. In general, outside ends 253 may be considered actuation areas, which induce movement in feeder arm 240. In further configurations of combination feeder 220, the actuation areas may be in other locations or may respond to other stimuli to induce movement in feeder arm 240. For example, the actuation areas may be electrical inputs coupled to servomechanisms that control movement of feeder arm 240. Accordingly, combination feeder 220 may have a variety of structures that operate in the same general manner as the configuration discussed above.

**[111]** Knitting Process

**[112]** The manner in which knitting machine 200 operates to manufacture a knitted component will now be discussed in detail. Moreover, the following discussion will demonstrate the operation of combination feeder 220 during a knitting process. Referring to Figure 21A, a portion of knitting machine 200 that includes various needles 202, rail 203, standard feeder 204, and combination feeder 220 is depicted. Whereas combination feeder 220 is secured to a front side of rail 203, standard feeder 204 is secured to a rear side of rail 203. Yarn 206 passes through combination feeder 220, and an end of yarn 206 extends outward from dispensing tip 246. Although yarn 206 is depicted, any other strand (e.g., filament, thread, rope, webbing, cable, chain, or yarn) may pass through combination feeder 220. Another yarn 211 passes through standard feeder 204 and forms a portion of a knitted component 260, and loops of yarn 211 forming an uppermost course in knitted component 260 are held by hooks located on ends of needles 202.

**[113]** The knitting process discussed herein relates to the formation of knitted component 260, which may be any knitted component, including knitted components that are similar to knitted components 130 and 150. For purposes of the discussion, only a relatively small section of knitted component 260 is shown in the figures in order to permit the knit structure to be illustrated. Moreover, the scale or proportions of the various elements of knitting machine 200 and knitted component 260 may be enhanced to better illustrate the knitting process.

**[114]** Standard feeder 204 includes a feeder arm 212 with a dispensing tip 213. Feeder arm 212 is angled to position dispensing tip 213 in a location that is (a) centered between needles 202 and (b) above an intersection of needle beds 201. Figure 22A depicts a schematic cross-sectional view of this configuration. Note that needles 202 lay on different planes, which are angled relative to each other.

That is, needles 202 from needle beds 201 lay on the different planes. Needles 202 each have a first position and a second position. In the first position, which is shown in solid line, needles 202 are retracted. In the second position, which is shown in dashed line, needles 202 are extended. In the first position, needles 202 are spaced from the intersection where the planes upon which needle beds 201 lay meet. In the second position, however, needles 202 are extended and pass through the intersection where the planes upon which needle beds 201 meet. That is, needles 202 cross each other when extended to the second position. It should be noted that dispensing tip 213 is located above the intersection of the planes. In this position, dispensing tip 213 supplies yarn 211 to needles 202 for purposes of knitting, tucking, and floating.

**[115]** Combination feeder 220 is in the retracted position, as evidenced by the orientation of arrow 221. Feeder arm 240 extends downward from carrier 230 to position dispensing tip 246 in a location that is (a) centered between needles 202 and (b) above the intersection of needle beds 201. Figure 22B depicts a schematic cross-sectional view of this configuration. Note that dispensing tip 246 is positioned in the same relative location as dispensing tip 213 in Figure 22A.

**[116]** Referring now to Figure 21B, standard feeder 204 moves along rail 203 and a new course is formed in knitted component 260 from yarn 211. More particularly, needles 202 pulled sections of yarn 211 through the loops of the prior course, thereby forming the new course. Accordingly, courses may be added to knitted component 260 by moving standard feeder 204 along needles 202, thereby permitting needles 202 to manipulate yarn 211 and form additional loops from yarn 211.

**[117]** Continuing with the knitting process, feeder arm 240 now translates from the retracted position to the extended position, as depicted in Figure 21C. In the extended position, feeder arm 240 extends downward from carrier 230 to position dispensing tip 246 in a location that is (a) centered between needles 202 and (b)

below the intersection of needle beds 201. Figure 22C depicts a schematic cross-sectional view of this configuration. Note that dispensing tip 246 is positioned below the location of dispensing tip 246 in Figure 22B due to the translating movement of feeder arm 240.

**[118]** Referring now to Figure 21D, combination feeder 220 moves along rail 203 and yarn 206 is placed between loops of knitted component 260. That is, yarn 206 is located in front of some loops and behind other loops in an alternating pattern. Moreover, yarn 206 is placed in front of loops being held by needles 202 from one needle bed 201, and yarn 206 is placed behind loops being held by needles 202 from the other needle bed 201. Note that feeder arm 240 remains in the extended position in order to lay yarn 206 in the area below the intersection of needle beds 201. This effectively places yarn 206 within the course recently formed by standard feeder 204 in Figure 21B.

**[119]** In order to complete inlaying yarn 206 into knitted component 260, standard feeder 204 moves along rail 203 to form a new course from yarn 211, as depicted in Figure 21E. By forming the new course, yarn 206 is effectively knit within or otherwise integrated into the structure of knitted component 260. At this stage, feeder arm 240 may also translate from the extended position to the retracted position.

**[120]** Figures 21D and 21E show separate movements of feeders 204 and 220 along rail 203. That is, Figure 21D shows a first movement of combination feeder 220 along rail 203, and Figure 21E shows a second and subsequent movement of standard feeder 204 along rail 203. In many knitting processes, feeders 204 and 220 may effectively move simultaneously to inlay yarn 206 and form a new course from yarn 211. Combination feeder 220, however, moves ahead or in front of standard feeder 204 in order to position yarn 206 prior to the formation of the new course from yarn 211.

**[121]** The general knitting process outlined in the above discussion provides an example of the manner in which inlaid strands 132 and 152 may be located in knit elements 131 and 151. More particularly, knitted components 130 and 150 may be formed by utilizing combination feeder 220 to effectively insert inlaid strands 132 and 152 into knit elements 131. Given the reciprocating action of feeder arm 240, inlaid strands may be located within a previously formed course prior to the formation of a new course.

**[122]** Continuing with the knitting process, feeder arm 240 now translates from the retracted position to the extended position, as depicted in Figure 21F. Combination feeder 220 then moves along rail 203 and yarn 206 is placed between loops of knitted component 260, as depicted in Figure 21G. This effectively places yarn 206 within the course formed by standard feeder 204 in Figure 21E. In order to complete inlaying yarn 206 into knitted component 260, standard feeder 204 moves along rail 203 to form a new course from yarn 211, as depicted in Figure 21H. By forming the new course, yarn 206 is effectively knit within or otherwise integrated into the structure of knitted component 260. At this stage, feeder arm 240 may also translate from the extended position to the retracted position.

**[123]** Referring to Figure 21H, yarn 206 forms a loop 214 between the two inlaid sections. In the discussion of knitted component 130 above, it was noted that inlaid strand 132 repeatedly exits knit element 131 at perimeter edge 133 and then re-enters knit element 131 at another location of perimeter edge 133, thereby forming loops along perimeter edge 133, as seen in Figures 5 and 6. Loop 214 is formed in a similar manner. That is, loop 214 is formed where yarn 206 exits the knit structure of knitted component 260 and then re-enters the knit structure.

**[124]** As discussed above, standard feeder 204 has the ability to supply a yarn (e.g., yarn 211) that needles 202 manipulate to knit, tuck, and float. Combination

feeder 220, however, has the ability to supply a yarn (e.g., yarn 206) that needles 202 knit, tuck, or float, as well as inlaying the yarn. The above discussion of the knitting process describes the manner in which combination feeder 220 inlays a yarn while in the extended position. Combination feeder 220 may also supply the yarn for knitting, tucking, and floating while in the retracted position. Referring to Figure 21I, for example, combination feeder 220 moves along rail 203 while in the retracted position and forms a course of knitted component 260 while in the retracted position. Accordingly, by reciprocating feeder arm 240 between the retracted position and the extended position, combination feeder 220 may supply yarn 206 for purposes of knitting, tucking, floating, and inlaying. An advantage to combination feeder 220 relates, therefore, to its versatility in supplying a yarn that may be utilized for a greater number of functions than standard feeder 204

**[125]** The ability of combination feeder 220 to supply yarn for knitting, tucking, floating, and inlaying is based upon the reciprocating action of feeder arm 240. Referring to Figures 22A and 22B, dispensing tips 213 and 246 are at identical positions relative to needles 220. As such, both feeders 204 and 220 may supply a yarn for knitting, tucking, and floating. Referring to Figure 22C, dispensing tip 246 is at a different position. As such, combination feeder 220 may supply a yarn or other strand for inlaying. An advantage to combination feeder 220 relates, therefore, to its versatility in supplying a yarn that may be utilized for knitting, tucking, floating, and inlaying.

**[126]** Further Knitting Process Considerations

**[127]** Additional aspects relating to the knitting process will now be discussed. Referring to Figure 23, the upper course of knitted component 260 is formed from both of yarns 206 and 211. More particularly, a left side of the course is formed from yarn 211, whereas a right side of the course is formed from yarn 206. Additionally, yarn 206 is inlaid into the left side of the course. In order to form this configuration, standard feeder 204 may initially form the left side of the

course from yarn 211. Combination feeder 220 then lays yarn 206 into the right side of the course while feeder arm 240 is in the extended position. Subsequently, feeder arm 240 moves from the extended position to the retracted position and forms the right side of the course. Accordingly, combination feeder may inlay a yarn into one portion of a course and then supply the yarn for purposes of knitting a remainder of the course.

**[128]** Figure 24 depicts a configuration of knitting machine 200 that includes four combination feeders 220. As discussed above, combination feeder 220 has the ability to supply a yarn (e.g., yarn 206) for knitting, tucking, floating, and inlaying. Given this versatility, standard feeders 204 may be replaced by multiple combination feeders 220 in knitting machine 200 or in various conventional knitting machines.

**[129]** Figure 8B depicts a configuration of knitted component 130 where two yarns 138 and 139 are plated to form knit element 131, and inlaid strand 132 extends through knit element 131. The general knitting process discussed above may also be utilized to form this configuration. As depicted in Figure 15, knitting machine 200 includes multiple standard feeders 204, and two of standard feeders 204 may be utilized to form knit element 131, with combination feeder 220 depositing inlaid strand 132. Accordingly, the knitting process discussed above in Figures 21A-21I may be modified by adding another standard feeder 204 to supply an additional yarn. In configurations where yarn 138 is a non-fusible yarn and yarn 139 is a fusible yarn, knitted component 130 may be heated following the knitting process to fuse knitted component 130.

**[130]** The portion of knitted component 260 depicted in Figures 21A-21I has the configuration of a rib knit textile with regular and uninterrupted courses and wales. That is, the portion of knitted component 260 does not have, for example, any mesh areas similar to mesh knit zones 163-165 or mock mesh areas similar to mock mesh knit zones 166 and 167. In order to form mesh knit zones 163-165

in either of knitted components 150 and 260, a combination of a racked needle bed 201 and a transfer of stitch loops from front to back needle beds 201 and back to front needle beds 201 in different racked positions is utilized. In order to form mock mesh areas similar to mock mesh knit zones 166 and 167, a combination of a racked needle bed and a transfer of stitch loops from front to back needle beds 201 is utilized.

**[131]** Courses within a knitted component are generally parallel to each other. Given that a majority of inlaid strand 152 follows courses within knit element 151, it may be suggested that the various sections of inlaid strand 152 should be parallel to each other. Referring to Figure 9, for example, some sections of inlaid strand 152 extend between edges 153 and 155 and other sections extend between edges 153 and 154. Various sections of inlaid strand 152 are, therefore, not parallel. The concept of forming darts may be utilized to impart this non-parallel configuration to inlaid strand 152. More particularly, courses of varying length may be formed to effectively insert wedge-shaped structures between sections of inlaid strand 152. The structure formed in knitted component 150, therefore, where various sections of inlaid strand 152 are not parallel, may be accomplished through the process of darting.

**[132]** Although a majority of inlaid strands 152 follow courses within knit element 151, some sections of inlaid strand 152 follow wales. For example, sections of inlaid strand 152 that are adjacent to and parallel to inner edge 155 follow wales. This may be accomplished by first inserting a section of inlaid strand 152 along a portion of a course and to a point where inlaid strand 152 is intended to follow a wale. Inlaid strand 152 is then kicked back to move inlaid strand 152 out of the way, and the course is finished. As the subsequent course is being formed, inlay strand 152 is again kicked back to move inlaid strand 152 out of the way at the point where inlaid strand 152 is intended to follow the wale, and the course is finished. This process is repeated until inlaid strand 152 extends a desired

distance along the wale. Similar concepts may be utilized for portions of inlaid strand 132 in knitted component 130.

**[133]** A variety of procedures may be utilized to reduce relative movement between (a) knit element 131 and inlaid strand 132 or (b) knit element 151 and inlaid strand 152. That is, various procedures may be utilized to prevent inlaid strands 132 and 152 from slipping, moving through, pulling out, or otherwise becoming displaced from knit elements 131 and 151. For example, fusing one or more yarns that are formed from thermoplastic polymer materials to inlaid strands 132 and 152 may prevent movement between inlaid strands 132 and 152 and knit elements 131 and 151. Additionally, inlaid strands 132 and 152 may be fixed to knit elements 131 and 151 when periodically fed to knitting needles as a tuck element. That is, inlaid strands 132 and 152 may be formed into tuck stitches at points along their lengths (e.g., once per centimeter) in order to secure inlaid strands 132 and 152 to knit elements 131 and 151 and prevent movement of inlaid strands 132 and 152.

**[134]** Following the knitting process described above, various operations may be performed to enhance the properties of either of knitted components 130 and 150. For example, a water-repellant coating or other water-resisting treatment may be applied to limit the ability of the knit structures to absorb and retain water. As another example, knitted components 130 and 150 may be steamed to improve loft and induce fusing of the yarns. As discussed above with respect to Figure 8B, yarn 138 may be a non-fusible yarn and yarn 139 may be a fusible yarn. When steamed, yarn 139 may melt or otherwise soften so as to transition from a solid state to a softened or liquid state, and then transition from the softened or liquid state to the solid state when sufficiently cooled. As such, yarn 139 may be utilized to join (a) one portion of yarn 138 to another portion of yarn 138, (b) yarn 138 and inlaid strand 132 to each other, or (c) another element (e.g., logos, trademarks, and placards with care instructions and material

information) to knitted component 130, for example. Accordingly, a steaming process may be utilized to induce fusing of yarns in knitted components 130 and 150.

**[135]** Although procedures associated with the steaming process may vary greatly, one method involves pinning one of knitted components 130 and 150 to a jig during steaming. An advantage of pinning one of knitted components 130 and 150 to a jig is that the resulting dimensions of specific areas of knitted components 130 and 150 may be controlled. For example, pins on the jig may be located to hold areas corresponding to perimeter edge 133 of knitted component 130. By retaining specific dimensions for perimeter edge 133, perimeter edge 133 will have the correct length for a portion of the lasting process that joins upper 120 to sole structure 110. Accordingly, pinning areas of knitted components 130 and 150 may be utilized to control the resulting dimensions of knitted components 130 and 150 following the steaming process.

**[136]** The knitting process described above for forming knitted component 260 may be applied to the manufacture of knitted components 130 and 150 for footwear 100. The knitting process may also be applied to the manufacture of a variety of other knitted components. That is, knitting processes utilizing one or more combination feeders or other reciprocating feeders may be utilized to form a variety of knitted components. As such, knitted components formed through the knitting process described above, or a similar process, may also be utilized in other types of apparel (e.g., shirts, pants, socks, jackets, undergarments), athletic equipment (e.g., golf bags, baseball and football gloves, soccer ball restriction structures), containers (e.g., backpacks, bags), and upholstery for furniture (e.g., chairs, couches, car seats). The knitted components may also be utilized in bed coverings (e.g., sheets, blankets), table coverings, towels, flags, tents, sails, and parachutes. The knitted components may be utilized as technical textiles for industrial purposes, including structures for automotive and

aerospace applications, filter materials, medical textiles (e.g. bandages, swabs, implants), geotextiles for reinforcing embankments, agrotextiles for crop protection, and industrial apparel that protects or insulates against heat and radiation. Accordingly, knitted components formed through the knitting process described above, or a similar process, may be incorporated into a variety of products for both personal and industrial purposes.

**[137]** Knitted Components With Tongues

**[138]** In footwear 100, tongue 124 is separate from knitted component 130 and joined to knitted component 130, possibly with stitching, an adhesive, or thermal bonding. Moreover, tongue 124 is discussed as being added to knitted component 130 following the knitting process. As depicted in Figures 25 and 26, however, knitted component 130 includes a knitted tongue 170 that is formed of unitary knit construction with knit element 131. That is, knit element 131 and tongue 170 are formed as a one-piece element through a knitting process, which will be discussed in greater detail below. Although tongue 124 or another tongue may be joined to knit element 131 after knitted component 130 is formed, tongue 170 or another knitted tongue may be formed during the knitting process and of unitary knit construction with a portion of knitted component 130.

**[139]** Tongue 170 is located within a throat area (i.e., where lace 122 and lace apertures 123 are located) of knitted component 130 and extends along the throat area. When incorporated into footwear 100, for example, tongue 170 extends from a forward portion of the throat area to ankle opening 121. As with knit element 131, tongue 170 is depicted as being formed from a relatively untextured textile and a common or single knit structure. Tongue 170 is also depicted in Figure 27 as having a generally planar configuration. Examples of knit structures that may impart this configuration for tongue 170, as well as knit element 131, are any of the various knit structures in knit zones 160-162 discussed above. In further configurations, however, apertures may be formed in

areas of tongue 170 by utilizing the knit structures of mesh knit zones 163-165, indentations may be formed in areas of tongue 170 by utilizing the knit structures of mock mesh knit zones 166 or 167, or a combination of apertures and indentations may be formed in areas of tongue 170 by utilizing the knit structure of hybrid knit zone 168. Additionally, areas of tongue 170 may have a padded aspect when formed to have layers and floating yarns, for example, that are similar to padded zone 169. Accordingly, the untextured and planar aspect of tongue 170 is shown for purposes of example, and various features may be imparted through the use of different knit structures.

**[140]** Referring to Figures 28 and 29, a knitted tongue 175 is depicted as being formed of unitary knit construction with knit element 151 of knitted component 150. Tongue 175 has the same general shape as tongue 170, but may have a padded aspect with greater thickness. More particularly, tongue 175 is depicted in Figure 30 as including two overlapping and at least partially coextensive knitted layers 176, which may be formed of unitary knit construction, and a plurality of yarn loops 177 located between layers 176. Although the sides or edges of layers 176 are secured or knit to each other, a central area is generally unsecured. As such, layers 176 effectively form a tube or tubular structure, and yarn loops 177 are located between and extend outward from one of layers 176. In effect, yarn loops 177 fill an interior volume between layers 176 and impart a compressible or padded aspect to tongue 175. It should also be noted that each of layers 176 and yarn loops 177 may be formed of unitary knit construction during the knitting process that forms knitted component 150.

**[141]** Another knitted component 180 is depicted in Figure 31 as including a knit element 181, an inlaid strand 182, and a knitted tongue 183. With the exception of the presence of tongue 183, knitted component 180 has a general structure of a knitted component disclosed in U.S. Patent Application Publication 2010/0154256 to Dua, which is incorporated herein by reference. Tongue 183 is

formed of unitary knit construction with knit element 181 and includes various knit structures. Referring to Figure 32, for example, peripheral areas of tongue 183 exhibit an untextured configuration that may have any of the various knit structures in knit zones 160-162. At least two areas of tongue 183 incorporate apertures and may have any of the various knit structures in mesh knit zones 163-165. Referring to Figure 33, a central area of tongue 183 has a compressible or padded aspect that includes two overlapping and at least partially coextensive knitted layers 184, which may be formed of unitary knit construction, and a plurality of floating yarns 185 extending between layers 184. The central area of tongue 183 may exhibit, therefore, the knit structure of padded zone 169. Although the sides or edges of layers 184 are secured to each other, a central area is generally unsecured. As such, layers 184 effectively form a tube or tubular structure, and floating yarns 185 may be located or inlaid between layers 184 to pass through the tubular structure. That is, floating yarns 185 extend between layers 184, are generally parallel to surfaces of layers 184, and also pass through and fill an interior volume between layers 184. Whereas a majority of tongue 183 is formed from yarns that are mechanically-manipulated to form intermeshed loops, floating yarns 185 are generally free or otherwise inlaid within the interior volume between layers 184. As an additional matter, layers 184 may be at least partially formed from a stretch yarn to impart the advantages discussed above for knitted layers 140 and floating yarns 141.

**[142]** Tongue 183 provides an example of the manner in which various knit structures may be utilized. As discussed above, the peripheral areas of tongue 183 exhibit an untextured configuration, two areas of tongue 183 incorporate apertures, and the central area of tongue 183 includes knitted layers 184 and floating yarns 185 to provide a compressible or padded aspect. Mock mesh knit structures and hybrid knit structures may also be utilized. Accordingly, various knit structures may be incorporated into tongue 183 or any other knitted tongue (e.g., tongues 170 and 175) to impart different properties or aesthetics.

**[143]** Tongue 170 is secured to a forward portion of the throat area of knit element 131. That is, tongue 170 is joined through knitting to knit element 131 in a portion of the throat area that is closest to forefoot region 101 in footwear 100. Each of tongues 175 and 183 are respectively secured or knit to a similar position in knitted components 150 and 180. Referring to Figures 34 and 35, however, a knitted tongue 190 is secured along a length of the throat area of a configuration of knitted component 131 that does not include inlaid strand 132 or lace apertures 123. More particularly, edges of tongue 190 are knit to an area of knit element 131 that is spaced outward from inner edge 135. Accordingly, any of the configurations of tongues 170, 175, 183, and 190 may be secured (e.g., through unitary knit construction) to various locations in the throat areas of knitted components 130, 150, and 180.

**[144]** Advantages of constructing tongue 170 during the knitting process and of unitary knit construction are more efficient manufacture and common properties. More particularly, manufacturing efficiency may be increased by forming more of knitted component 130 during the knitting process and eliminating various steps (e.g., making a separate tongue, securing the tongue) that are often performed manually. Tongue 170 and knit element 131 may also have common properties when formed from the same yarn (or type of yarn) or with similar knit structures. For example, utilizing the same yarn in both of tongue 170 and knit element 131 imparts similar durability, strength, stretch, wear-resistance, biodegradability, thermal, and hydrophobic properties. In addition to physical properties, utilizing the same yarn in both of tongue 170 and knit element 131 may impart common aesthetic or tactile properties, such as color, sheen, and texture. Utilizing the same knit structures in both of tongue 170 and knit element 131 may also impart common physical properties and aesthetic properties. These advantages may also be present when at least a portion of knit element 131 and at least a portion of tongue 170 are formed from a common yarn (or type of yarn) or with common knit structures.

**[145]** Tongue 175 includes yarn loops 177 between layers 176, and tongue 183 includes floating yarns 185 between layers 184. A benefit of yarn loops 177 and floating yarns 185 is that compressible or padded areas are formed. In addition to yarn loops 177 and floating yarns 185, other types of free yarn sections may be utilized. For purposes of the present application, "free yarn sections" or variants thereof is defined as segments or portions of yarns that are not directly forming intermeshed loops (e.g., that define courses and wales) of a knit structure, such as floating yarns, inlaid yarns, terry loops, ends of yarns, and cut segments of yarn, for example. Moreover, it should be noted that free yarn sections may be one portion of an individual yarn, with other portions of the yarn forming intermeshed loops of the knit structure, For example, the portion of a yarn forming terry loops (e.g., the free yarn sections) may be between portions of the yarn forming intermeshed loops of a knit structure. As an alternative to free yarn sections, foam materials or other types of compressible materials may be utilized within either of tongues 175 and 183.

**[146]** As a final matter, although tongue 170 is disclosed in combination with knitted component 130, tongue 170 may also be utilized with knitted components 150 and 180, as well as other knitted components. Similarly, tongues 175, 183, and 190 may be utilized with any of knitted components 130, 150, and 180, as well as other knitted components. The combinations disclosed herein are, therefore, for purposes of example and other combinations may also be utilized. Moreover, the specific configurations of tongues 170, 175, 183, and 190 are also meant to provide examples and may also vary significantly. For example, the position of layers 184 and floating yarns 185 may be enlarged, moved to a periphery of tongue 183, or removed from tongue 183. Accordingly, the various combinations and configurations are intended to provide examples, and other combinations and configurations may also be utilized.

**[147]** Tongue Knitting Process

**[148]** The manner in which knitting machine 200 operates to manufacture a knitted component with a tongue will now be discussed in detail. Moreover, the following discussion will demonstrate the manner in which knit element 131 and tongue 170 are formed of unitary knit construction, but similar processes may be utilized for other knitted components and tongues. Referring to Figures 36A-36G, a portion of knitting machine 200 is schematically-depicted as including needle beds 201, one rail 203, one standard feeder 204, and one combination feeder 220. It should be understood that although knitted component 130 is formed between needle beds 201, knitted component 130 is shown adjacent to needle beds 201 to (a) be more visible during discussion of the knitting process and (b) show the position of portions of knitted component 130 relative to each other and needle beds 201. Also, although one rail 203, one standard feeder 204, and one combination feeder 220 are depicted, additional rails 203, standard feeders 204, and combination feeders 220 may be utilized. Accordingly, the general structure of knitting machine 200 is simplified for purposes of explaining the knitting process.

**[149]** Initially, a portion of tongue 170 is formed by knitting machine 200, as depicted in Figure 36A. In forming this portion of tongue 170, standard feeder 204 repeatedly moves along rail 203 and various courses are formed from at least yarn 211. More particularly, needles 202 pull sections of yarn 211 through loops of a prior course, thereby forming another course. This action continues until tongue 170 is substantially formed, as depicted in Figure 36B. It should be noted at this stage that although tongue 170 is depicted as being formed from one yarn 211, additional yarns may be incorporated into tongue 170 from further standard feeders 204. For example, a fusible yarn may be incorporated into at least the upper or final course of tongue 170 to assist with ensuring that tongue 170 is properly joined or knitted with knit element 131. Additionally, at least the final

course of tongue 170 may include cross-tuck stitches with a relatively tight or dense knit to ensure that tongue 170 remains properly positioned on needles 202 during later stages of the knitting process.

**[150]** Knitting machine 200 now begins the process of forming knit element 131, as depicted in Figure 36C, in accordance with the knitting process discussed previously. As the knitting process continues, combination feeder 220 inlays yarn 206 to form inlaid strand 132, as depicted in Figure 36D, also in accordance with the knitting process discussed previously. Through a comparison of Figures 36C and 36D, tongue 170 remains stationary relative to needle beds 201, but knit element 131 moves downward and may overlap tongue 170 as successive courses are formed in knit element 131. This continues until a course is formed that is intended to join tongue 170 to knit element 131. More particularly, tongue 170 remains stationary relative to needle beds 201 as portions of knitted component 131 are formed. At the point depicted in Figure 36E, however, a course is formed that (a) extends across the final course of tongue 170, which includes the cross-tuck stitches, and (b) joins with the final course of tongue 170. In effect, this course joins tongue 170 to knit element 131. At this stage, therefore, knit element 131 and tongue 170 are effectively formed of unitary knit construction.

**[151]** Once tongue 170 is joined to knit element 131, knitting machine 200 continues the process of forming courses, thereby forming more of knit element 131, as depicted in Figure 36F. Given that tongue 170 is now joined to knit element 131, tongue 170 moves downward with knit element 131 as successive courses are formed, as seen through a comparison of Figures 36E and 36F. Moving forward, knitting machine 200 continues the process of forming courses in knit element 131 until knitted component 130 is substantially formed, as depicted in Figure 36G.

**[152]** Now that the general process associated with forming knitted component 130 to include tongue 170 is presented, additional aspects of the knitting process will be discussed. As noted above, a fusible yarn may be incorporated into at least the final course of tongue 170 to assist with ensuring that tongue 170 is properly joined or knitted with knit element 131. In some knitting processes, the yarn forming the final course of tongue 170 is cut. By incorporating the fusible yarn into the final course of tongue 170, the knit structure at the interface of tongue 170 with knit element 131 may be strengthened. That is, melting of the fusible yarn will fuse or otherwise join the sections of yarn at the interface and prevent unraveling of the cut yarn.

**[153]** Also as noted above, at least the final course of tongue 170 may include cross-tuck stitches with a relatively tight or dense knit to ensure that tongue 170 remains properly positioned on needles 202 during later stages of the knitting process. During a majority of the knitting process that forms knit element 131, tongue 170 remains stationary relative to needle beds 201. Movement, vibration, or other actions of knitting machine 200 may, however, dislodge portions of the final course from needles 202, thereby forming dropped stitches. By forming cross-tuck stitches with a relatively tight or dense knit, fewer dropped stitches are formed. Moreover, if dropped stitches are formed, the fusible yarn within the final course will fuse or otherwise join the dropped stitches within the knit structure.

**[154]** Once tongue 170 is knit, various needles 202 hold tongue 170 in position while knit element 131 is formed. In effect, the needles 202 that hold tongue 170 are unavailable for further knitting until tongue 170 is joined with knit element 131. As a result, only those needles 202 located beyond the edges (i.e., to the right and to the left) of tongue 170 are available for forming knit element 131. The final course of tongue 170 should, therefore, have equal or less width than the distance between opposite sides of inner edge 135 in the area where tongue 170 is joined with knit element 131. In other words, the design of knitted component

130 should account for (a) the length of the final course of tongue 170 and (b) the number of needles 202 that are reserved for holding tongue 170 while knit element 131 is formed.

**[155]** In the knitting process discussed above, both tongue 170 and knit element 131 are formed from yarn 211. Whereas tongue 170 remains stationary relative to needle beds 201 through a portion of the knitting process, portions of knit element 131 move downward as successive courses are formed. Given that a segment of yarn 211 may extend from the final course of tongue 170 to the first course of knit element 131 (i.e., the bottom edges of knit element 131), this segment of yarn should have sufficient length to account for the downward movement of the first course of knit element 131. In effect, a comparison of Figures 36C-36E, demonstrates that the first course of knit element 131 moves downward and away from the final course of tongue 170 as knit element 131 is formed. Accordingly, if a segment of yarn 211 extends from the final course of tongue 170 to the first course of knit element 131, this segment of yarn should have sufficient length to account for the growing distance between the final course of tongue 170 and the first course of knit element 131.

**[156]** Although various methods may be employed to account for the growing distance between the final course of tongue 170 and the first course of knit element 131, Figure 37 depicts an expansion section 195 as being formed following the formation of tongue 170. Expansion section 195 may then be cast off of needles 202. As the distance between the final course of tongue 170 and the first course of knit element 131 increases, expansion section 195 may unravel and lengthen. That is, unraveling of expansion section 195 may be used to effectively lengthen the section of yarn 211 between the final course of tongue 170 and the first course of knit element 131. In some configurations, expansion section 195 may be formed as a jersey fabric to facilitate unraveling.

**[157]** The various Figures 36A-36G show knitted component 130 as being formed independently. In some knitting processes, however, a waste element is knit prior to forming knitted component 130. The waste element engages various rollers that provide a downward force upon knitted component 130. The downward force ensures that courses move away from needles 202 as later courses are formed.

**[158]** Based upon the above discussion, knit element 131 and tongue 170 may be formed of unitary knit construction through a single knitting process. As described, tongue 170 is formed first and remains stationary upon needle beds 201 as knit element 131 is formed. After a course is formed that joins knit element 131 and tongue 170, knit element 131 and tongue 170 move downward together as further portions of knit element 131 are formed.

**[159]** Sequential Alterations

**[160]** Knitting machine 200 includes, among other elements, a knitting mechanism 270, a pattern 280, and a computing device 290, as schematically-depicted in Figure 38. Knitting mechanism 270 includes many of the mechanical components of knitting machine 200 (e.g., needles 202, feeders 204 and 220, carriage 205) that mechanically-manipulate yarns 206 and 211 to form a knitted component (e.g., knitted component 130). Pattern 280 includes data on the knitted component, including the yarns that are utilized for each stitch, the type of knit structures formed by each stitch, and the specific needles 202 and feeders 204 and 220 that are used for each stitch, for example. The operation of knitting machine 200 is governed by computing device 290, which reads data from pattern 280 and directs the corresponding operation of knitting mechanism 270.

**[161]** Multiple and substantially identical knitted components may be formed by knitting machine 200. More particularly, computing device 290 may repeatedly read pattern 280 and direct knitting mechanism 270 to form substantially identical

knitted components. In general, therefore, each knitted component that is formed will be substantially identical to other knitted components that are formed based upon a particular pattern 280. Referring to Figures 39A-39C, however, three versions of tongue 170 are shown. Whereas Figure 39A depicts tongue 170 as including a knit structure (e.g., yarns with different colors) with alphanumeric characters that form "1 OF 100," Figures 39B and 39C respectively depict tongue 170 as including knit structures with alphanumeric characters that form "2 OF 100" and "3 OF 100."

**[162]** One manner of accomplishing the sequential alterations of the type shown in Figures 39A-39C is to create multiple patterns. In effect, each of the configurations of tongue 170 shown in Figures 39A-39C may have a different pattern. As an alternative, an application (e.g., software) run by computing device 290 may alter pattern 280 while each successive tongue 170 is formed to provide sequential alterations. For example, pattern 280 may include a modifiable field 281, which is an area of pattern 280 that can be updated or changed by computing device 290. For purposes of reference, portions of pattern 280 that correspond with "1," "2," and "3" in Figures 39A-39C may be governed by modifiable field 281. Computing device 290 may include a counter, for example, that updates modifiable field 281 with each successive knitted component that is formed. Accordingly, sequential alterations of pattern 280 may be automated through the use of an application run by computing device 290, thereby rectifying the need for different patterns 280 for each sequential variation of tongue 170.

**[163]** In operation, pattern 280 with modifiable field 281 is provided by an operator, designer, or manufacturer, for example. Computing device 290 may either form a first knitted component with a default setting for modifiable field 281 or may update modifiable field 281 according to other instructions or data. As such, for example, tongue 170 of Figure 39A may be knitted with "1 OF 100." Computing

device 290 now updates modifiable field 281 with data representing another alphanumeric character, possibly a sequential alphanumeric character when computing device 290 includes a counter, and tongue 170 of Figure 39B may be knitted with "2 OF 100." The procedure repeats and computing device 290 updates modifiable field 281 with data representing another alphanumeric character and tongue 170 of Figure 39C may be knitted with "3 OF 100." Accordingly, modifiable field of pattern 280 may be repeatedly updated with data representing different alphanumeric characters, possibly sequential alphanumeric characters.

**[164]** The invention is disclosed above and in the accompanying figures with reference to a variety of configurations. The purpose served by the disclosure, however, is to provide an example of the various features and concepts related to the invention, not to limit the scope of the invention. One skilled in the relevant art will recognize that numerous variations and modifications may be made to the configurations described above without departing from the scope of the present invention, as defined by the appended claims.

CLAIMS

1. A method of manufacturing a knitted component for an article of footwear, the method comprising:

knitting a tongue with a knitting machine;

holding the tongue on needles of the knitting machine;

knitting a first portion of a knit element with the knitting machine while the tongue is held on the needles;

joining the tongue to the first portion of the knit element; and

knitting a second portion of the knit element with the knitting machine.

2. The method recited in claim 1, further including a step of selecting the knitting machine to be a flat knitting machine.

3. The method recited in claim 1, further including a step of knitting an expansion section following the step of knitting the tongue, and wherein the step of knitting the first portion of the knit element includes unraveling the expansion section.

4. The method recited in claim 1, wherein the step of knitting the tongue includes forming a course of the tongue to include at least one of (a) a fusible yarn and (b) cross-tuck stitches.

5. The method recited in claim 1, wherein the step of joining the tongue includes forming a course with the knitting machine that joins the tongue to the knit element.

6. A method of manufacturing a knitted component for an article of footwear, the method comprising:

knitting a tongue with a knitting machine;

knitting a first portion of a knit element with the knitting machine, the tongue being stationary with respect to a needle bed of the knitting machine during knitting of the first portion of the knit element, and the first portion of the knit element moving with respect to the tongue during knitting of the first portion of the knit element;

forming a course with the knitting machine that joins the tongue to the knit element; and

knitting a second portion of the knit element with the knitting machine, the tongue and the first portion of the knit element moving together during knitting of the second portion of the knit element.

7. The method recited in claim 6, further including a step of selecting the knitting machine to be a flat knitting machine.

8. The method recited in claim 6, further including a step of knitting an expansion section following the step of knitting the tongue, and wherein the step of knitting the first portion of the knit element includes unraveling the expansion section.

9. The method recited in claim 6, wherein the step of knitting the tongue includes forming a final course of the tongue to include at least one of (a) a fusible yarn and (b) cross-tuck stitches.

10. A method of knitting comprising:

providing a knitting pattern with a modifiable field;

updating the modifiable field with data representing a first alphanumeric character;

knitting a first component with a knit structure of the first alphanumeric character;

updating the modifiable field with data representing a second alphanumeric character, the second alphanumeric character being different than the first alphanumeric character; and

knitting a second component with a knit structure of the second alphanumeric character.

11. The method recited in claim 10, wherein the second alphanumeric character is sequential from the first alphanumeric character.

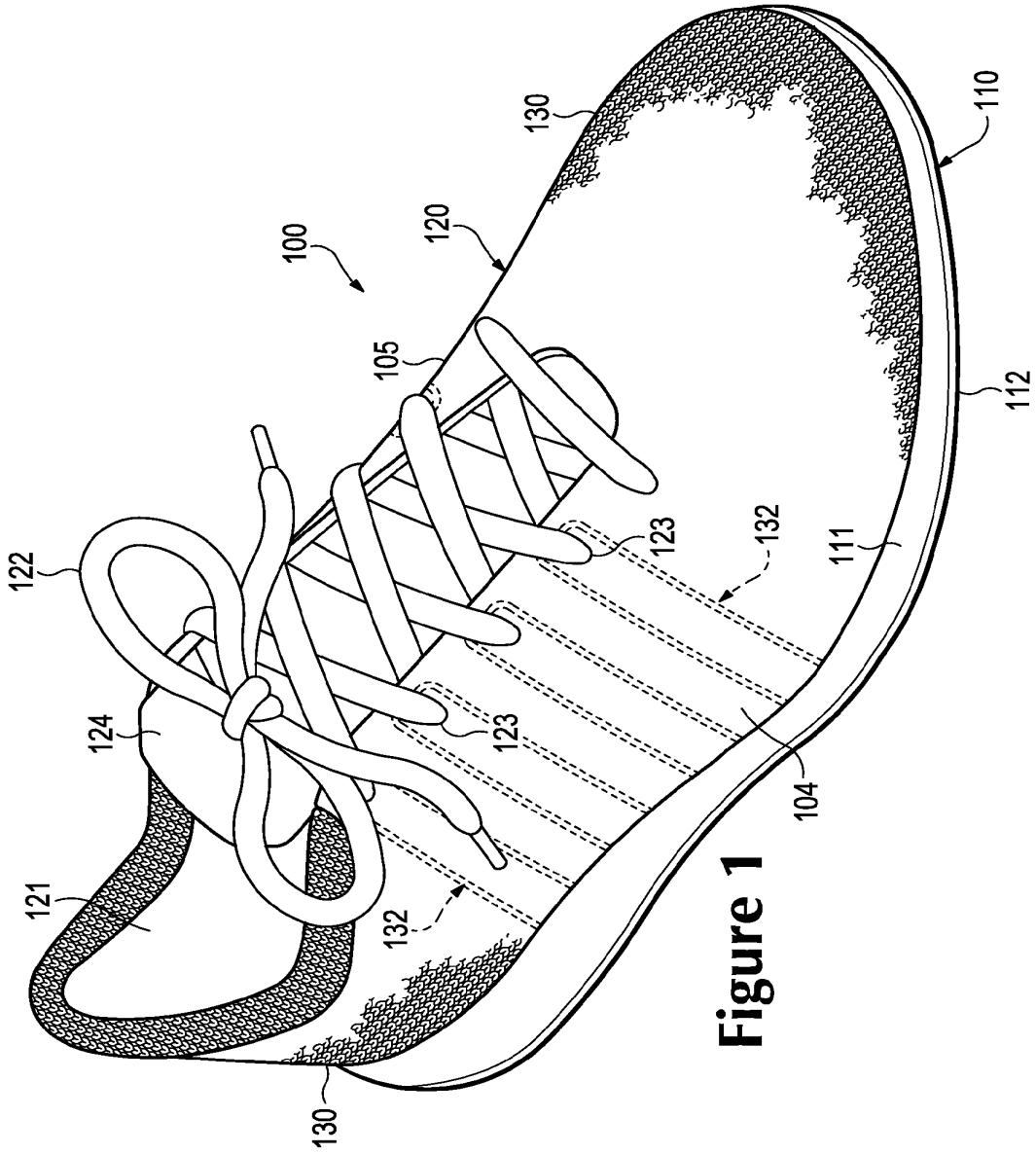



Figure 1

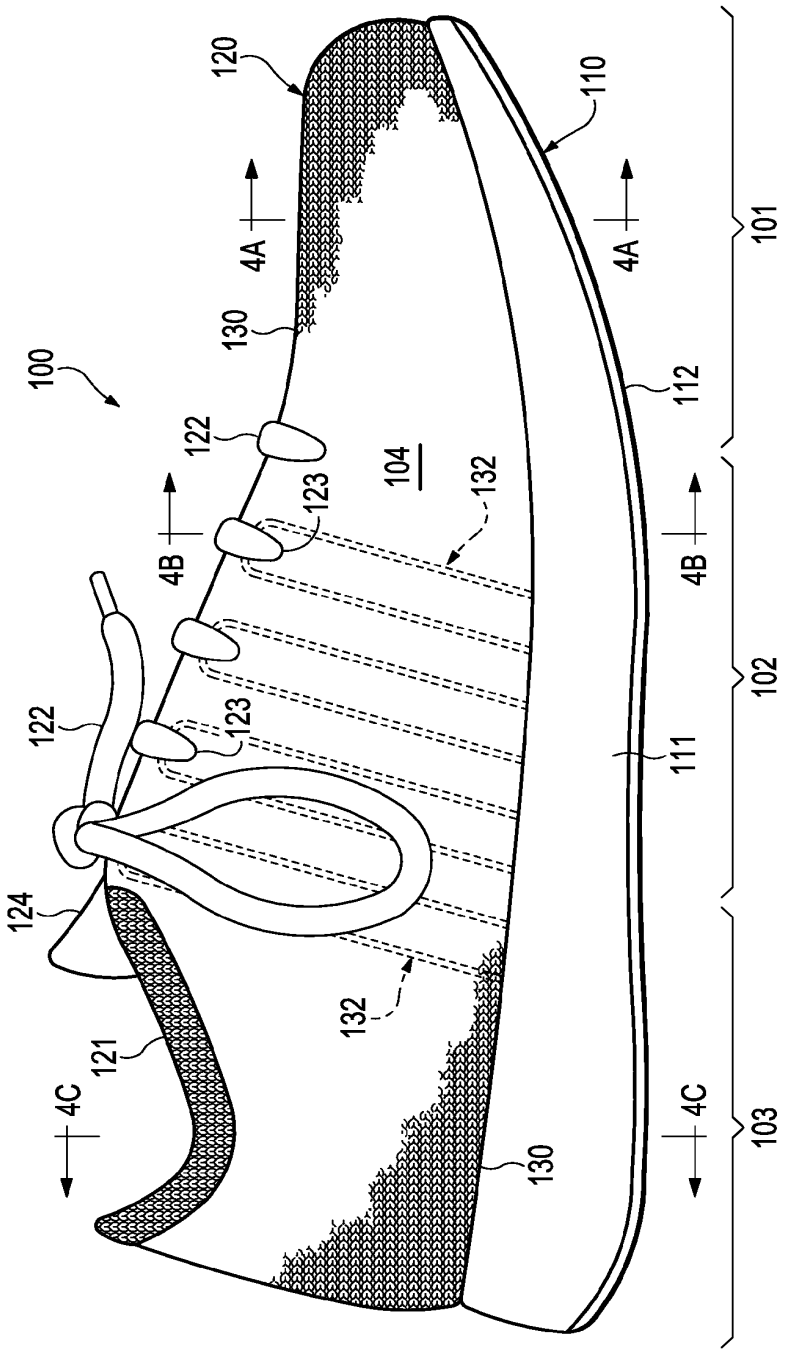

120
110
4A
4A
130
100
112
122
104
132
123
4B
4B
122
123
111
124
132
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4C
4C
130
101
102
103

Figure 2

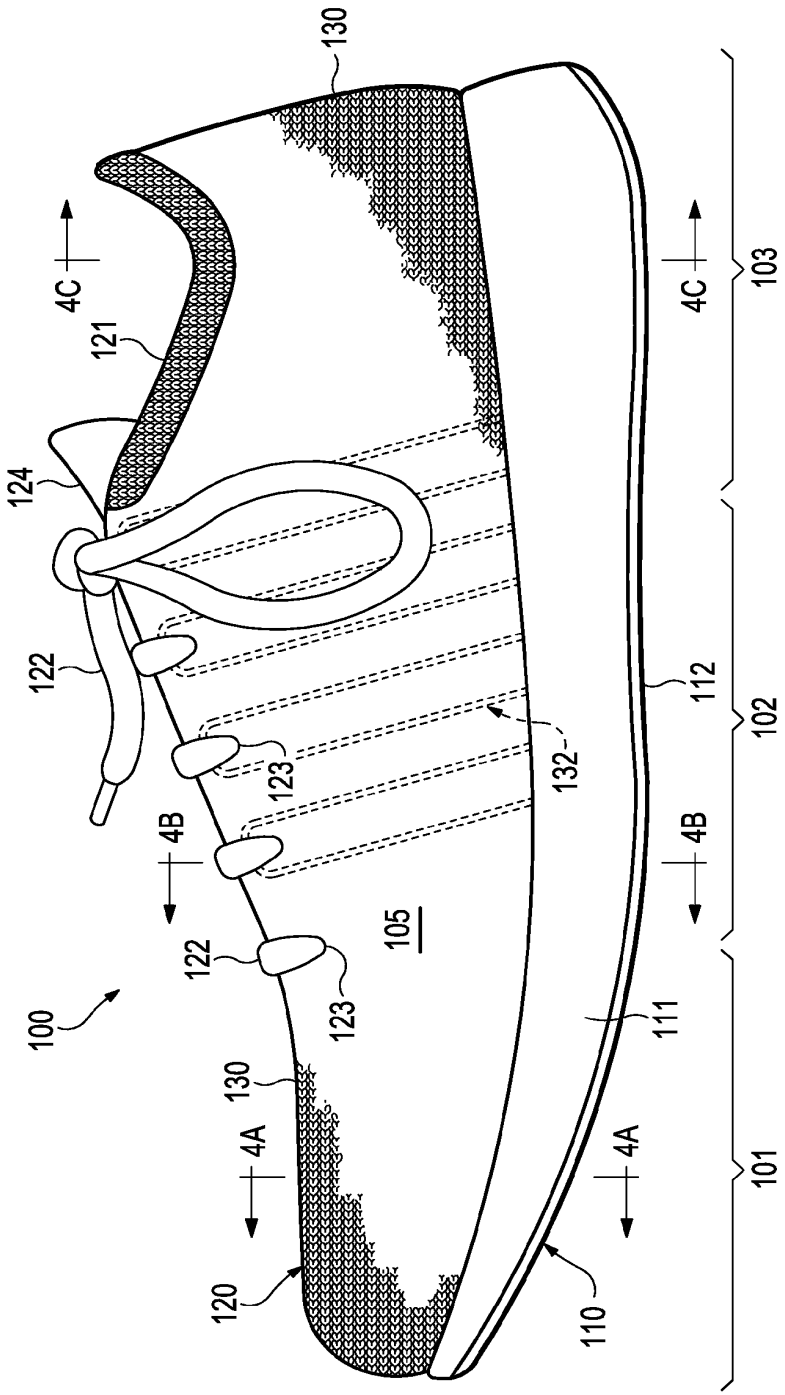

130
4C
121
124
122
123
132
4B
105
122
123
100
130
4A
120
110
111
112
4B
4C
4A
103
102
101

Figure 3

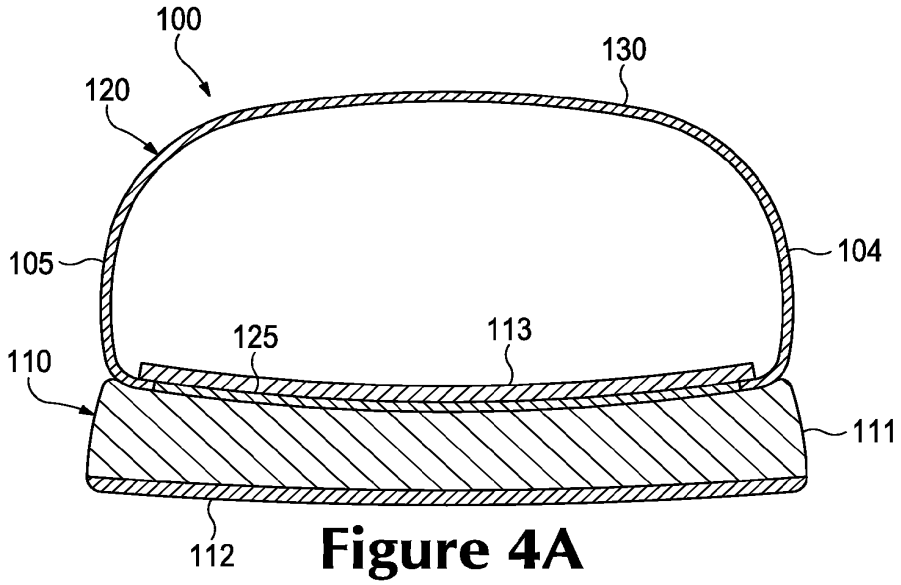



Figure 4A

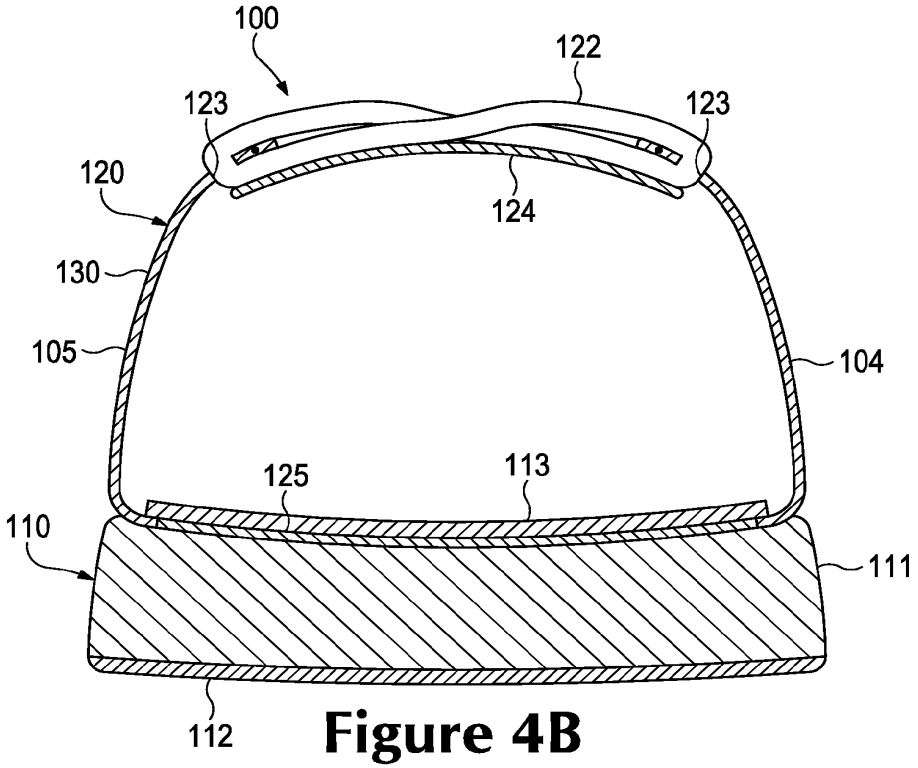



Figure 4B

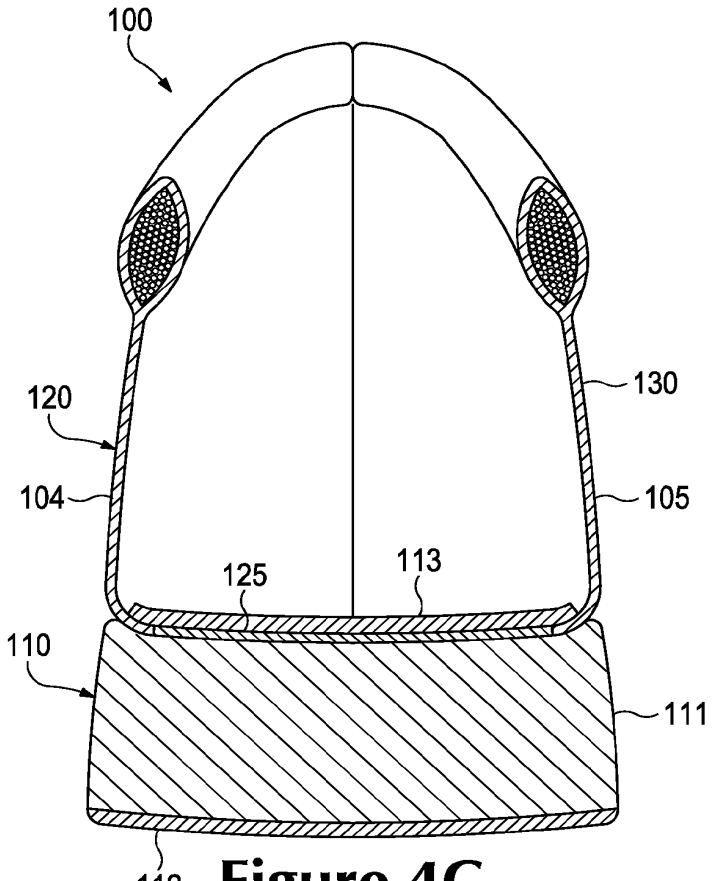



Figure 4C

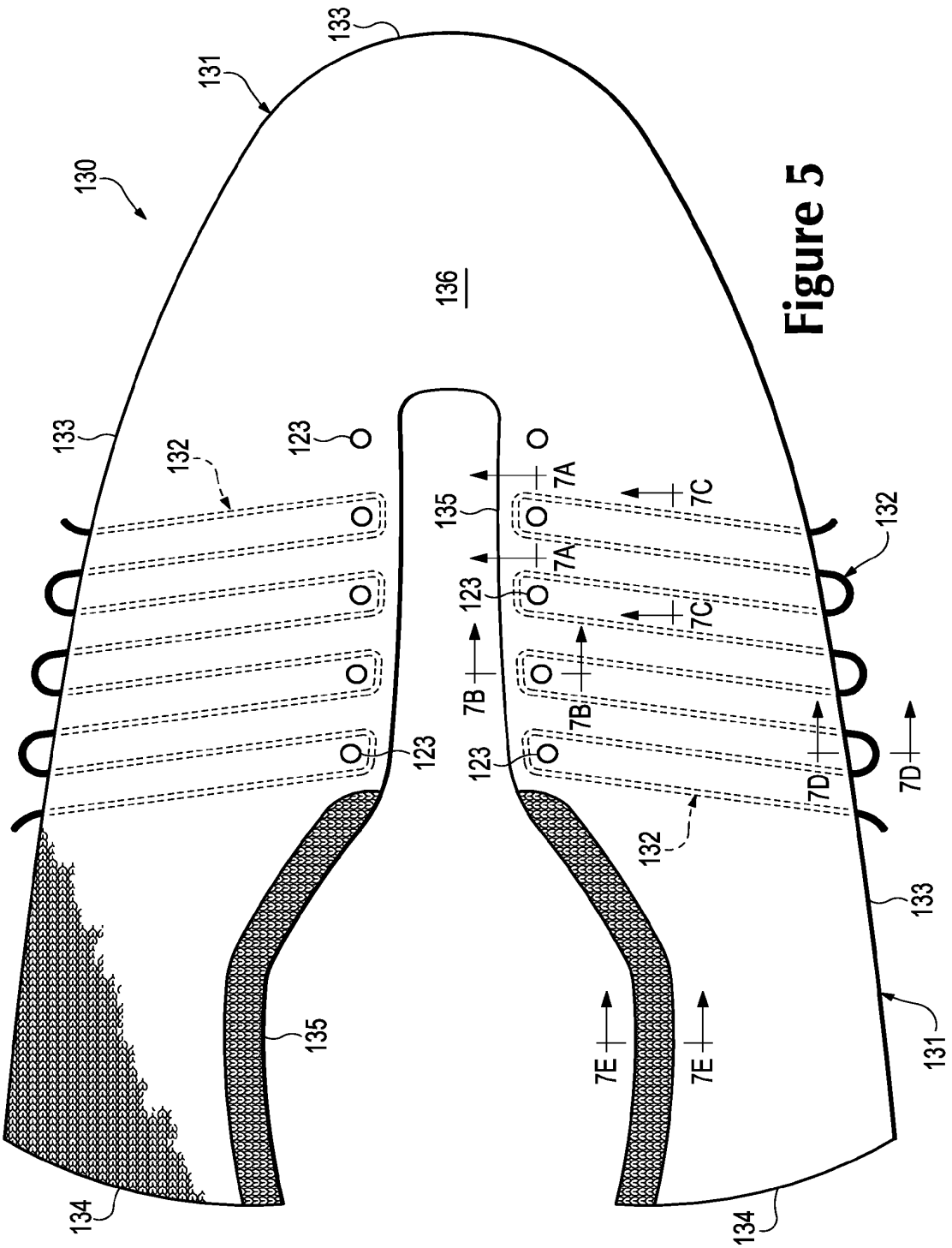



Figure 5

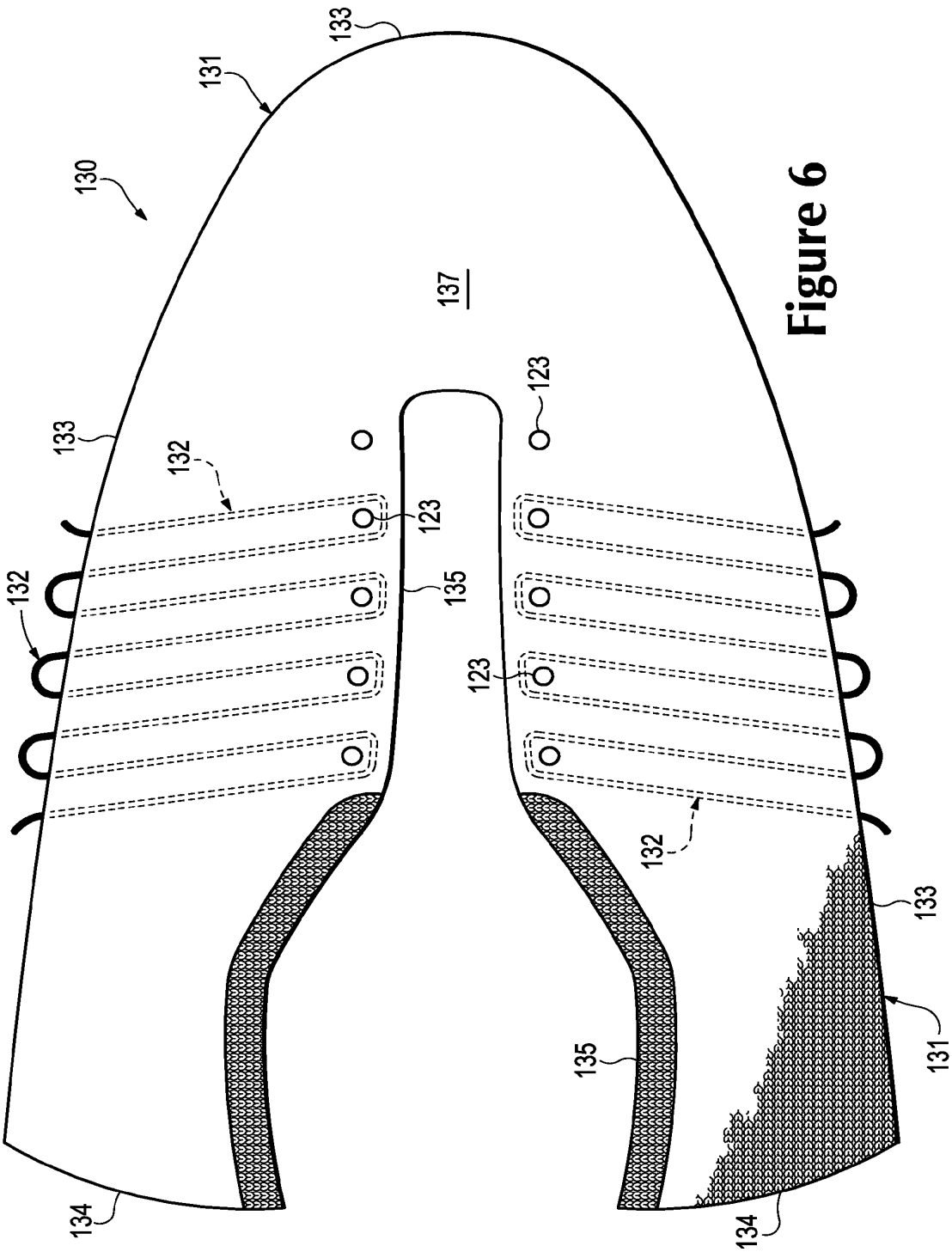



Figure 6

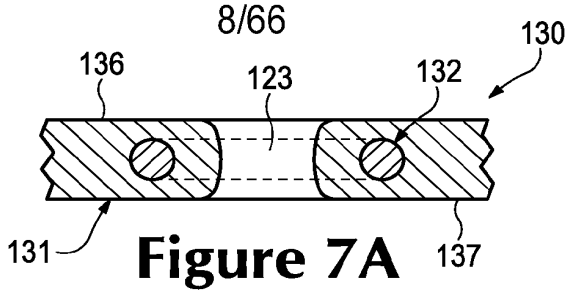



Figure 7A

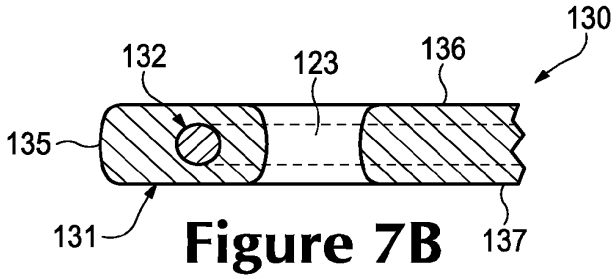



Figure 7B

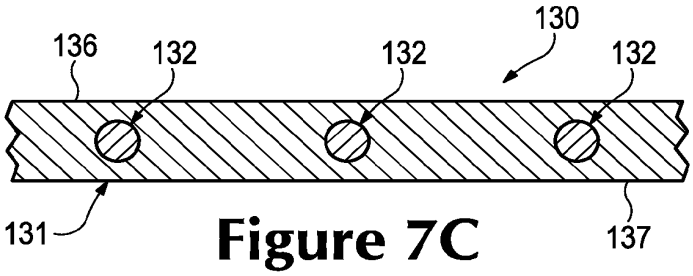



Figure 7C

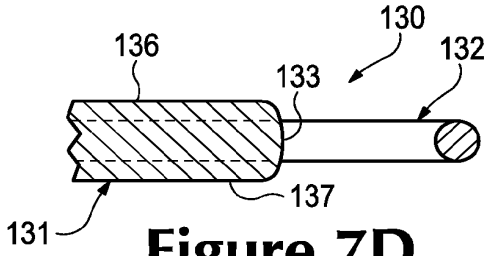



Figure 7D

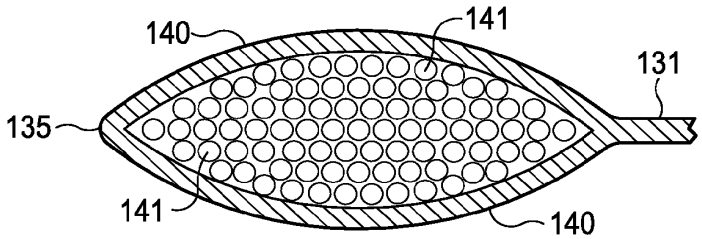



Figure 7E

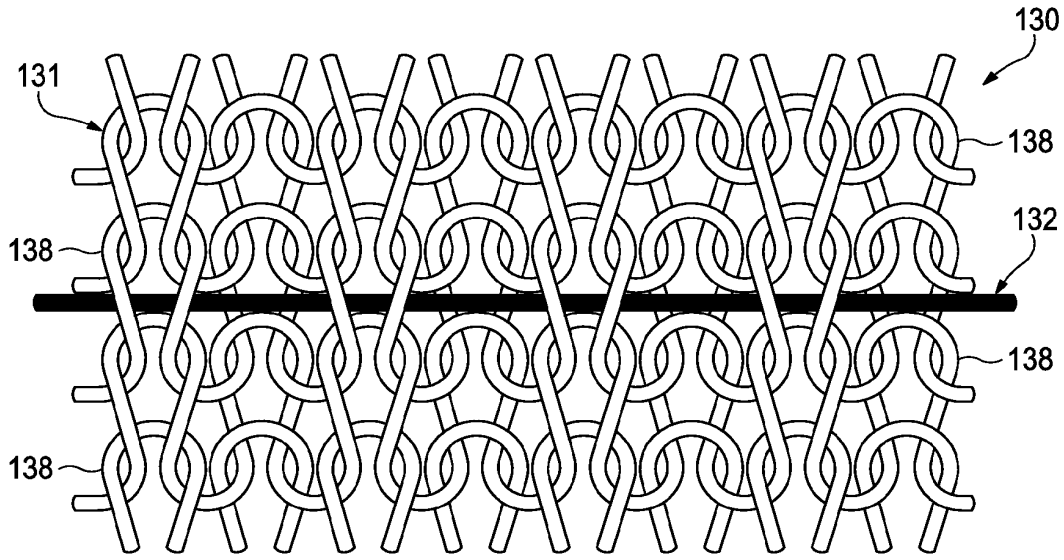



Figure 8A

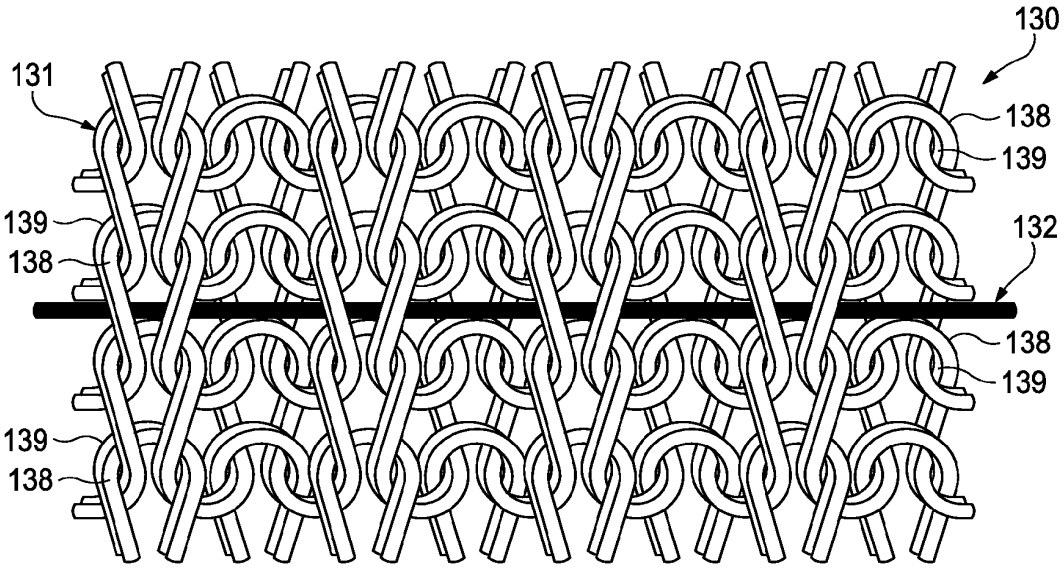



Figure 8B

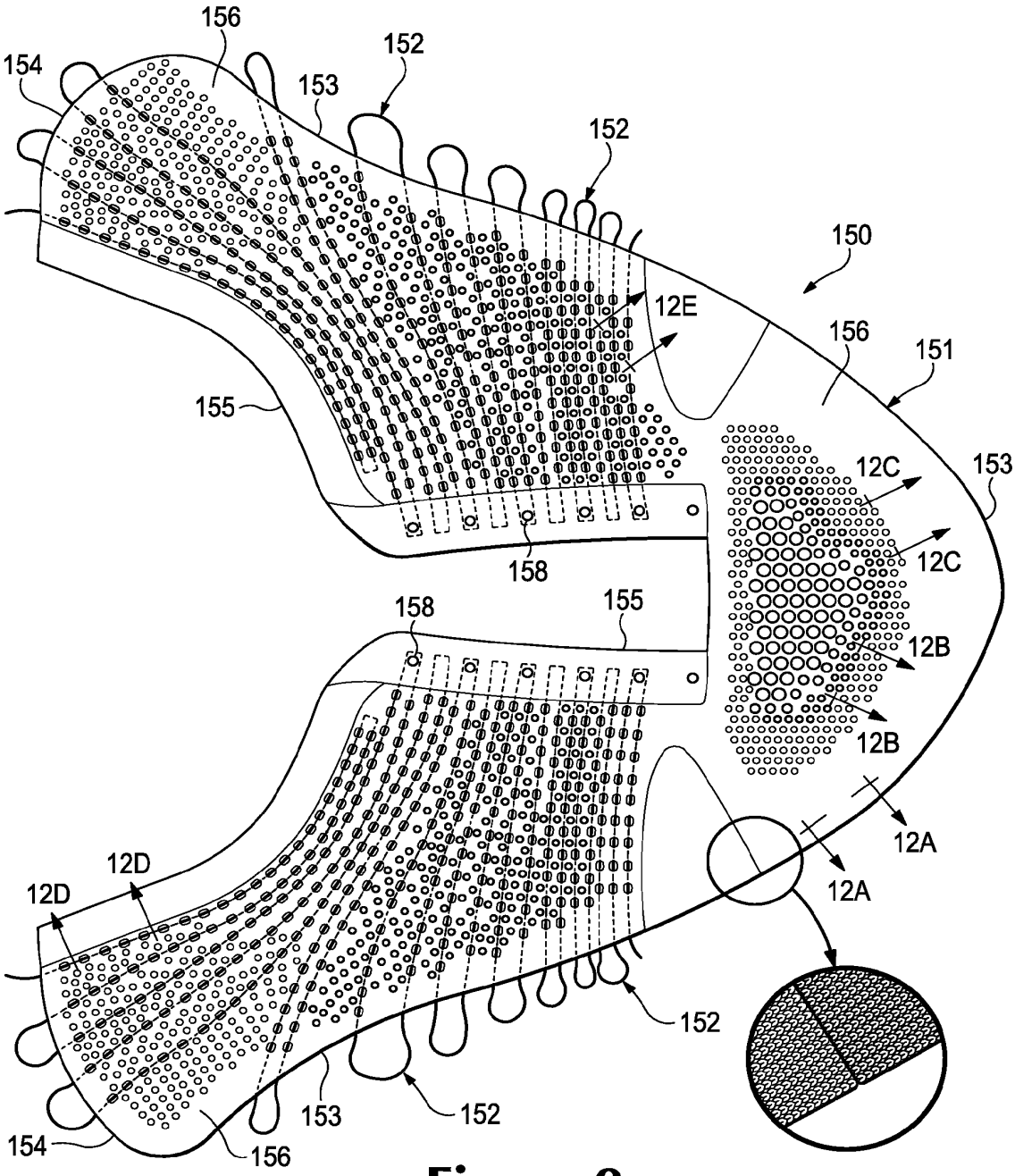

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Figure 9

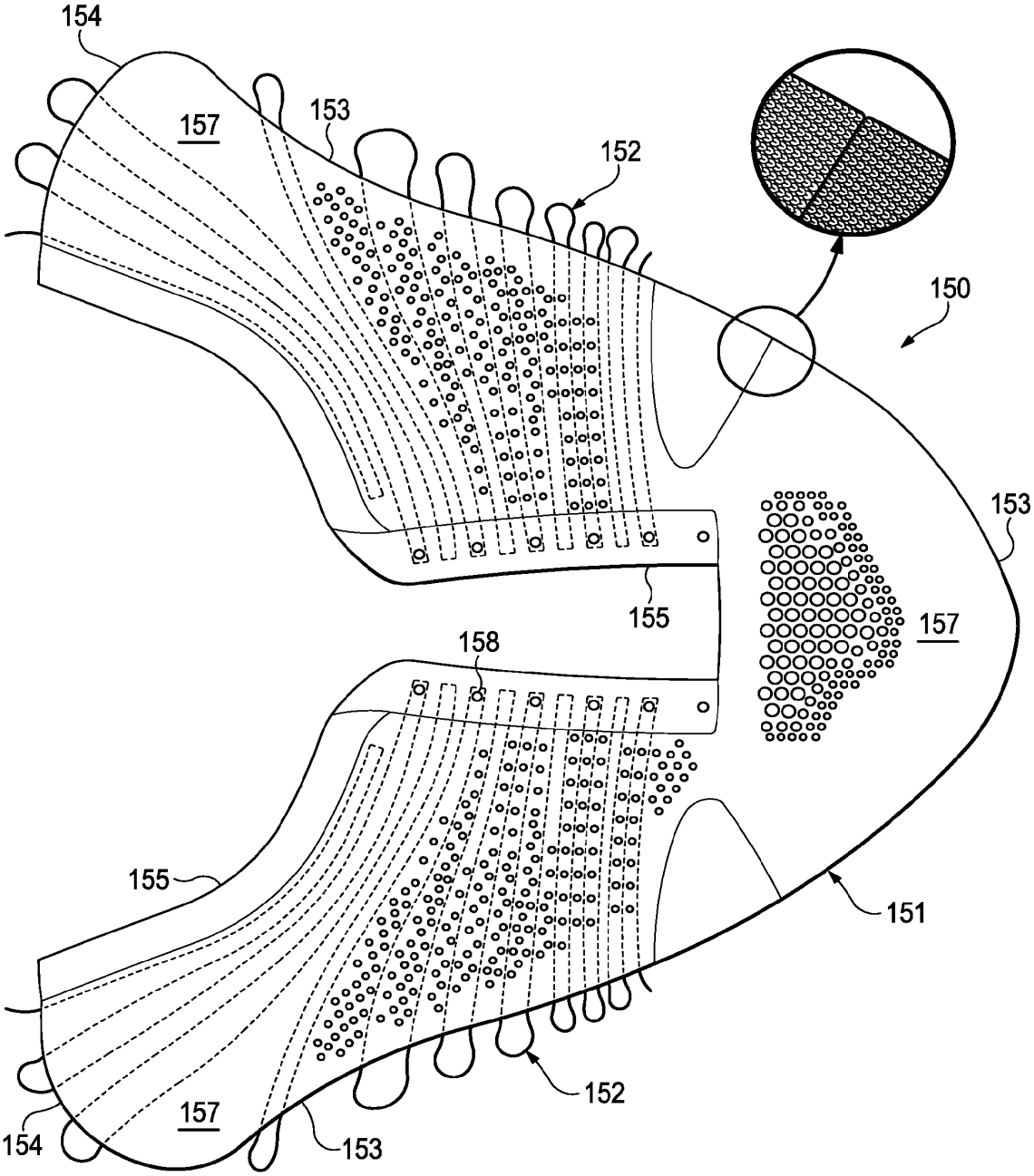



**Figure 10**

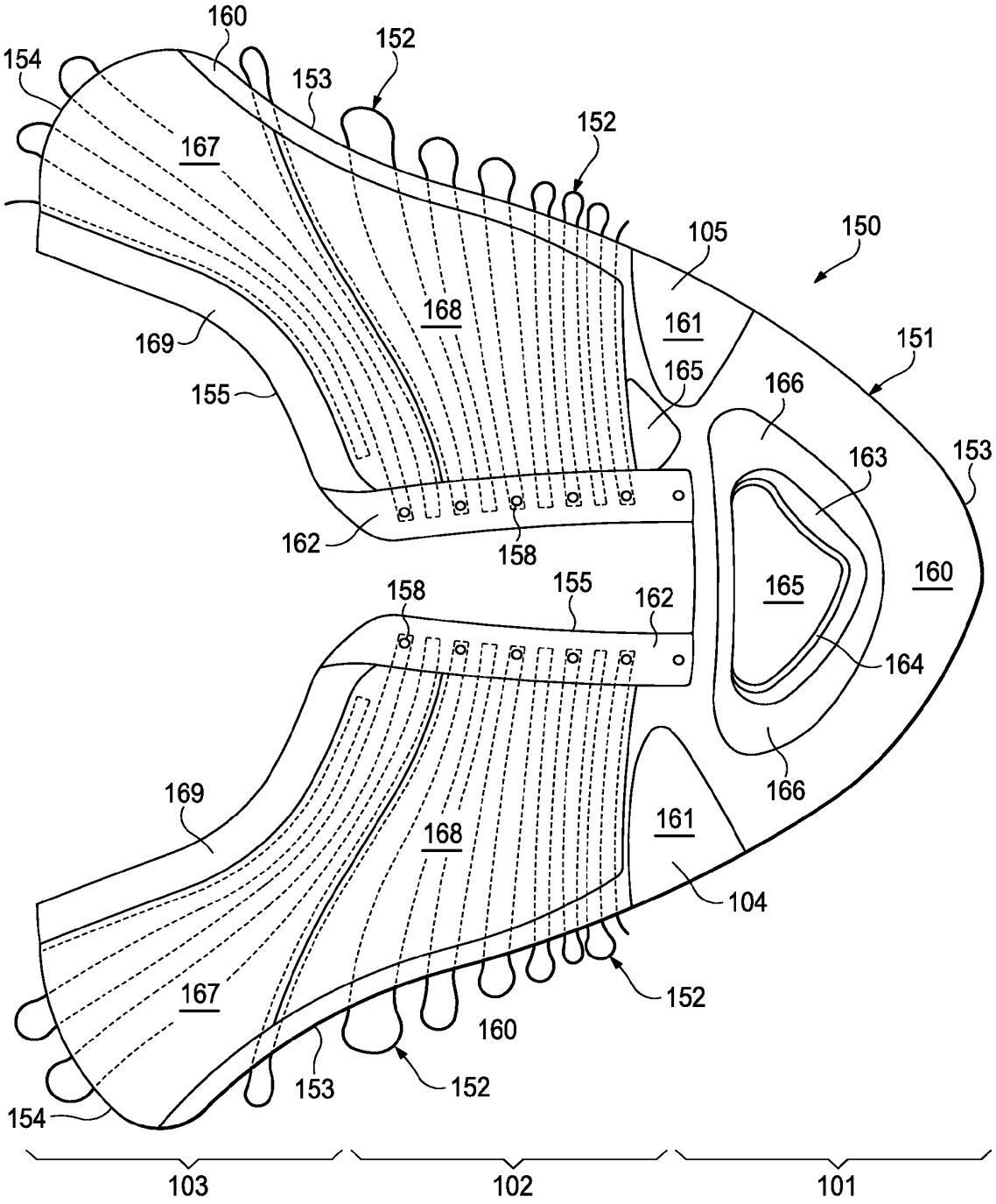
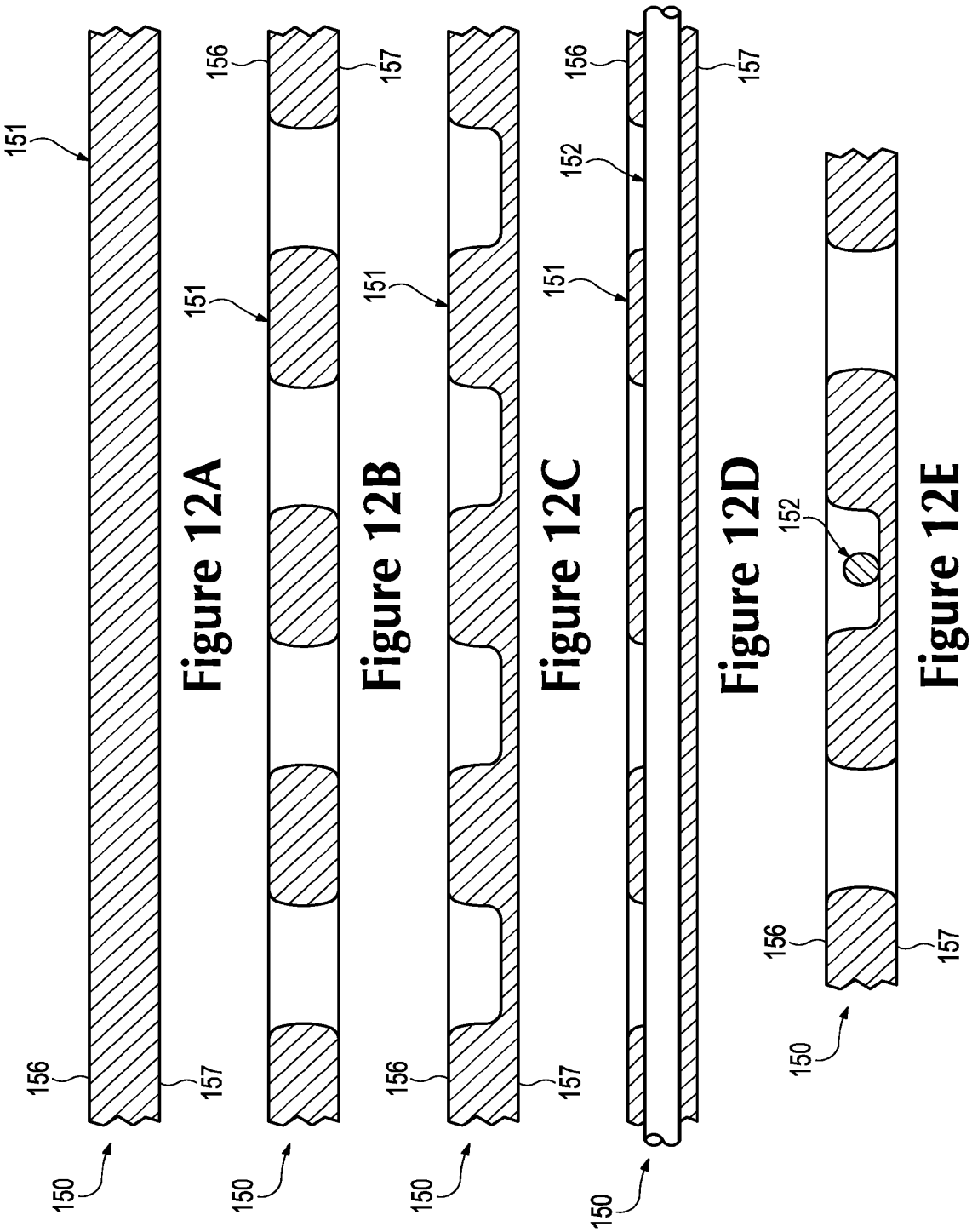

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**Figure 11**


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Figure 12A
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Figure 12B
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Figure 12C
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Figure 12D
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Figure 12E

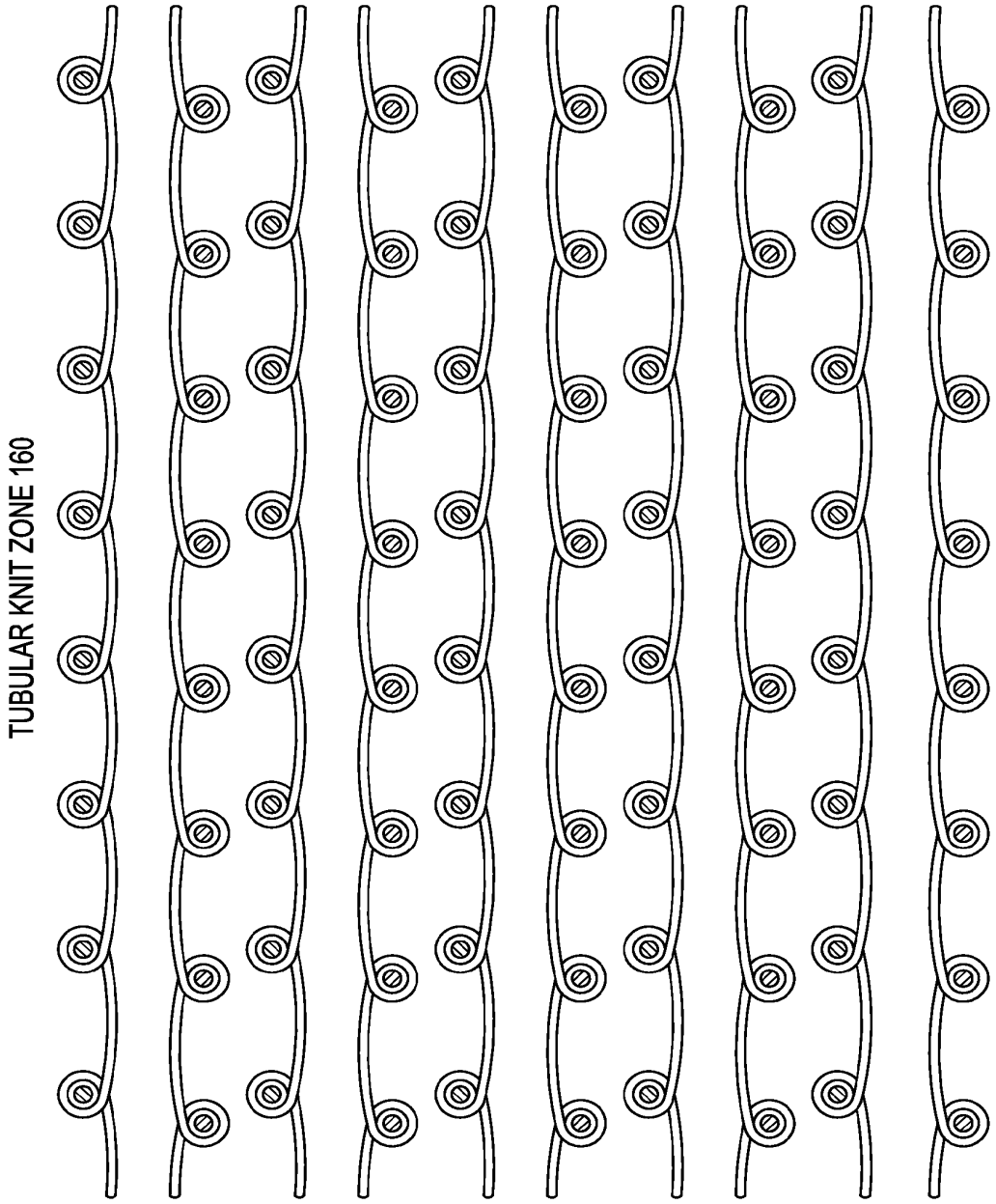



Figure 13A

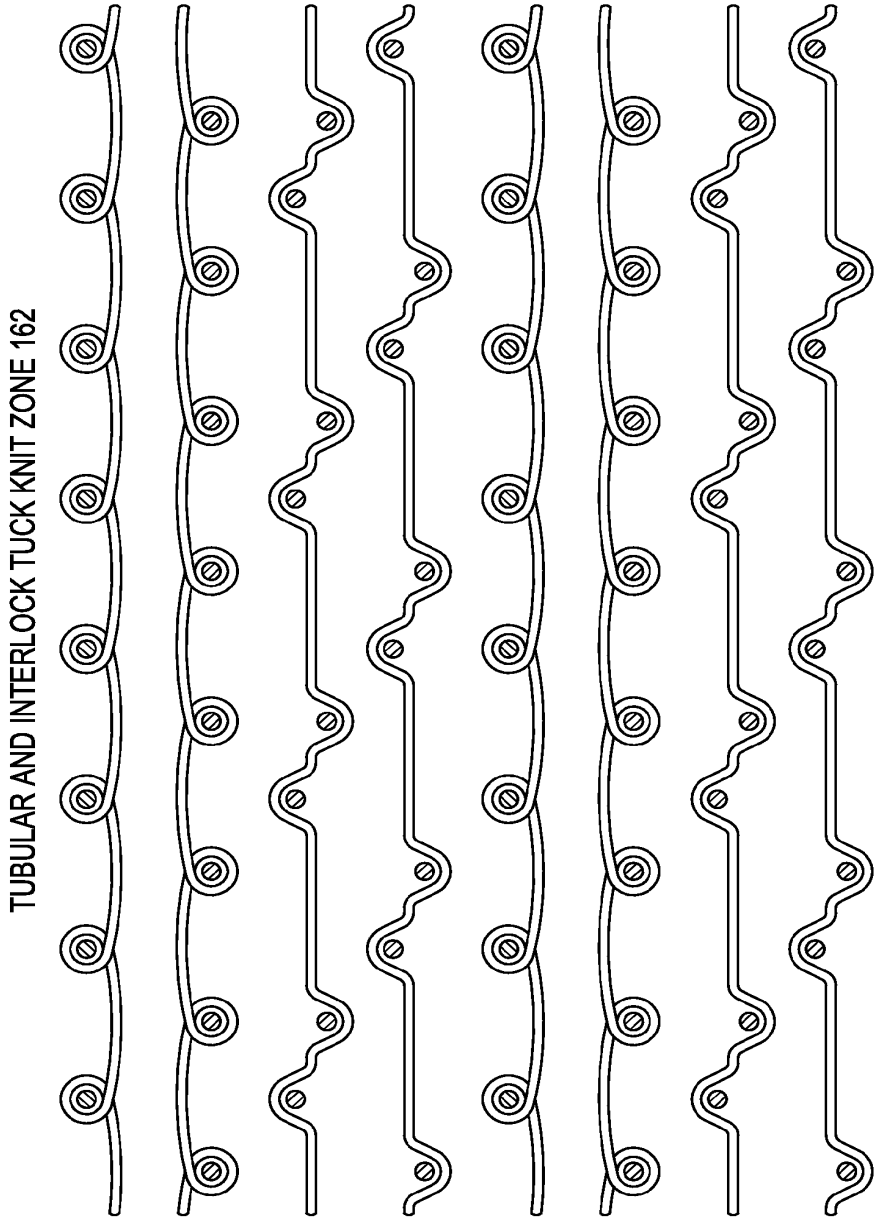



Figure 13B

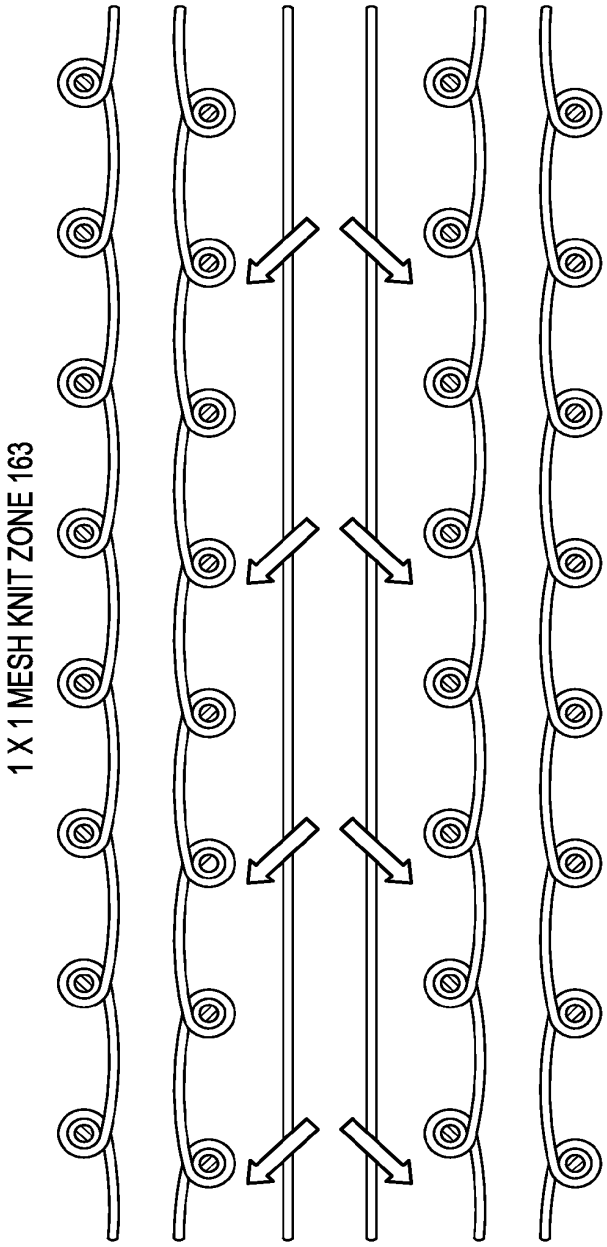



Figure 13C

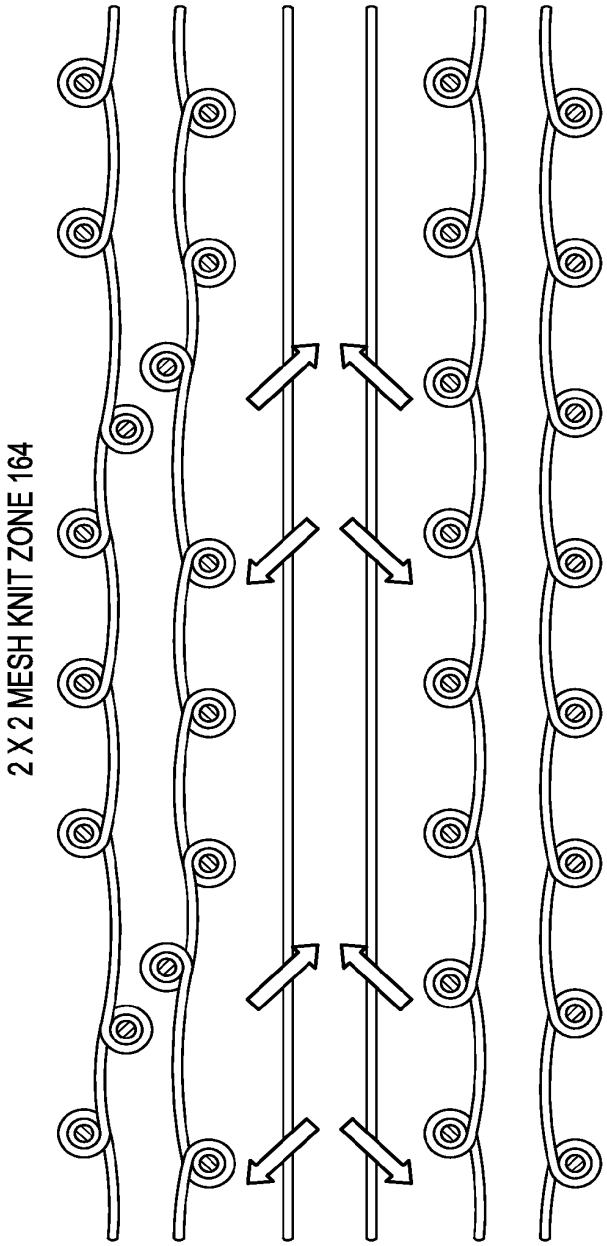



Figure 13D

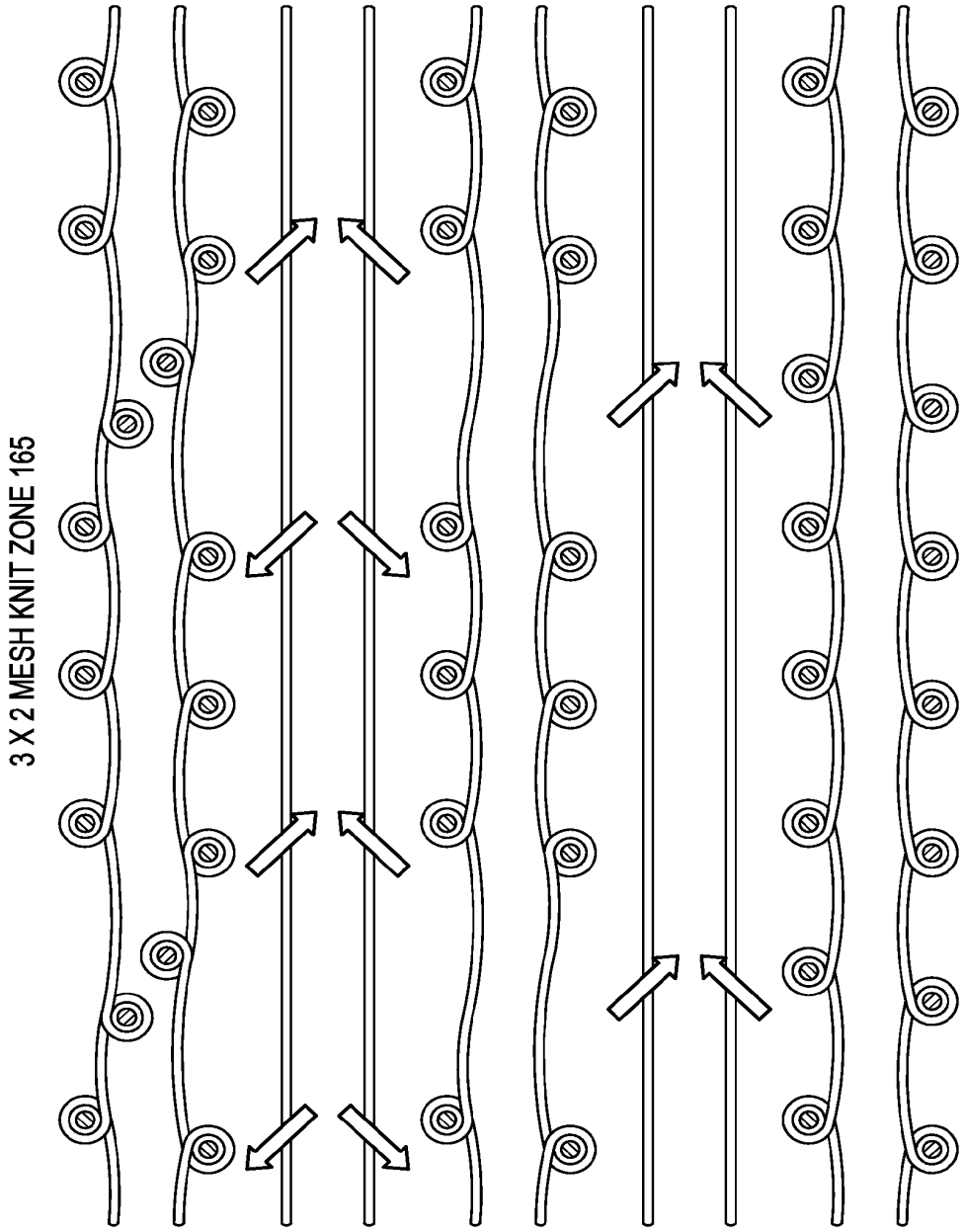



Figure 13E

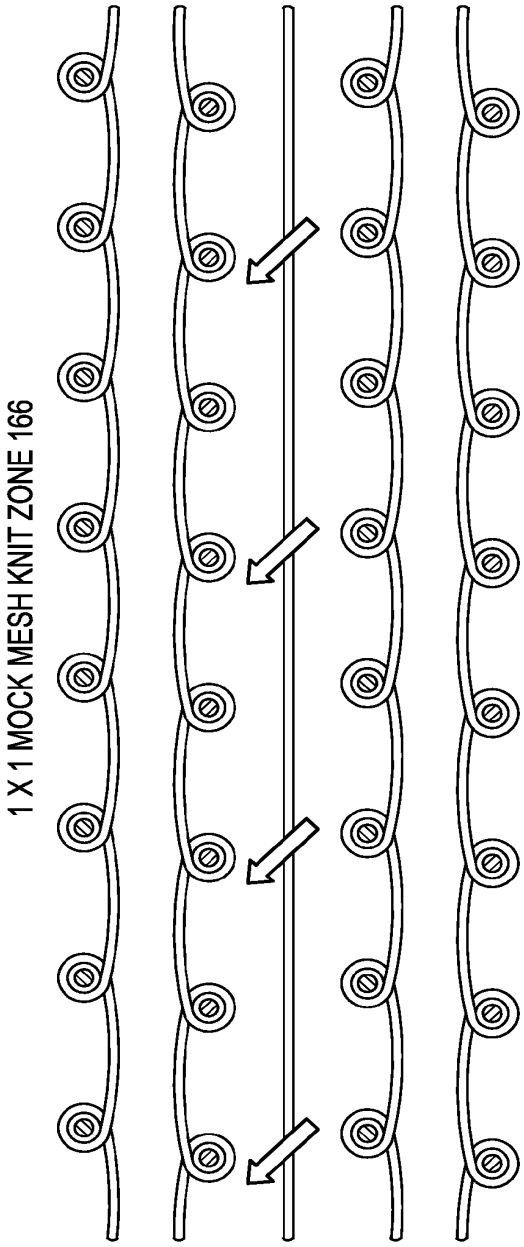



Figure 13F

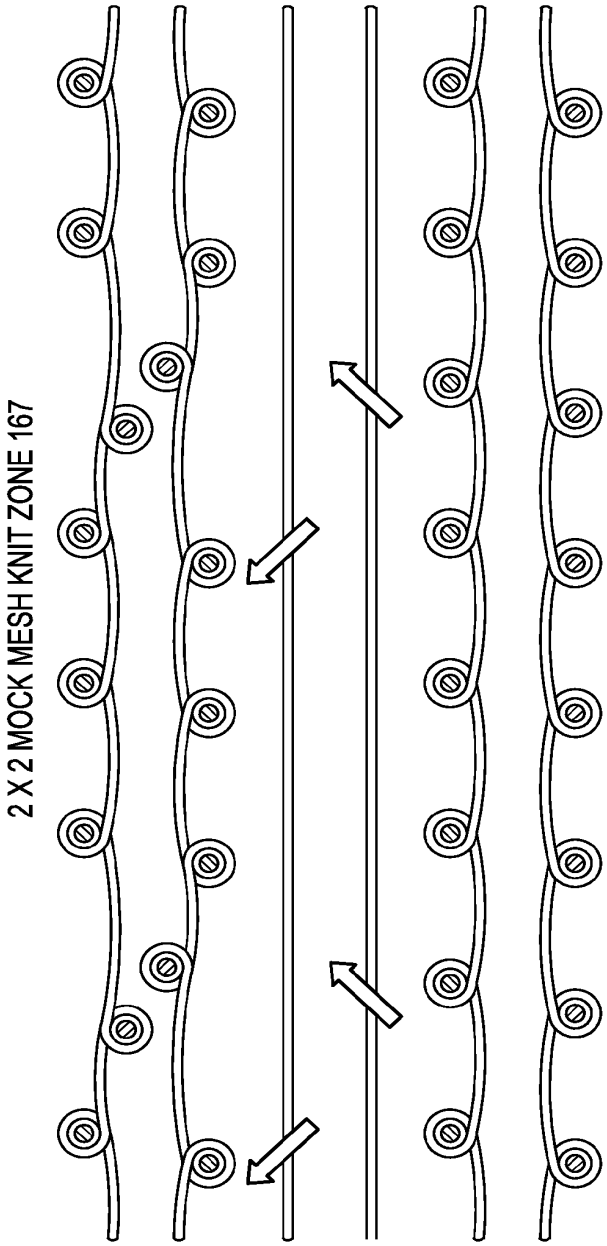



Figure 13G

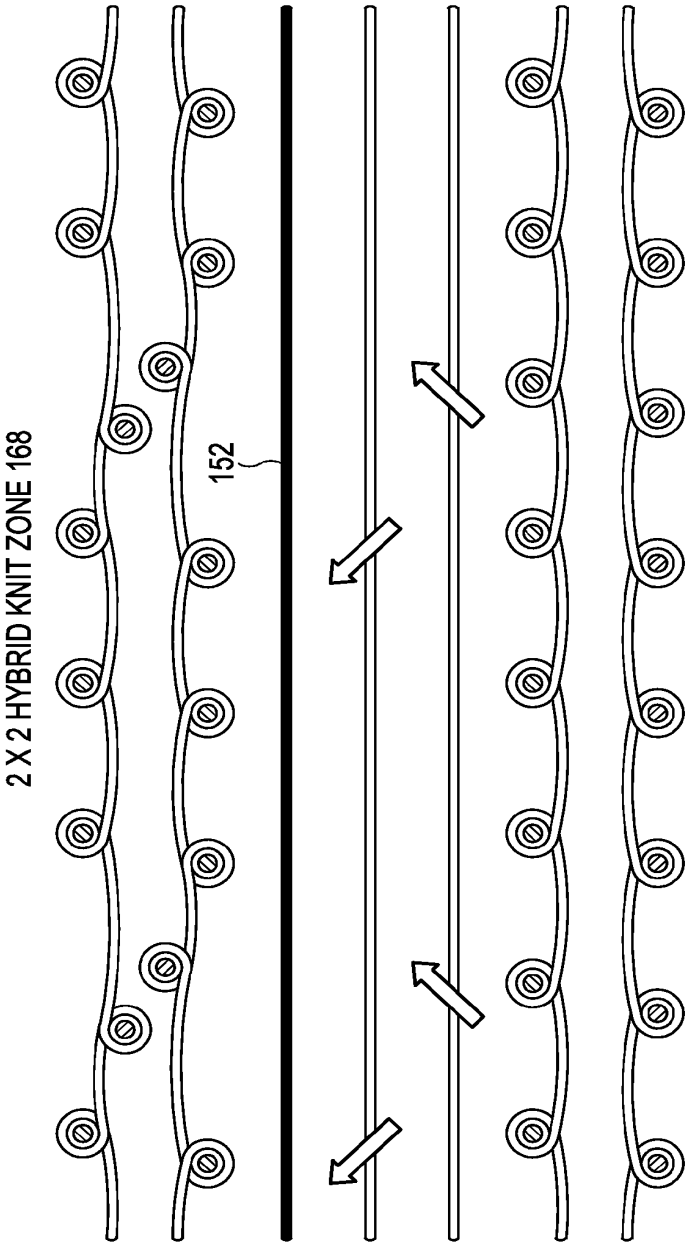



Figure 13H

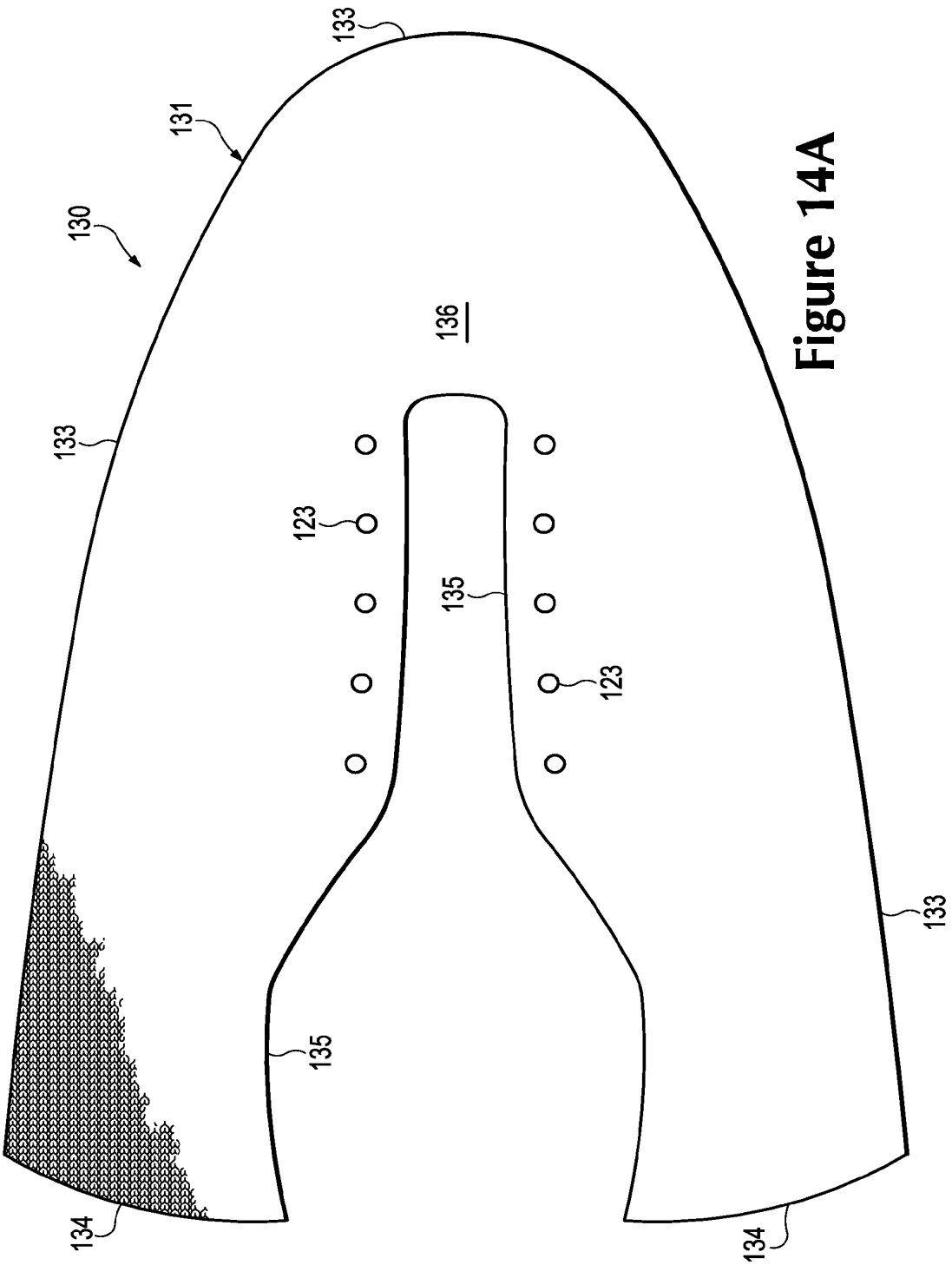



Figure 14A

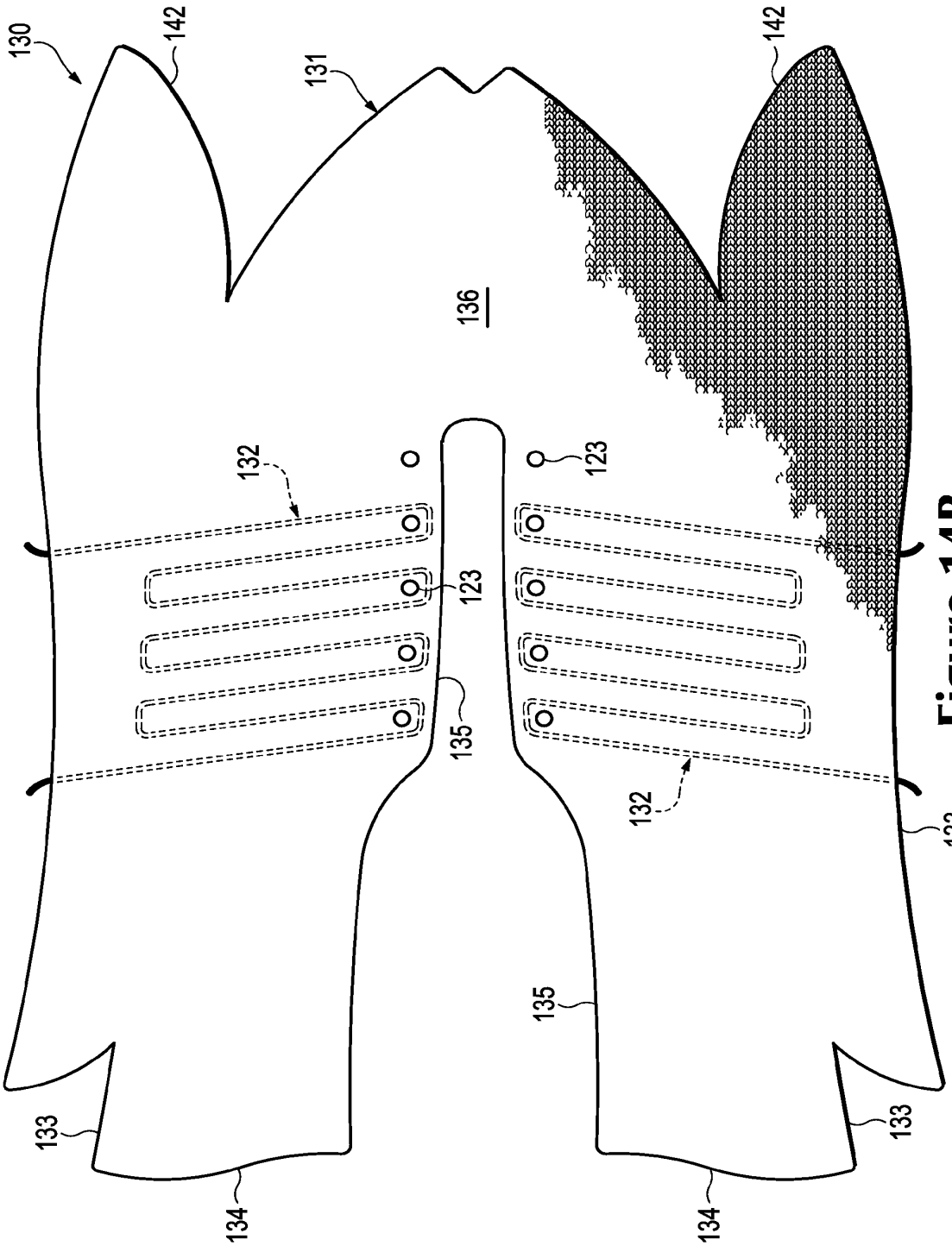



Figure 14B

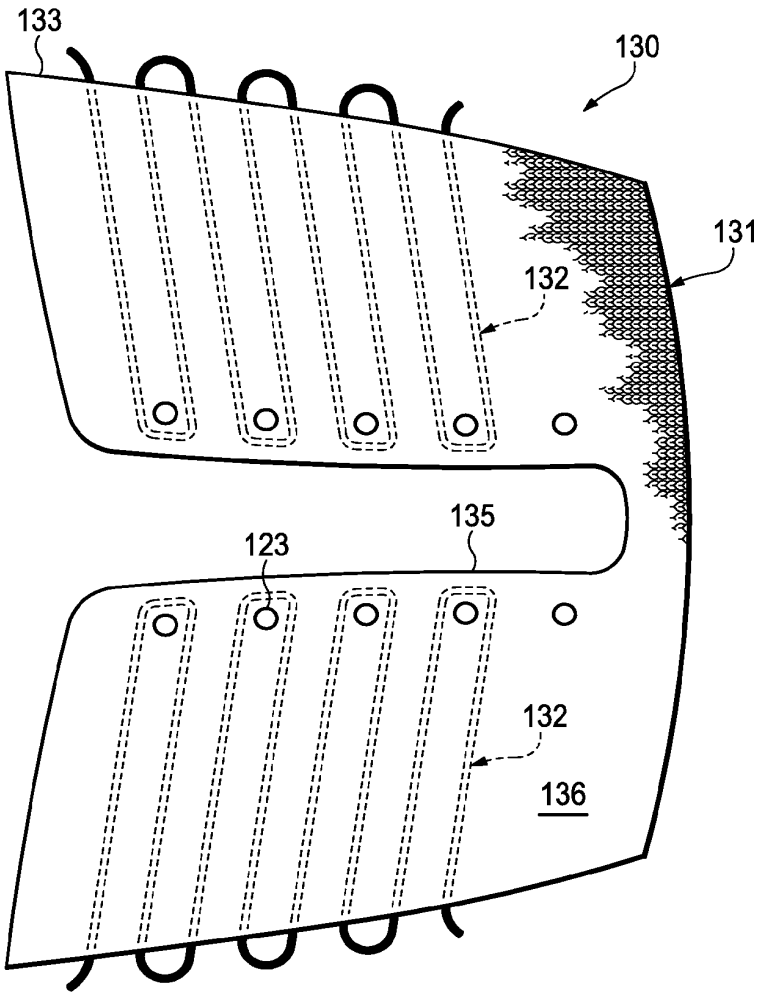



Figure 14C

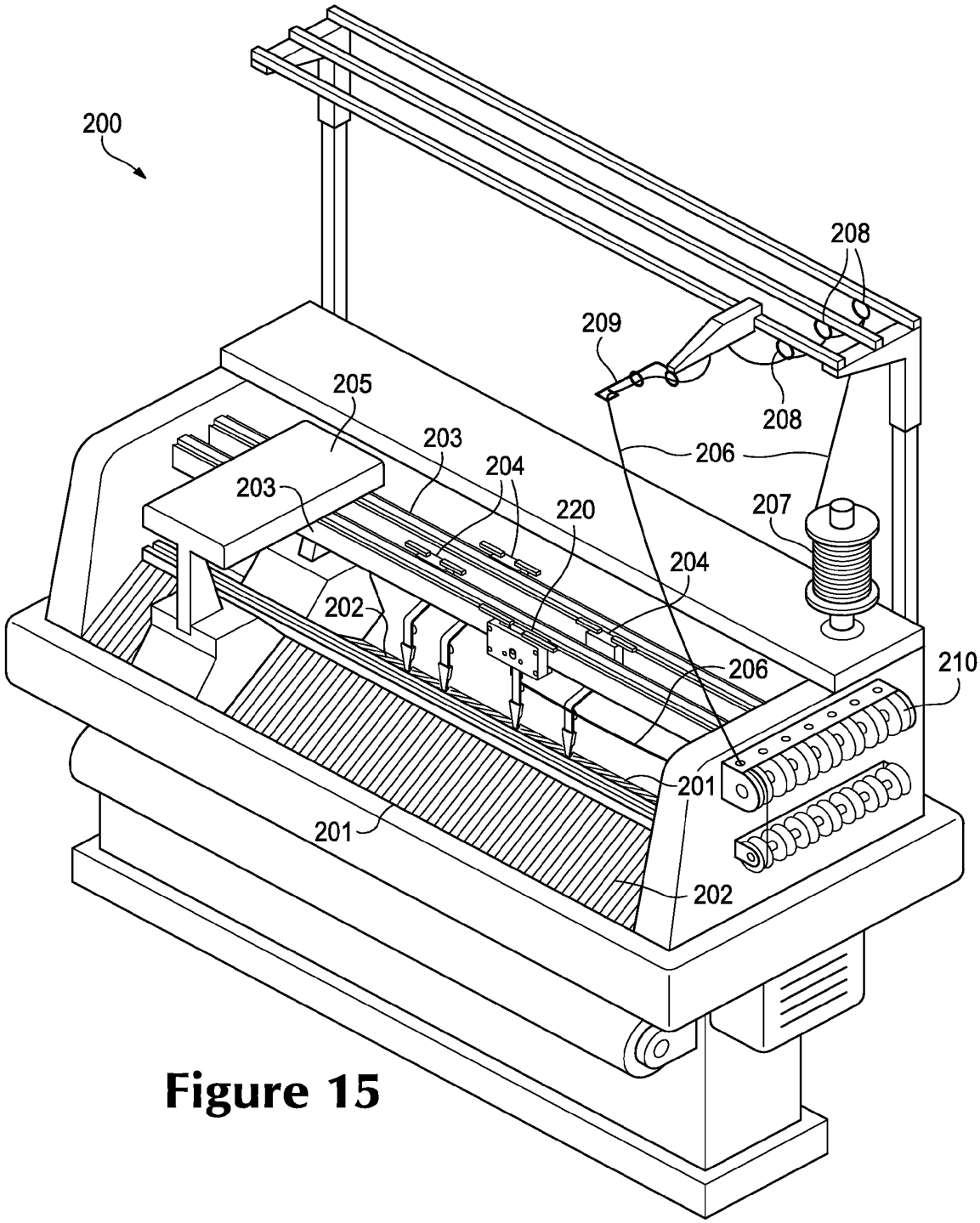

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Figure 15

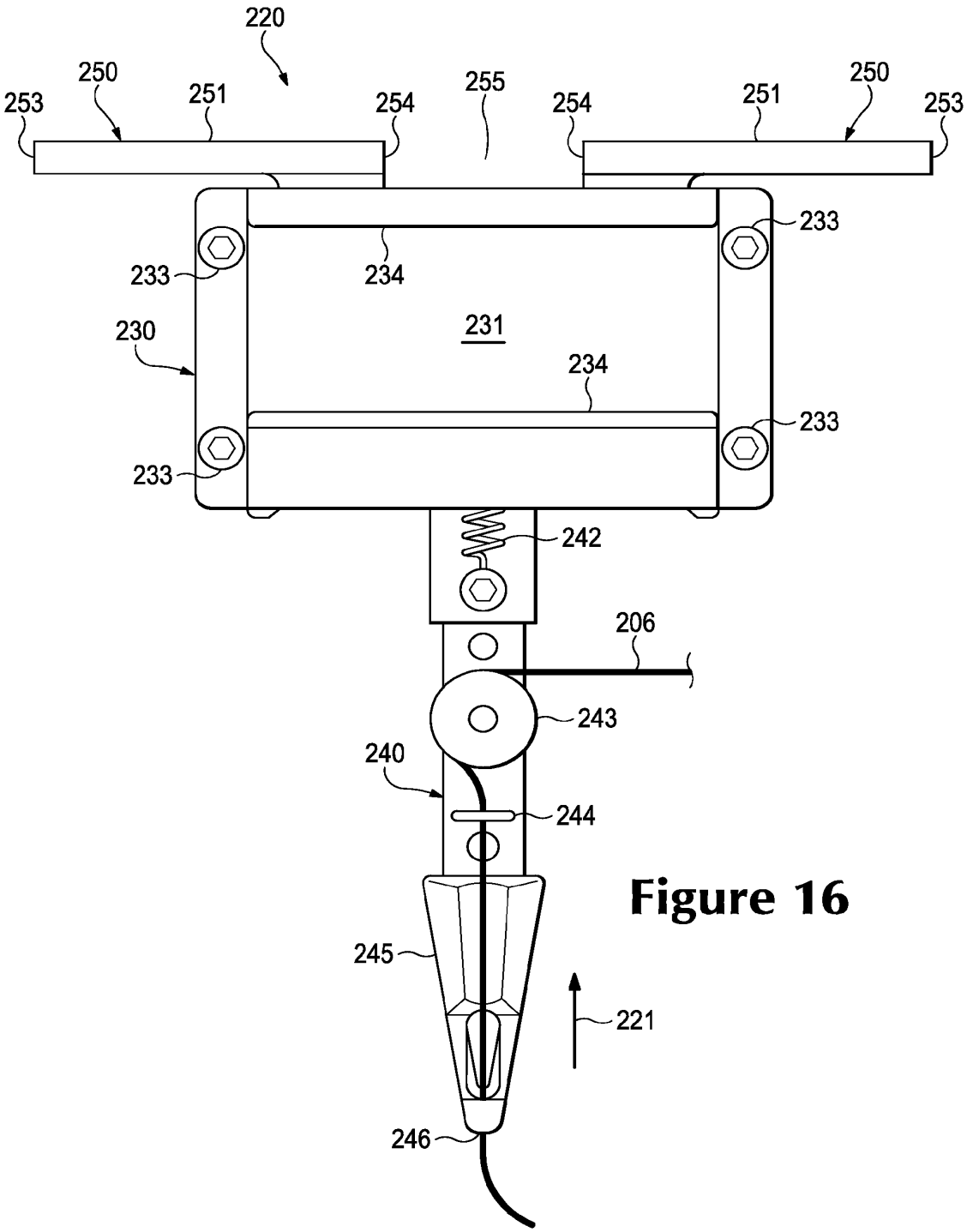

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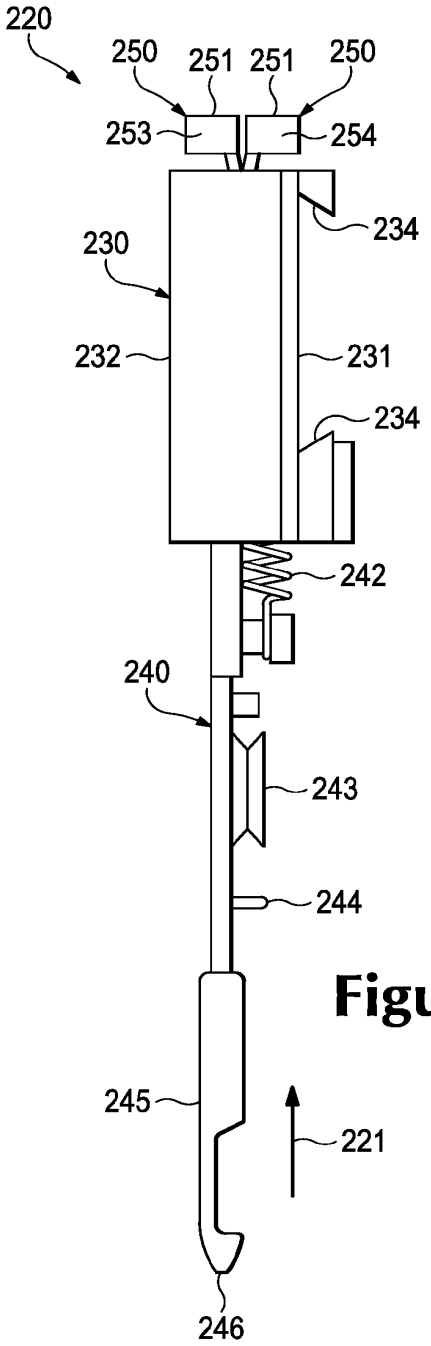

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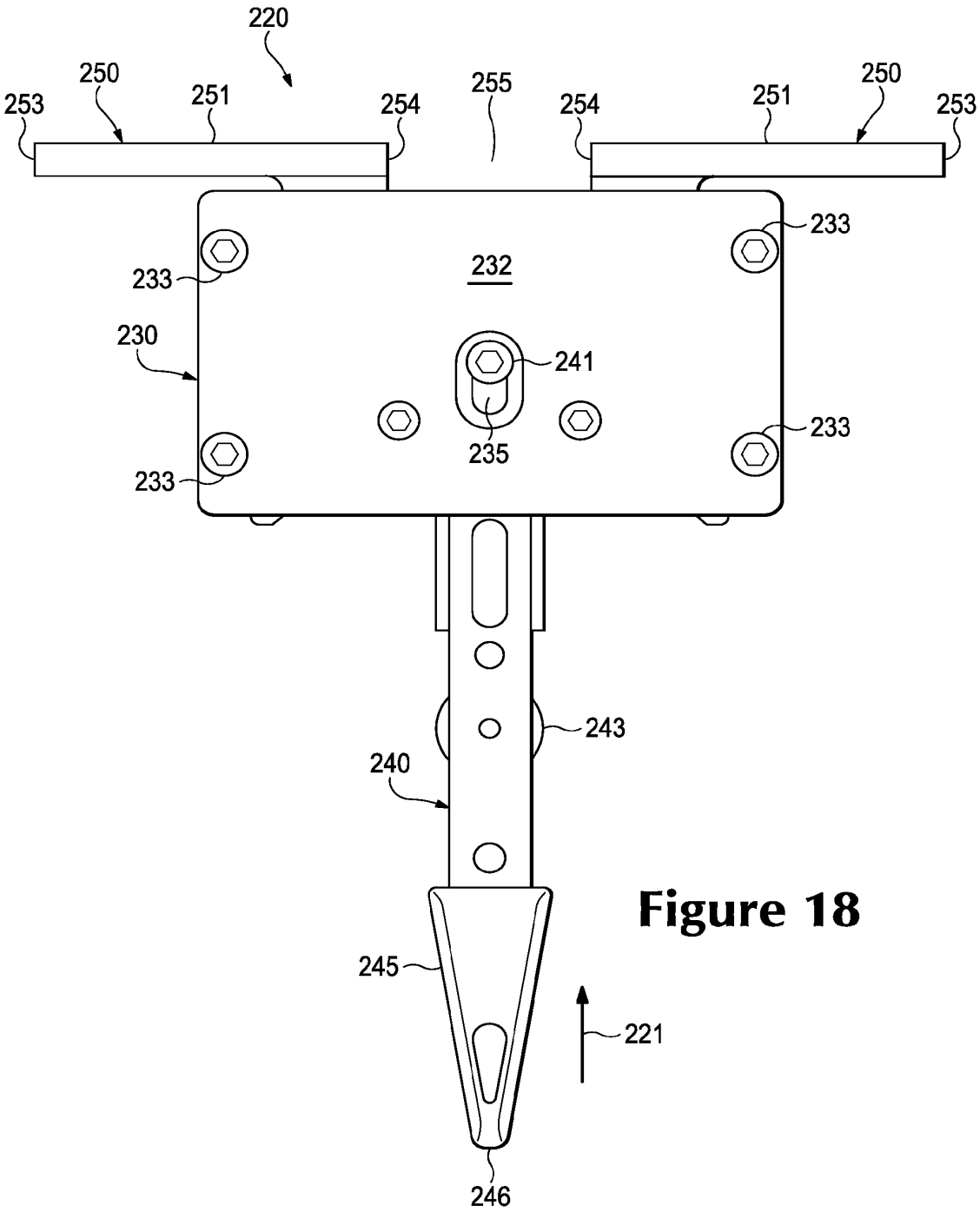

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Figure 18

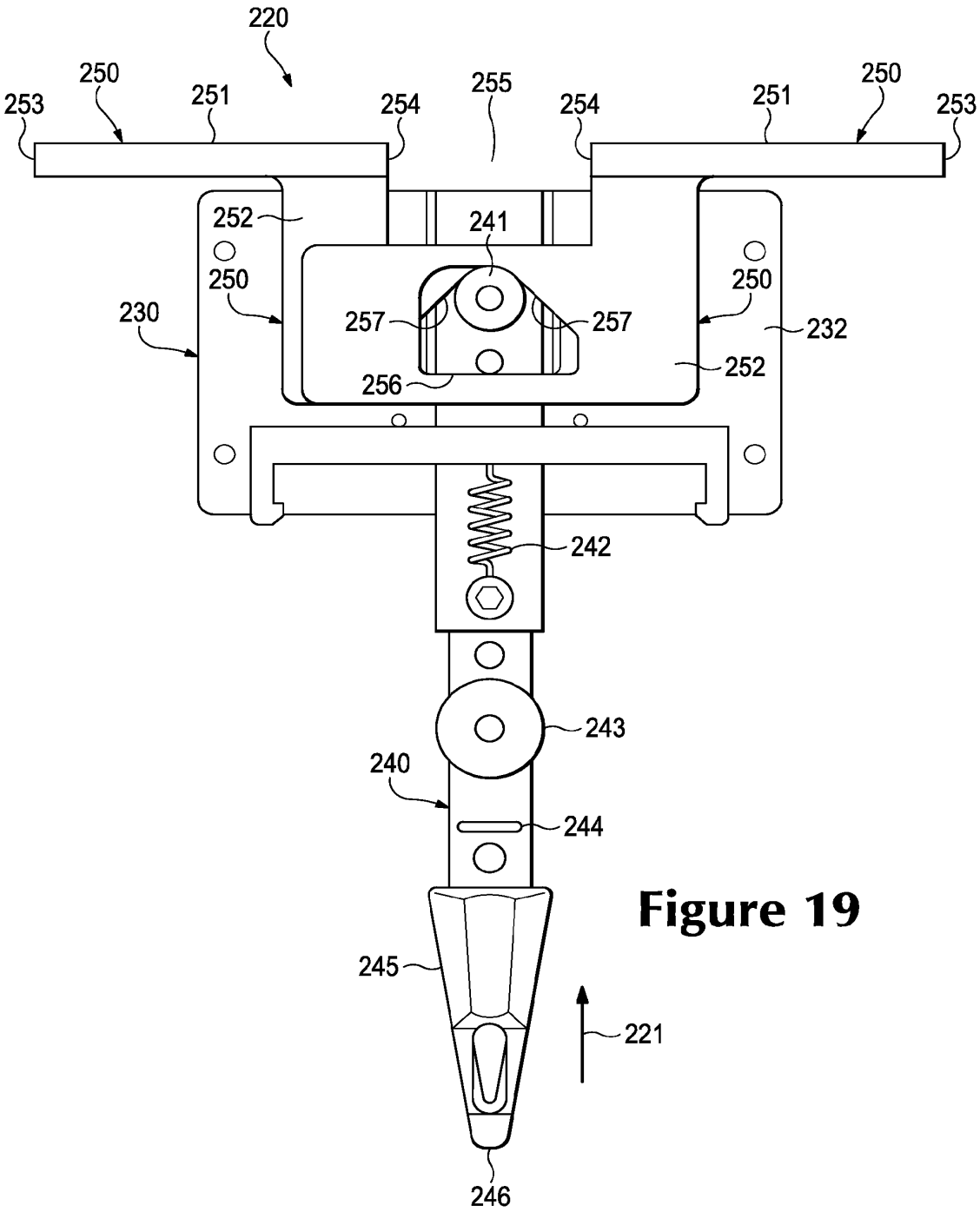

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Figure 19

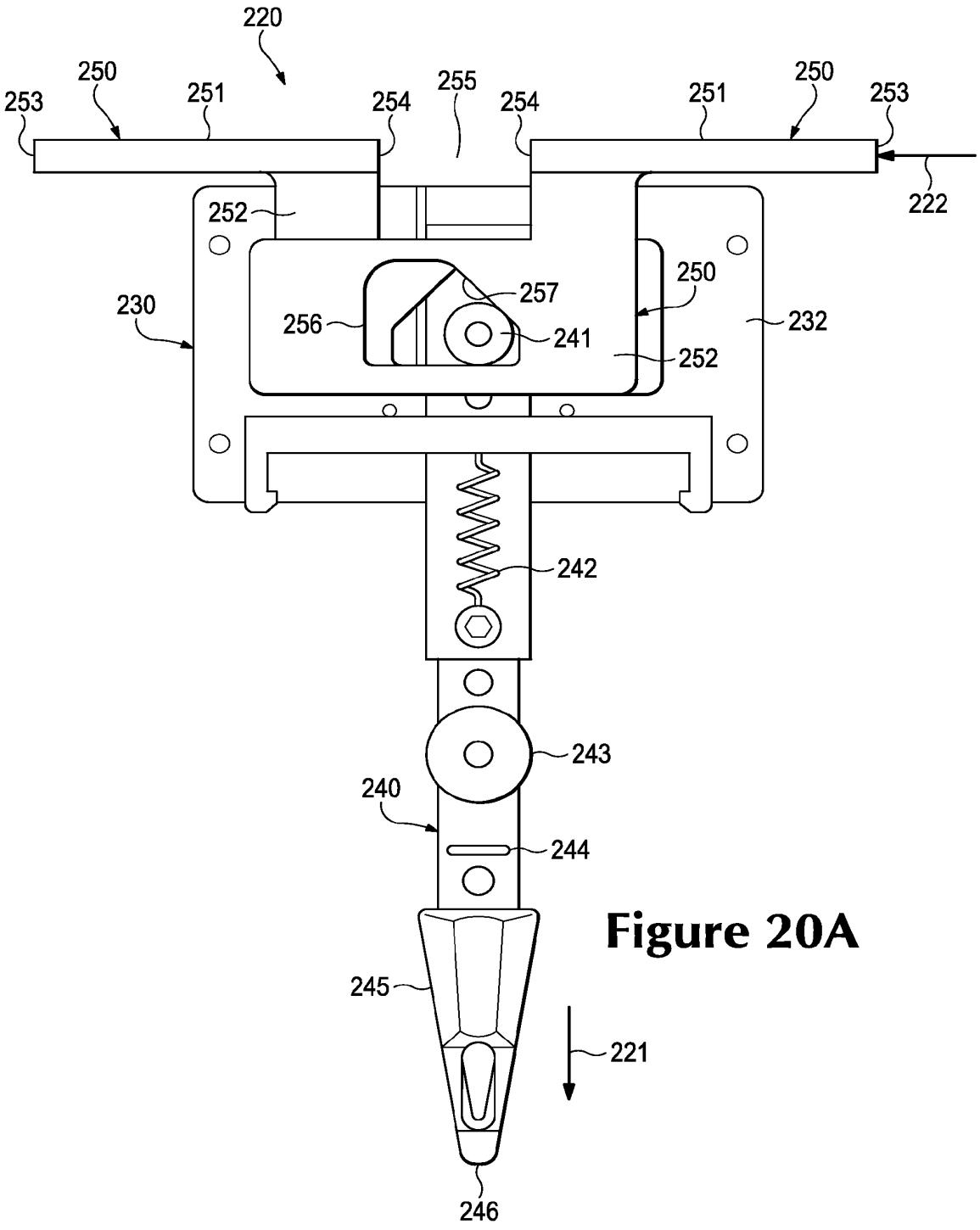

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Figure 20A

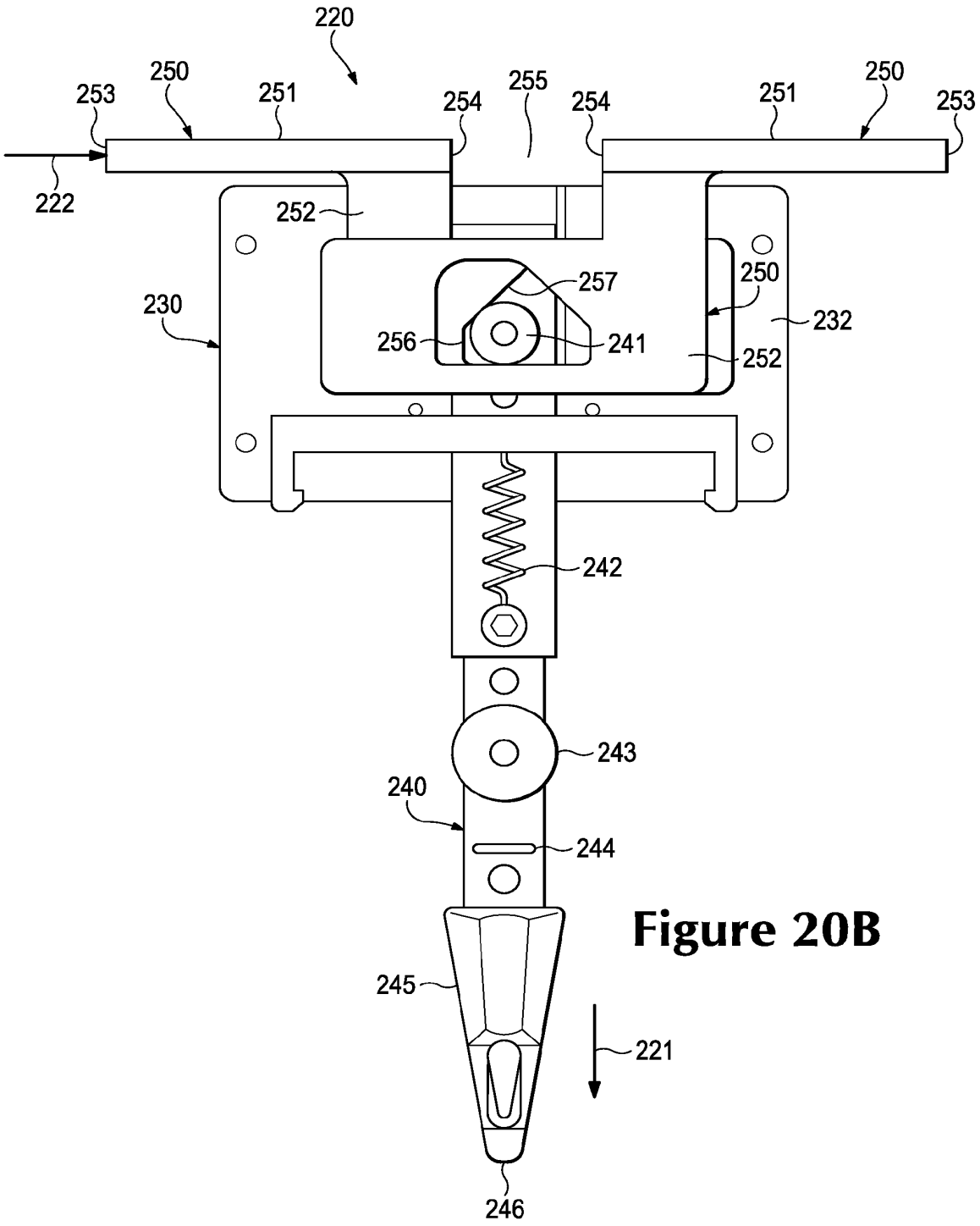

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Figure 20B

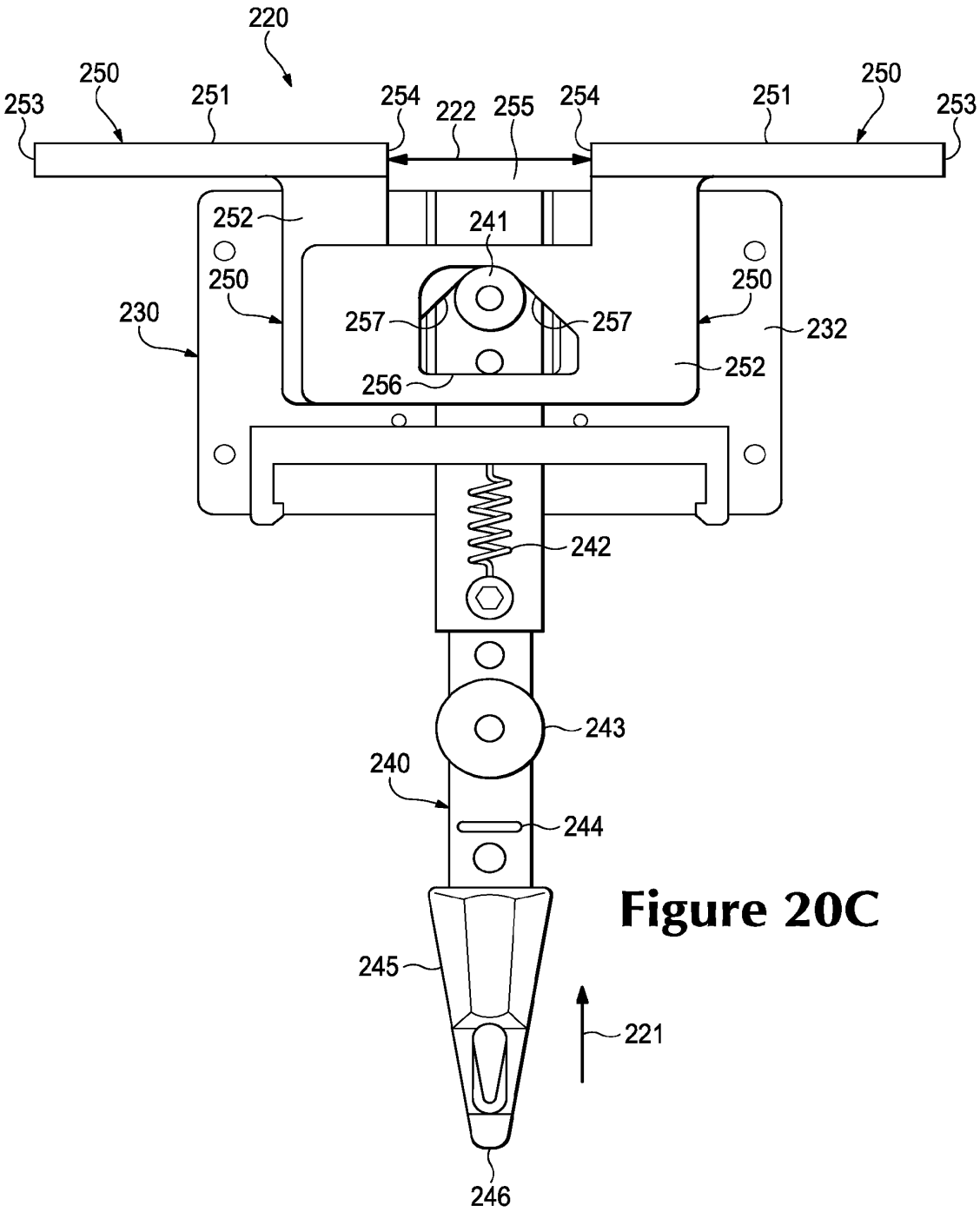

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Figure 20C

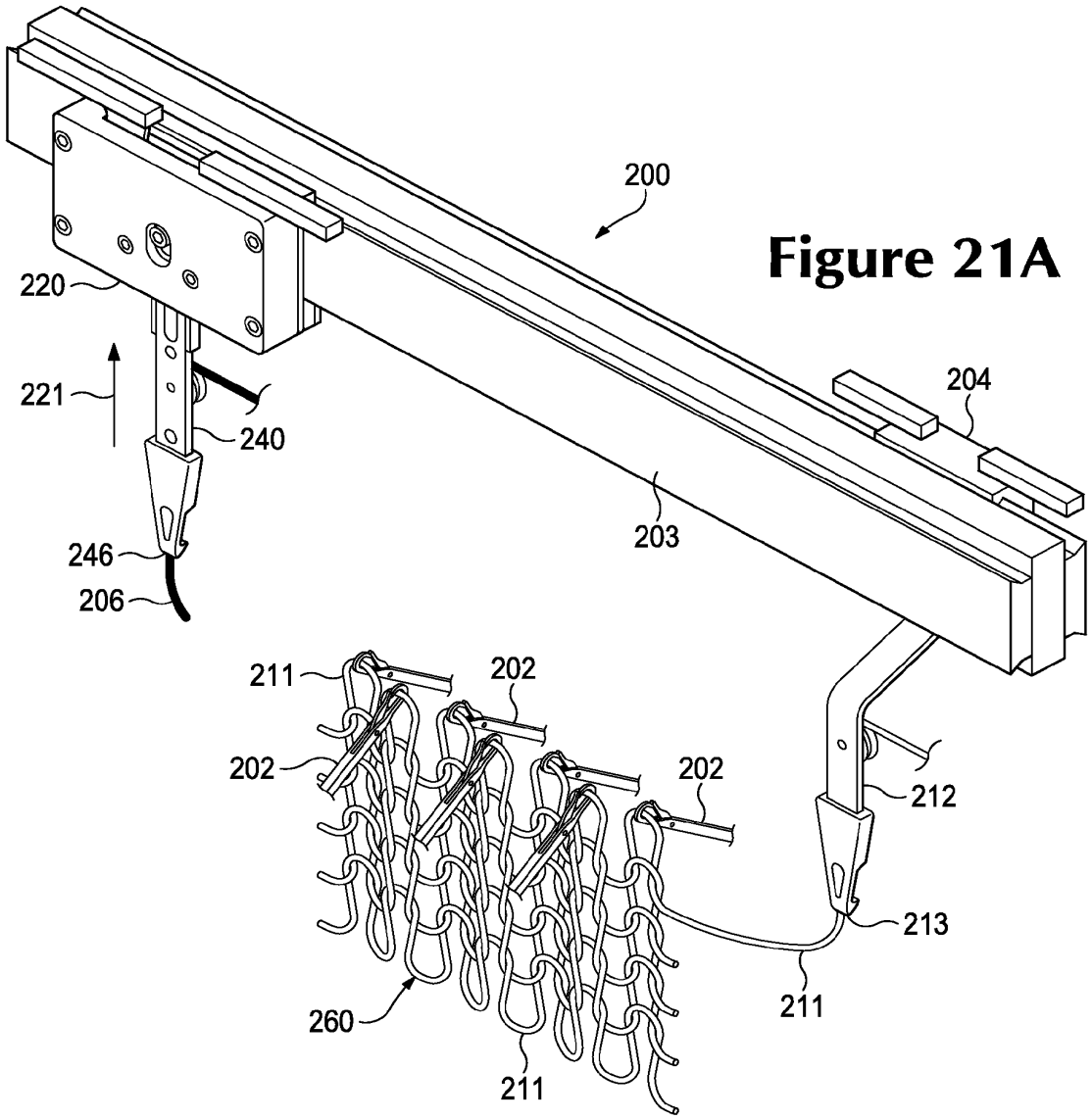

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Figure 21A

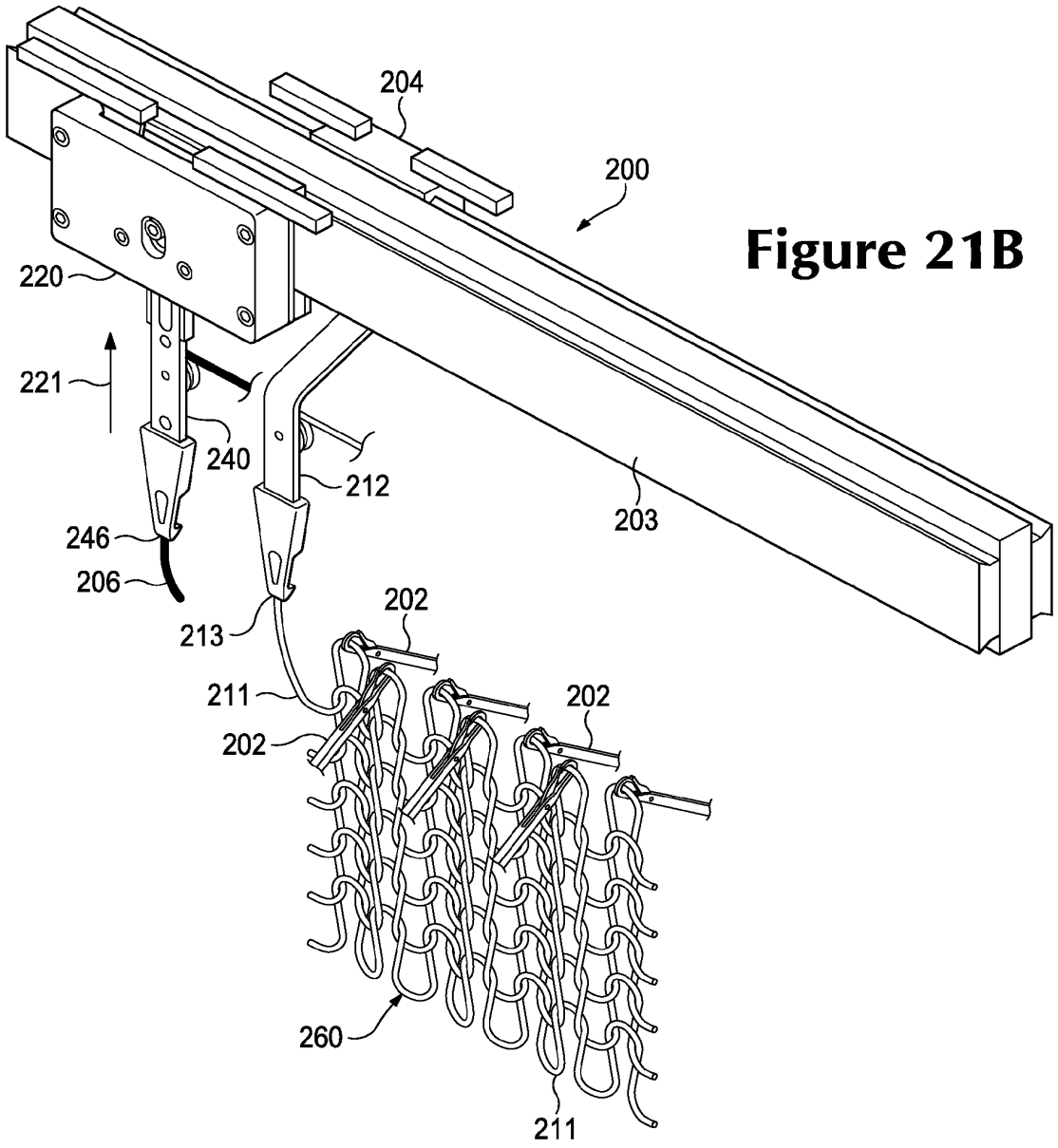



Figure 21B

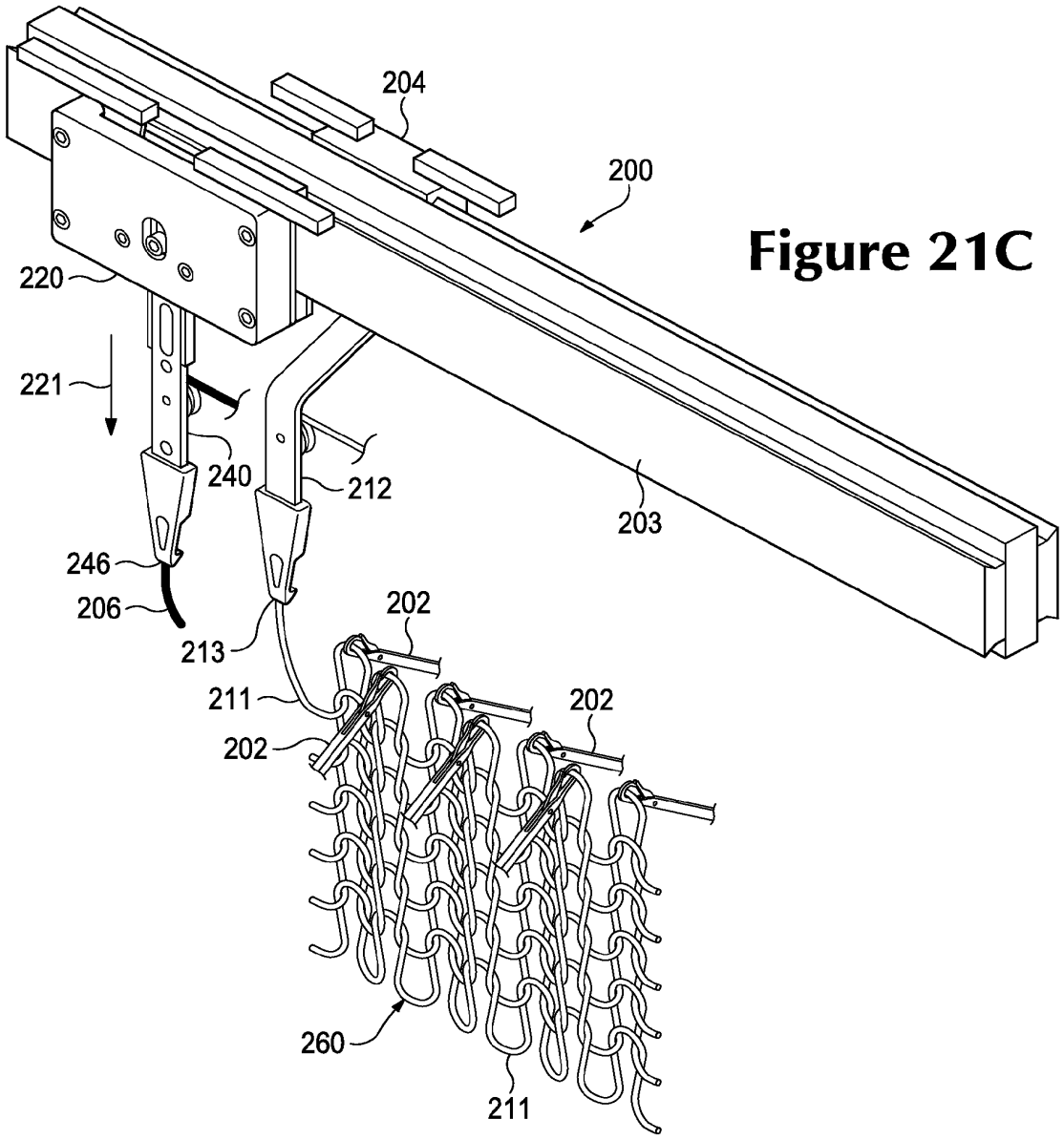



Figure 21C

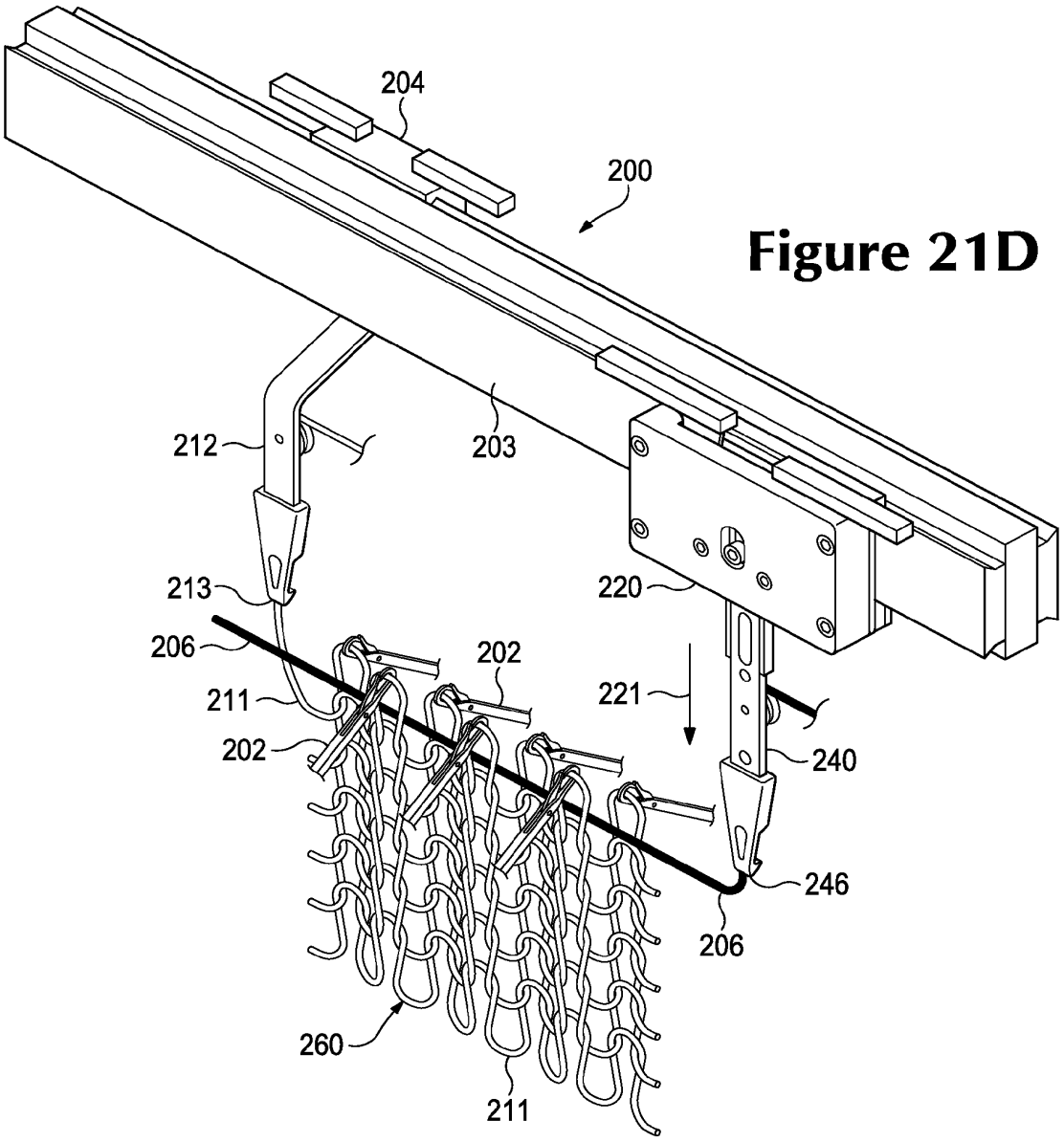



Figure 21D

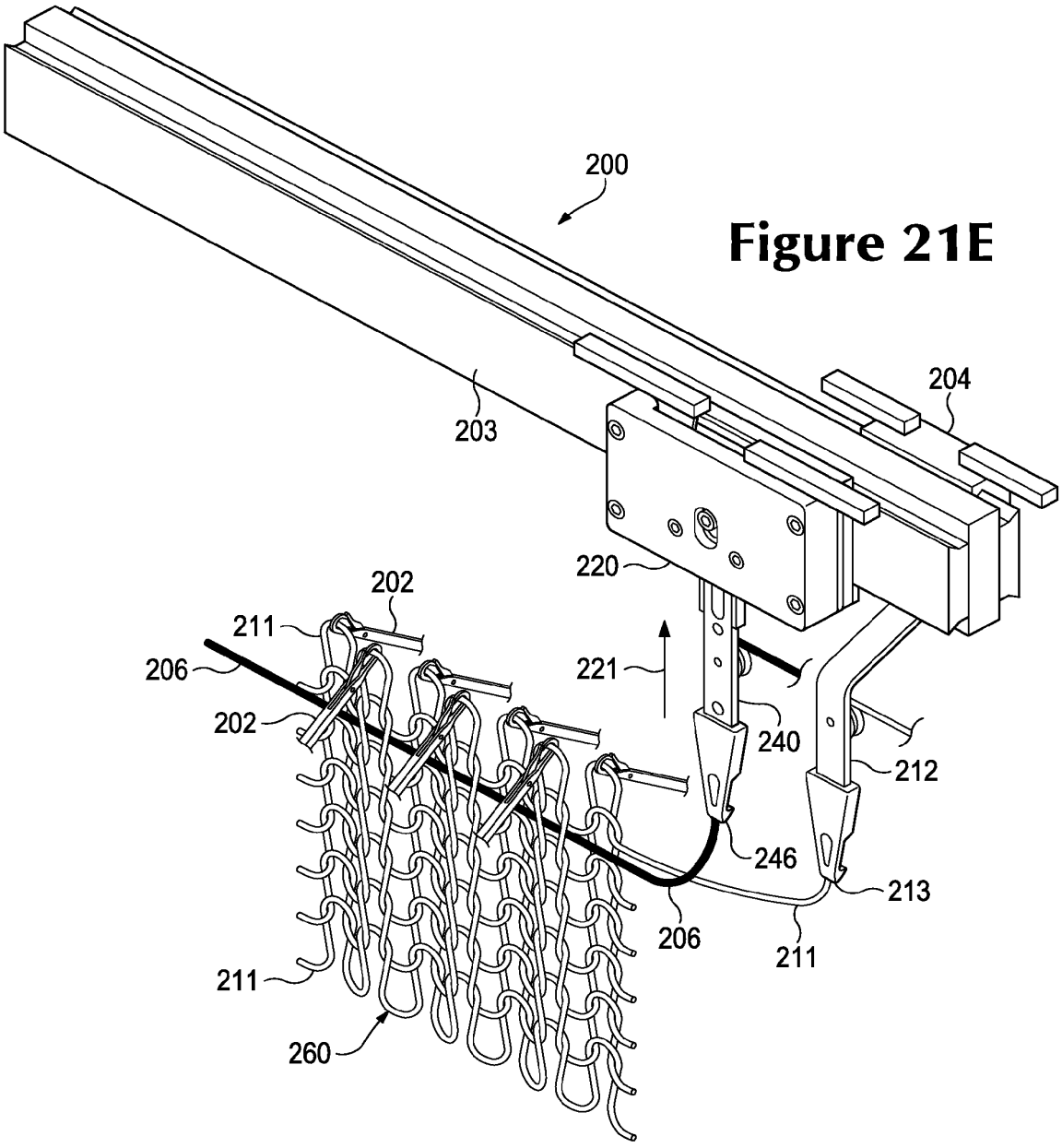

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Figure 21E

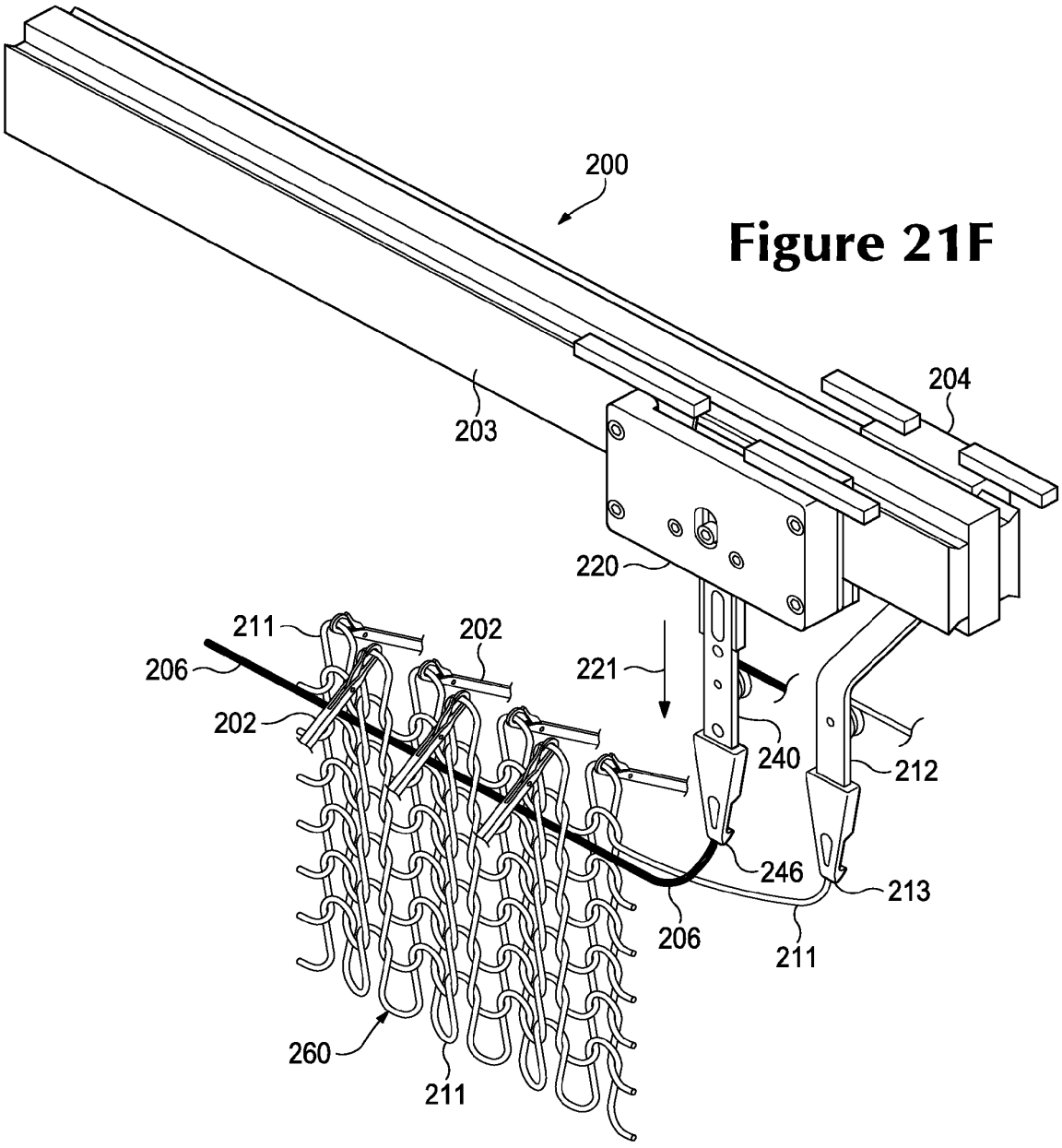

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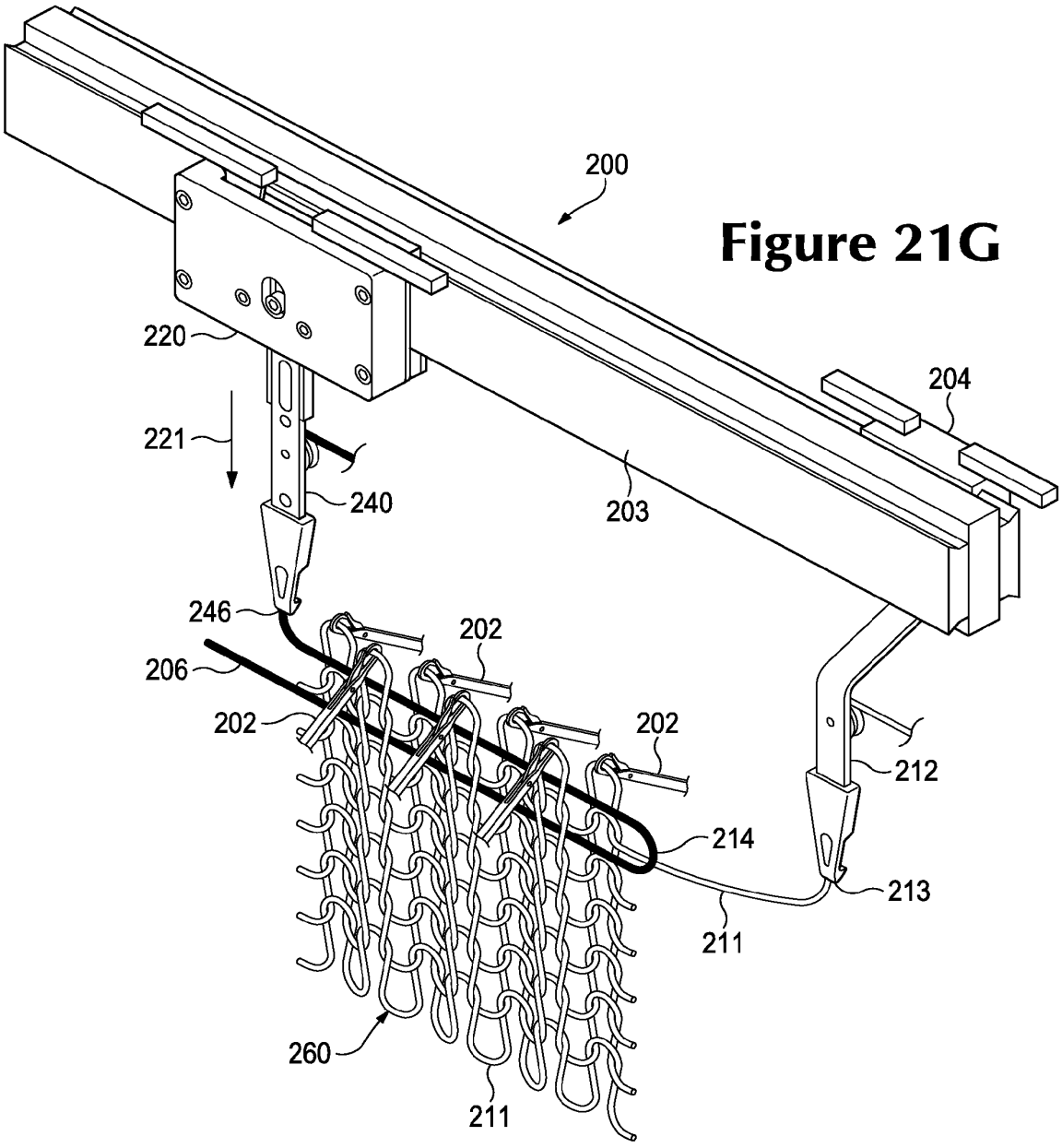

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Figure 21G

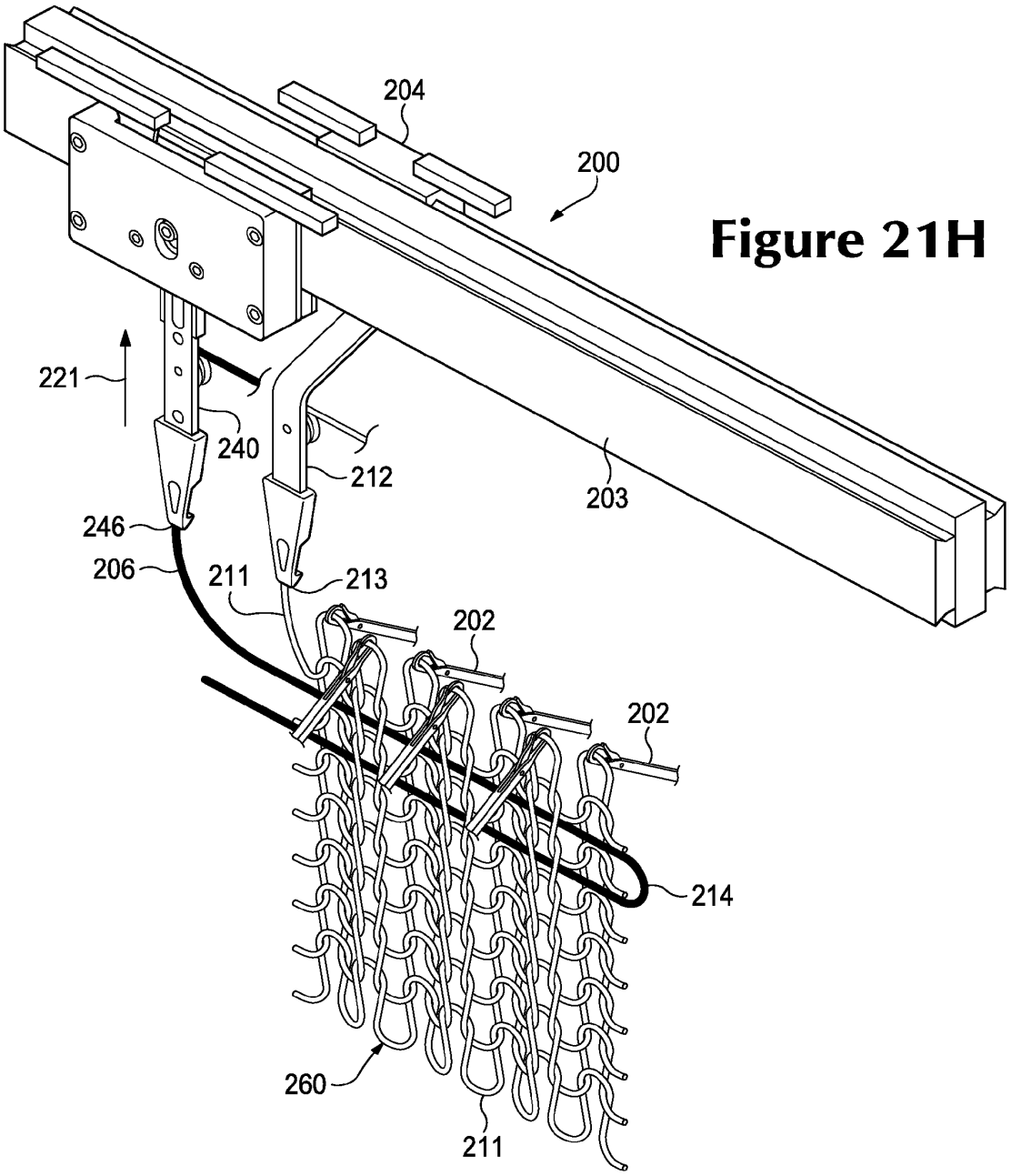



Figure 21H

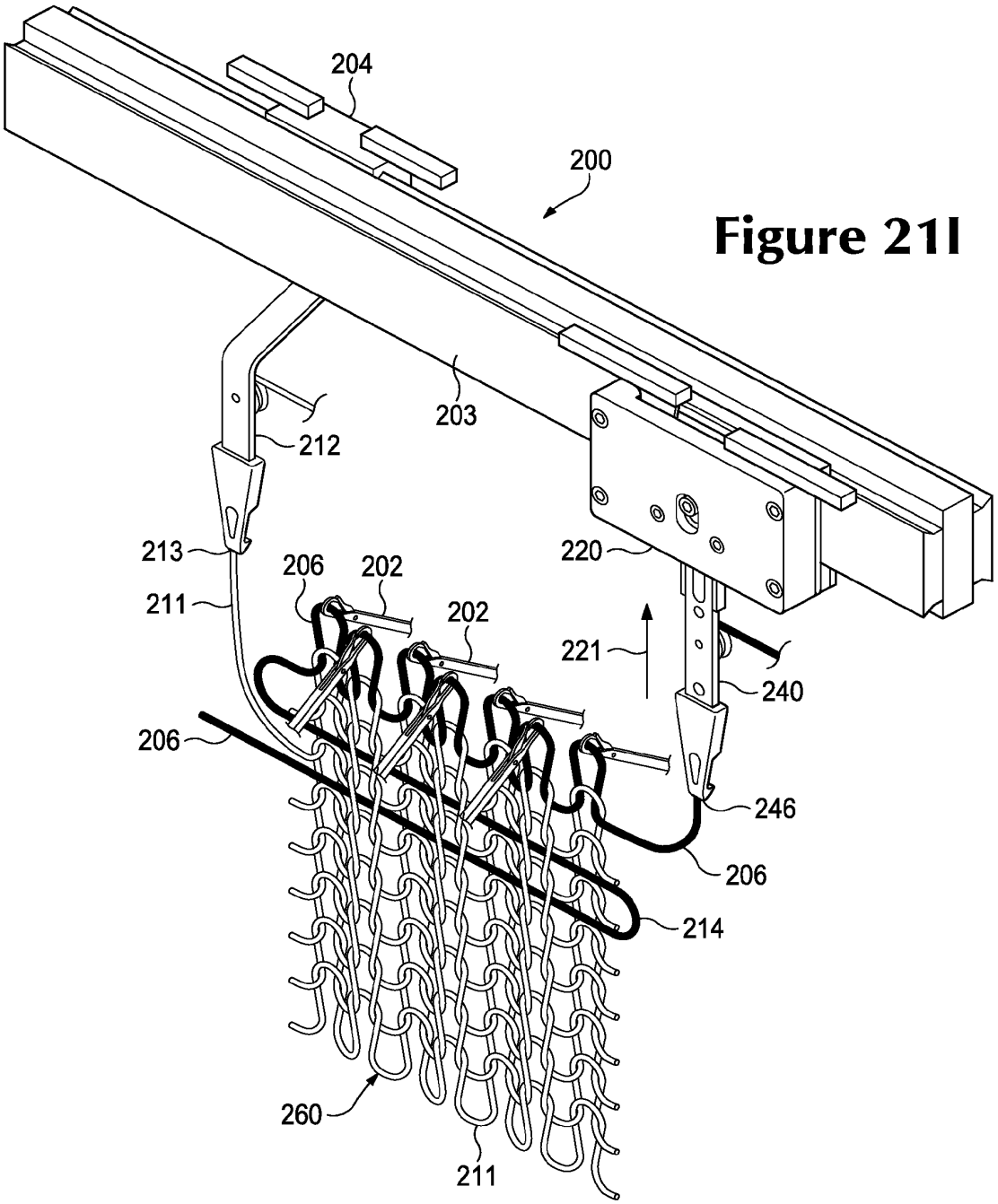

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Figure 21I

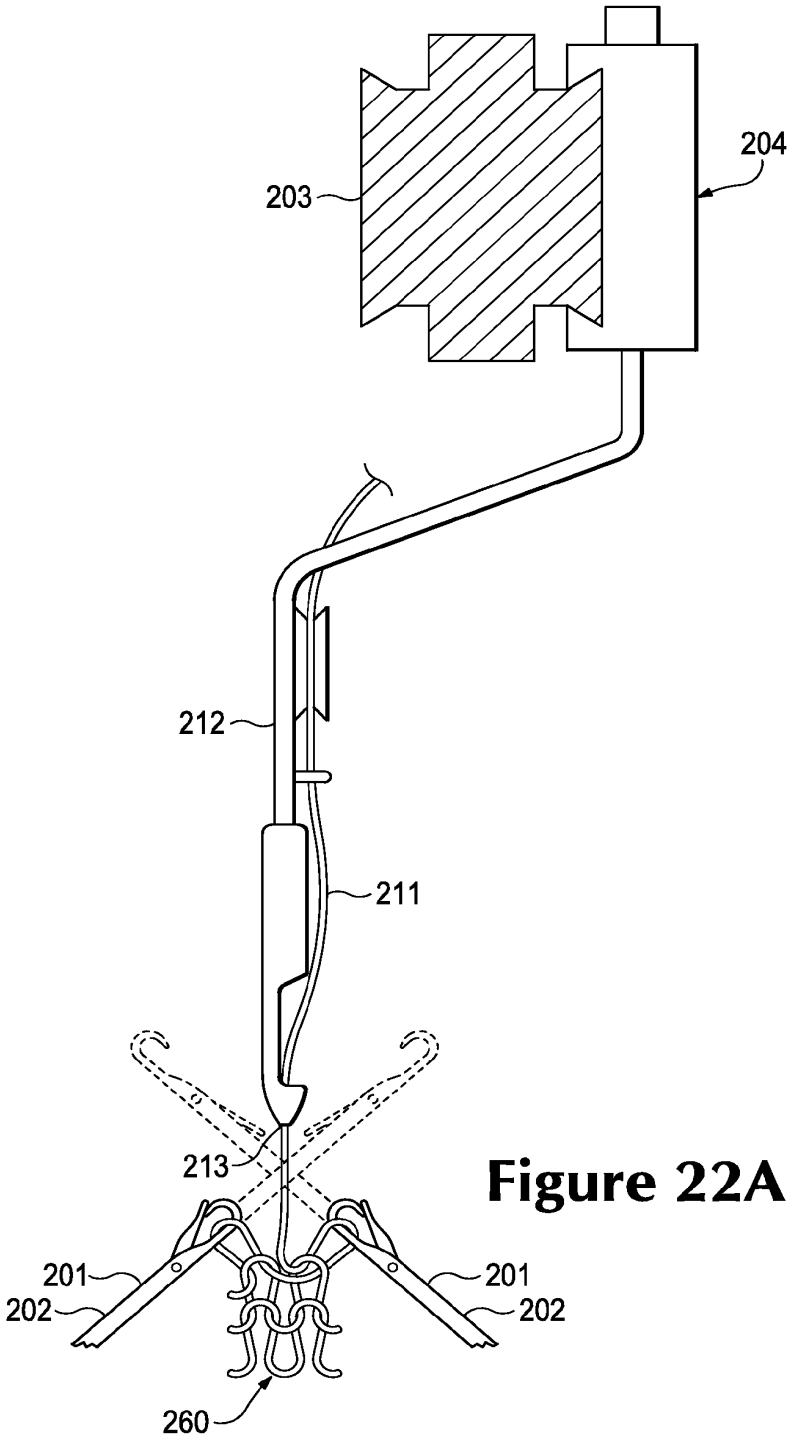



Figure 22A

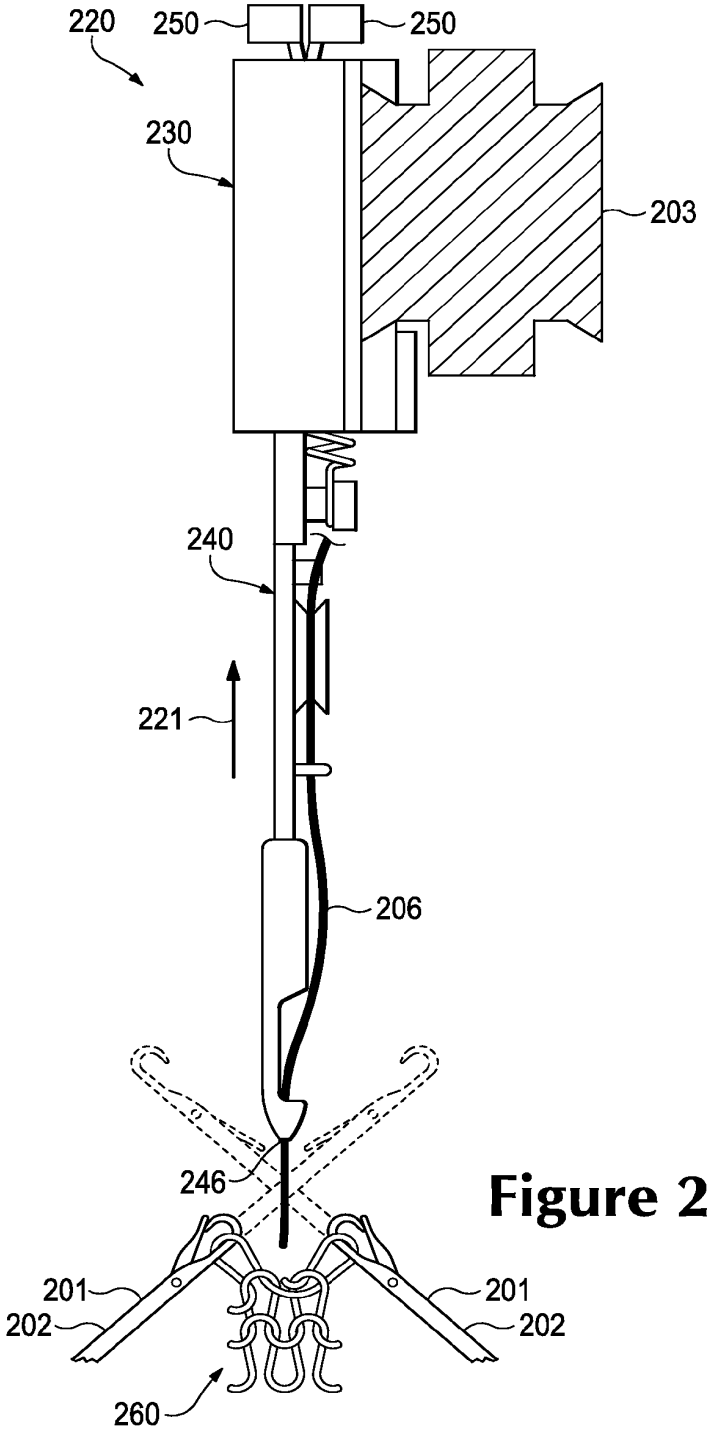



Figure 22B

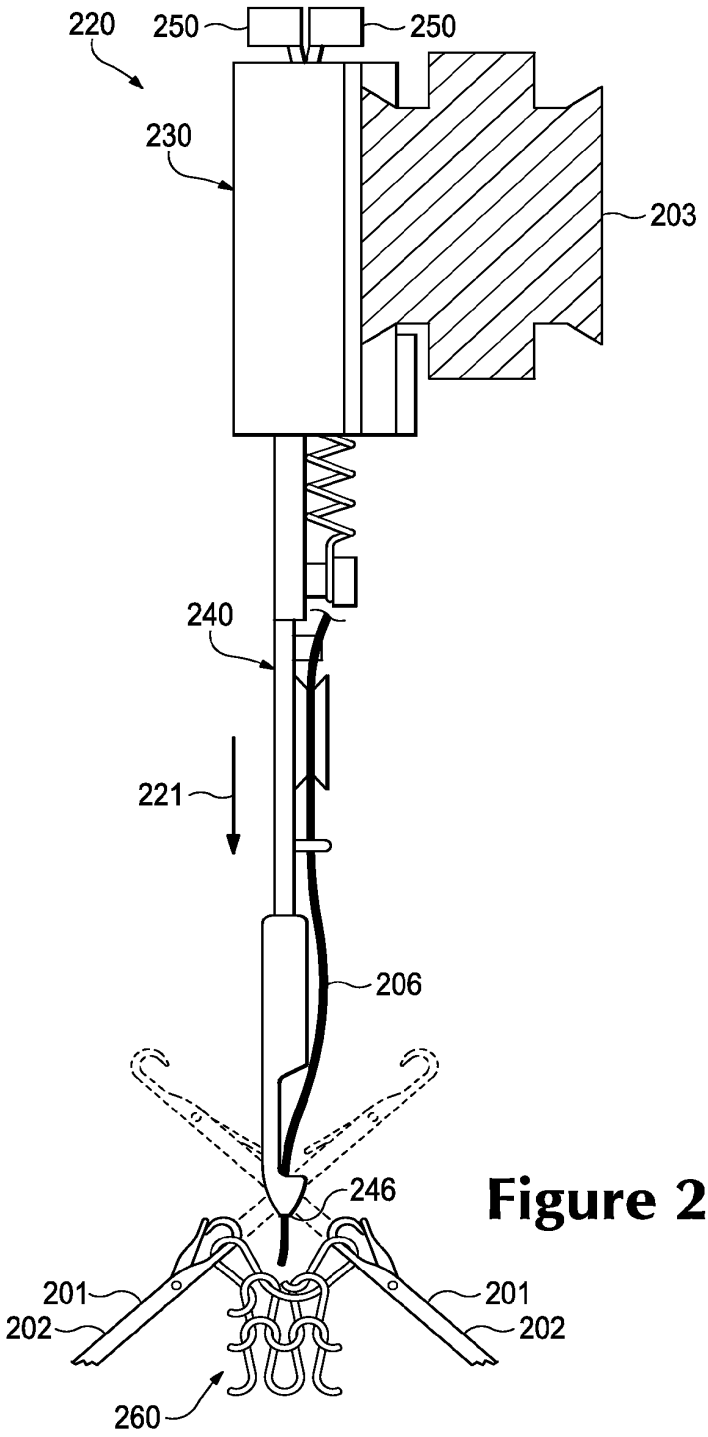



Figure 22C

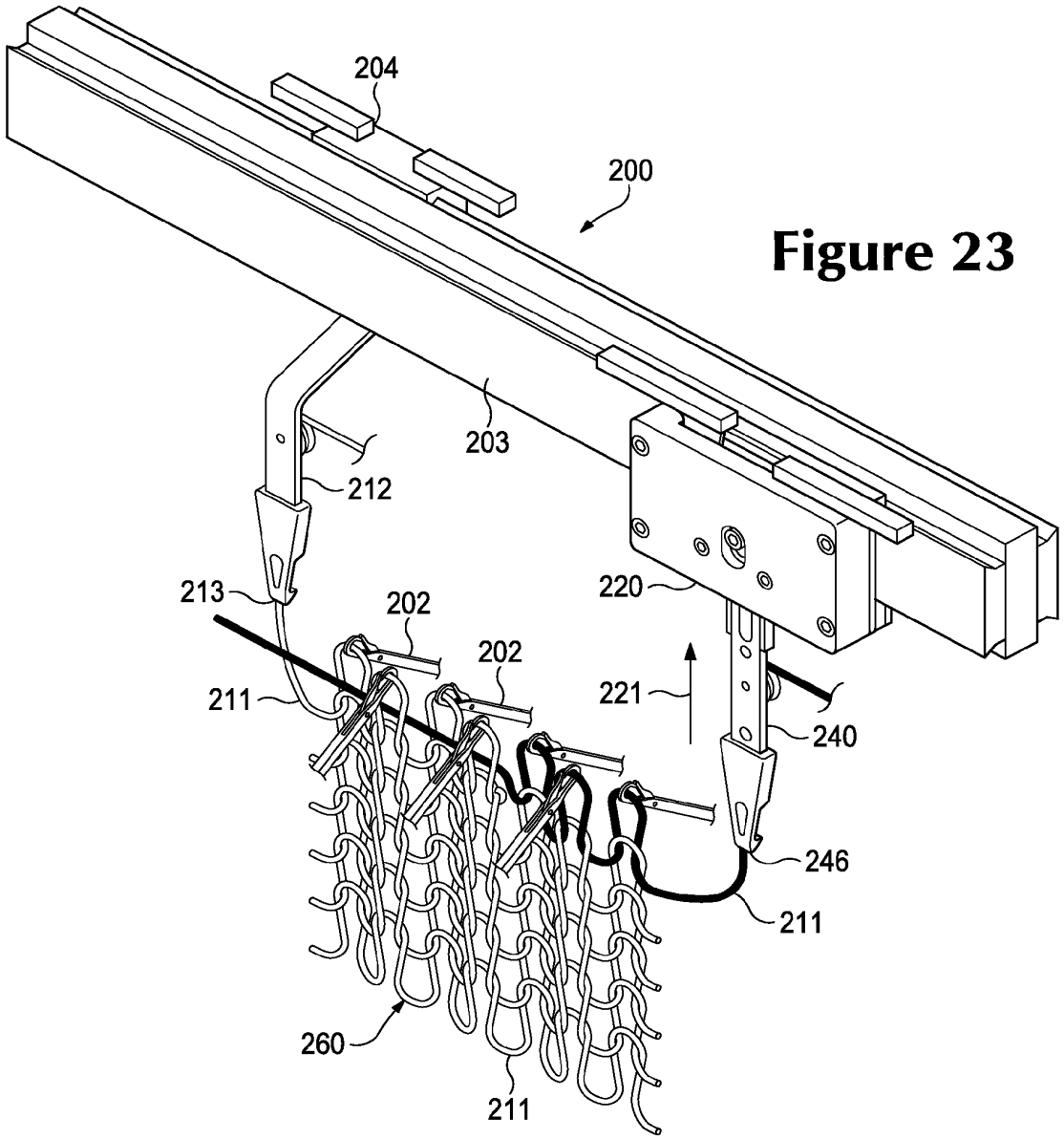



**Figure 23**

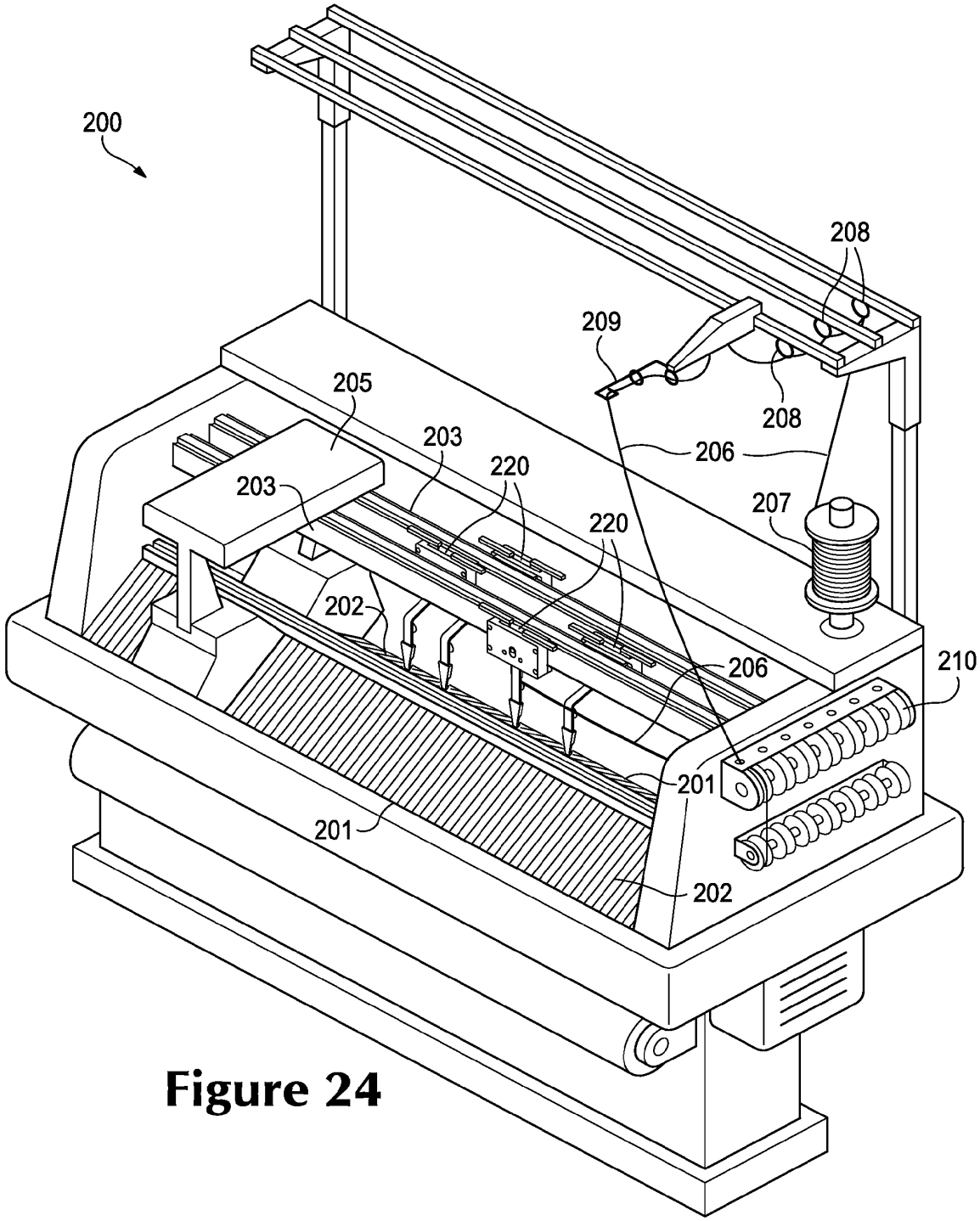

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Figure 24

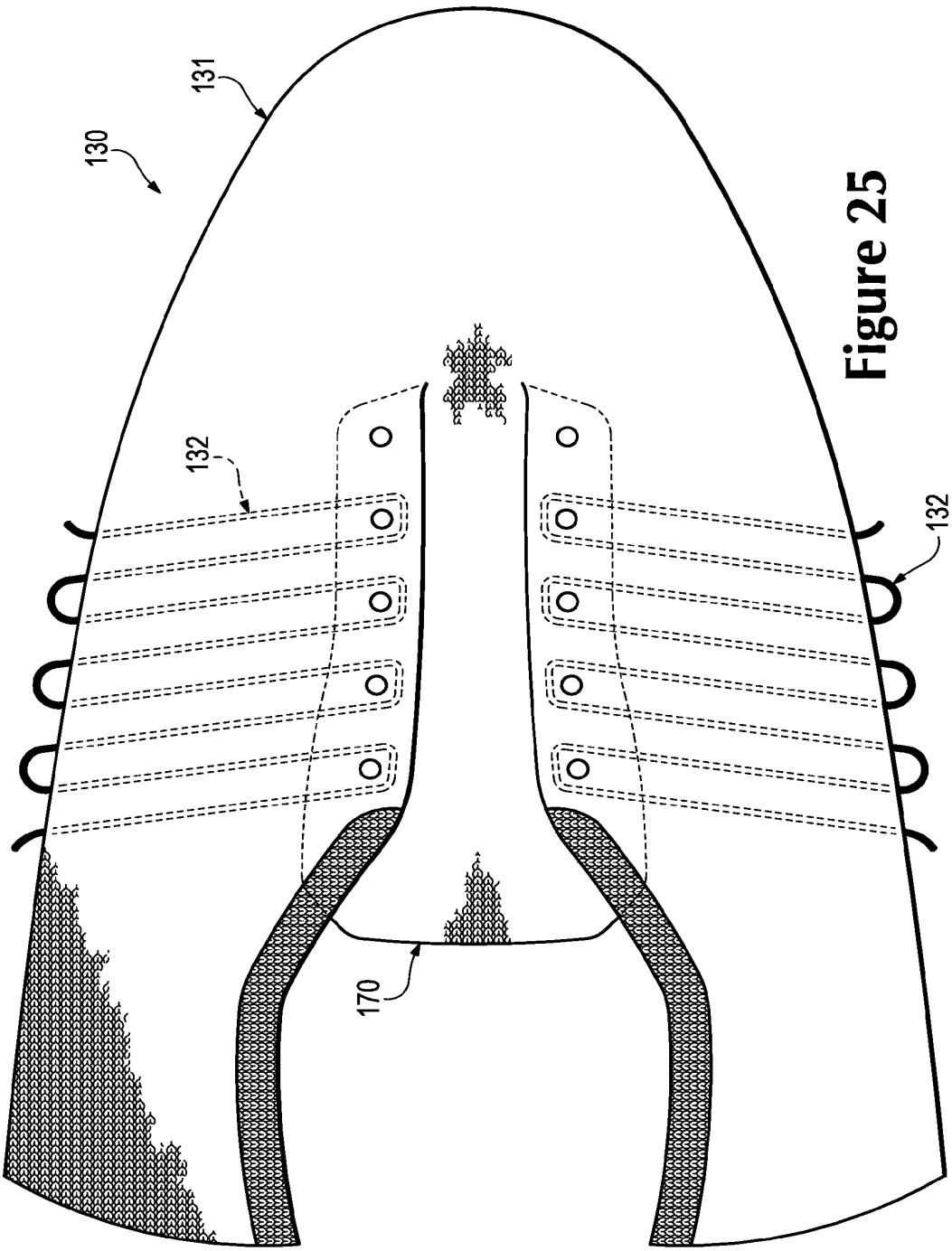



Figure 25

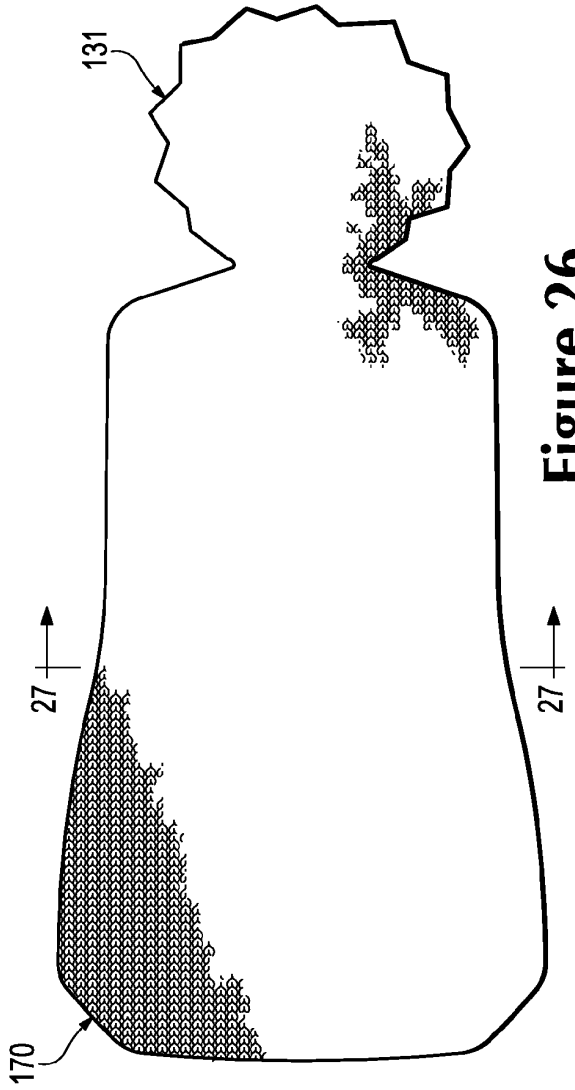



Figure 26

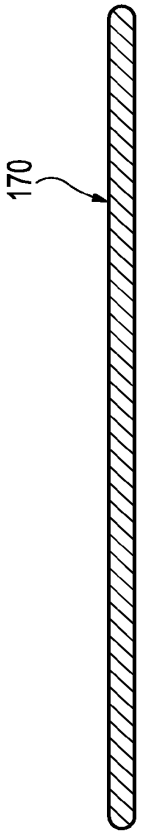



Figure 27

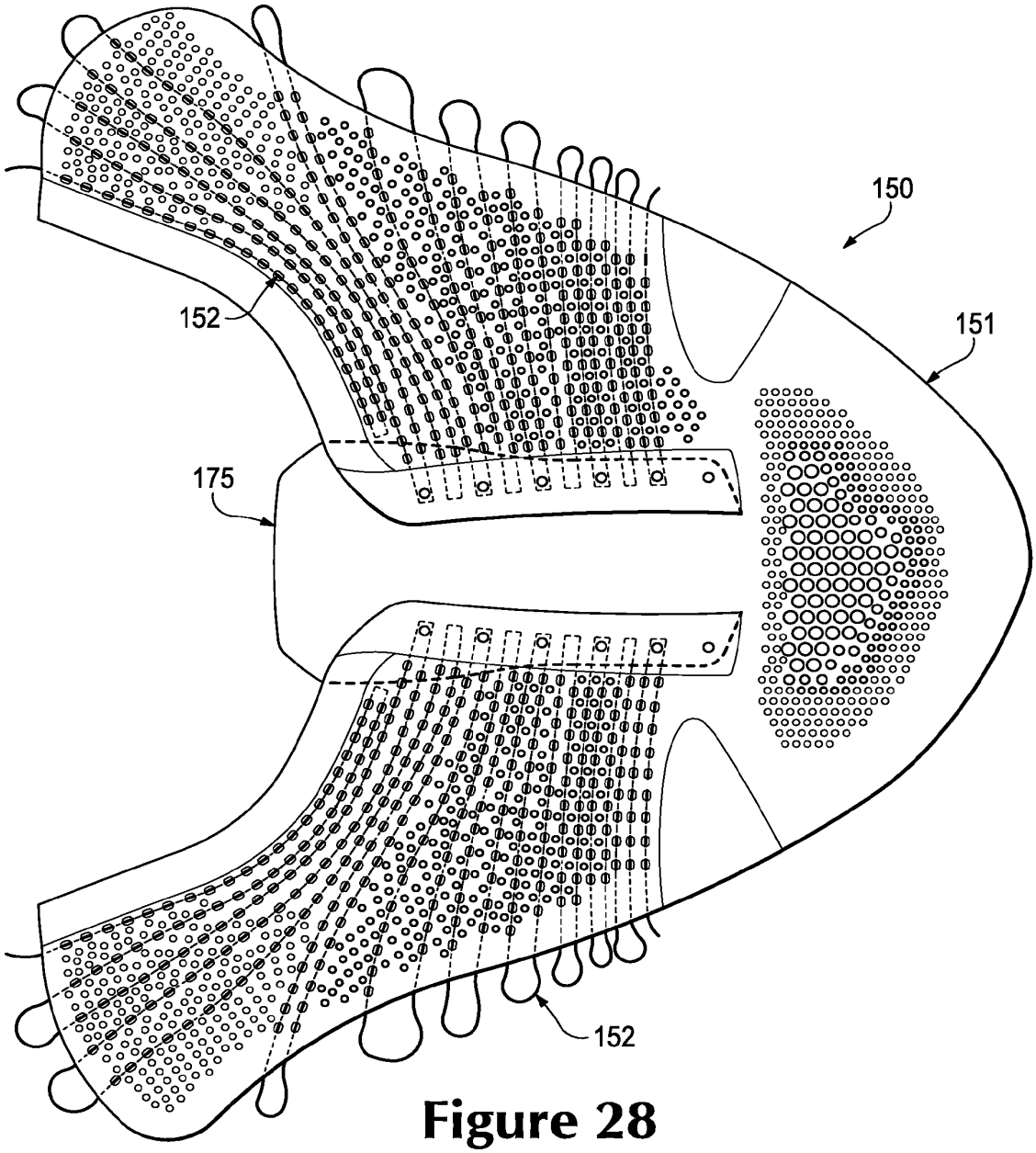



Figure 28

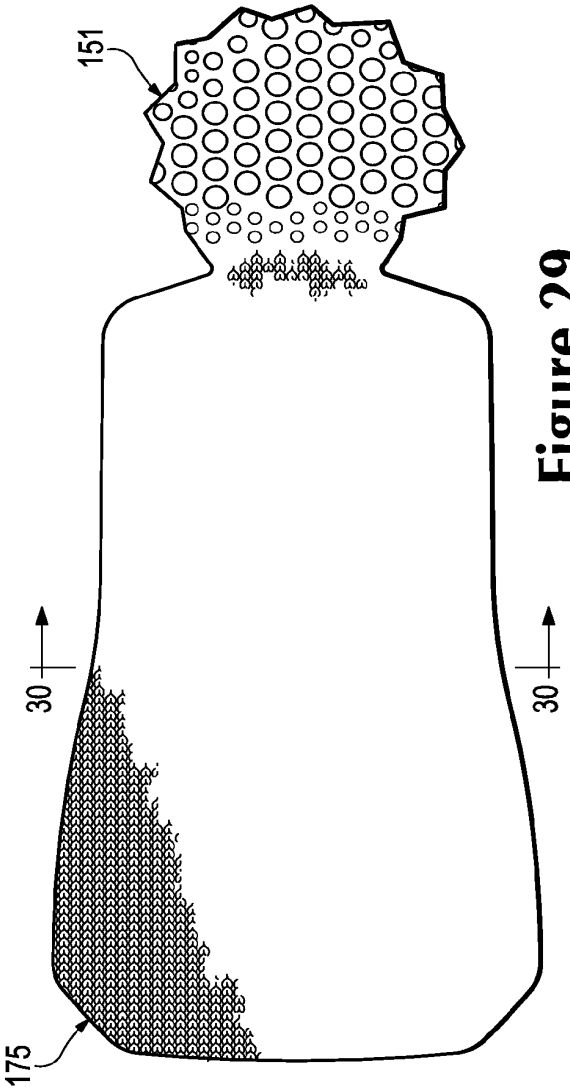



Figure 29

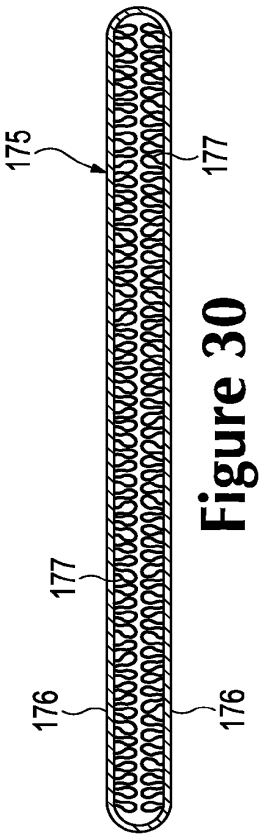



Figure 30

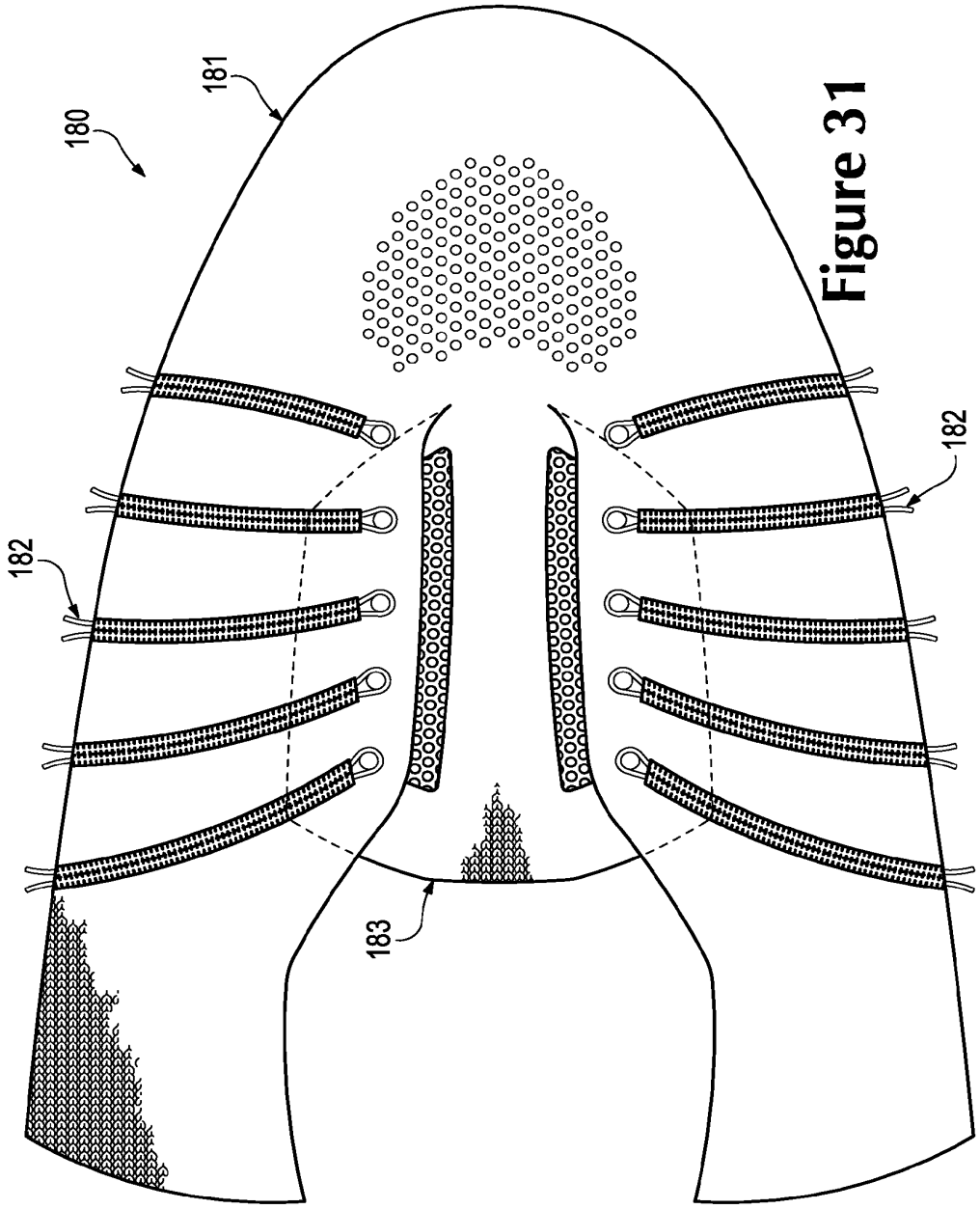



Figure 31

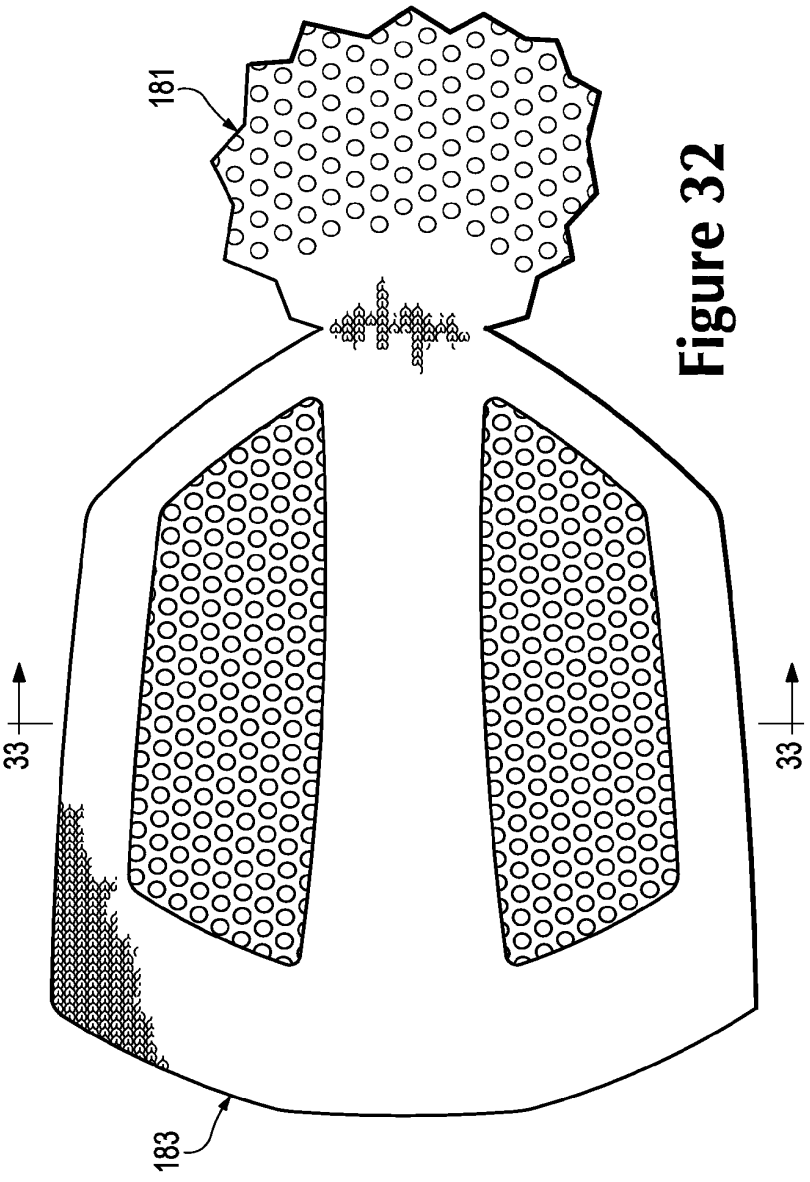



Figure 32

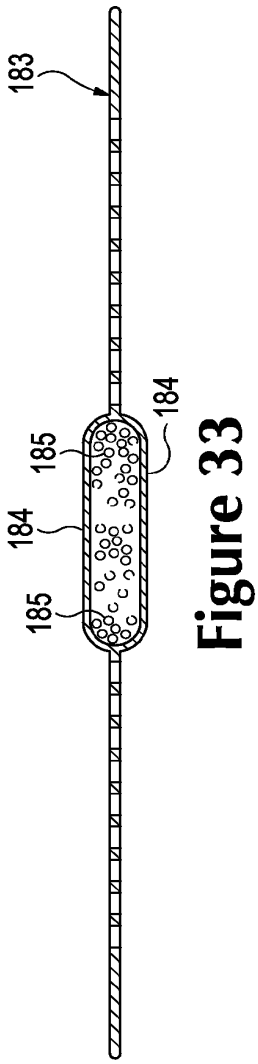



Figure 33

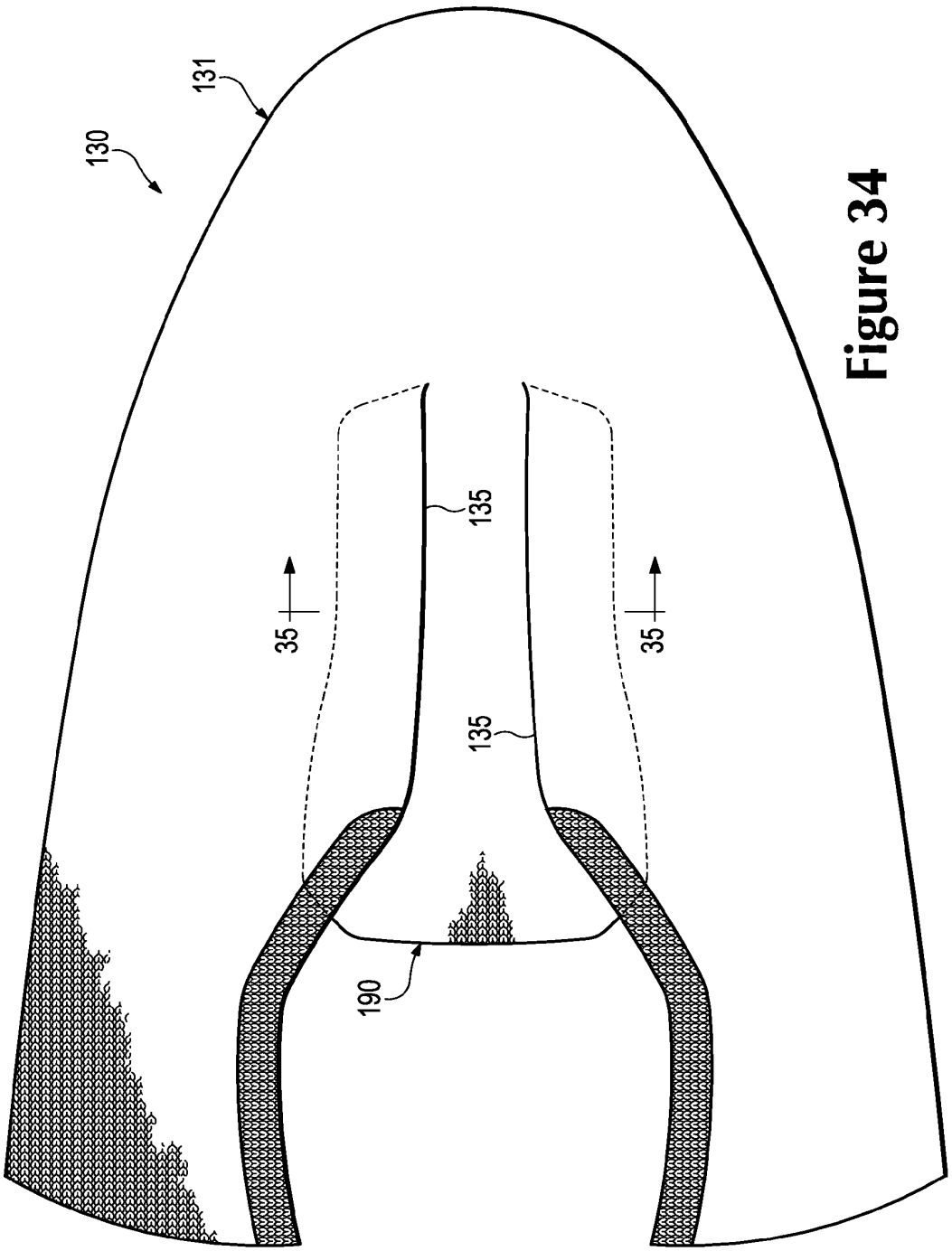



Figure 34

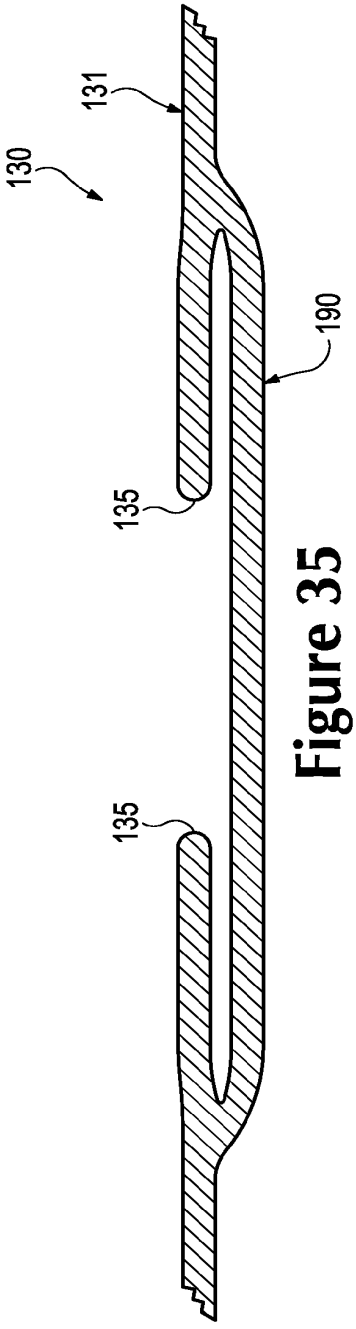



Figure 35

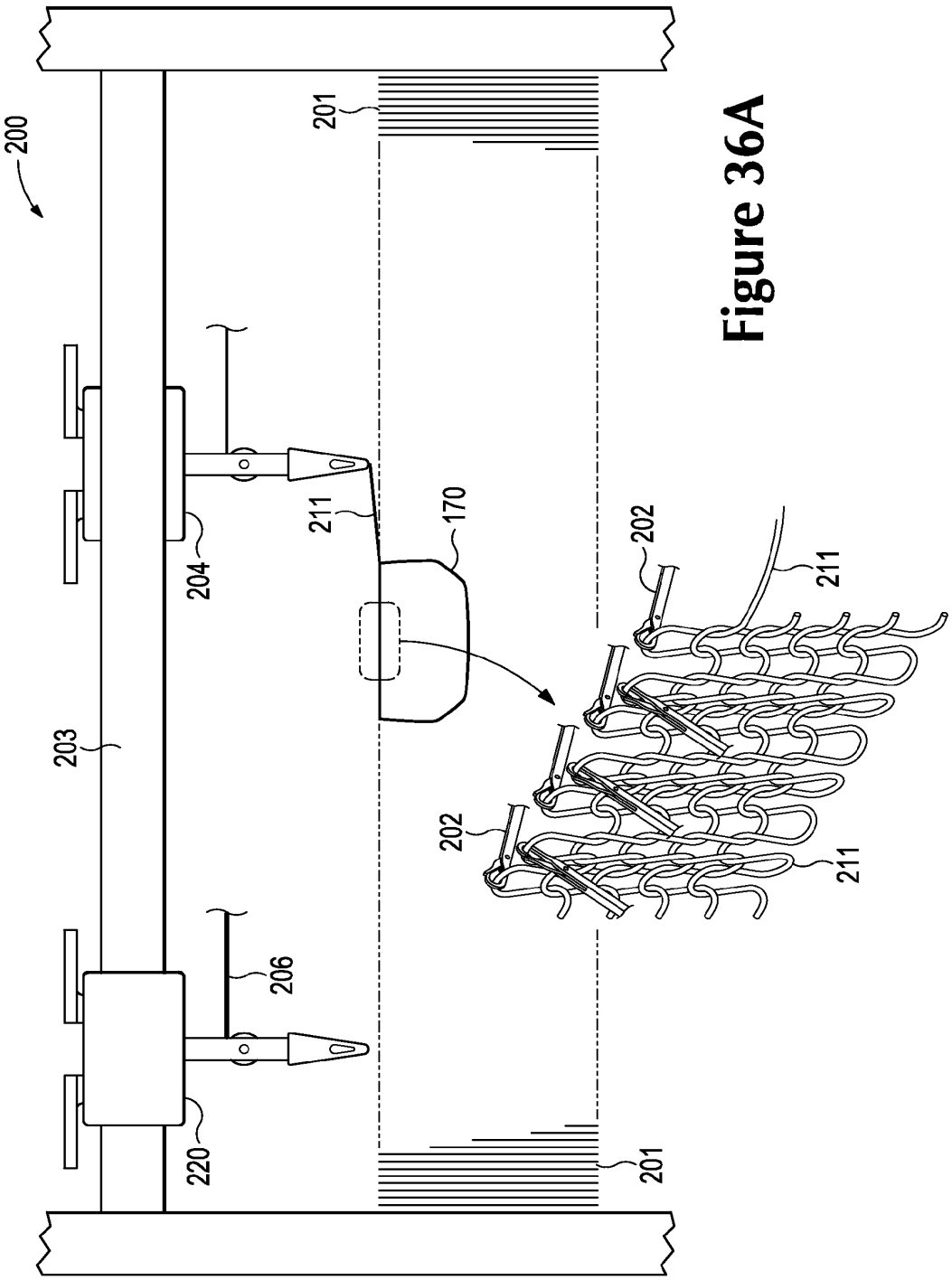



Figure 36A

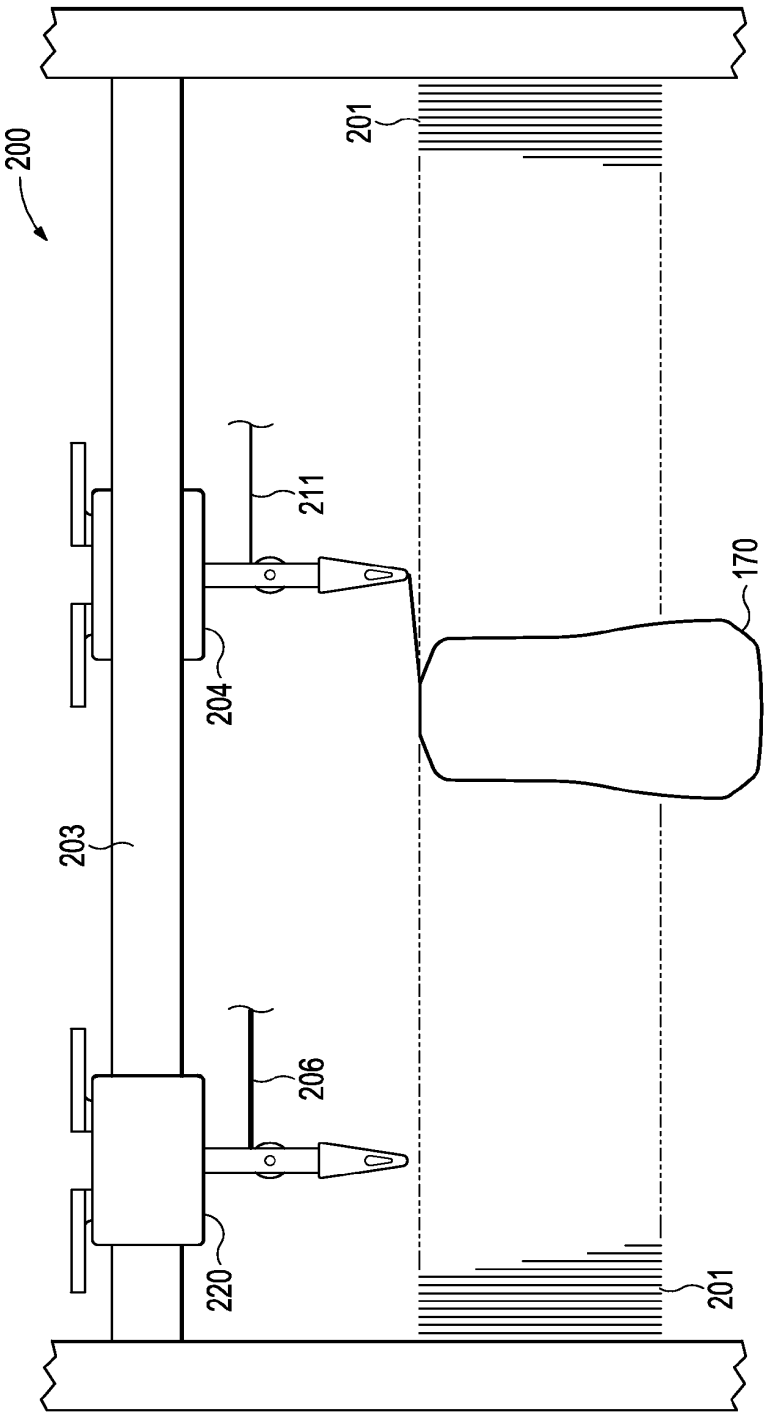



Figure 36B

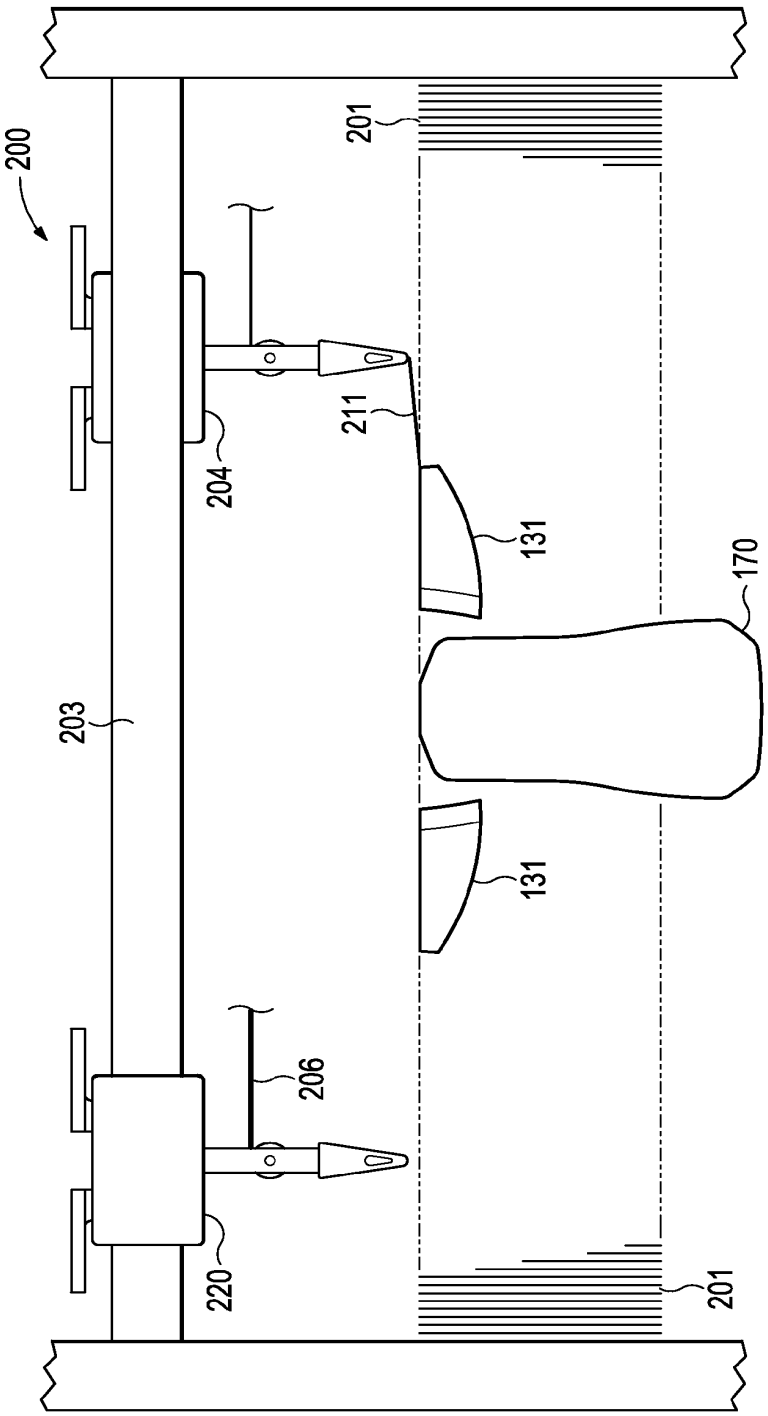



Figure 36C

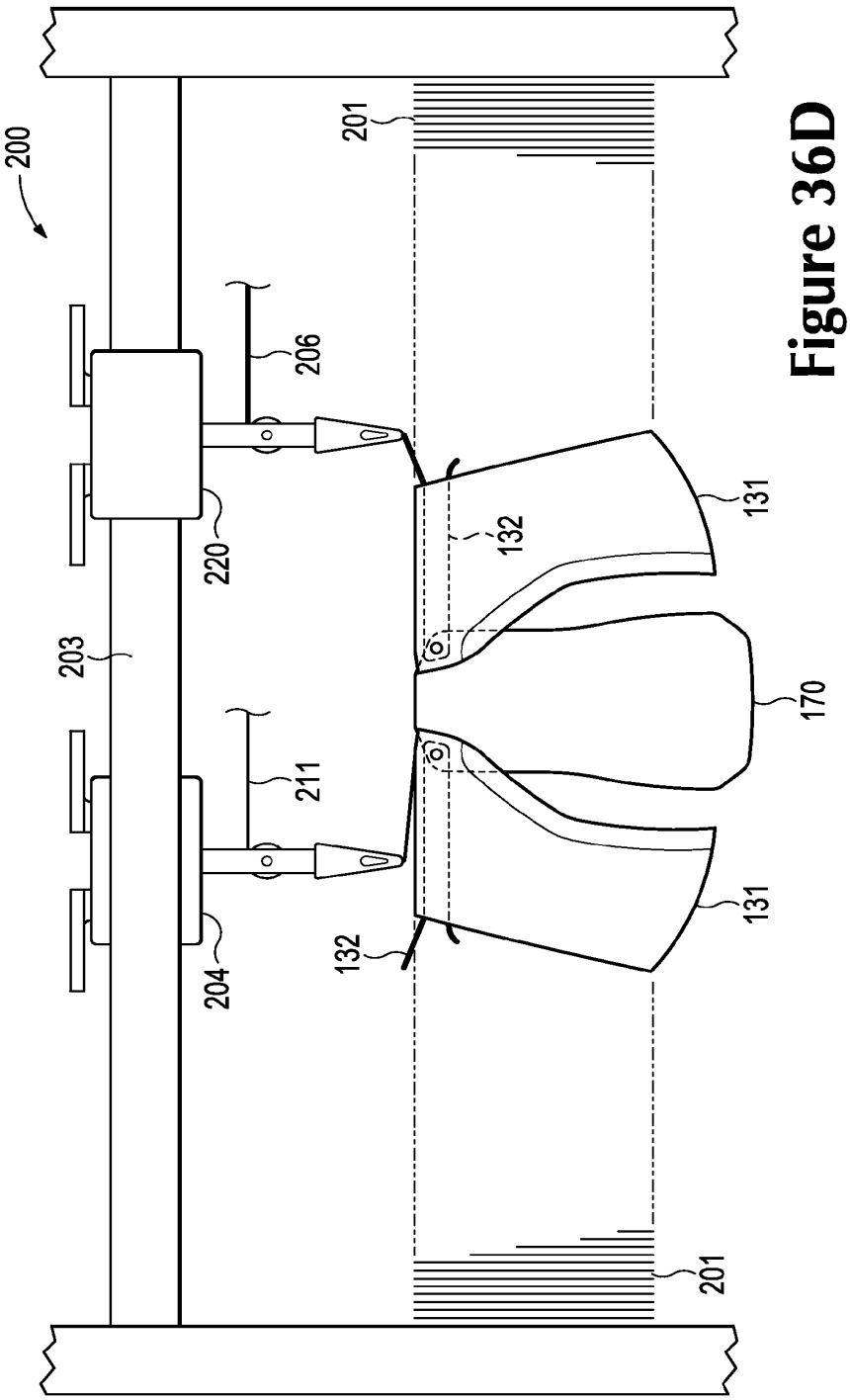



Figure 36D

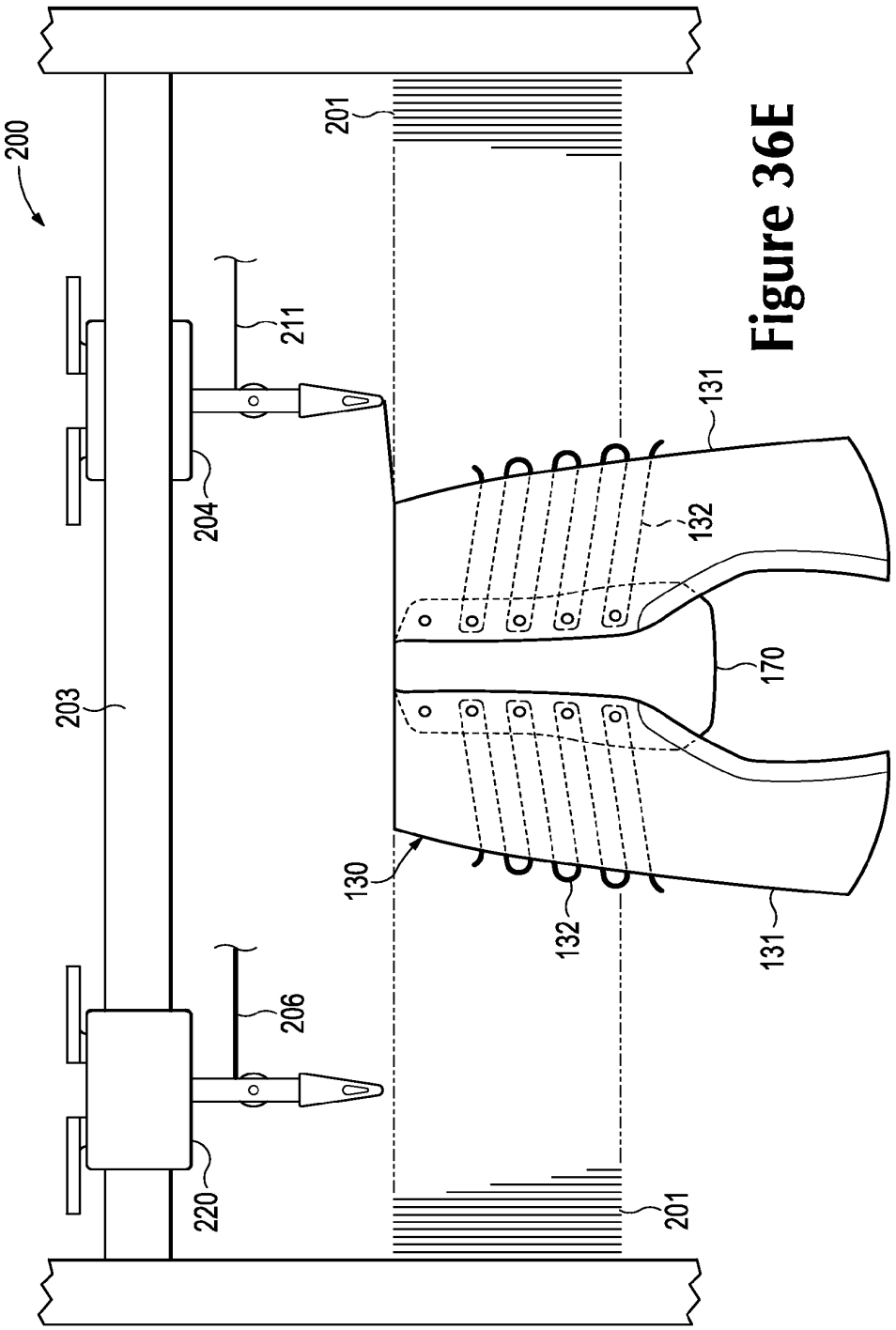



Figure 36E

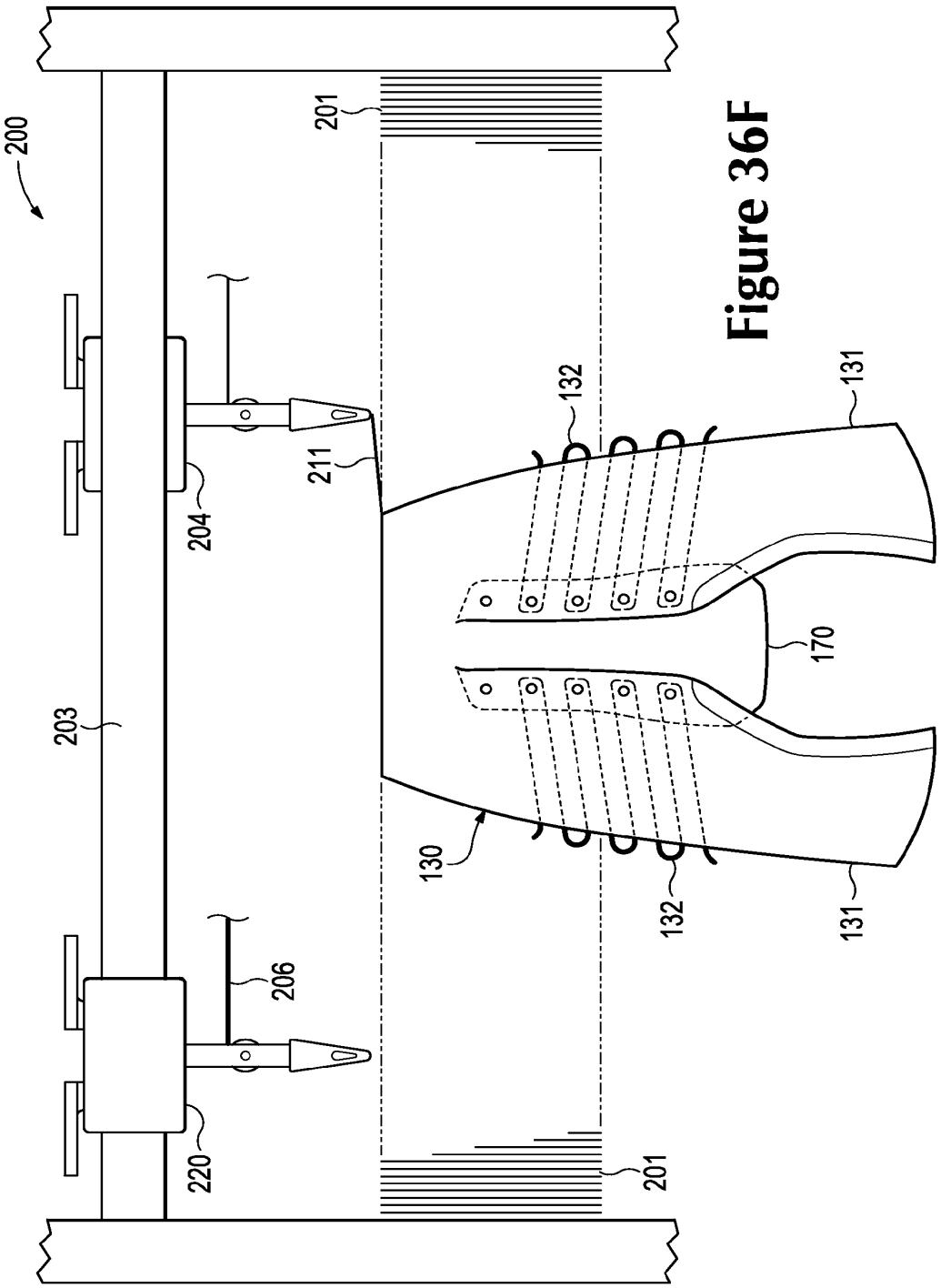



Figure 36F

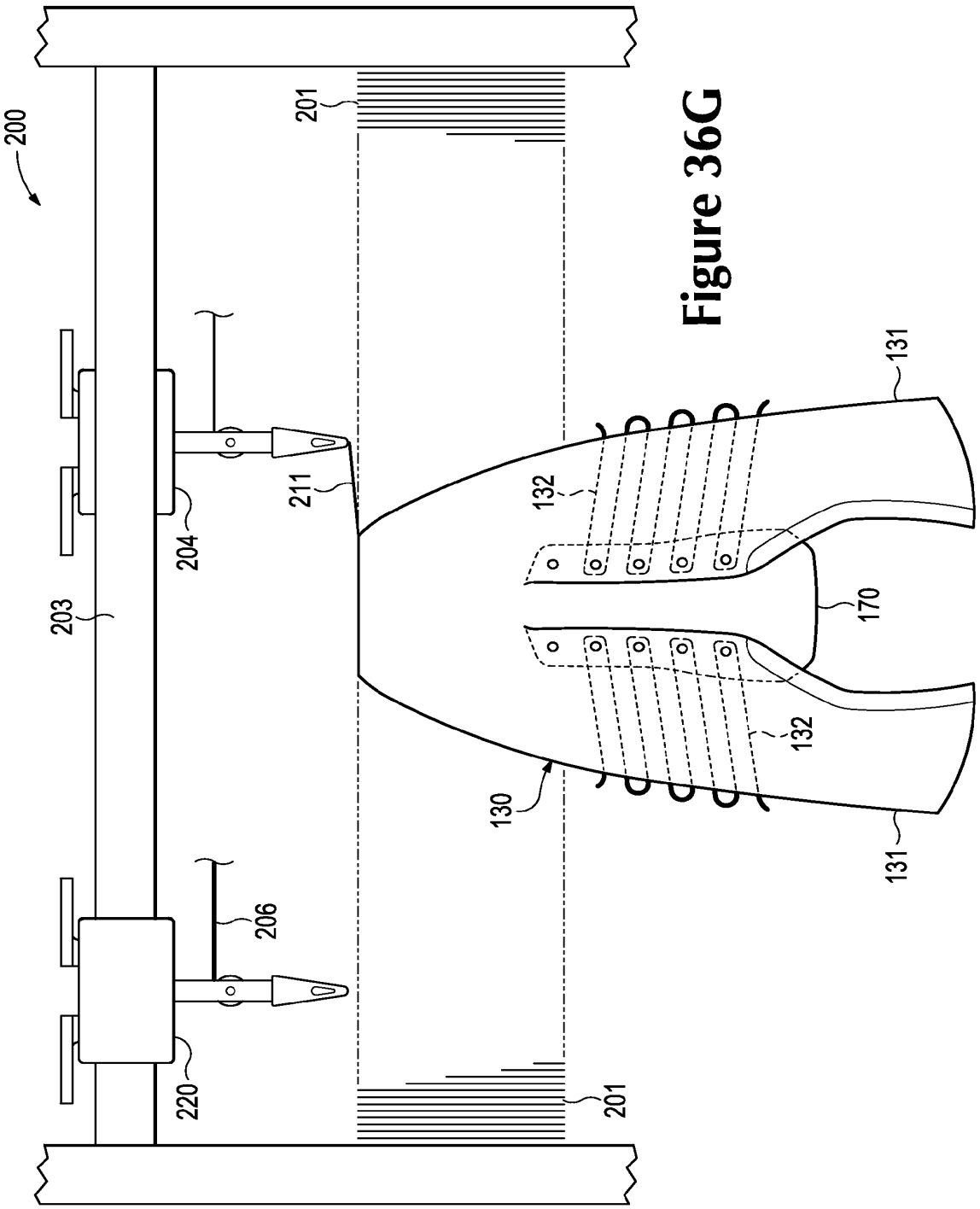



Figure 36G

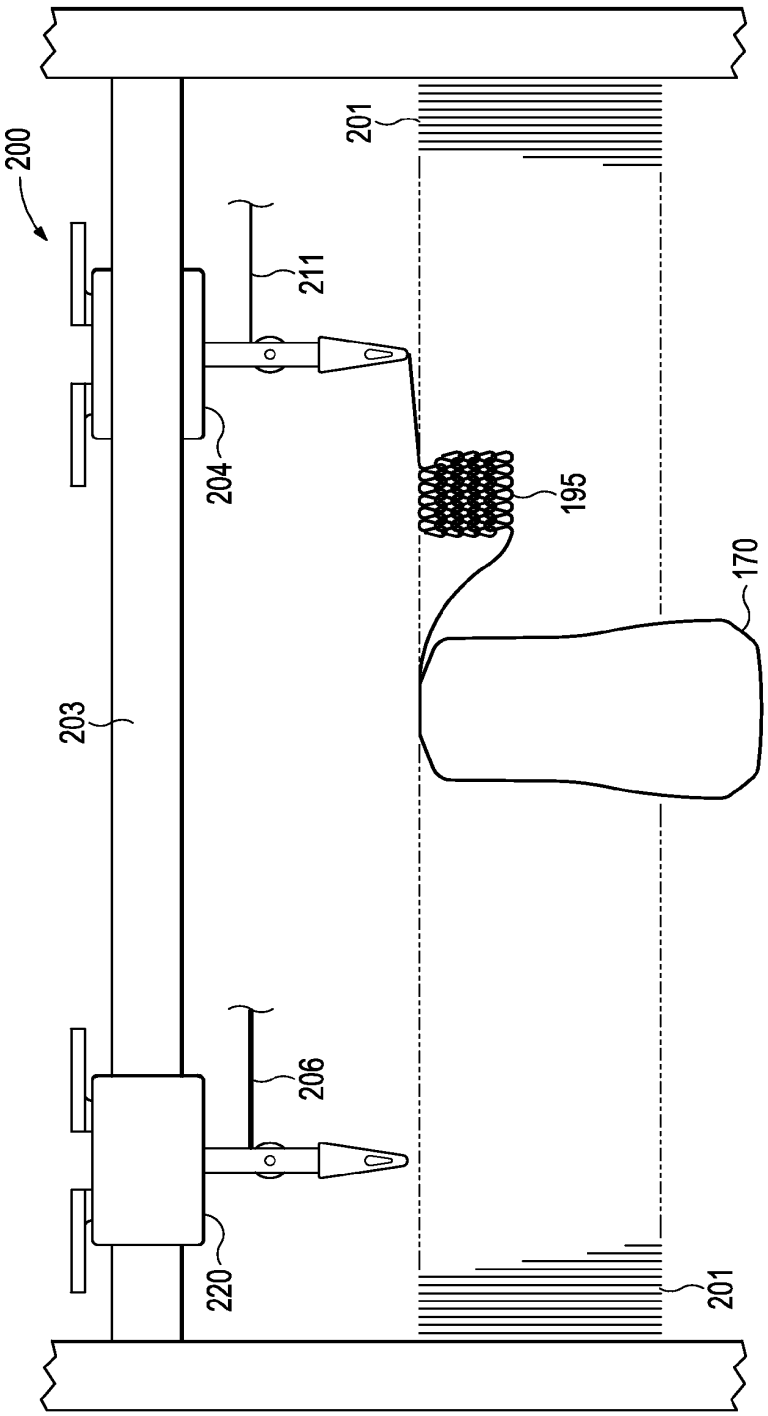



Figure 37

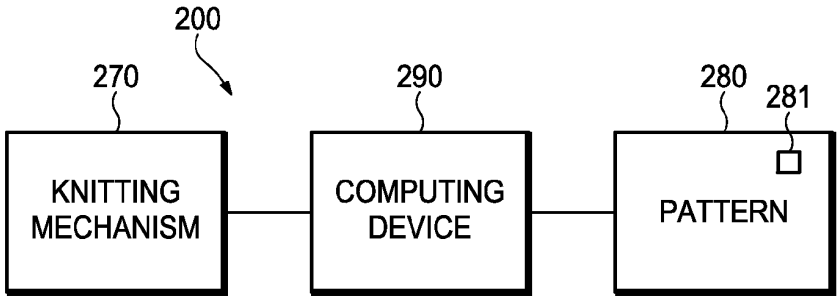

200
270
290
280
281
KNITTING MECHANISM
COMPUTING DEVICE
PATTERN

**Figure 38**

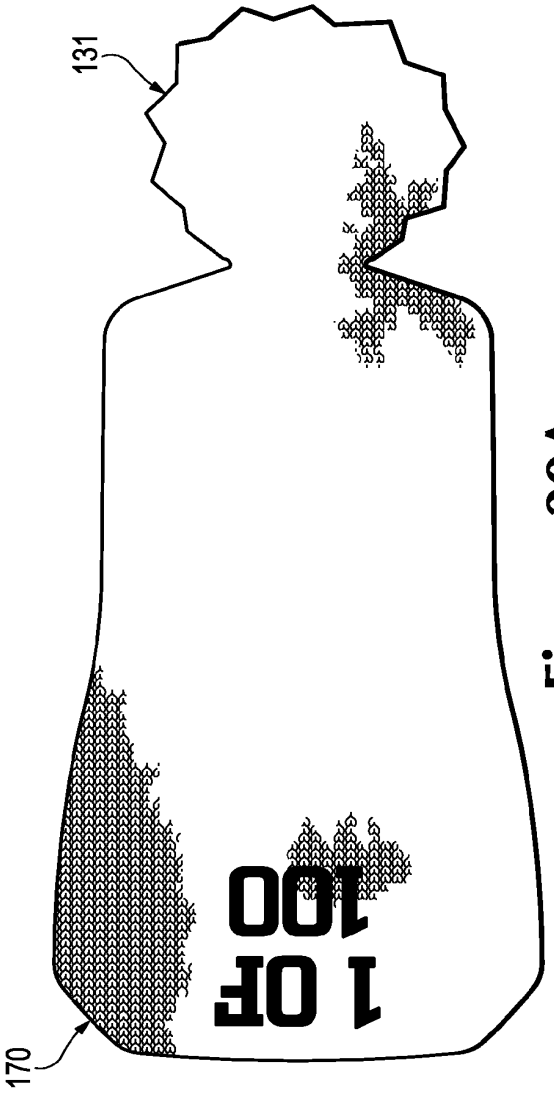



Figure 39A

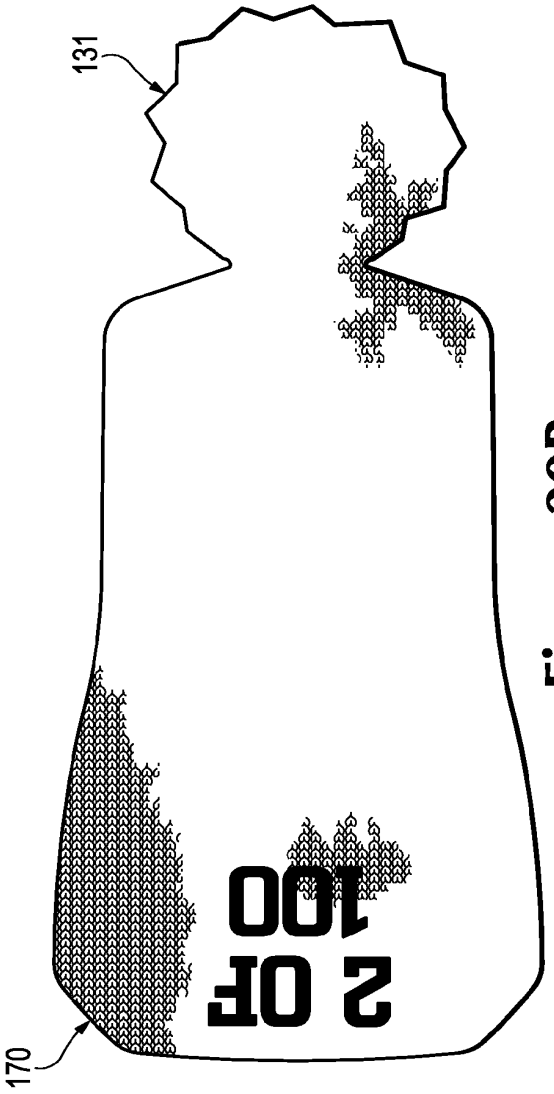



Figure 39B

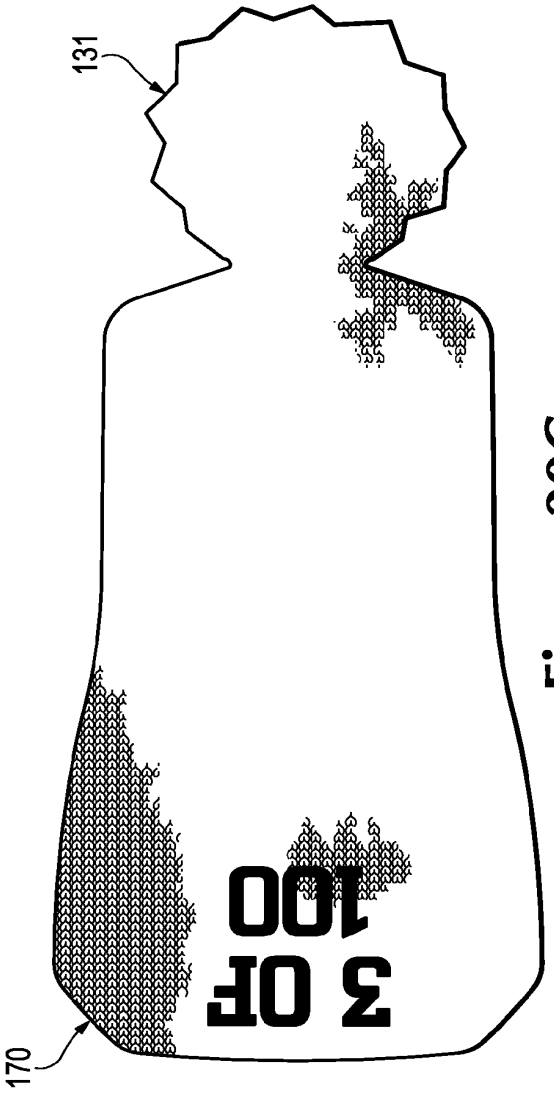



Figure 39C

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# PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
Gibson, Eric M.
PLUMSEA LAW GROUP, LLC
10411 Motor City Drive, Suite 320
Bethesda, MD 20817
ETATS-UNIS D'AMERIQUE

DOCKETED 6/24/2014
PDF MLA/YMT
ISR

## NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

| | |
|---|---|
| Applicant's or agent's file reference<br>51-3933 | Date of mailing *(day/month/year)*<br>20 June 2014 (20-06-2014)<br>**FOR FURTHER ACTION** See paragraphs 1 and 4 below |
| International application No.<br>PCT/US2014/018852 | International filing date *(day/month/year)*<br>27 February 2014 (27-02-2014) |
| Applicant<br>NIKE INTERNATIONAL LTD. | |

1. [X] The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

**Filing of amendments and statement under Article 19:**
The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

**When?** The time limit for filing such amendments is normally two months from the date of transmittal of the International Search Report.

**Where?** Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Fascimile No.: (41-22) 338.82.70

**For more detailed instructions, see *PCT Applicant's Guide*,** International Phase, paragraphs 9.004 - 9.011.

2. [ ] The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. [ ] **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

[ ] the protest together with the decision thereon has been transmitted to the International Bureau together with any request to forward the texts of both the protest and the decision thereon to the designated Offices.

[ ] no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. Following the expiration of 30 months from the priority date, these comments will also be made available to the public.

Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

| Name and mailing address of the International Searching Authority | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2<br>NL-2280 HV Rijswijk<br>Tel. (+31-70) 340-2040<br>Fax: (+31-70) 340-3016 | NYSTRöM-HANNACK, Anette<br>Tel: +49 (0)89 2399-6933 |

Form PCT/ISA/220 (July 2010)

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# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| Applicant's or agent's file reference | FOR FURTHER ACTION | see Form PCT/ISA/220 as well as, where applicable, item 5 below. |
|---|---|---|
| 51-3933 | | |
| International application No. | International filing date *(day/month/year)* | (Earliest) Priority Date *(day/month/year)* |
| PCT/US2014/018852 | 27 February 2014 (27-02-2014) | 28 February 2013 (28-02-2013) |
| Applicant | | |
| NIKE INTERNATIONAL LTD. | | |

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 4 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**
   a. With regard to the **language,** the international search was carried out on the basis of:
      [X] the international application in the language in which it was filed
      [ ] a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))
   b. [ ] This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).
   c. [ ] With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. [ ] **Certain claims were found unsearchable** (See Box No. II)

3. [ ] **Unity of invention is lacking** (see Box No III)

4. With regard to the **title,**
   [X] the text is approved as submitted by the applicant
   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**
   [X] the text is approved as submitted by the applicant
   [ ] the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings,**
   a. the figure of the **drawings** to be published with the abstract is Figure No. 20
      [X] as suggested by the applicant
      [ ] as selected by this Authority, because the applicant failed to suggest a figure
      [ ] as selected by this Authority, because this figure better characterizes the invention
   b. [ ] none of the figures is to be published with the abstract

Form PCT/ISA/210 (first sheet) (July 2009)

# INTERNATIONAL SEARCH REPORT

International application No
PCT/US2014/018852

A. CLASSIFICATION OF SUBJECT MATTER
INV. D04B1/24 A43B23/02
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
D04B A43B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | US 2005/193592 A1 (DUA BHUPESH [US] ET AL)<br>8 September 2005 (2005-09-08)<br><br>paragraph [0055] - paragraph [0057];<br>figures 8, 11 | 1-4,<br>8-14,<br>16-23 |
| X | US 2005/115284 A1 (DUA BHUPESH [US])<br>2 June 2005 (2005-06-02)<br><br>paragraph [0020] - paragraph [0031];<br>figure 1 | 1-4,<br>8-14,<br>16-23 |
| A | US 2004/118018 A1 (DUA BHUPESH [US])<br>24 June 2004 (2004-06-24)<br>paragraph [0062] - paragraph [0063];<br>figures 6A, 6B | 1-23 |

-/--

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 12 June 2014 | 20/06/2014 |

| Name and mailing address of the ISA/ | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040,<br>Fax: (+31-70) 340-3016 | Zirkler, Stefanie |

1

Form PCT/ISA/210 (second sheet) (April 2005)

# INTERNATIONAL SEARCH REPORT

International application No
PCT/US2014/018852

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X,P | WO 2013/126313 A2 (NIKE INTERNATIONAL LTD; TATLER DAREN P [US]; PODHAJNY DANIEL A [US]) 29 August 2013 (2013-08-29) the whole document | 1-23 |

1

Form PCT/ISA/210 (continuation of second sheet) (April 2005)

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2014/018852

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| US 2005193592 A1 | 08-09-2005 | CN 1925763 A | 07-03-2007 |
| | | CN 101756428 A | 30-06-2010 |
| | | TW I279198 B | 21-04-2007 |
| | | US 2005193592 A1 | 08-09-2005 |
| | | US 2008196181 A1 | 21-08-2008 |
| | | US 2010325916 A1 | 30-12-2010 |
| | | US 2012005922 A1 | 12-01-2012 |
| | | US 2012159813 A1 | 28-06-2012 |
| | | US 2014150294 A1 | 05-06-2014 |
| | | WO 2005092134 A1 | 06-10-2005 |
| US 2005115284 A1 | 02-06-2005 | US 6931762 B1 | 23-08-2005 |
| | | US 2005115284 A1 | 02-06-2005 |
| | | US 2006130359 A1 | 22-06-2006 |
| US 2004118018 A1 | 24-06-2004 | AT 448703 T | 15-12-2009 |
| | | AU 2003299627 A1 | 29-07-2004 |
| | | CA 2510558 A1 | 22-07-2004 |
| | | EP 1571938 A1 | 14-09-2005 |
| | | ES 2335988 T3 | 07-04-2010 |
| | | JP 4376792 B2 | 02-12-2009 |
| | | JP 2006511306 A | 06-04-2006 |
| | | US 2004118018 A1 | 24-06-2004 |
| | | WO 2004060093 A1 | 22-07-2004 |
| WO 2013126313 A2 | 29-08-2013 | TW 201402030 A | 16-01-2014 |
| | | US 8448474 B1 | 28-05-2013 |
| | | US 2013212907 A1 | 22-08-2013 |
| | | US 2014144190 A1 | 29-05-2014 |
| | | US 2014150296 A1 | 05-06-2014 |
| | | WO 2013126313 A2 | 29-08-2013 |

# PATENT COOPERATION TREATY

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INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

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## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43*bis*.1)

Date of mailing
*(day/month/year)* see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

**FOR FURTHER ACTION**
See paragraph 2 below

| International application No. | International filing date *(day/month/year)* | Priority date *(day/month/year)* |
|---|---|---|
| PCT/US2014/018852 | 27.02.2014 | 28.02.2013 |

International Patent Classification (IPC) or both national classification and IPC
INV. D04B1/24 A43B23/02

Applicant
NIKE INTERNATIONAL LTD.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notifed the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

| Name and mailing address of the ISA: | Date of completion of this opinion | Authorized Officer |
|---|---|---|
| European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0<br>Fax: +49 89 2399 - 4465 | see form PCT/ISA/210 | Zirkler, Stefanie<br>Telephone No. +49 89 2399-2056 |

Form PCT/ISA/237 (Cover Sheet) (July 2009)

**Box No. I Basis of the opinion**

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:

   a. (means)

      ☐ on paper

      ☐ in electronic form

   b. (time)

      ☐ in the international application as filed

      ☐ together with the international application in electronic form

      ☐ subsequently to this Authority for the purposes of search

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

**Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

| | | | |
|---|---|---|---|
| Novelty (N) | Yes: | Claims | 5-23 |
| | No: | Claims | 1-4 |
| Inventive step (IS) | Yes: | Claims | 5-7, 15 |
| | No: | Claims | 1-4, 8-14, 16-23 |
| Industrial applicability (IA) | Yes: | Claims | 1-23 |
| | No: | Claims | |

2. Citations and explanations

**see separate sheet**

**Box No. VI Certain documents cited**

1. Certain published documents (Rules 43*bis*.1 and 70.10)

   and / or

2. Non-written disclosures (Rules 43*bis*.1 and 70.9)

   **see form 210**

**Box No. VII Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

**see separate sheet**

**Box No. VIII Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**Re Item VIII**

**Certain observations on the international application**

1 **Claim 10** is not clear due to its back reference to claim 9 because claim 10 claims "*knitting the exterior surface of the first portion of the upper with the second feeder*" whereas claim 9 claims "*knitting the exterior surface of the first portion of the upper with the first feeder*".

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1 Reference is made to the following documents:

D1 US 2005/193592 A1

D2 US 2005/115284 A1

2 The present application does not meet the criteria of **Article 33(1) PCT** for the following reasons:

2.1 Documents D1 and D2 both disclose *a method of manufacturing a knitted component for an article of footwear (D1: Fig. 11; D2: Fig. 1), the method comprising:*

*knitting a portion of the knitted component defining an upper with a knitting machine, the upper including a portion of at least one of an exterior surface of the knitted component and an opposite interior surface of the knitted component* [note: it is assumed that any knitted component comprises an exterior and an interior surface]*; and*

*knitting an integral knit tongue* [claim 1 does not define what features differentiate this region from an instep section of documents D1 and D2 (see for example D2: Fig. 1(33)), especially as the "*integral knit tongue*" of claim 1 loses the features characteristic for a tongue by fixing it to all sides of the throat area] *that is of unitary knit construction with the upper with the knitting machine, the integral knit tongue extending through a throat area of the knitted component; and*

*wherein the integral knit tongue is joined by knitting with the knitting machine to a forward portion of the throat area and at least along a portion of a lateral side and a medial side of the throat area of the knitted component extending from the forward portion to an ankle opening of the upper (D1: Fig. 11; D2: Fig. 1 (33)).*

**Hence, the subject-matter of claim 1 is not new (Articles 33(1) and 33(2) PCT).**

2.2 The subject-matter of independent claim 8 differs from that of claim 1 in that it further defines that a first portion of an upper is knitted using a first feeder, a second portion of the upper is knitted using a second feeder and the integral knit tongue is knitted using at least one of these two feeders.

According to D2 ([0023]) "*upper 30 is formed primarily from multiple yarns that are mechanically manipulated through an interloping process to produce a unitary structure having various sections with different physical properties.*"

Although, this does not explicitly disclose the usage of a first feeder for a first section and a second feeder for a second section and one of those two for the instep section a person skilled in the art would without the exercise of inventive skill derive this configuration from the disclosure of D2.

**Hence, the subject-matter of claim 8 does not involve an inventive step (Articles 33(1) and 33(3) PCT).**

2.3 The subject-matter of independent claim 16 differs from that of claim 8 in that the integral knitted tongue is not knitted using one of the first and second feeder but an additional third feeder.

**Hence, the subject-matter of claim 16 does not involve an inventive step** for the reasons already given for claim 8 **(Articles 33(1) and 33(3) PCT).**

2.4 **Dependent claims 2 to 4, 9 to 14 and 17 to 23** do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (**Articles 33(1), 33(2) and 33(3) PCT**), as the additional features of these claims are either already disclosed in D1 and D2 or are merely straightforward possibilities suggested by these documents so that the skilled person would select them, in accordance with the circumstances, without the exercise of inventive skill, in order to solve the respective problem posed.

3 The combination of the features of **dependent claims 5 to 7 and 15** is neither known from, nor rendered obvious by, the available prior art as none of these documents discloses or even suggests to add a "*free portion*" to the "*integral knit tongue*".

## Re Item VI

### Certain documents cited

| Application No | Publication date *(dd/mm/yyyy)* | Filing date *(dd/mm/yyyy)* | Priority date *(dd/mm/yyyy)* |
|---|---|---|---|
| PCT/US2013/026618 | 29/08/2013 | 19/02/2013 | 20/02/2012 |

## Re Item VII

### Certain defects in the international application

1 The independent claims are not in the two-part form in accordance with **Rule 6.3(b) PCT**.

2 The features of the claims are not provided with reference signs placed in parentheses (**Rule 6.2(b) PCT**).

3 Contrary to the requirements of **Rule 5.1(a)(ii) PCT**, the relevant background art disclosed in documents D1 to D4 is not mentioned in the description, nor are these documents identified therein.

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 19504471 |
| **Application Number:** | 13781525 |
| **International Application Number:** | |
| **Confirmation Number:** | 7689 |
| **Title of Invention:** | Article Of Footwear Incorporating A Knitted Component With An Integral Knit Tongue |
| **First Named Inventor/Applicant Name:** | Bhupesh Dua |
| **Customer Number:** | 57618 |
| **Filer:** | Eric M. Gibson/Jose Espejo |
| **Filer Authorized By:** | Eric M. Gibson |
| **Attorney Docket Number:** | 51-3209 |
| **Receipt Date:** | 07-JUL-2014 |
| **Filing Date:** | 28-FEB-2013 |
| **Time Stamp:** | 14:53:42 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | no |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Information Disclosure Statement (IDS) Form (SB08) | 2014-07-07_51-3209_IDS.pdf | 28567<br>f738c2f1a19a048fd2182c94f49292dbb3e02faa | no | 3 |

| | |
|---|---|
| **Warnings:** | |
| **Information:** | |

| This is not an USPTO supplied IDS fillable form | | | | | |
|---|---|---|---|---|---|
| 2 | Foreign Reference | 2014-07-07_51-3209_IDS_WO2013126313A2.pdf | 4331204<br>804156f6062c6ff537dd33bf0fc8e903758f6413 | no | 125 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 3 | Non Patent Literature | 2014-07-07_51-3209_IDS_ISR.pdf | 666931<br>c4074a10a45c0baa500ea82d654acc3228bff737 | no | 11 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | **Total Files Size (in bytes):** | 5026702 | | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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| **INFORMATION DISCLOSURE STATEMENT BY APPLICANT** ( **Not for submission under 37 CFR 1.99)** | | |
|---|---|---|
| | Application Number | 13781525 |
| | Filing Date | 2013-02-28 |
| | First Named Inventor | Bhupesh Dua |
| | Art Unit | 3765 |
| | Examiner Name | Larry D. Worrell Jr. |
| | Attorney Docket Number | 51-3209 |

| **U.S.PATENTS** | | | | | | |
|---|---|---|---|---|---|---|
| Examiner Initial* | Cite No | Patent Number | Kind Code[1] | Issue Date | Name of Patentee or Applicant of cited Document | Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear |
| | 1 | | | | | |
| If you wish to add additional U.S. Patent citation information please click the Add button. | | | | | | |

| **U.S.PATENT APPLICATION PUBLICATIONS** | | | | | | |
|---|---|---|---|---|---|---|
| Examiner Initial* | Cite No | Publication Number | Kind Code[1] | Publication Date | Name of Patentee or Applicant of cited Document | Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear |
| | 1 | | | | | |
| If you wish to add additional U.S. Published Application citation information please click the Add button. | | | | | | |

| **FOREIGN PATENT DOCUMENTS** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Examiner Initial* | Cite No | Foreign Document Number[3] | Country Code[2] i | Kind Code[4] | Publication Date | Name of Patentee or Applicant of cited Document | Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear | T[5] |
| | 1 | | | | | | | ☐ |
| If you wish to add additional Foreign Patent Document citation information please click the Add button | | | | | | | | |

| **NON-PATENT LITERATURE DOCUMENTS** | | | |
|---|---|---|---|
| Examiner Initials* | Cite No | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published. | T[5] |

| INFORMATION DISCLOSURE STATEMENT BY APPLICANT ( Not for submission under 37 CFR 1.99) | | |
|---|---|---|
| | Application Number | 13781525 |
| | Filing Date | 2013-02-28 |
| | First Named Inventor | Bhupesh Dua |
| | Art Unit | 3765 |
| | Examiner Name | Larry D. Worrell Jr. |
| | Attorney Docket Number | 51-3209 |

| | | | |
|---|---|---|---|
| | 1 | Letter from Bruce Huffa dated December 23, 2013 (71 Pages). | ☐ |

If you wish to add additional non-patent literature document citation information please click the Add button

**EXAMINER SIGNATURE**

| Examiner Signature | | Date Considered | |
|---|---|---|---|

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

| INFORMATION DISCLOSURE STATEMENT BY APPLICANT ( Not for submission under 37 CFR 1.99) | | |
|---|---|---|
| | Application Number | 13781525 |
| | Filing Date | 2013-02-28 |
| | First Named Inventor | Bhupesh Dua |
| | Art Unit | 3765 |
| | Examiner Name | Larry D. Worrell Jr. |
| | Attorney Docket Number | 51-3209 |

**CERTIFICATION STATEMENT**

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

**OR**

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

**SIGNATURE**

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

| Signature | /Eric M. Gibson/ | Date (YYYY-MM-DD) | 2014-08-01 |
|---|---|---|---|
| Name/Print | Eric M. Gibson | Registration Number | 59,058 |

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Fabdesigns, Inc.
4963 Haskell Avenue
Encino, CA 91436
Re: Update as requested 12/12/13

December 23, 2013

Dear Patty Hong,

Enclosed your will find the updates to the patents that you've sent me to review. We sincerely value our continued relationship with Nike. As I stated, much of these goes against our mutual NDA signed on June 1, 2013 and presses to force our own IP into markets that we did not agree to purposely and would not agree to now.

We are giving Nike notice that this is not acceptable, nor permitted under our mutual NDA.

We'd like a response to these patent revisions within 30 days as to how they will be correct. We also request that the patent 8490299 be corrected, which I have continuously protested since the moment I learned of it and notified Nike legal promptly well before it was granted.

I'd also like full copies of previous patents that my name was attached to though I was never given anything more than the front page and the US application page. I would like to know what Nike claims I invented.

I have been extremely patient, forthcoming, and accommodating to everything Nike has ever requested.

If I don't hear from you or your office, I'm assuming that you are filing without my signature or permission to use my IP in complete contradiction to the mutual NDA of June 2010, and will need to take other actions which I should not have to.

Sincerely,



Bruce Huffa

RECEIVED
DEC 24 2013
PLUMSEA LAW GROUP

Fabdesigns, Inc.
4963 Haskell Avenue
Encino, CA 91436
Re: Update as requested 12/12/13

December 23, 2013

Dear Patty Hong,

Thank you for sending the current batch of patents.

We sincerely value our continued relationship with Nike. I'm having several issues with signing the agreement pages of these documents as there are many items with them that are not true, and some cases we can not support complete inaccuracies. **(See below 'Notes on Agreements page)** Face pages are fine.

From Agreements Page 1:

> NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, WE, the aforesaid, Daniel A. Podhajny and Bruce Huffa, by these presents do confirm that We did (under the law of the jurisdiction(s) where the invention was conceived, reduced to practice and made, under the NIKE Employee Invention and Secrecy Agreement and/or under some other agreement with NIKE, Inc. including such a sale, assignment or transfer) sell, assign and transfer or, if not already done so, do sell, assign and transfer unto NIKE, Inc., its successors, legal representatives and assigns, the full, exclusive and worldwide right in and to said invention as described in said application, in and to the aforesaid application and in and to any Patents, Design Registrations, Industrial Models, Industrial

**Concerns about preexisting knowledge:**

We have no problem supporting Nike for defending the Flyknit. The fact is we created it from nothing Nike had existing and worked diligently 40 hours weekly at Nike premises to make it happen, as well as contributed much outside efforts and knowledge that Nike did not pay for. The know how and techniques all had to come from somewhere else – outside Nike, predating our relationship with Nike, and that somewhere was our previous experience, education, extreme expertise in fully fashioned manufacturing processes, and in many cases from our own studio resources and on our own time, and out of our own pockets.

However, the wording in these agreement documents also appears to use our technology, know-how, and library against us, to limit us beyond footwear and into other markets on many of these patents, stating that we developed them <u>at Nike</u>, and agree to sell, assign, and transfer our techniques for creating fabrics in just about every industry, and this is not something we would support. We respectfully and specifically cite our Mutual NDA Agreement / Service Agreement signed by Bruce Kilgore of Nike, Bruce Huffa of Fabdesigns, Inc., effective June 1, 2010, section 4.1. And these depart significantly from what we agree our IP would be used for on a royalty free basis as described deliverables in the 'Schedule A – deliverables section' of the same agreement. We did not agree to Nike patenting our IP into other industries, nor preventing us from transacting our normal engineering practice.

We drew on our own know how, machine builder's libraries, existing stitch technology, our mechanical, electronic, and machine knowledge to make that functional design happen for Nike's team and with very little, if any assistance from Nike team members. As I showed you on my own computer, I built many of these stitch techniques, most of which do NOT exist in the sweater

industry where the current Nike Knit team came from, but in the technical textile knitting world, and left it in the computer system as a palette of techniques that not only used previously as building blocks, but also to draw on for NEW shoe designs. Many of these stitch techniques I am now seeing identified as 'inventions'. Many of these are not NEW to the technical knitting industry and many are my own working short cuts and techniques that I incorporated into the designs to create efficiencies and faster production times. Having others claim them, is not OK.

I am very much a humble person, but the simple fact is that there would be no Nike Flyknit shoe without the outside, off the clock contributions we made that were not part of the paid for performance of services per our Services Agreement for 40 hours per week and were incorporated into Nike's products. We're concerned that some of these patents, specifically 51-3279 are reaching beyond the specific footwear scope we carved out in this Services Agreements and into our other business areas. **(See notes below)**

**Concerns about transferring work that was not paid for hire on anything other than the royalty free use basis as we'd previously signed & agreed for footwear only:**
We have no desire to sell, assign, or transfer our know-how and library forever more to Nike in all these other business areas, especially for items where we did much of this work on our own time, with our own resources, and without compensation or collaboration from Nike. Much of this has been our working stitch library of techniques for many years prior to our relationship with Nike. We will need your help to find some other wording that is agreeable and appropriate for the true circumstances of how some of these items from our own IP, and from efforts we undertook in our own time, with our own resources, and without any compensation from Nike, came into the possession of Nike's knit team, and subsequently to your desk to patent.

When you visited, if you learned anything about us, we hope it was that we have complete integrity, are transparent, loyal, and will do what we can to help defend Nike in a professional capacity in regards to these technical claims. We have not discussed any of these issues outside of Nike, and you their law team, nor have we disputed anything with the U.S. Patent office, as we are hoping to resolve some of these issues to both Nike's education as to what the ripple effect of these over reaching patents may incite in the industry, Nike's education of the technical knitting industry, and the IP protection of both their interests and ours, and in maintaining a unified front in combating potential knock offs and infringers in the footwear industry that could potentially erode Nike's Flyknit platform. We have been, are, and intend to remain loyal to this commitment.

We understand that there is still a valid part of the 2010 mutual NDA in place and that Nike is using the work I completed in my own time, without Nike resources, as well as certain information I left there, on the royalty free basis discussed in the 2010 NDA Agreement specifically for shoes– <u>not</u> for exclusive use in patenting for other markets without my permission and certainly not for other employees to sift through and attach their names. We were very specific with Nike in our agreements that our IP and royalty free use of our developments that Nike did not pay for was for footwear use ONLY. You speak of this 'duty to Nike' that we have. This is a two way street per our <u>mutual</u> NDA. Nike also has a duty to protect our own IP we left there for Nike to incorporate into its' products.

We have been knitting complex projects as a livelihood for several decades and strongly object to Nike using the IP that we left behind, and the technical concepts, swatches, parts and ideas that we developed on our own time, with our own resources - royalty free for anything other than shoes. 'Shoes only', footwear, was our agreement from the beginning of our Nike relationship and specified in our 2008 agreement for testing the machinery over the course of 6 months, as

well as the 2010 agreement. We also strongly object to Nike patenting any techniques or IP that we used prior to our Nike relationship or that was brought in as a demonstration of our capabilities, and that of the machines. This includes apparel patents we've seen filed.

The fact is that I contributed many innovations to Nike that I created on my own time and without any compensation, collaboration, or Nike resources, but agreed that Nike can use royalty free if input into Nike shoe products – specific footwear products defined in our "June 1, 2013mutual NDA – Schedule A Deliverables". This IP is for royalty free us in basketball, training and soccer products ONLY. The referenced 'dress shoes, hiking boots, et al.' do not comply with our agreement. Any use in footwear products, or ANY products other than those defined in our mutual agreement without permission of Fabdesigns, Inc. is not acceptable.

1. **Description of Services & Deliverables.**

Throughout the term of this Agreement, Contractor will provide the following Services and Deliverables to NIKE:

- Execute the commercialization and successful launch of the Flyknit Racer III for the SPRING '13 season.
- Demonstrate that knitting as an effective method of making basketball, training, and soccer products. Products must meet or exceed current performance standards. It is expected that this will drive a new (unique) visual presentation of NIKE products.

The IP, knowledge and know-how that I owned prior falls under protection of the June 2010 mutual NDA, which states that Nike gets to use the parts and techniques that I incorporated into its' products royalty free in these SPECIFIC products – **not** that Nike gets exclusive use anywhere they want as these docs you've asked me to sign state. Signing these documents would negate my 2010 mutual NDA, and I have no interest in doing so.

**Concerns about work that was not done on the Nike clock:**
In most cases new idea items needed to be in a physical format and placed in front of Bhupesh to garner any attention from Nike. That meant I **had** to do them outside of the P.O. system and on my own time at my expense on speculation that Nike might like the idea. Neither Fabdesigns, Inc. nor I personally was compensated in any way for any hours, ideas, resources, or out of pocket expenses beyond the well spelled out 40 hour weekly budget and project goals, which were executed exclusively on Nike premises. **(See 'example' below)**

As you saw yourself at my studio, I have meticulous documentation of my hours and what was accomplished each week as progress was inspected and supervised by Bhupesh Dua. It was required by Bhupesh to substantiate the P.O.'s and every dollar of invoicing.

I worked on these **(51-3214, 51-3279)** and many other knit projects not related to the Flyknit that you may or may not have seen yet, all in my own time, on my own machinery, and without Nike resources.

I have received no other 'valuable consideration' for my time, resources or efforts on these items that I started and completed on my own time with my own resources. This includes the original idea for inlay cables, and the original ideas, designs for the combination feeder and the resulting cable inlay application, a soccer ball liner and many other contributions I brought into Nike from my Los Angeles knitting studio and were incorporated into its' products.

I have not asked Nike for one penny beyond what Nike paid on invoicing the completed P.O.'s, as Bhupesh would not consider it, even at the time.

Therefore, I will not sign a document stating that I received 'valuable consideration' for my time, resources or efforts on these items, and that I am further agreeing to selling, assigning and transferring to Nike based on this supposed 'received valuable consideration' and in direct opposition to the NDA's signed by Nike and Fabdesigns, Inc.

**Concerns about the current Nike Knit Team use of our IP:**
We also made it clear to you and Eric Gibson, that we have no problem defending Nike's valid claims, and that to do so we felt it additionally imperative to Nike's success, that these new people on the Nike knit team need to be educated as to what patents are; the difference between patents and copyrights; the difference between functional and design patents; what inventors truly are, and what is a valid claim. Some of them have no formal textile degree; others have only high school or less education. One was only a knitter (machine operator), and we see his name listed on patents, which I created years prior, yet I am the bottom name – and an after thought at that.

I have also had to put up with other people claiming my prior IP and my off site engineering work as their own, the very work I did on my own time, with no Nike resources, and at considerable personal financial sacrifice, not a gain – and all which also would be subject to the mutual NDA we signed with Nike, effective June 1, 2010.

As part of our duty as flat knitting experts loyal to Nike, and per the documents that you've previously required us to sign in order to execute that duty, we feel it is our onus to alert you to these items:

Many of these new fabrication claims existed well before these new people joined Nike or are already public domain prior to even my relationship with Nike. Many are possible and have been commercially available with other types of inlay feeders. These people came from sweaters and of course some or all of this may be new to them, but not everything is new to everyone else in the world. It appears to us that this is a patent frenzy directed toward the flat knitting industry, with people perhaps more eager to get their names recorded on Nike patents, and reach into industries and markets and fabrications to which they have limited or no knowledge and experience, than to validate that there is a legitimate innovation or claim for footwear. Many of them should already know many of these fabrics and techniques as already being in existence. We've been using them for years in many other industries.
**(See notes on 51-3279)**

Just because some technology is new to them or to Nike, does not make it patentable. It would be Embarrassing for us to be called as expert witnesses to defend Nike under these circumstances, yet that seems to be our duty to Nike. There are already many prominent industry experts who have spoken out in trade forums about these public domain type patents that Nike is claiming for knits, including a truly generic one for a 'weft knitted shoe'. In all sincerity, some of these items should be copyrights on designs or design patents solely for footwear at best, because of how long the stitches have been in public domain, and are considered essential building blocks of the already existing markets, towards which some of these claims are being extended.

**Concerns regarding inclusion of previous Nike patents – Pre- June 2008 – making Nike vulnerable to challenge**
It is my professional opinion and that of Fabdesigns, Inc. that the technology for this shoe platform is completely different than anything in footwear that has come before it.

Citing sock technology, previous thermoplastic fusible patents, and previous pieced cut and sew weft knit patents that are general, generic, and based on 20, 30 50 year old technology and older

is muddying the Flyknit platform in our opinion and creating a situation where Nike is an easy target for challenge. These previous patents do not belong in the functional patents of the Nike Flyknit. They may be better suited to cite for design patents.

- The Flyknit technology that I built for Nike uses a unitary, integrated structure for the upper.
- The upper is the structure of the shoe.
- The fusible technology is completely different and does not incorporate any of the previous patent technology except for the actual WORD fusible. I built a special digitally manipulated and strategically placed STEAM fusible adhesive that is distributed in specific ways at the yarn/ fiber level and also to which the density of the fusible is distributed in a controlled manner.
- This platform does not use sock technology what so ever, nor any circular knitting. Why is it here at all?
- All previous knit technology known to Nike was completely disregarded by me and thrown to the side as dated, sweater/apparel based, and already in use somewhere. This platform is a completely new and modern 3 D flat knitting technology that no one at Nike had intimate nor hands on knowledge of. It had NEVER been applied to shoes, which we know of. It would be much easier to defend and protect than using 20 year old and older technologies that many others have used and can prove have been used.
- At the time this project commenced, in spring of 2008, the two people at Nike that we've spoken to Bhupesh Dua and Ed Thomas, admittedly had limited knowledge of knitting and barely any hands on experience. Their basis for the sock and previous patents appears to be the dated technology that they've learned at college and through the industry – things that have already been released to public domain. Most were apparel based technology. These dated technical positions are very difficult to defend. Both Ed and Bhupesh had tried with every expert they knew to create a knitted shoe, including Ed's former professor at Philadelphia University, who also taught my wife. With all their sincere efforts, only a sock format was achieved in 9 years of work.
- A line should have been drawn as a clean break in technology, not to use and cite old technology and irrelevant patents in this new platform FOR FUNCTIONAL PATENTS as it creates complications that paint a huge target on Nike, inviting challenge.
- We also feel that a robust IP defense to this Flyknit platform for footwear should include both Design patents and copyrights on all shoes that were produced in development at Nike. This may have prevented the alleged leaks we discussed when you were here, and the existence of a competitive product now directly challenging Nike's Flyknit.
- The design patents could include these old technologies if Nike so choses, that would be their place to connect the IP thread.

**Future:**
We absolutely will continue to cooperate with Nike and help defend the Nike Flyknit. However, we can not support this new, seemingly aggressive activity to patent the obvious without officially alerting you. We feel we cannot state that we are selling, assigning and transferring things that are public domain, and in so doing, also thwart our livelihood and how we and thousands of others have made a living in engineering 3 D flat knitted textiles for more than thirty years, as the wording currently written into these agreement documents makes clear. Our signed agreement with Nike is to focus on footwear applications, where we feel in our professional opinion, much of these techniques have been lacking.

I hope you understand my reluctance and my opinion that this 'agreement document' attached to these patents is obviously not acceptable to me as written, nor true, and we as a company can not support this agreement document 'as is'. Doing so would limit our right to work in the industry we have since 1978.

This is the first time I have seen full copies of patents that have been submitted to me for a signature. Previously I have only seen the "Inventor Acknowledgements page" and the "Utility Patent Application", both requiring a signature, but I have never been given the patent to review the claims in advance of them being filed. I have also been the very last person to see them – the afterthought – when I am clearly the inventor of this technology and should be lead on many of them. Given what I'm reading in these, I will submit this batch to you and, will request copies of previous patents to review to know exactly what Nike claims that I invented. I've trusted Nike's technical judgment, but after reading these that are fraught with inaccuracies, bad terminology and reaching into other product categories, beyond footwear, that would be subject to my 2010 NDA, I have concerns about what my name and reputation is actually attached to.
If I find any errors, I trust that they would be addressed and corrected for both Nike's defense of the IP and my own.

You will need to find better wording that is more appropriate to the mutual NDA situation and agreeable to both Nike and me, considering what my family, my company and I were put through for the benefit of Nike's knit platform. I imagine there will be many more of these patents and my body of work at Nike was substantial beyond the 60 or more structural shoe designs you saw. Wording will be important to us. We want this to be positive for both of us, as well as the foundation of the Flyknit to be solid and not built on a house of cards or manufactured claims that would do both Nike, me, and Fabdesigns, Inc. harm in the industry.

4.2 NIKE Property. Except as provided in Section 4.1, NIKE will own all intellectual property rights that are included in or created in connection with the Deliverables or Services (collectively, the "Developments") including, without limitation (the "Developments"): (a) all inventions, ideas, developments, designs, methods, know how, or other discoveries, whether or not patentable; (b) all works of authorship fixed in a tangible medium of expression; (c) any word, slogan, symbol, character or sound to be used to identify products or services of NIKE or its affiliates; and (d) any list, database or other commercially valuable assembly of information; and (e) all adaptations, modifications, and derivative works of any of the above. To the extent any Developments qualify under applicable law, they will be "works made for hire." To the extent they do not qualify as "works made for hire," Contractor assigns to NIKE exclusively all present and future right, title and interest in and to the Developments. Upon NIKE's request and at NIKE's cost, Contractor will execute and deliver to NIKE all documents necessary to perfect NIKE's right, title and interest in and to each Development, both domestically and abroad. In addition, Contractor will require all of its employees, subcontractors, and agents engaged in the provision of Services under this Agreement to execute appropriate agreements to (i) ensure that those individuals do not have ownership claims in the Developments and (ii) require those individuals to cooperate with Contractor and NIKE to perfect NIKE's right, title and interest in and to each Development, both domestically and abroad.

I have every intention of performing my duty to defend Nike's Flyknit footwear platform, and cooperate. I have gone through these patents as you requested and done a general scan. Line by line would take longer, as would the due diligence that should be spent on several of these items which are most concerning. In completing this general scan and providing you with 5 to 20 minutes of research per concern, I have spent to date 63 hours of my time providing Nike with its' request.

**"Upon Nike's request and at Nike's cost Contractor will execute and deliver to Nike all documents necessary to perfect Nike's right, title and interest in each Development. . . "** per my mutual NDA agreement from 2010.

This represents $18,900 of value in my consultation time, not including the visit you and Eric Gibson made in August. (63 hours X $300/hr). $300/hr is my normal and reasonable rate for every client I currently serve that requires expert flat knitting expertise. Kinko's billed me for 640 pages to copy all these so that I might mark them up and highlight. So, for this effort and in future ($18,900 / 640 pages= $29.53), such reviews can be expected to cost the average of $29.50 per page to review, plus any applicable admin fees and shipping.

Nowhere in any of the documents I have, does is state that I must provide all this additional time to Nike at no charge. This is my busiest time of year. I take my commitment to Nike very seriously, and have lost significant revenue in accommodating your requests. I would request also that in future you send a digital copy along with the paper copy to save time and resources.

I also recommend that upon reading my report, that Nike designate a significant amount of due diligence be addressed to investigation of these claims in advance of both filing them and in submitting them to me for review. I believe an ounce of prevention will be worth a pound of cure in defending Nike against the easy challenges some of these claims pose in risks to Nike.

Sincerely,
Bruce Huffa BHQ 12/23/13

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Here are my report comments:
Note: examples given in this report are 5, 10, 20 minutes of a limited research scope and do not represent an exhaustive search or the suggested due diligence to validate. At this moment these are provided for demonstration purposes only, given my time constraints.

**Agreements page: 51-3214, 51-3279.**

- This is the first time I have ever see this 'agreement page' on any patent I've signed for Nike.
- In the case of: 51-3214, 51-3279, 51-3345, 51-3723, these items were created in my own time, and at my own expense with 'no valuable consideration' or reimbursement for my time or resources.
- I was not an employee of Nike, but subject to a Services Consulting arrangement from March 2008 that cover only 40 hours of my time on Nike premises for specific weekly goals. A second agreement in June 2010 contained a revised Service contract/Mutual NDA with a flat rate, lease for my equipment and an end strategy of a written job offer. We respectfully and specifically cite schedule A of our Mutual NDA Agreement / Service Agreement signed by Bruce Kilgore of Nike, Bruce Huffa of Fabdesigns, Inc., effective June 1, 2010, and section 4.1.
- I am very much a humble person, but the simple fact is that the Nike Flyknit shoe was born out of financial subsidizing of those efforts by Fabdesigns, Inc., in contributing our own IP which was preexisting, created on our own time, and with our own resources.
- Contract: The knit shoe project was supposedly a temporary 3 month project, 6 months at most, to fit into the down/slow time of our apparel manufacturing business in 2008.
    - Payment terms spelled out at $80/hr per service hour at 40 hours per week; created on March 8, 2008 and signed by Bhupesh Dua.

| | |
|---|---|
| NIKE, Inc. One Bowerman Drive Beaverton, OR 97005-6453 USA Phone: 503-671-6453 Fax: 503-671-6300 Attn: Nancy Diamond - Legal Department Bhupesh Das | Fabdesigns, Inc. 4963 Haskell Avenue Encino, CA 91436 Phone: 818-784-6767 Fax: 818-784-6729 Attn: Bruce Huffa |
| By: Bhupesh Das | By: |
| Name: BHUPESH DAS | Name: Bruce Huffa |
| Title: Sr. MATERIALS RESEARCH | Title: President |
| Date: March 19, 2008 | Date: March 19, 2008 |

- The Services Agreement was intended for a very limited budget and scope project to last no more than 6 months, at the end of which, this contract was supposed to terminate, and I would go back to my business in Los Angeles.

- The agreement actually describes the relationship with Nike and Stoll America and what their relationship encompasses. Fabdesigns, Inc is a third party, hired to assist Nike in evaluating the suitability of the machine to create a knitted shoe concept, to reach a decision to commit to Stoll for a machine or not.

- Fabdesigns, Inc and Bruce Huffa is a third party to this relationship.

- The Services Agreement was set up solely for me / Bruce Huffa to help Nike as an independent third party, to set up, teach, test and evaluate the Stoll machine for Nike's desire to create a knitted shoe, and perform other related services as agreed during the term of the agreement. This required me to test the machine in Germany for Bhupesh before it was delivered to IHM. The term of this agreement was 120 days and stated nothing about working for Nike 24/7 and giving everything I developed on and off the clock to Nike or anything about giving Nike all the former knowledge, know how and techniques that I had accumulated prior to the relationship, for Nike to patent.

- The scope of this agreement never anticipated a long term relationship, that governed IP or important related topics that should have been/ would have been included beyond the expected 6 month relationship that would and did culminate with the decision sale or leasing of the machinery to Nike, by Stoll America.

NIKE and Stoll America Knitting Machinery, Inc. ("Stoll") have entered into, or intend to enter into, one or more agreements by which Stoll will provide to NIKE certain knitting equipment, accessories, and associated software. CONTRACTOR will assist NIKE in setting up, learning, testing and evaluating the Stoll equipment, and to perform such other related services as the Parties may agree to during the Term of this Agreement (the "Services").

- The relationship between Fabdesigns, Inc and Nike was not intended to endure past the testing and evaluation of the machinery phase. Nor was any product development or engineering service beyond the 6 month machinery evaluation period anticipated or accommodated. The relationship for this evaluation ended as planned.
- At the same time, the other option Nike explored was that if the evaluation proved successful, and Nike saw promise in the knit platform, Nike intended to

extend a job offer to me as a full time employee at $150K on E band as head of their knitting program. I was told they were initiating with this project as the kick off of such a program. In any event, the 6 month time frame to evaluate the machinery was the planned limit of the relationship between Fabdesigns, Inc. / Bruce Huffa described in this contract. A change of relationship status was planned and acted on within the planned time frame.

## Services Agreement

This Services Agreement ("Agreement") is between NIKE, Inc., an Oregon corporation with its principal place of business at One Bowerman Drive, Beaverton, OR 97005-6453, on behalf of itself and its affiliated businesses ("NIKE"), and Fabdesigns, Inc., with its principal place of business at 4963 Haskell Avenue, Encino, CA 91436 on behalf of itself and its owners ("CONTRACTOR"). In this Agreement, NIKE and CONTRACTOR may be referred to individually as "a Party" and collectively as "the Parties."

This Agreement is effective as of the 8th day of March, 2008 ("the Effective Date").

NIKE and Stoll America Knitting Machinery, Inc. ("Stoll") have entered into, or intend to enter into, one or more agreements by which Stoll will provide to NIKE certain knitting equipment, accessories, and associated software. CONTRACTOR will assist NIKE in setting up, learning, testing and evaluating the Stoll equipment, and to perform such other related services as the Parties may agree to during the Term of this Agreement (the "Services").

**1. Commencement of Services.**

1.1 CONTRACTOR will commence providing the Services on March 31, 2008, or as soon thereafter as possible. All technicians familiar with Stoll equipment ("Technician" or "Technicians") proposed by CONTRACTOR to provide Services must be approved by NIKE before providing Services. Prior to performing the Services, any Technician performing Services must execute and deliver to NIKE the Technician Agreement attached to this Agreement as Exhibit A, the terms of which are hereby incorporated into and made a part of this Agreement.

1.2 A Technician will spend between two and four weeks at Stoll's facilities in Germany to receive specialized training on the Stoll equipment that will be used by NIKE. This training will be considered part of the Services.

1.3 It is understood and agreed that some Services may be provided at CONTRACTOR's premises using CONTRACTOR's facilities, material or equipment. NIKE has no obligation to pay for use of such facilities, material or equipment.

1.4 CONTRACTOR will provide 40 hours per week of Services at times and locations mutually agreed by the Parties.

1.5 In its sole discretion, NIKE may reject a proposed Technician, or terminate continued Services by a Technician at any time, and for any or no reason.

**2. Fees and Expenses.**

2.1 All payment and reimbursement under this Agreement will be in U.S. dollars.

2.2 As full payment for the Services, NIKE will pay CONTRACTOR $3,200 per week based on CONTRACTOR providing not less than 40 hours of Services during the week. Should less than 40 hours of Services be provided in a given week, the payment for the Services provided during that week will be computed based on the following formula: number of hours of Services provided for the week ÷ 40 x $3,200

2.3 CONTRACTOR will invoice NIKE for Services every two weeks. CONTRACTOR's invoice will contain a description, and the number of hours, of Services provided each day. Payment of uncontested invoice amounts will be made by NIKE within thirty (30) days after receipt of CONTRACTOR's invoice.

2.4 In addition to the payment for Services, NIKE will reimburse CONTRACTOR at actual cost (without mark-up or additional fees) only for the following categories of expenses incurred in furtherance of performing the Services. Except for the expenses described below, and any expenses subsequently approved by NIKE in advance in writing, CONTRACTOR will bear its own expenses in connection with providing the Services. Unless subsequently pre-approved in writing, NIKE will only reimburse CONTRACTOR for the following expenses: coach airfare (domestic and overseas), lodging (including any pre-approved hotel room and taxes, but not phone or other charges to the room), $75(US) per diem charge while at Stoll's German facilities, and local transportation (rental car, taxi). NIKE, at its option, either will reimburse CONTRACTOR for such expenses in accordance with NIKE's travel reimbursement policies, or will make arrangements and payments directly to the provider. Any request for reimbursement must be properly documented by CONTRACTOR.

3. Term.

3.1 Unless terminated earlier as set out in this Section 3, the Term of this Agreement starts when the CONTRACTOR begins performing Services for NIKE and it will expire when CONTRACTOR ceases performing the Services.

3.2 NIKE may terminate this Agreement at any time, for any or no reason, immediately upon written notice to CONTRACTOR. Within 30 days prior written notice, CONTRACTOR may terminate this Agreement at any time, for any and no reason, after ninety (90) days following successful completion of the training at Stoll's German facilities. Should CONTRACTOR terminate this Agreement prematurely, or should NIKE terminate this Agreement within 120 days from the Effective Date on account of CONTRACTOR's material breach of this Agreement, then CONTRACTOR will reimburse $7,500 to NIKE as compensation for the training received by CONTRACTOR at Stoll's German facilities.

3.3 In the event of a failure of CONTRACTOR to perform the Services to NIKE's satisfaction, then NIKE may terminate this Agreement immediately.

3.4 In the event NIKE fails to make timely payments or reimbursement as required under this Agreement, CONTRACTOR will give NIKE written notice of such failure with not less than five business days in which to effect cure. In the event NIKE fails to timely cure, then CONTRACTOR, at its sole option, may suspend performance of the Services or terminate the Agreement without further notice and without any financial obligation to NIKE.

4. General Provisions.

4.1 No Publicity. CONTRACTOR shall not disclose to any third party the existence of this Agreement or the monetary value of this Agreement. Without limiting the generality of the foregoing, CONTRACTOR shall not (i) make any public announcement regarding its association with NIKE; or (ii) use NIKE's name, any NIKE trademarks, or any content in which NIKE holds a copyright, or in any client list or other promotional materials, activities, or publications.

4.2 Independent Contractor. Nothing herein creates or is intended to create any employment



**(I'm sure Nike legal have the full document. We can supply if you need it)**

- Under this contract, for the first couple of billing cycles in Beaverton, I invoiced Nike for the 40 hours on site and the significant extra hours that I applied to this knit shoe project for Nike, plus my travel time to and from Beaverton from Los

Angeles. I was subsequently told by Bhupesh that I was eating his budget up faster than he expected. Going forward, Nike would only authorize 40 hours per week of hourly compensation for only the 4 ten hour days per week on premises – Monday through Thursday. These hours were supervised project work in house at IHM & then Mia Hamm on the knit shoe efforts as per strict directive of Bhupesh Dua for accounting for project progress weekly. I invoiced accordingly on the P.O. directives from Bhupesh to work on only what he agreed to, and received payment for 40 hours only. Given this was short-term; I felt my company and I could endure the reduced income temporarily.

- My actual work week for Nike during this contract averaged 60 to 75 hours or more to achieve the initial shoe– so I could deliver what they needed and go back to my apparel business. Per our agreement of March 2008, and Bhupesh's directive, Nike would not pay beyond the 40 hours. This was because of the extensive travel to different time zones and Bhupesh's concerns that test swatches out of his supervision could not be anticipated in terms of limiting the time and budget. He wanted one bill and Nike paid by check on invoice.
- Several weeks later towards the end of my six months, I'd been working on ways to reinforce knitted apparel fabrics in my studio. The first thing I thought of was using fusible thread. I pulled a cone off my shelf to take it with me on Monday. I had a secondary idea of creating a thicker yarn structure, and as the machine was running I was noting the timing and spacing of the feeders. I modified my own equipment and cut a feeder block and used the Stoll standard feeder to create a cable layout that inlayed cable into a ripple. I planned this to wrap around the instep medial and lateral regions to provide support. This feeder did not dip, but made the initial swatches.
- When I returned to Beaverton on the following Monday, I showed the swatch to Bhupesh and Ben, explaining my idea for structural support while knitting the upper to shape. I also gave him the fusible thread with a swatch and explained what it did and why it could be useful for our footwear purposes and that he needed to order a thicker version for us to use on the Nike machinery. He contacted my fusible vendor, who in turn sent him several sizes of thread. **(I was never compensated for my time, parts, machine parts, yarns, materials, or work outside the 40 hrs at IHM & Mia Hamm. Everything I brought in from my studio, and created in my own time was never reimbursed.)**

- My six months machinery evaluation ended – as did the above contract. Nike had made its' decision on the machinery; my work on providing Nike with a proof of concept shoe, proving the viability and potential of the machine was satisfied. We ALL considered the evaluation contract completed – Nike, Stoll America and Fabdesigns, Inc.
- At the end of the machinery evaluation period, Bhupesh told me that Nike still didn't have the knitting platform position ready yet to offer me the position we'd discussed, and I packed up and prepared to go back to my business in Los Angeles as planned.
- Several days later in the week, I was told by Bhupesh that Nike Management was still working on budgeting the flat knit program and concerned that they would not have the know-how in house to continue running the machine they'd leased. The in-house Nike people also needed further training. **(See example email below from around the same time, of a frustrated Nike engineer. Per the e-mail's reference - mid August 2008 there were already a minimum of 14 shoe variations to prove the machine worked for the purpose scoped.)**

-----Original Message-----
From: White, Vince <Vince.White@nike.com>
To: fabdesigns@aol.com; Huffa, Bruce (ETW) <Bruce.Huffa@nike.com>
Cc: Dua, Bhupesh <Bhupesh.Dua@nike.com>; Bangert, Don <Don.Bangert@nike.com>; Casillas, Tina (ETW) <Tina.Casillas@nike.com>; Shaffer, Ben <Ben.Shaffer@nike.com>; Hawkinson, Karen (ETW) <Karen.Hawkinson@nike.com>; Hensley, Shaun <Shaun.Hensley@nike.com>
Sent: Thu, 21 Aug 2008 4:33 pm
Subject: RE: Shoe 14-B OK to Knit?

Connie,

Thanks for the keen insight and experienced perspective, not to mention the great pep talk!

It's a little overwhelming to dive in so deep without some good grounding in the basics of what you're talking about below. In tackling an entire shoe upper, I'm definitely in over my head!

Bruce makes flat knitting look so easy, but the learning curve is surprisingly long and startlingly steep! *The more I learn, the more I realize how much more there is to learn. Most of all, I'm learning just how much of a wizard Bruce is!*

Hopefully Nike will be as patient with me as you suggest. I still wonder if more formal hands-on knitting classes taught by Stoll might be a good way for me to get more basic knitting experience, in a way that won't hinder Bruce's fantastic cutting-edge work.

Again, thanks for all the words of wisdom. When I'm back from time off I'll certainly take it to heart.

Vince

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**From:** fabdesigns@aol.com [mailto:fabdesigns@aol.com]
**Sent:** Thursday, August 21, 2008 2:57 PM
**To:** White, Vince; Huffa, Bruce (ETW)
**Cc:** Dua, Bhupesh; Bangert, Don; Casillas, Tina (ETW); Shaffer, Ben; Hawkinson, Karen (ETW); Hensley, Shaun
**Subject:** RE: Shoe 14-B OK to Knit?

Vince,
This is Connie Huffa. Bruce is unavailable today. I see you are having some difficulty. Most of what you are describing are issues that can be resolved with a bit of practice and patience. Several of the issues you've noted I see here are things that are usually a balan ce of weight (take down), tensions on the yarn being stabilized better and a few issues of perhaps more conducive feeder placements, a possible small racking corrections and absolutely a few NP adjustments on your racks and knits so that you have a compatible fabric arrangement where the yarn is not fighting the bending into the loop configuration. Monofil has a tendency to want to be straight - so, when you knit it into a loop it becomes a spring. Working with all these things at one time is very challenging and nearly impossible to take on all at once and get it right in one shot. My suggestion would be to isolate one issue at a time and then trouble shoot them - one issue at a time. For instance: Almost all yarn issues are down to how one strings up the machine.

You must realize that what you are trying to do is more difficult than what just about anyone else is doing at this moment in 3-D knitting. I have been knitting and engineering fabrics for more than 30 years, on all kinds of equipment from warp knits to circulars and just about everything in between. I still have some of the same issues you're describing he re. You need to work on the nuances of going from one take down to the next; loosening and tightening stitches, stringing up yarns and working with different tensions, as well as figuring out what NP's are appropriate for fabric compatibilities - plus a few=2 0other items of adjustment. A

hundred differenet variations of the same fabric can be made with just fine adjustments on take down, NP's, and knit and tuck variations of the same lay out. It takes practice, focus and patience with yourself, to figure out which set of variations is the one that sells the product :)

You wouldn't run a a marathon with out going through the necessary steps of working up to the distance, knowing your route and getting into shape. Nor would you fly a plane with out spending considerable time getting accustomed to your gauges and controls, maybe even taking some short hop flights before you circumnavigate the globe, right? :) Same here with getting used to all the fabric controls you have at your figer tips. There are 3 computers on that machine, each doing completely different things to regulate the quality of your fabric, the memory of your jacquard, and the timing of all those parts. Your needle bed alone has almost 3200 parts all working at the same time.

I understand that you have had considerable training already. My advice would be to go over your notes on the particular fabric that you're having the most difficulty with and start there.&n bsp; Check you yarn set up and the tensions on your monofil. Make sure that your take down is not to heavy or your will rip the needles right out of the bed. But do things one at20a time - rather than all at once. Good luck and just take your time and make lots of notes as to the things you've tried. This is unfortunately how we all learn. :) Connie

-----Original Message-----
From: White, Vince <Vince.White@nike.com>
To: fabdesigns@aol.com; Huffa, Bruce (ETW) <Bruce.Huffa@nike.com>
Cc: Dua, Bhupesh <Bhupesh.Dua@nike.com>; Baugert, Don <Don.Baugert@nike.com>; Casillas, Tina (ETW) <Tina.Casillas@nike.com>; Shaffer, Ben <Ben.Shaffer@nike.com>; Hawkinson, Karen (ETW) <Karen.Hawkinson@nike.com>; Hensley, Shawn <Shawn.Hensley@nike.com>
Sent: Thu, 21 Aug 2008 1:46 pm
Subject: FE: Shoe 14-B OK to Knit?

=0 D
Bruce (and Team),

High hopes for knitting a Shoe 14 with the requested improvements in color were dashed this morning. Fight after fight with the machine, I just couldn't get the program to start correctly and keep going:

| Ankle w. issue | Possible Cause | Proposed Fix |
|---|---|---|
| Various "start" difficulties – very odd | Incorrect "start" program? | Check for correct start, Shoe's vs. Nike's |
| 6 ends of gray dyed yarn lacked tension | Not enough Primo's! | Go back to 75 olex 2-ply blue yarn |
| Flywire in feeder #6 kept breaking | &n bsp; | Poor manual clamping? Learn a better technique? |
| | | Inertia of spool? Use friction feed wheels? |
| Monofil would get tangled in carriage | No tucks across to start? | Add tucks to keep monofil down |
| Cast-offs did not cast off orange yarn | Incorrect NP's in start? | Again, start with the correct start |
| Cone elastic didn't clear needles | &n bsp; | Wrong clamp/release? Fix all release/clamp out settings |

Bottom line, when I come back, I'd like to pick up on Shoe 14-B* right where I left off.
Seeing some fruits of my labor would go a long way in helping me gain some programming confidence!
A few observations and p ointers from a seasoned professional will also help me avoid more delays!

OK, it's off to the M&M lab for a tour. May you have a great productive week while I'm gone!

Vince

* Shoe 14-A was a feeble first attempt with misunderstood requests for a thicker monofil collar

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- Bhupesh requested me to at least continue a P.O. billing relationship with Nike for another 3 to 4 months to the end of 2008. The arrangement he created, proposed continuing the 40 hours work on Nike premises, with the spelled out weekly goals. I performed the hours he requested on the items he and the team requested and billed accordingly. We were told by Bhupesh that a new contract was not necessary for only an additional 90 days. But he had his assistant, Frances Hall, change our billing and payment terms. Fabdesigns, Inc. was then set up with electronic transfer.

From: Hall, Frances A. <Frances.Hall@nike.com>
To: Huffa, Bruce (ETW) (ETW) <Bruce.Huffa@nike.com>; fabdesigns <fabdesigns@aol.com>
Cc: Dua, Bhupesh <Bhupesh.Dua@nike.com>
Subject: Invoicing Procedure
Date: Wed, Aug 6, 2008 3:59 pm

Dear Bruce,

Below is the recommended Nike accounts payable procedure to use for submitting invoices.

1) Contact me by e-mail (cc: Bhupesh Dua) with the total number of hours you have worked and the time frame (i.e. 8/4-8/8/08)

2) I will create a purchase order and you will receive a copy.
3) Reference the purchase order number on your invoice
4) Send the invoice electronically to apad@nike.com the Nike accounts payable e-mail address.

Kim Olson is the accounts payable representative that processes your invoice -- she has assured me that she will take care of your invoices immediately and they will be paid according to the N30 terms. As she indicated to you, she will gladly answer any payment questions you may have and you can call her directly at 503-532-2038. Going forward, I will give Kim a heads-up when I create a new purchase order so she will know to expect your invoice.

Your EFT request form and supporting documentation for electronic payments to your bank have been sent to the Nike treasury department today. It generally takes a couple of days to set that up. After the set-up is complete, you will receive confirmation as well as information about Global Advice (Bank of America's portal of payment information). The next invoice you submit to accounts payable will be paid electronically so make sure to reference the "submit payment to" (your banking information) on the invoice.

Please do contact me if you have any questions or concerns about the above.

Best regards,

Frances Hall
Advanced Materials Research
e-mail: frances.hall@nike.com
PH: 503-671-4499 FX: 503-532-4664

"Please consider the environment and don't print this email unless you really need to.

*The information in this e-mail and any attachments is privileged and confidential, and is intended for addressee(s) only. Reading, copying, disclosure or use by anybody else is unauthorized. If you are not the intended recipient, please delete this message and any attachments, and advise the sender by return e-mail.*

- At the end of 2008, the P.O. billing arrangement and his budget were supposed to end and I'd return to Los Angeles. I was also told that Nike was supposed to formally extend an offer of employment, at the position they repeatedly discussed ($150K on E band).
- Yet, at end of 2008, the knit platform still was not budgeted, I was told by Bhupesh. He asked if I'd do another 3 months. I continued into 2009, billing 40 hours on P.O.'s from Bhupesh, though my work week still averaged 60 to 75 hours or more - much of it going to work on this non dipping feeder idea. This feeder prototype that I'd pieced together in my studio, worked 80% of the time, and I continued trying to perfect it, minimizing the damages to the fabric and the machine.
- This P.O. working arrangement was verbally extended multiple times every three months into 2009 with the same promises of a platform lead position. Again and again, at the end of each subsequent 3 month interval, Bhupesh still contended that Nike still wanted to hire me at the position they planned for me ($150K on E band) but there was a hiring freeze.

- In the spring of 2009 I could not get the Stoll inlay feeder to work for a production worthy shoe. Nor could I get the standard feeder modification, (non-dipping feeder I'd Frankensteined with my own machine parts), to work consistently.
- With my machine in Los Angeles apart for my own business on a weekend, I drew a sketch of an idea of how to create an inlay feeder to get a structure fiber into a small area and respond to the timing of the machine.
- When I returned to Beaverton on the following Monday, I showed the 2D design of a feeder to Bhupesh. He could not understand why I needed a different type of feeder. He would not authorize any project money or hours from the weekly 40 he'd committed to in order to develop a feeder, and was not at all interested in it or knowing anything about it. He felt it was the machine builder's job to create such things and that Nike was not in the machine parts business.
- I knew this special feeder I had in mind was the key needed to create the structure in a fabric in a short area, as other inlay feeders from the machine builders that I had and tried, were designed for wider apparel and medical and could not work for what I needed the machine to do in such a small knitting space, at high speed, and with multiple colors. Therefore, with no support from Nike, I had **no choice** but to create my feeder design on speculation that it would work, and engineer it on my own time and at my own expense.
- The following month, I showed my dipping feeder design to Jason Badden who just happened to be visiting on a curiosity trip to the knit studio in Mia Hamm. Jason was from the Nike Pantry and I expressed how stupid this short sightedness was on the [Flyknit] technology and budget side, that I could not even get this tool prototyped, and that I was going to pay for it myself. He gave $2000 from the Pantry Budget, which he paid not to me, but to an outside third party to have it CNCd in Portland.
- I ran the resulting feeder in multiple sample to make sure it worked on Nike's machine and after couple dozen tests, I showed both the feeder and the swatches to Bhupesh. The first thing he asked was where I got the money from. I told him – don't ask, don't tell. He had no idea for several days and was very upset that the Pantry funded anything, and said it made him look bad. Bruce Kilgore also wanted Nike to have nothing to do with manufacturing feeders or machine parts.
- Throughout 2009, I continued to bill 40 hours on P.O.'s from Bhupesh, though my work week continued to average 60 to 75 hours or more. By the end of 2009, for every dollar that Nike paid me I was spending $1.35 to continue the two city relationship in support of this project. My feeder design worked exactly as I'd intended.
- I continued this 3 month interval verbal extension arrangement on monthly P.O. invoicing with Nike until April 2010, at which time my company could no longer support my absence from day to day business, and the apparel manufacturing entity needed to be closed out. Neither could my family survive the substantial reduction in income due to this Nike knit project holding me in Beaverton, limiting my time in Los Angeles to work on our own business, while absorbing all the extra time dedicated to meeting the Nike deadlines. The over extension of the relationship with Nike required my family to borrow to the limit on our home to continue financing the company overhead and living expenses with me gone. I had also missed birthdays, holidays, anniversaries, and life events for more than 2 years. I told Bhupesh and the Nike management that I either needed to leave to return to Los Angeles or they needed to step up to their continued promises.
- In June 2010, Nike finally put the contract, lease, mutual NDA into writing for me with the end strategy of Nike hiring me at the position they continually discussed ($150K on E band as head of their flat knitting program). My company business was suspended except for invoicing Nike; equipment was sold or put in storage, my machinery leased to Nike, and my family moved to Portland, cutting off all other income except this new contract.

This contract was specific in its' deliverables and scope to include Footwear only. **(See entire Schedule A prepared by Bruce Kilgore and Nike legal)**

SCHEDULE A

Description of Services, Deliverables and Compensation

This Schedule is hereby incorporated into, forms a part of, and is in all respects subject to the terms of, the Agreement. All capitalized terms not defined in this Schedule will have the meanings assigned to those terms in the Agreement.

1. Description of Services & Deliverables.

Throughout the term of this Agreement, Contractor will provide the following Services and Deliverables to NIKE:

- Execute the commercialization and successful launch of the Lunar Racer III for the SPSU '12 season.
- Demonstrate flat knitting as an effective method of making basketball, training, and soccer products. Products must meet or exceed current performance standards. It is expected that this will drive a new (unique) visual presentation of NIKE products.
- Engineer the above products to be economically viable via commercially available equipment.
- Effectively manage and maintain the equipment required to achieve the program goal.
- Guide NIKE and its manufacturing partners in the evaluation, selection, and procurement of knit machinery to support development and production.
- Effectively manage and train staff associated with the knit program.
- Design/engineer patterns, structures, to create form fitting footwear products.
- Develop effective techniques for grading, making, and finishing footwear products.
- Work with internal product and material teams.
- Work with key external resources (yarn suppliers, machine suppliers, etc.)
- Run pre-production trials to validate operation.
- Transfer products from development to production.
- Provide, operate and maintain at NIKE's Min Hamm facility all of Contractor's business equipment (collectively the "Contractor Equipment"), including but not limited to the following:

- **From fall 2008 through May 2010 there was no written or signed contract for service agreement to develop a knit shoe or product line between Fabdesigns, Inc. and Nike. This was a verbal 3 month, budgeted P.O. and billing cycled for 40 hours per week – Monday through Thursday, plus travel expenses and accommodation. I was NOT reimbursed travel time, mexis, or any other hours, resources, materials, out of pocket expenses, or for any knitting, parts, materials or machine ideas done on my own time, beyond the meticulously documented 40 hours per week that Bhupesh would agree to budget toward the knit shoe project.**

- 6 to 8 months after signing this June 1, 2010 contract with Nike, (Nov-Dec of 2010), both my wife and I were approached by third party recruiters using the exact job description written into my contract/offer.
- In about the same week I was trying to settle this platform position with Bruce Kilgore, Bhupesh, and Nike's management (Mike Donohue), I was also signing the patent on the feeder I'd created in my own time, with Byron in Nike legal.
- A short time later after signing the feeder patent, I was told that the written employment offer from Nike that was part of my June 2010 contract ($150K on E band as head of their flat knitting program) was subsequently withdrawn.
- When I approached Bhupesh Dua and other Nike management, I was subsequently told Nike was hiring someone else for this lead position as knit platform lead as well as several others in a flat knitting department as programmers, and that if I wanted to work for Nike, I would need to apply for a job at Nike on line with the rest of the world's

applicants, for positions that were less than half the salary, less experience, and no managerial scope other than a simple knit programmer. I was told it was a formality. So I applied. I got a response back that I wasn't qualified for even a programming position in the platform. Yet, Nike went on to hire lesser qualified non-US citizens for all of these positions except the director of knitting position, which I was told went to an internal person who was up for a promotion – Steve Wright. Great person but has no idea about knitting. Many of these other lesser qualified 'world applicants' that were hired did not even have green cards.

**From:** Human Resources <human_resources@invalidemail.com>
**To:** brucchuffa <brucchuffa@aol.com>
**Subject:** Knit Innovation Director 054463 at Nike, Inc. including its affiliates
**Date:** Mon, Apr 4, 2011 5:09 pm
**Attachments:** ce_message_cn_html.htm (2K)

Dear Bruce,

Thank you for your interest in the Knit Innovation Director opening. The information provided in your application will be compared with the requirements of the position. Please understand that due to the large volume of applications we receive, we are only able to respond to internal candidates and those external candidates who best match the qualifications of our openings.

Nike values the global diversity of our employees, athletes and customers. We are committed to equal treatment of all qualified individuals. It's our policy to remove barriers to employment opportunities and ensure that access to jobs is strictly based on job-related factors.

We elevate our performance through our constant search for diversity. Not by looking for things that make us different, but by looking for things that make us better.

Thanks for taking the time to apply. We do appreciate your interest.

Sincerely,

Talent Acquisition
Nike, Inc.

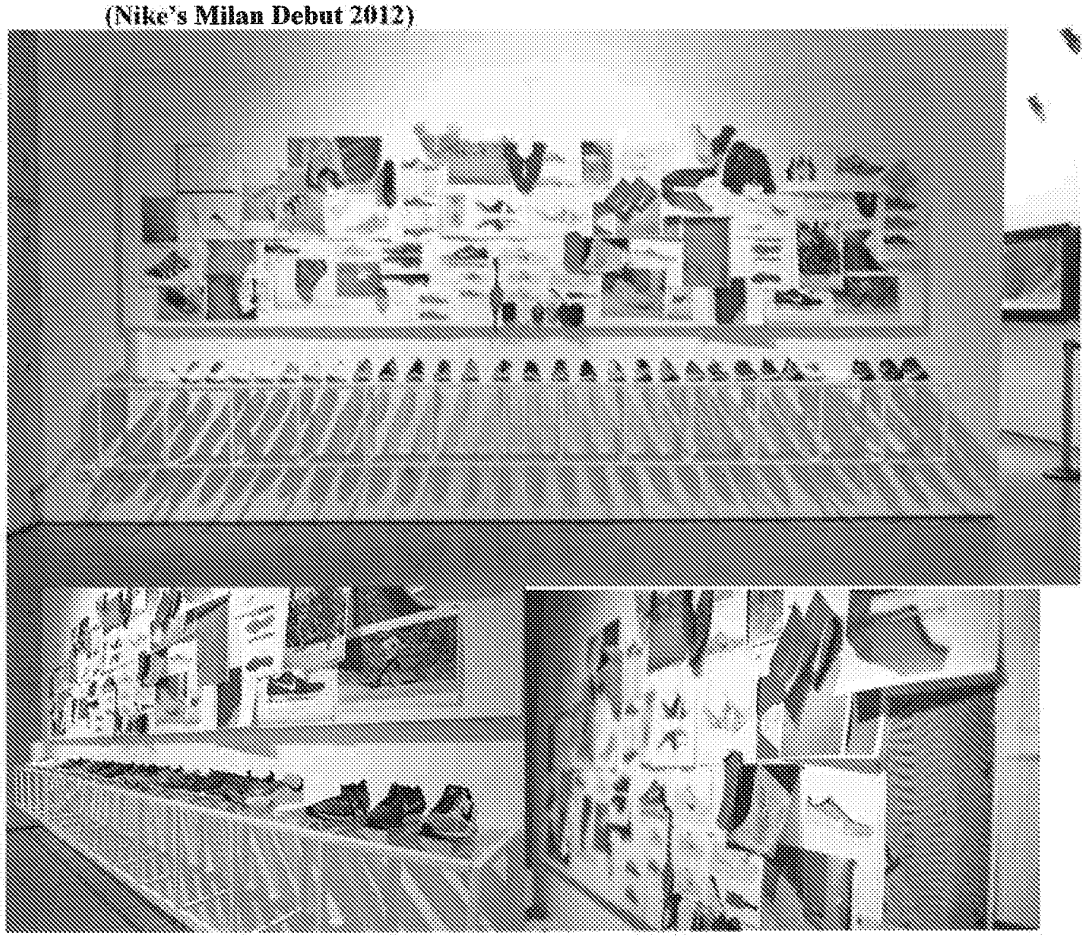
Replies to this message are undeliverable and will not reach Nike Talent Acquisition. Please do not reply.

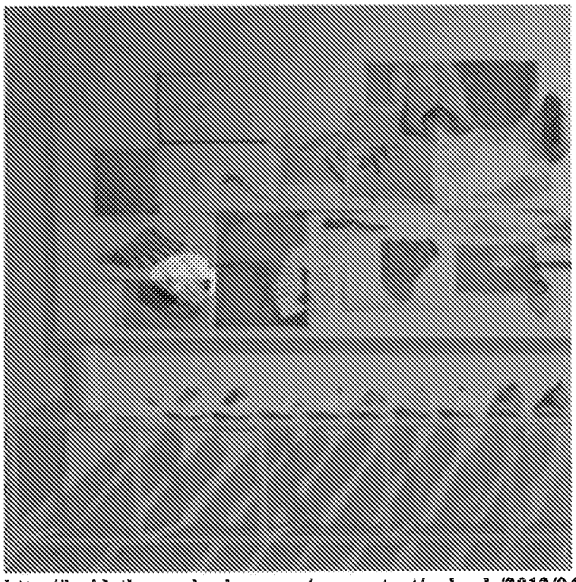
- I finished out the contract for Nike to the end of its' planned one year term – May 2011, did not extend it further, and moved back to Los Angeles to avoid bankruptcy for both my personal and business finances.

**Example:** As we previously discussed on your visit, I also created the inlay combination feeder design and engineering on my own time because like this stroble, the soccer ball liner and other structural 3 D knit items I created, Bhupesh could not envision what I was talking about technically. (It's probably not his fault, this is highly technical and likely not his expertise.) And when I showed the 2D design of a feeder to Bhupesh, he still could not understand, would not authorized any project money or hours from the weekly 40 he'd committed to in order to develop a feeder, and was not at all interested in it or knowing anything about it. He felt it was the machine builder's job to create such things.

It was clear at that point Nike had limited knowledge of flat knitting at that particular time, no real idea of technical flat textile modifications for machinery or materials, and desperately needed enlightening on the subject for others at Nike, beyond Bhupesh, to understand the potential of a flat knitted shoe with structure, not just a knitted shoe that would last one or two selling seasons as the original understanding of the March 2008 Nike 'knit shoe' design brief.

(Nike's Milan Debut 2012)





http://insidethesneakerbox.com/wp-content/uploads/2012/04/DSC_8562-e1334614458856.jpg

This is the EXACT same swatch to which Byron had to correct the patent, as Bhupesh had placed his own name on it as sole inventor. This filing was amazing and disturbing to me considering that Bhupesh wanted nothing to do with adapting the machine for any reason (worrying about warranties), didn't want to see it, contributed nothing to it, knew nothing about it until it was completed, and it was designed, created, and completed entirely off site, adapting my own machine, on my own time, at my own risk, with my own resources.

Nike's entire investment in the inlay concept and the development of this (above) highlighted swatch from Nike', which was the birth of the Flyknit, was **$0**. Bhupesh's response to Byron why he put himself solely on this patent, was that, 'he always wanted a knit shoe.' It also took Byron a considerable amount of time to get Bhupesh to admit that I was the actual inventor of this patent. Byron explained to him that the patent would be invalid without my name on it, as would every other future patent that references it. It also took until June 2010 to get my name added to this patent, many months after Bhupesh finally admitted to Byron that I had been the one who invented this concept in our December 2009 meeting with Byron.

Nike's entire investment in the combination feeder was Jason's $2K from the Pantry to the outside CNC company to help make the dipping feeder more than a year later (March 2010. Nike had been using the feeder I created with parts from my own machine and brought in to make the inlay feasible on that make and model machine series.

**Bruce Huffa**

**From:** Badden, Jason
**Sent:** Thursday, February 18, 2010 1:33 PM
**To:** Huffa, Bruce (ETW)
**Subject:** Re: send info

Bruce . great to meet you today ! I will jump all over this part and hopefully have something for you late next week ..

Thanks > Jason Badden < 503-532-7143
Designer Kitchen

On 2/18/10 1:11 PM, "Huffa, Bruce (ETW)" <Bruce.Huffa@nike.com> wrote:

Bruce Huffa
Nike, Inc.
One Bowerman Drive
Beaverton, OR 97005
Tel: 503-532-4384
bruce.huffa@nike.com

Without this (above) prototype and Jason's $2K dollars from his budget in March 2010 that was paid to the CNC, the entire Flyknit project would not have used any cables what so ever, because it was not financially or productively efficient, and it would not be the functional success and building block that it is. It would just be a "knit shoe" as the

original Nike project design brief called for in 2008 **(51-3764 Figure 14A)** and the 40 hours per week on premises would have produced.

ONLY after seeing my physical 'frankensteined' feeder configuration work and the original swatch on his desk in fall 2008, would Bhupesh authorize P.O. money to go forward refine the inlay concept aesthetics for Nike. Bhupesh would not reimburse me for my obvious extended amount of time and effort in creating the feeder and proof of concept swatches. And even after the combination feed was actually built without his knowledge and running, he would not accept my feeder until he took my IP to Stoll to ask their opinion.

The second white and black swatch, just to right of the highlighted swatch, in the above photo, I had completed within a day or so of showing Bhupesh the original inlay proof of concept from my studio and it is in the exact format of what was given to Ben Schaefer to help build the aesthetics to kick off the Flyknit design. The white yarn, and black thick yarn came from my studio, because Nike had no materials in Beaverton to work with. I even had to supply the vendor contact and yarn specification. **This** is the origin of Flyknit.

I contributed the monstrous quantity of hours, all these extra innovative development items, including the feeder design to Nike's project, in good faith because a well-spelled out career opportunity, in terms of a set salary and scope of heading up the entire 3D knit platform of innovation with Nike, was promised to me consistently for 3 years by Nike management from March 2008 onward and subsequently put into writing in 2010.

I was not looking for royalties and understood that my ideas might be incorporated or not, and that if so it would be royalty free. I used every bit of energy and know how that I could, on and off the clock, in building what I anticipated was an exciting and mutually beneficial future to revolutionize knitting and take Nike to the forefront of a technology it hadn't tapped yet. It was extremely exciting, highly creative time for me as a cutting edge knitting engineer to know that my innovations would actually be made into some 'cool' products. I did not expect the wording in these patents to contradict the 2010 mutual NDA agreement as much as they do.

So, in all truth and sincerity, I have not received ANY valuable consideration or any benefit for these and several other items That I brought in that preexisted the Nike relationship, work I completed in my own time, at my own expense and without resources for Nike, other than my name on a patent, and in some cases, not even that much. And in all cases having to share functional inventor ship with people, who's only contribution was finding the finished swatches, shoes and other items in my hand on Monday morning. They should have been on separate design patents if at all. To say I was disappointed in not leading the knit platform as promised for 3.5 years, was an understatement at the time in 2011.

What's done, is in the past and we do not wish Nike any ill will what so ever. Nor, do I still desire to be a full time employee of any company. Today, my family is financially stable once again; we prevented bankruptcies, though the apparel business is gone at a huge financial loss that we are still paying on debt.

I am thrilled to see how well the Flyknit is received globally. As we told you and Eric upon your visit, we put a tremendous amount of effort, endured hardships, and extreme

personal sacrifice for the project, far beyond the hours for which we were compensated. To any true inventor, seeing the product grow and be so well received by athletes, wannabe athletes, the design world, and our own knitting industry as revolutionary is tremendous in our opinion. We are just now more prepared to quote projects better, should Nike require my help in the future, and not subsidize a billion dollar+ company.

We have been respectful to our agreements with Nike, support Nike whole-heartedly in their efforts to defend Flyknit, have remained loyal, and will continue to do what we can to protect Nike's interests. I have no issue with Nike using my invention(s) in shoes as intended, since it is already out there, and what was originally intended when I agreed to help Nike in 2008.

I can't sign these agreement documents that says I created this as an employee, for hire, received any valuable consideration or enjoyed any benefits, – as this is not the case. Nor, will I agree to sell, assign or transfer anything that is subject to my IP pre-ownership in the mutual NDA – royalty free use is suggested. This includes all the off the clock work, materials, and resources that I was never paid for, and for which Bhupesh would not agree to pay even after shown my viable prototypes, yet he still incorporated them freely into Nike products, prior to the effective date of that Mutual NDA- June 1, 2010.

It must also be noted that the combination feeder that I designed is make, model and series specific. It is not applicable to other machine brands; is captive to operate ONLY on Stoll models TC and HP. It is specifically programmable only on Stoll CAD system M1+ and not retrofitable to previous generations of machinery and CAD. Nor is it applicable to the new Stoll ADF machine which was launched two years ago by Stoll. Nor does any Nike product use the special 'combination' features I built into this feeder beyond inlay and close parking, which effected optimal production efficiency.

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**As for 51-3279** other wise known as 'monofilament, intarsia with inlay'

I have no issues supporting Nike in defending this article of footwear.
My concerns are:

- pre-existing IP that is Fabdesigns, Inc.'s, and which is incorporated into the shoe royalty free.
- The agreement page does not pertain to me as noted previously
- patenting in to other markets where these techniques are already in existence and we can not support that effort.
- pre-existing IP that is Fabdesigns, Inc.'s, and which would be incorporated into other than footwear. We can not support that effort, in direct contradiction to our Mutual NDA of 2010.
- Anatomical mapping and knitting to zones already exists in other markets. Suggest footwear only wording.

The monofilament applications described in this document are stitch techniques that I have used for many years prior to my relationship with Nike. These are techniques that I taught Daniel Podhajny, who had never used monofilament before he came to the Nike project. It was brought to Nike prior to Dan joining the Nike knit team the first time.

**[0003] ". . . By decreasing the number of material elements utilized in the upper, therefore, waste may be decreased while increasing recycleability of the upper."**

Cradle to cradle technology was suggested to Nike for this knit shoe project on the initial consultation with Fabdesigns, Inc. as we had recycled yarns and fabrics in house and showed the swatches to Bhupesh in January of 2008. These were/are commercially available materials, off the shelf from Unifi, which we were using for an initiative for a different apparel project. The concept was to use as little material as possible, having that materials already being recycled, and able to be recycled yet again. This is a 'green' concept we've also brought to automotive consumer products and several other industries. It is a marketing point in our opinion, not a patentable claim. I can't see reasoning to support recycleability as a patentable claim. But I absolutely support the concept if you can help clarify.

We brought this integrated knitting concept of a unitary knit to shape component to Nike and taught Nike how I proposed to adapt it to a shoe format and create an integrated structure, knit in one piece, with as little material as possible, and as efficiently as I could possibly get the machinery to function. Nike did not invent this manufacturing process.

The fact is, I created a complete 3D knit manufacturing platform for developing and mass producing structural and anatomically correct knit shoes and train the staff at Nike to program, QA & QC production best practices on an exponential scale suitable for the anticipated size of this entire project. Plus create lean and sustainable best practices in development and production to minimize materials and waste and optimize efficiency throughout the process.

Again, I have no issue with front page of the patent. The agreement document that says I created this **as an employee**, received valuable consideration and enjoyed benefits – as previously noted, this is not the case. Nor would it be reasonable that I'm selling, assigning or transferring the technique, other than royalty free. The monofilament and original knit downs were from my apparel studio, on my time. I've seen this already in the medical industry and used it many times in medical and aerospace applications. The origins of this inlay intarsia monofilament predate the Nike relationship by several years.

**[0005-0007, 0044, 0045]** This specific technique was in our line of clothing, and used frequently in projects predating our relationship with Nike, in very much the exact same state as is stated in this patent. The monofilament and the fusible used at Nike were materials that I brought in from my studio shelf and taught Nike how to use them in combination with a tensile element. This monofilament is something we've used, as others have on many other types of flat knitting machinery, in aerospace applications, apparel, trim, medical applications, home furnishings, and several other fabrication that need flexibility and strength. We've used it as reinforcement and 'see through' intarsia regions in many fabrics (mixed in combination with other stitches such as 'stain glass', which we showed you when you were here) before our relationship with Nike existed and since. We, as well as many others before us, have also used the same principle in medical products for the foot where the monofilament is an elastic, which exerts compression, stretch in one direction, but not the other which has a rigid yarn. This is a common technical stitch in many markets, specifically medical.

This stitch, like many others we discussed on your last visit, may be new to Nike, but it is not new to the knitting world – and should not be new to anyone on your knitting team if they were being completely honest. This public domain stitch technique is why we say this should be a copyright or a design patent.

**Common example of [0057, 0059, 0060]:** I brought monofilament padded zoning (mock quilting) and this monofilament intarsia stitch in swatch, cones of yarn, and finished article form with my label to Nike along with many which Bhupesh Dua then borrowed from our studio and kept at Nike for several years. This particular monofilament, intarsia, with inlay technique along with other type of combination techniques using monofilament spanning color changes, including transfer jacquard, and multi-jacquard joins was developed on my own time and independent of Nike resources and has been used on my own products as well as for many other clients in medical, aerospace, architectural, and other related over nearly two decades. It's a common practice in providing structure, counter stretch, and aesthetics.
**(Below – popular 2003 to 2005)**

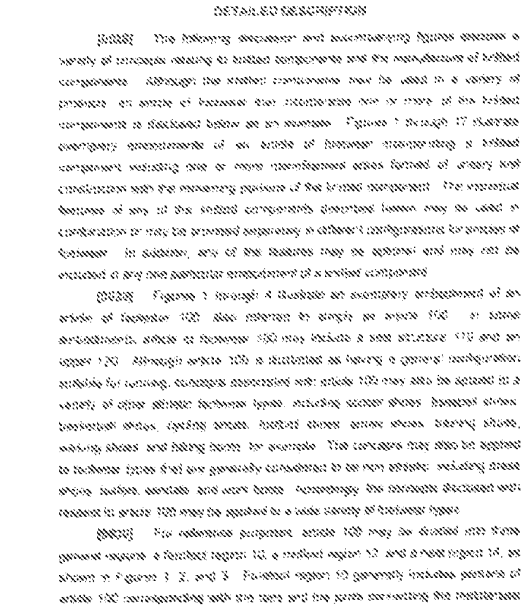


We brought 25 plus years of knitting technology in machine builder swatches, yarns, our own work, and new materials like this monofilament to show Nike's team the possibilities and capabilities of the machinery. I shared this library of inspiration materials for demonstration purposes, as did the machine builders who we visited together. This technique was also part of the CAD stitch library I left at Nike.

**[0008]** I am very concerned about Nike patenting this technique beyond footwear. In our opinion it would put Nike at risk in other industries.

We've seen it at Steiger flat machinery, which has its' own special inlay feeders and is well known in the medical industry for inlay intarsia with monofilament elastics for use in orthopedics which need to immobilize joints and flex in other directions. In my professional opinion: claiming this use of monofilament inserted in the way this document does is almost akin to claiming a Fairisle, mesh, argyle, or Aran stitch or other generic off the shelf technique that the machine builders already show in their libraries, and just applying it to a shoe.

**[0028, 0036, 0041, 0042] The following discussion and accompanying figures disclose a variety of concepts relating to knitted components and the manufacture of knitted components. Although the knitted components may be used in a variety of products. . . article of footwear . . . as an example."**



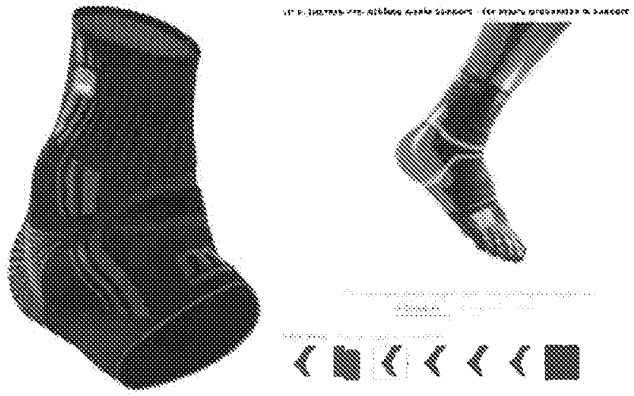
This technique we brought to Nike. Also per our 2010 mutual NDA, Nike has a duty to protect our IP 'as it would its' own.' It might appear that extending the scope of this patent by reaching into other markets beyond footwear as this document does, and into other industries where we currently do business, would harm Fabdesigns, Inc. rather than protect. Further, we also advise that the reaching into other markets where 'inlay of monofilament' processes already have existed for decades, may put Nike at risk. We can not support Nike into areas beyond the scope of footwear.

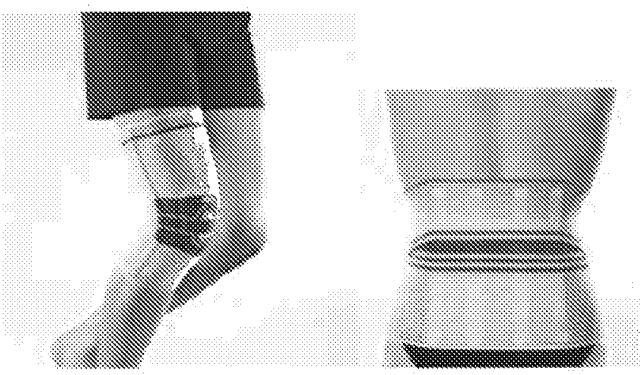
Therefore I can't sign a document that sells or assigns this technique, prevents me from using inlay in other technical projects, or requests that I assign public domain techniques that already exist in other industries, but are just now new to Nike.

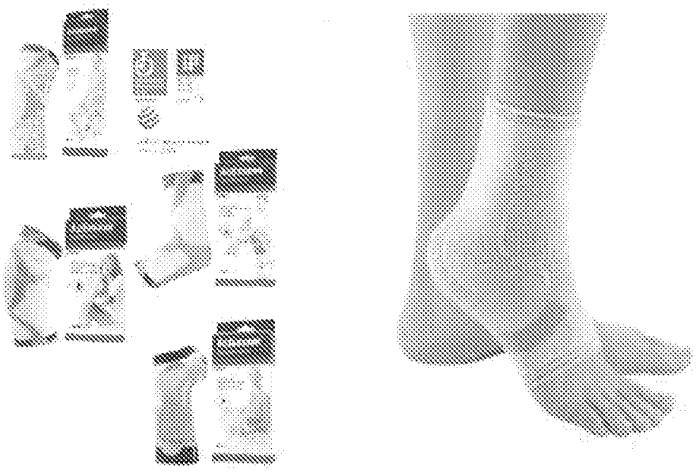
**Examples:** We suggest that the focus of this patent be footwear only as this technique is very common for example in flat knitted medical bracing.

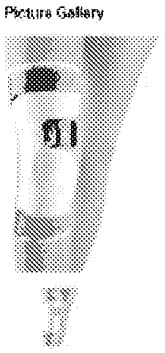
**[0038]** Others in the industry, using this monofilament inlay intarsia technique, (that I did not develop), and which have been common practice and commercially available for feet for quite some time: Bort, Bauerfiend, BSN (Jobst) among others. Intarsia inlay on flat machinery and the monofilament that they are talking about is an elastic monofilament that wraps around the foot just as described in this patent. Some used in ankle, joint and other orthopedic products as well as lymphedema flat knitted hosiery, where a tensile yarn is used for the heel as reinforcement.

24





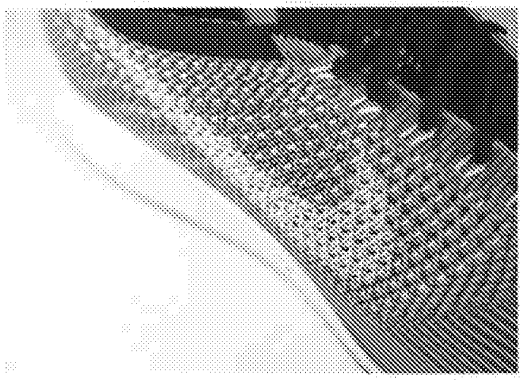




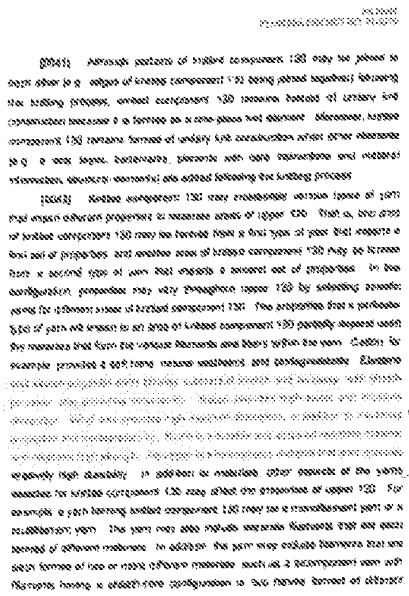

This product from Bort uses 'integrated filaments (like the Nike cables), but sculpted around the knee area. They are inserted into the knitted fabric at the time of manufacture with an inlay feeder on the Steiger flat machine and adjusted with those external straps. Likewise the BSN product above has lateral and medial inlay intarsia arrangements that are size and left or right specific. Many have body mapped anatomical monofilament inlay patterns that are proprietary.

**[0038]** In medical flat knit braces and compression hosiery the exact size of the monofilament is specified in the UK, French, and German RAL standards to deliver a specific performance to zones of the product.

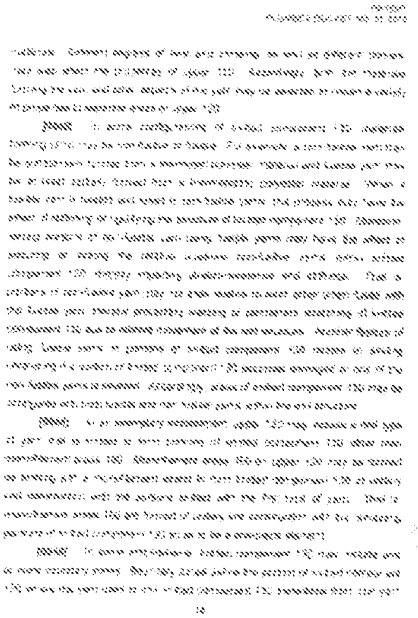
**[0038, 0039, 0040]** Incorporating this monofilament technique was created in this specific manner prior to Daniel Podhajny joining the Nike knit team.


**Shoe on display at Milan 2012**

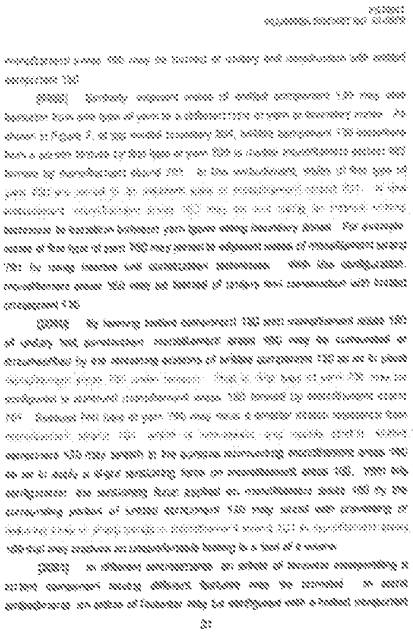
**[0042 through 0057]** This document needs to focus on footwear only. See highlighted areas.



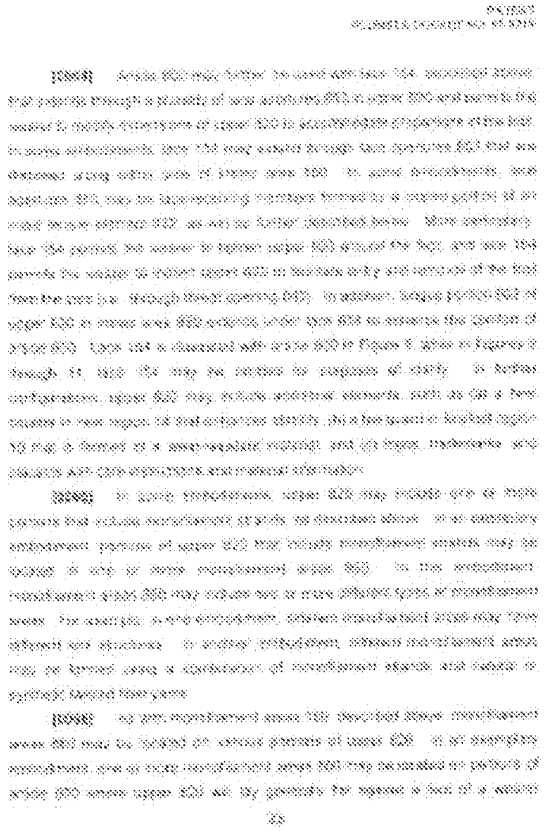
Engineered yarns and knitting them into zones already exists in many categories of knitted products. This is generic knitting 101 information. This would be embarrassing to defend this as an innovation or claim for Nike beyond footwear. Engineered yarns may be new to Nike, but aerospace, medical, military and fashion as well as automotive have been utilizing these techniques in 'zones', layers, by yarn blocking (just like color blocking in jacquards). There are too many examples and samples of these yarn mapped products from the machine builder and other industries to list here.



**[0060]** This is what I taught Nike's team in how to properly knit monofilament into a shoe fabric – specifically how I taught Daniel Podhajny to knit monofilament. This is not innovation and was not invented or perfected at Nike. Much of this is also common sense and a waste of a paragraph – like knitting 101. I would protest that Dan invented this claim as would the entire technical knitting industry. The machine builder sells tensioning devices to make all these adjustments automatically in the knit CAD program specifically for monofilaments and technical yarns.



**[0065, 0069, 0070]** This technique was not invented at Nike, but was brought to Nike and predates Daniel Podhajny joining the Nike knit team, including the directionals in 0070.

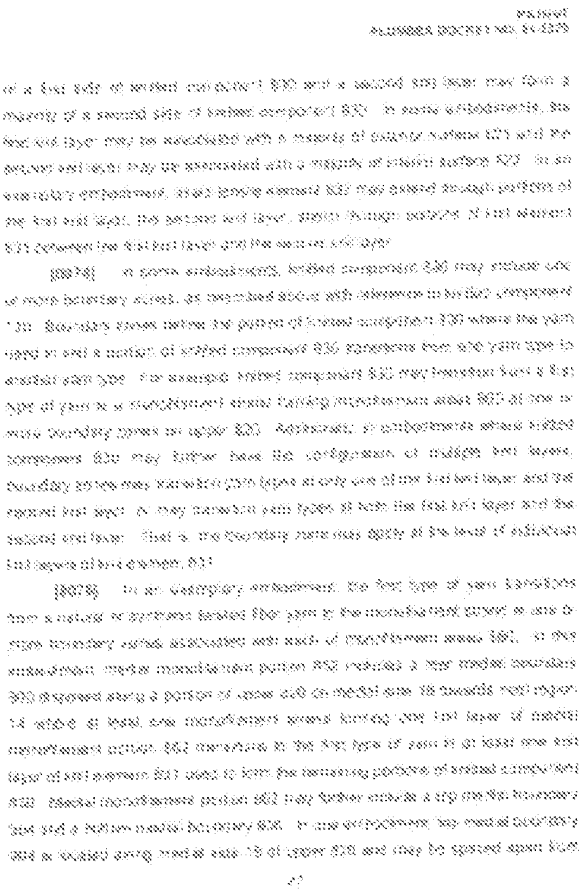


**[0071 through 0079]** Heel filaments that radiate from the lace area for tensile strength with a series of directional wedges which is also spanned with monofilaments and fusible. The filament technology that spans the instep to the meta-tarsal predates Daniel Podhjany joining the Nike Knit team and was in many of the original shoes that used my inlay techniques. However, what is also not new is the arrangement that wraps **around** the heel and is left/right specific to orientation. I explored seam placements on all parts of the foot and built many shoes in 2008-2009 with this seam orientation prior to Daniel Podhajny joining the Nike team (the first time), including this exact inlay tensile strategy. This arrangement and many of the other seam placements were suspended and placed in storage box and on the Mia Hamm sample wall we discussed on your visit. This seam arrangement and cable orientation were tabled due to the orientation being inefficient on the machine; the seam being not as aesthetically pleasing to marketing, and consumer safety concerns of rolling the ankle if the seam were to fail. I would protest that Dan invented anything on this shoe functionally. This should be a Design patent where he arranged existing stitch technology, using my IP in a 'paint by numbers' zone mapping (in my original template that included the cables) as I showed you was possible on the CAD software. Specifically **[0074]** should be shoe/footwear specific. This monofilament application existed prior to our relationship with Nike.

- I would not support Nike taking this cable mapping technique that I created on my own time, prior to my relationship with Nike, into other industries beyond footwear – per our mutual NDA of 2010.
- I would not support Nike taking this cable mapping technique, combined with more of my IP in the stitch techniques, into other industries beyond footwear - – per our mutual

NDA of 2010. I already have used this in many other industries from medical to aerospace pre – Nike relationship. Variations also exist at machine builder libraries.

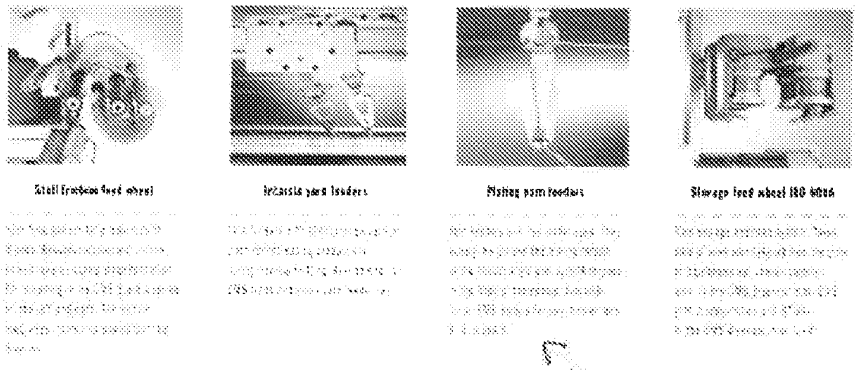
- I would not support Nike taking this cable mapping into industries where it already exists, placing Nike at risk, as well as my industry integrity.



**[0080 through 0087]** This two layer description is actually technically described as 'plaiting' in **[0087].** This is a very common stitch technique that creates a surface, and an anterior face with a totally different yarn. This is one of the original techniques I brought to Nike, by bringing in the special order 'plaiting feeders' from my own machinery in Los Angeles. Nike borrowed them for 3 years as well as my tension devices. The wording in this area of the patent needs updating to proper terminology. 'Layers' in cut and sew footwear already exist. **(Brochure 1999 below)**

# **Equipment** *for your personal requirements*

*A range of special attachments are available for the Stoll CMS range to help you improve knitting economy even further and solve special production requirements.*



Plaiting feeder

**Special order equipment, showing plaiting feeder, third from left.**

**[0088 through 0094, 0099, 00100 through and including 00110]** is also intarsia yarn mapped in Zones. This was done in many previous shoe designs and machine tests. The 'ventilation'

benefits of this fabric are already existing in flat knit medical products, using inlay monofilament and venting the patella, popliteal, under arms, and other regions of high heat, wound care, and sweat but need structure; military – helmet liners are one example. In some products fusible is also use simultaneously. The particular stitch used and described is IP I brought to Nike.

**[0095] US Patent Application Publication 2012/0233882 And article of footwear with and integrated knit tongue - CROSS**-REFERENCE TO RELATED APPLICATIONS

> **[0001]** This application is a continuation-in-part of co-pending U.S. patent application Ser. No. 13/474,531, entitled "Article Of Footwear Incorporating A Knitted Component With A Tongue", filed on May 17, 2012, which application is a continuation of U.S. patent application Ser. No. 13/400,511, entitled "Article Of Footwear Incorporating A Knitted Component With A Tongue", filed on Feb. 20, 2012, which applications are hereby incorporated by reference in their entirety.
>
> I don't believe I have these copies, and have not reviewed any of these claims.

**[00109]** The stitches identified are not proper knitting terminology. There is no such thing as a mock mesh. The wording in this area of the patent needs updating to proper terminology.

16. **[00111]** The concerns we have with this patent are the reaches into other market and products beyond footwear where our own IP will be incorporated without our knowledge and permission. This may also preclude us and any of our respective clients in these other industries for using our own know-how. Per our mutual NDA of 2010 we request that our IP continue to be respected and incorporated into footwear only as agreed. This patent incorporates both a new 'silhouette' for the techniques we brought to Nike to be arranged and combined in any manner desired for any market or category. Though much of the stitches that were combined – specifically the monofilament, plaiting and collar padding were IP we brought to Nike from our own library, swatches and work done on our own time, with our own resources, with no compensation from Nike. This is IP I brought to Nike. I would not support Nike beyond footwear and would lodge protest based on mutual NDA agreement.

**Fig 16B** is already existing in the medical industry.
**Fig 17** already exists in other industries. This is common, generic and inherent in knit technology.

**Claims – Page 43**

1. Suggest this be focused on an article of footwear. Claims in #1, sentences 2, 3,4 already exist. These are generic statements and describe the general knitting of a yarn with ANY monofilament. If this is incorporating the technique I brought to Nike from my own technical library then I object to it, beyond footwear.
17. Claims in #16, sentences 2, already exist. This describes plaiting. This is a general stitch already existing in knitwear for many decades. I would not support Nike beyond footwear. Claims in #16, sentences 3, already exist. This is IP I brought to Nike. I would not support Nike beyond footwear and would lodge protest based on mutual NDA agreement. Claims in #16, sentences 4, already exist. This is IP I brought to Nike. I would not support Nike beyond footwear and would lodge protest based on mutual NDA agreement.

37. Claims in #37. Claims in #37, sentences 2, already exist. This is IP I brought to Nike. I would not support Nike beyond footwear and would lodge protest based on mutual NDA

agreement. Claims in #37, sentences 3, already exist. This is IP I brought to Nike. I would not support Nike beyond footwear and would lodge protest based on mutual NDA agreement.

Here are a few other industries where monofilament fibers are already used.

Textile material made of woven knitted fabrics
EP 0655095 B1
Used in car seat covers since 1996 – with mono filaments

http://architype.org/product/lama-concept-holoknit-textile/
architectural – holoknit – (Intarsia monofilament inlay knit – photo looks like a warp knit but could be made on flat bed equipment)

I could spend more time than I already have finding more examples, but I don't want to waste any more of my time than I already have. This list is not exhaustive and requires much more due diligence to research properly for Nike's protection.

---

**As for 51-3214** otherwise known as 'adjustable Knitted Portion'

I have no issues supporting Nike in defending this as an article of footwear only.
My concerns are:

- Agreement page does not pertain to me as noted previously. pre-existing IP that is Fabdesigns, Inc.'s, work performed on our own time, with our own resources and machinery, which incorporated into the shoe royalty free. This was unpaid work, done in my own time, - no valuable consideration received. Suggest royalty free or such wording for footwear only.
- pre-existing IP that is Fabdesigns, Inc.'s, which would be incorporated into other than footwear. Using this technique beyond footwear This is considered our IP under 2010 mutual NDA agreement. We have used this stitching technique of inlaying single or multiple threads between to as a closure and securing technique many times in a **[0032]** ". . . variety of shapes, sizes, and characteristics . . ." prior to our relationship with Nike.
- patenting in to other markets where these techniques are already in existence and we can not support that effort. This is IP I brought to Nike. I would not support Nike beyond footwear and would lodge protest based on mutual NDA agreement.
- [0056] US Patent8490299 B2 - 2008/ 0110048 I respectfully decline to acknowledge that Bhupesh Dua had anything to do with this patent and refuse to perjure ourselves in continuing to reinforce what has felt to us, intellectual fraud. This is the same patent that arose from MY original inlay swatch to which Byron had to correct the patent, as Bhupesh had placed his own name on it as sole inventor. I immediately protested it **(11/2/2009)** and insisted on speaking further with Nike legal to discuss (again with Byron). I further will not support efforts to take this is IP I brought to Nike to other markets. I would not support Nike beyond footwear and would lodge protest based on mutual NDA agreement.
- US Patent application 13/781,336 does not exist. Vertical inlay tensile element. I would not sign this as I already have done two strands of vertical inlay this for medical foot applications prior to this non-existent patent application. I may have shown you the swatch on your visit. One vertical inlay will not provide any structure to a shoe – purely decorative purposes. The **figure 7G of 51-3345 is inaccurate. It is NOT a vertical inlay. It would be a horizontal inlay because of how the knit shape is formed. The**

**Nike shoe is comprised of knit to shape wedges, zones and complex knit dimensions that would make this absolutely impossible as a vertical inlay. Direction is completely 90 degrees wrong. Secondly, the technology is not there yet to create a vertical inlay in a knit to shape shoe. I am working on perfecting it with a machine builder. Even though I can and have created vertical inlay in a knit to a shape very similar to a shoe format, (I HAVE ALREADY CREATED MULTIPLE VERTICAL INLAYS IN A SHOE-LIKE FORM) the software is not reliable yet to produce it consistently. Specific machinery and complex adapted machine accessories are also required. Nike doesn't have them yet, as the machine builder doesn't have them yet.** Without jeopardizing my project's current IP further, **I assure you that vertical inlays do not and can not look like figure 7G in a shoe.**

- Front page is fine.

Inlay has been possible on many makes and models of machinery for decades. This particular technique we have used with an elastic inlay yarn and created smocking to gather in the bodice of a garment, sleeve closures, waist bands, aerospace applications, medical, military applications, and has been incorporated into many other technical knit products before, during, and since our relationship with Nike commenced.

**[0079-0083]** Per our 2010 mutual NDA, this adapted adjustable inlay cable technique for a closure system is for use in footwear only, because we developed the system entirely on our own, with no Nike resources, is for royalty free use by Nike in footwear only. Any other use by Nike requires permission of Fabdesigns, Inc. This was unpaid work, done in my own time, with our own resources and at risk to our machinery - no valuable consideration received. Also per our 2010 mutual NDA, Nike has a duty to protect our IP 'as it would its' own.' It might appear that extending the scope of this patent by reaching into other markets beyond footwear as this document does, and into other industries where we currently do business, would harm Fabdesigns, Inc. rather than protect. Further, we also advise that the reaching into other markets where 'inlay' processes already have existed for decades, may put Nike at risk. We can not support Nike into areas beyond the scope of footwear.

Therefore I can't sign a document that sells or assigns this technique, prevents me from using inlay in other technical projects, or requests that I assign public domain techniques that already exist in other industries, but are just now new to Nike.

**[0086-0096]** US patent 13/048,527 - 2012-0234051 "Combination feeder for a Knitting Machine". This feeder does not use the combination knit and inlay in this knitted component. It uses the inlay feature only. Inlay has been possible on many makes and models of machinery for decades.
Also this feeder is specific to a Make and Model of Stoll knitting machinery. It is applicable only to 330 TC, 530, and 530 HP machinery, and programmable with M1+ software only. It is not retrofitable to older machinery, not programmable with older CAD, and is not compatible with newer technology – 530 ADF, or other brands of flat knitting machinery. It was also designed on my own time. This was unpaid work, done in my own time, with our own resources and at risk to our machinery - no valuable consideration received. Also per our 2010 mutual NDA, Nike has a duty to protect our IP 'as it would its' own.' It might appear that extending the scope of this patent by reaching into other markets beyond footwear as this document does, and into other industries where we currently do business, would harm Fabdesigns, Inc. rather than protect. Further, we also advise that the reaching into other markets where 'inlay' processes already have existed for decades, may put Nike at risk. We can not practically support Nike in patenting inlay into areas beyond the scope of footwear.

**Claims:** I support these claims for footwear applications only.

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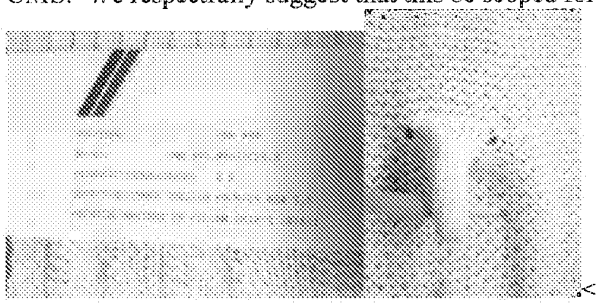
**As for 51-3209** otherwise known as 'knit component'

Front page is fine. This was paid work, done for hire. Adapting a knit and wear appendage to be used as an integrated tongue. Also integrated our knitting techniques for padding.

- Main concerns: Agreement page objections as previously noted.
- Claims cover 3 D knitting / whole garment (unitary integrated knit component) technology in many markets as previous noted and objected
- I respectfully suggest that these claims be focused and specifically scoped to reflect the types of footwear agreed to in our mutual NDA of June 1, 2013 Schedule A, deliverables, as previously noted. Any other use requires our permission. We can not support Nike reaching into these other product markets.
- I can not comment on cross referenced patents to review application or relevance if I have not reviewed the patent claims referenced.
- Who claimed inventorship of this? Is this an Add on?

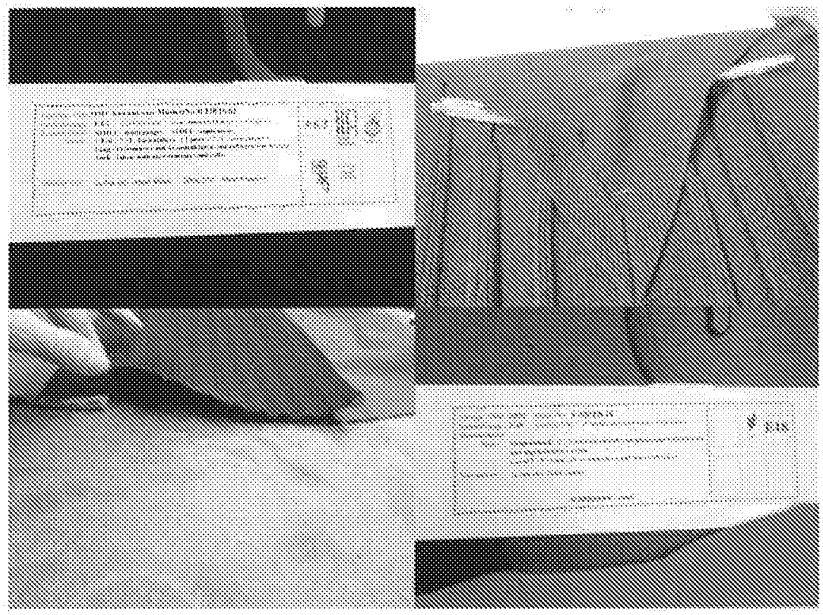
Cross reference to related applications
**[0001]** US Patent Application 13/474,531. I do not believe I have seen this patent, nor review the claims.
US Patent Application 13/400,511. I do not believe I have seen this patent, nor review the claims.
**[0005]** Recycleability: Claims as previously noted are marketing advertising points that need substantiation, quantification and responsible federal (FTC) accountability for 'green' and pre-consumer recycled content / post consumer recycleability technologies. This is a general claim. This technology in flat knit format was brought to Nike as previously noted.
**[0011]** We respectfully suggest that this technology be applied solely to the specific footwear products agreed to in our June 1, 2010 Mutual NDA agreement schedule A – Deliverables. This 3 D technology for knitting appendages and attaching them in the knitting process already exists in other markets. This would be impractical to defend otherwise.
**[0043]** We respectfully suggest that this technology be applied solely to the specific footwear products agreed to in our June 1, 2010 Mutual NDA agreement schedule A – Deliverables. This 3 D technology for knitting appendages and attaching them in the knitting process already exists in other markets. We have used these techniques prior to our relationship with Nike, currently and intend to continue using these techniques constantly as do many others in these exact listed product categories. This would be impractical to defend otherwise.
**[0044-0046]** We respectfully suggest that this technology be applied solely to the specific footwear products agreed to in our June 1, 2010 Mutual NDA agreement schedule A – Deliverables.
**[0047- 0051]Some Embodiments:** We respectfully suggest that this technology be applied solely to the specific footwear products agreed to in our June 1, 2010 Mutual NDA agreement schedule A – Deliverables. I object to this being unconfined and reaching into other markets.
**[0052-0053] increased manufacturing efficiency**: As previously noted, this is not the case. Sewing the tongue in is far more efficient way of attaching it. 12 minutes to knit in versus 10 seconds to sew in. The damage risk is also escalated in knitting the tongue into the shoe. All that is guaranteed is the same dye lot of yarn is used (all previously noted).
**[0054]** We respectfully suggest that this technology be applied solely to the specific footwear products agreed to in our June 1, 2010 Mutual NDA agreement schedule A – Deliverables. I

object to this being unconfined to the specific footwear previously noted, and reaching into other product markets. This is impractical to defend.
**[0054] Figure 5** We respectfully suggest that this technology be applied solely to the specific footwear products agreed to.
**[0055-0066]** We respectfully suggest that this 3 D technology be scoped and applied solely to the specific footwear products agreed to as previously noted.
**[0067]** elements with a lace aperture: This is existing technology from 1987 introduction to the CMS. We respectfully suggest that this be scoped for footwear only.



**< 1987 belt loop technique from Machine builder's original CMS capability swatches. This is the technique used in creating the loop on the tongue. It is common technique for cinching, belting and lacing applications in many industries.**

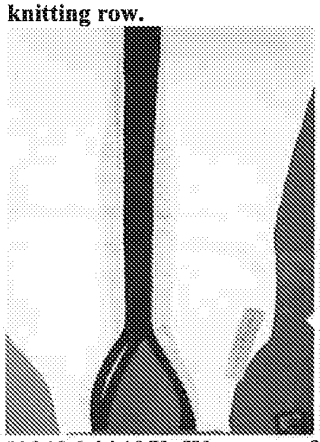
**[0068-74] Figure 6, 7, 9, 12, 14,15.** This is a common view of knitting 3 D components with overlapping portions, with flaps, plackets and button holes. This is existing technology from 1987 introduction to the CMS. We respectfully suggest that this be scoped for footwear only. We have made these flapped closure systems for many years prior to our Nike relationship as have other tech experts and machine builders in other markets. This is impractical to defend other than in footwear. Here are a few examples I found in 5 minutes. I suggest more due diligence be spent.



**[0078]** US patent AP 12/338,726 – 2010/0154256 – comments as previously noted.
US Patent AP 2012/0233882 – comments as previously noted.

**[0079-0096]** This is impractical to defend other than in footwear. We respectfully suggest that this be scoped to footwear only to avoid inviting easy challenge.
**[0097-00104]** General flat knitting knowledge. Unremarkable.
[00105-00107] These describe general properties of inlay – ALL of which already exist in other industries. This is not practical to defend beyond footwear. We respectfully suggest that these claims be focused and scoped on the specific footwear described in our Mutual NDA of June 1, 2010 – Schedule A Deliverables only.
Also note that in no cases have Nike products used the combination feeder for anything else than an INLAY feature. The inlay feature possible without the combination feeder and was employed in my original swatches from my studio. It was just not as efficient. It is also machine make, and model specific as previously noted. General inlay descriptions are not practical to defend beyond footwear as they already exist. (Multiple objections as noted previously)
**[00108]** US Patent AP 13/474,531, US Patent AP 13/400,511 – comments as previously noted.
**[00109-0013]** Figures 22 and 23 represent 3 D knitting techniques already in existence.
**[0014]** Spool package is common practice in direct feeders for Steiger and Stoll machines, especially for fashion, medical, technical and industrial textiles.
**[00117]** Figure 24 is absolutely defendable and is already specific to footwear.
**Fig 27** could be any 3 D Knit. This is how V necks are formed, but in the context of footwear, this is fine. This is technology and knitting techniques I brought to Nike. It was not invented at Nike.

**Below is a V neck made on a Stoll machine in 2002 in the exact same knitting technique and sold commercially in the US and Europe. Notice the knit and inlay technique on the same row, plus intarsia, plus full cables down each side. Cables knit, tuck, float, and transfer on the same row. So example this has knit, tuck, transfer, float, float inlay, intarsia with multiple feeders all in the same knitting row.**



**[00126-00127]** We respectfully suggest that these claims be focused and scoped on the specific footwear described in our Mutual NDA of June 1, 2010 – Schedule A Deliverables only. I could not support Nike and would object to the patent office if this were extended to other product markets. Other market product manufacturers, machine builders and technical experts would likely also object. This is not defendable beyond footwear.

**Claims 1 through 27:** We respectfully suggest that these claims be focused and scoped on the specific footwear described in our Mutual NDA of June 1, 2010 – Schedule A Deliverables only. I could not support Nike and would object to the patent office if this were extended to other product markets. Other market product manufacturers, machine builders and technical experts would likely also object. This is not defendable beyond footwear.

**As for 51-3345** otherwise known as 'knit component'

- Front page is fine. This was paid work, done for hire.
- Main concerns:
- Who claimed inventorship of this? Is this an Add on?
- Patent 8490299 B2 – 2008/0110048 – protested

Page 7: Patent 6,931,762 – August 25, 2005 – Dua: It references circular knitting with a seamless technology. It is a tubular sock. **"An article of footwear with a knit upper and a method of manufacturing the footwear are disclosed. The upper is formed through a knitting process to include a plurality of sections formed of different yarns and knits to provide the sections with different physical properties. In portions of the upper where sections formed of different yarns are in adjacent wales, a tuck stitch is utilized to join the sections. The method utilizes a circular knitting machine having multiple feeds that work together to knit the upper into a unitary, seamless structure. The multiple feeds, each of which provide multiple types of yarns, produce the sections to have varying physical properties."** Our technical concerns for Nike are that there are many medical products on the market that use and have used this technology for many decades; Gibaud in France, who we know, have used it for almost 100 years. Bauerfiend have use it more than 50 years, BSN and others have also.

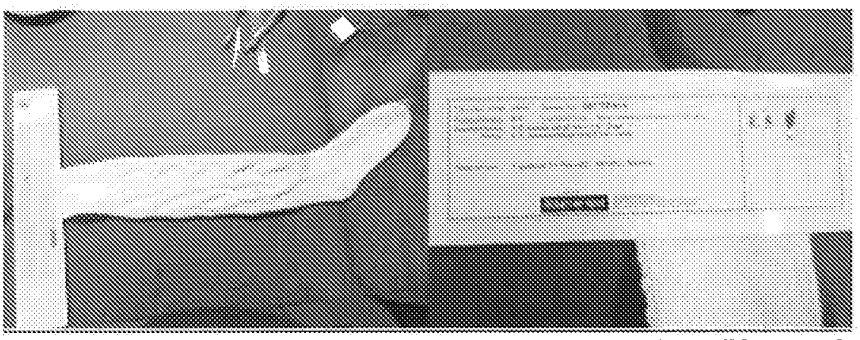




The machine builders, Santoni, Merz, Lonati, and others have created machinery based on achieving these principals in sock and foot products for several decades (Lonati since 1946) and advertise these claims as part of their marketing. **(Picture above Left from Lonati trade booth; Picture above left: Knit hosiery machine "Komet" of the English company Bentley, circa 1934)** We suggest the scope be limited to footwear; concurrent design patent and copyrights should be filed.

Patent 7,347,011- March 25, 2008 – Dua:
**"An article of footwear comprising: an upper incorporating a weft-knitted textile element having edges that are joined together to define at least a portion of a void for receiving a foot, wherein the weft-knitted textile element incorporates a single type of textile having a plurality of knit constructions; and a sole structure secured to the upper."** This claims a weft knit shoe with a single type of textile with multiple stitches that utilizes multiple seams, multiple layers, multiple types of knitting machinery (flat, circular and warp, and multiple components. This single textile technique and technology was and is common in machine and hand knitted slippers in the industry for many years prior to this patent. The multiple component has also been in use. The multiple knitting machinery fabrications assembled, has also been in use. None of these general claims for a knitted article of footwear have anything to do with,

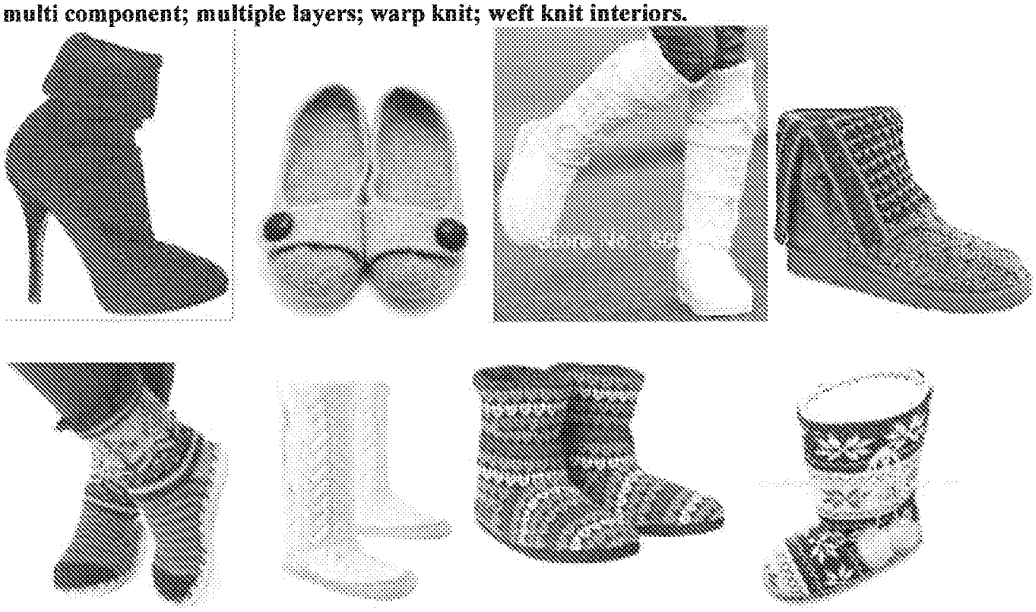
nor incorporate fully integrated flat knitting techniques, typically seen in 'whole garment', industrial, or technical textiles. 'Rib' is the only stitch identified in the claims, but no discussion of where it applies in the configuration, what it does, or how incorporated or why.

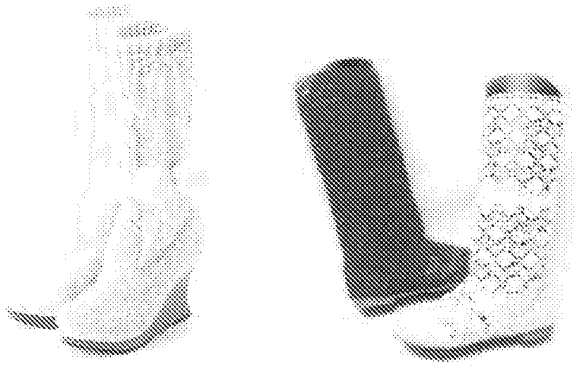


**(Above is a finished article of weft knitted footwear as a machine builder swatch Circa 2002. It incorporates a single type of textile having a plurality of knit constructions and is completely finished by the machine, finished edges that define a void for receiving a foot, and ready to be sewn to a sole as the commercial products shown below.)**

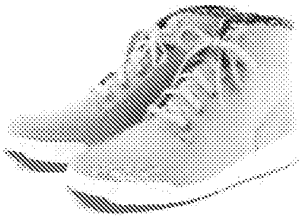
Both these patents relate to socks and cut and sew goods respectively; flat knit components are used in this sense in the later as a 'fabric component', which is supported by some other layer of material. Flat knitting is not shown in these patents as the base for the entire shoe structure and configuration. These are general patents – public domain knitting techniques that have been in the market decades, possibly a century or more, prior to these patents. The technology that we **built** for Nike is integrated knitting with dimensional structure and stability incorporated into the fabric at the time the fabric is constructed. We feel that type of claim is much stronger for Nike than a generic sock and generic cut and sew.

**Below – circular sock with uppers of unitary seamless structure; cut and sew; flat knit multi stitch; multi component; multiple layers; warp knit; weft knit interiors.**





**<-warp knit**



**<-Weft knit interior**

**[0024]** This list of materials covers every possible and potential material known to the industry and many already in use. **(See products above)** Please reconsider as a concurrent Design patent and copyright.

**[0025] Article of footwear having an upper incorporating a knitted component**
**US 8490299 B2 ; "2008/0110048 – Dua".** I respectfully decline to acknowledge that Bhupesh Dua had anything to do with this patent and refuse to perjure ourselves in continuing to reinforce what has felt to us, intellectual fraud. This is the same patent that arose from MY original inlay swatch to which Byron had to correct the patent, as Bhupesh had placed his own name on it as sole inventor. I only learned of the filing accidentally after it was already done, nearly a year later, Bryan Ferris and Gina Cheng helped me find Byron Kuzara to discuss it. I immediately protested it **(11/2/2009)** and insisted on speaking further with Nike legal to discuss (again with Byron).

**Bruce Huffa**

| | |
|---|---|
| From: | byron.kuzara <byron.kuzara@plumsea.com> |
| **Sent:** | Monday, November 2, 2009 4:24 PM |
| **To:** | Huffa, Bruce (ETW) |
| **Cc:** | Cheng, Gina |
| **Subject:** | Knit Application |

To: Huffa, Bruce (ETW)

Cc: Cheng, Gina

---

Bruce,

Gina mentioned that you may be an inventor of one of the knit applications we recently filed. In order to get the paperwork started to add you as an inventor, I will need a little information from you:

1) Full legal name
2) Country of citizenship
3) City and state of residence

Thanks,
Byron

---

From: Huffa, Bruce (ETW) [mailto:Bruce.Huffa@nike.com]
Sent: Wednesday, October 28, 2009 10:09 AM
To: byron.kuzara@plumsea.com
Subject: Nike Knit Patents

Hi Byron
I had a few questions on the patents.

1), What is the normal flow of patents ? example research / application / approval.

2), On the three patents we talked about, At this stage how protected are we ?
mainly the patent for the knit shoe ref #51-1677

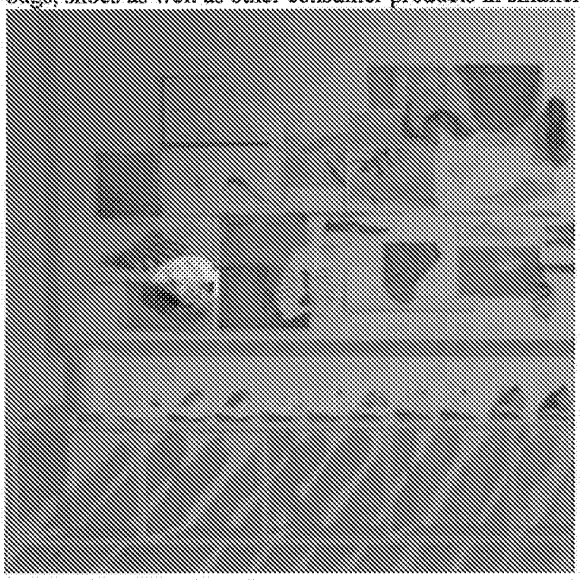
Thanks
Bruce

Bruce Huffa
Nike, Inc.
One Bowerman Drive
Beaverton, OR 97005
Tel: 503-532-4384
bruce.huffa@nike.com

*** This message has been archived. *** Links are for MAC use only!!!

This filing was amazing and disturbing to me considering that Bhupesh wanted nothing to do with any machine adaptations (worrying about warranties), contributed nothing to it, knew nothing about it until it was completed, and it was designed, created, and swatch proofed entirely off site, adapting my own machine, on my own time, at my own risk, with my own resources.

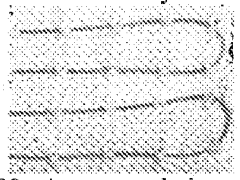
Neither did Ben Schaefer contribute anything to this original functional idea using inlaid cables, nor did they know anything about it until this original technical and functional textile concept was in a complete proof of concept swatch form – a rectangle with an opening with two sets of opposing cable inlays to form a closure system ready to accept a lace, cord, bungee, or hardware clasps. It was at that point anatomically suitable for an adjustable closure system for adapting to sleeve openings, pants fly, pants cuff, neck/yoke, bags, shoes as well as other consumer products in smaller and larger formats.



And only after seeing to original swatch, aesthetics work began – where they DID contribute, by incorporating the technique, making it market worthy.

We respectfully decline to reinforce and perpetuate an inaccuracy, and will not sign documents that reference this patent in the form that it stands now, without proper acknowledgement. Nor will we agree that this was created for hire. This inventorship of this patent was immediately protested by me, when I learned of it's existence, and again later protested in a letter sent directly to Mark Parker, Nike CEO, on July 29, 2012. As we related to you on your visit with Eric Gibson, we have never received a response to that letter or acknowledgement.

Inlay is also a common practice in complex technical textiles, medical, and other industries, where we are world class experts and utilize the technique for many technical markets including aerospace, apparel, and military projects to name a few. Below is one application example in public domain from a machine builder. There are many ways to inlay fiber, wire, etc. already in public domain and are common features advertised by the machine builders for technical textiles.



**What should have happened in 2008/2009:** A separate design patent and a copyright should have been filed by Nike, where Bhupesh Dua and Ben Schaefer could have been added to address the aesthetics IP. The aesthetics IP are what they contributed ONLY AFTER the function swatch was brought in to Nike by me, Bruce Huffa.

The original patent should have been corrected to properly reflect the **truth** once Nike legal was made aware of the situation in November 2009, and Bhupesh was made aware that incorrect filing of the inventors and contributions to this functional patent could/would invalidate the patent itself, putting Nike at risk. It is not our intention to put Nike in any risk. We've agreed to cooperate with Nike to help defend this

technology to the best of our abilities. However, I will not sign a document that sells or assigns this technique, prevents me from using inlay in other technical projects, or requests that I assign public domain techniques that already exist in other industries, but are just now new to Nike. This is IP I brought to Nike. I would not support Nike beyond footwear and would lodge protest based on mutual NDA agreement. I have waited since November of 2009 to have this resolved with Nike's legal team to fix the filing properly. Instead if properly attributing, Ben Shaefer's name was then added too – even after Bhupesh admitted to Byron in December of 2009 that I was the inventor.

Per our 2010 mutual NDA, this adapted 'adjustable inlay cable technique for a closure system' which was 'incorrectly attributed', and to which we have continuously protested the inventorship as it is currently recorded, because we developed the system entirely on our own, with no Nike resources, is for royalty free use by Nike in footwear only. Any other use by Nike requires permission of Fabdesigns, Inc. This was unpaid work, done in my own time, with our own resources and at risk to our machinery - no valuable consideration received. Also per our 2010 mutual NDA, Nike has a duty to protect our IP 'as it would its' own.' It might appear that extending the scope of this patent by reaching into other markets beyond footwear as this document does, and into other industries where we currently do business, would harm Fabdesigns, Inc. rather than protect. Further, we also advise that the reaching into other markets where 'inlay' processes already have existed for decades, may put Nike at risk. We can not support Nike into areas beyond the scope of footwear. I am already unhappy with how the patent is currently recorded. I have not officially protested with the patent office. That would be a last resort and one we would hope to not have to entertain beyond this conversation.

**[0029, 0031]** references Figure 6: **". . . strands 43 may be formed from any generally one-dimensional material that may be utilized in a knitting machine or other device that forms knitted component 40. . . . Accordingly, suitable materials for strands include various filaments . . . liquid crystal polymer."** This technique is for royalty free use by Nike in footwear only. Any other use by Nike requires permission of Fabdesigns, Inc. This was unpaid work, done in my own time, with our own resources, materials, yarns, filaments, and at risk to our machinery - no valuable consideration received.

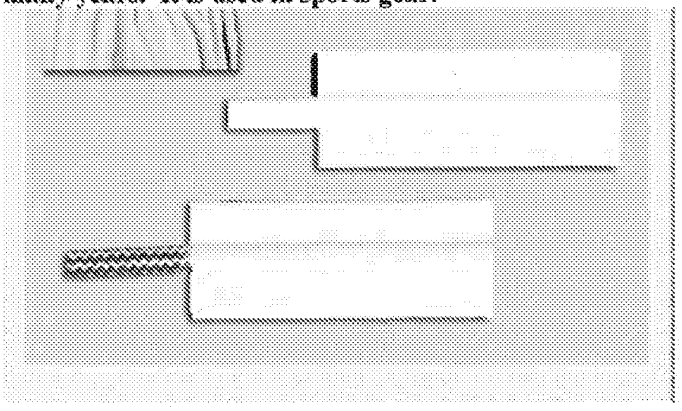
The stitch technique for creating tubular constructions and textured tubular constructions was also brought as part of our CAD library.
Strands within tubes was not invented at Nike. This is a common technique we use for closure systems in many industry projects as do other technical knit developers. (see Bort knee products) Configurations of rope, thread, webbing cable, yarn filament, and chain are already common practice in many technical textiles that have tubes. This inlaying of strands inside tube constructions is something already in use in fashion for draw string (shirred) garments, knit and wear, aerospace, military, medical and many other types of 3D knit applications.



The above Machine builder's swatch on face left with knit tub construction, having strands internally and externally over the tube (channel, tunnel) constructions, predates the entire Nike shoe program by several years. Circa 2002. Center and Right is a garment purchased at retail in 2003, manufactured commercially in China with a knit and wear component sleeve. Webbing is inserted into the channels and adjusts the sleeve.

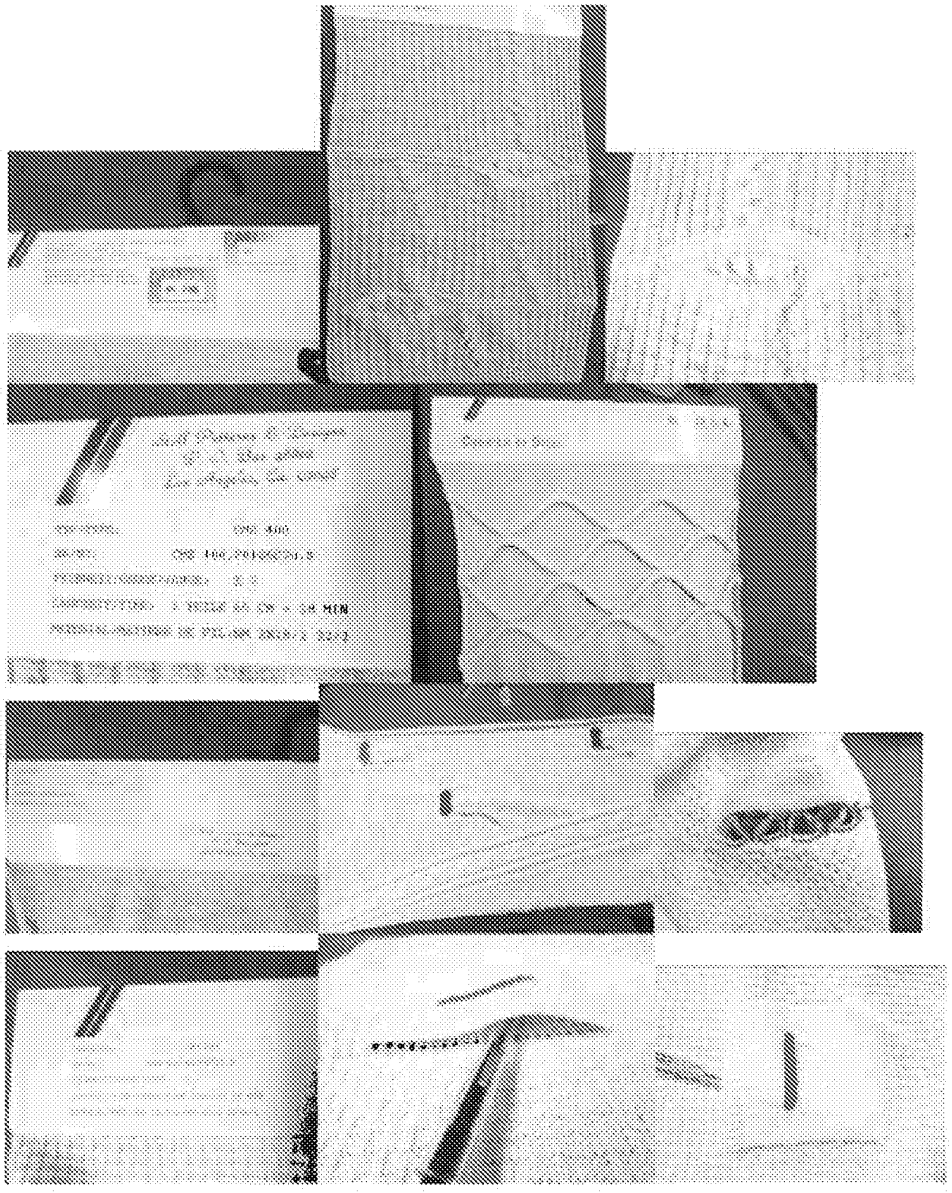
Likewise there are already knitted component waste bands already commercially available that have tube channels or voids created during the knitting process and cables, webbing, cords or other 'strands' inserted while the fabric is being produced.

**Below is a product from North East Knitting, which has been commercially available for many years. It is used in sports gear.**

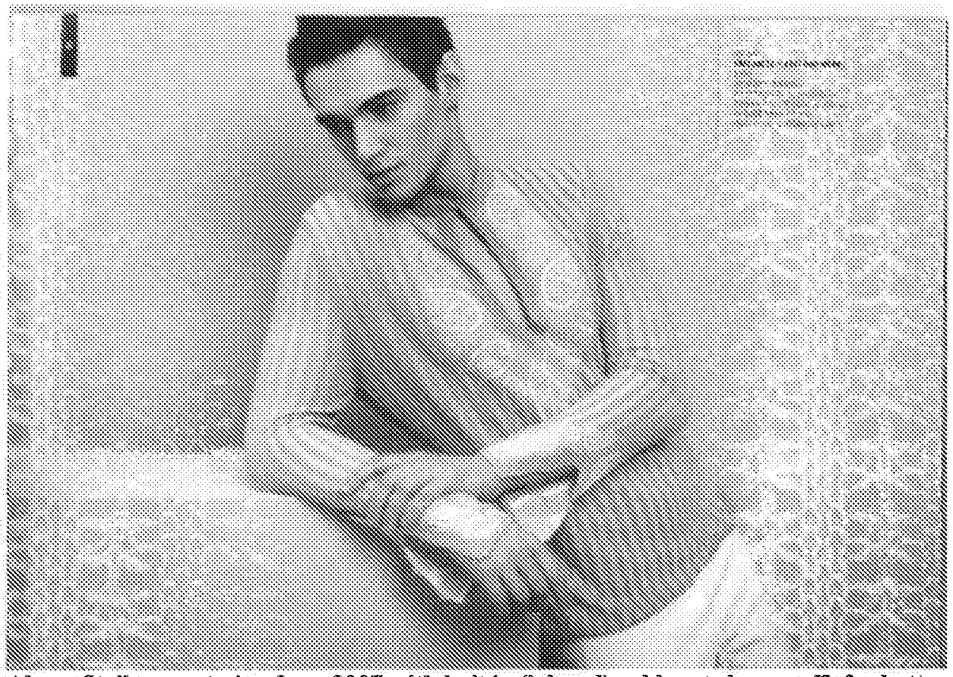


Likewise many aerospace, military and medical products use direct feed systems to insert (inlay) 'strands' into weft knitted components at the time the product or component is manufactured.

Below are swatches of just such applications in machine builder's swatches from 1987. These three dimensional techniques are what the CMS generation of Stoll machinery, SET & SES from Shima and other models from Steiger were built to do and demonstrated as such commercially since ITMA in Paris 1987.

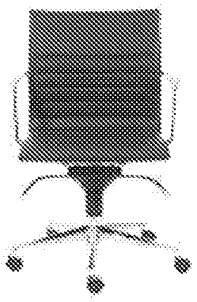


We respectfully suggest that these claims be focused on the specific footwear described in our Mutual NDA of June 1, 2010 – Schedule A Deliverables only.



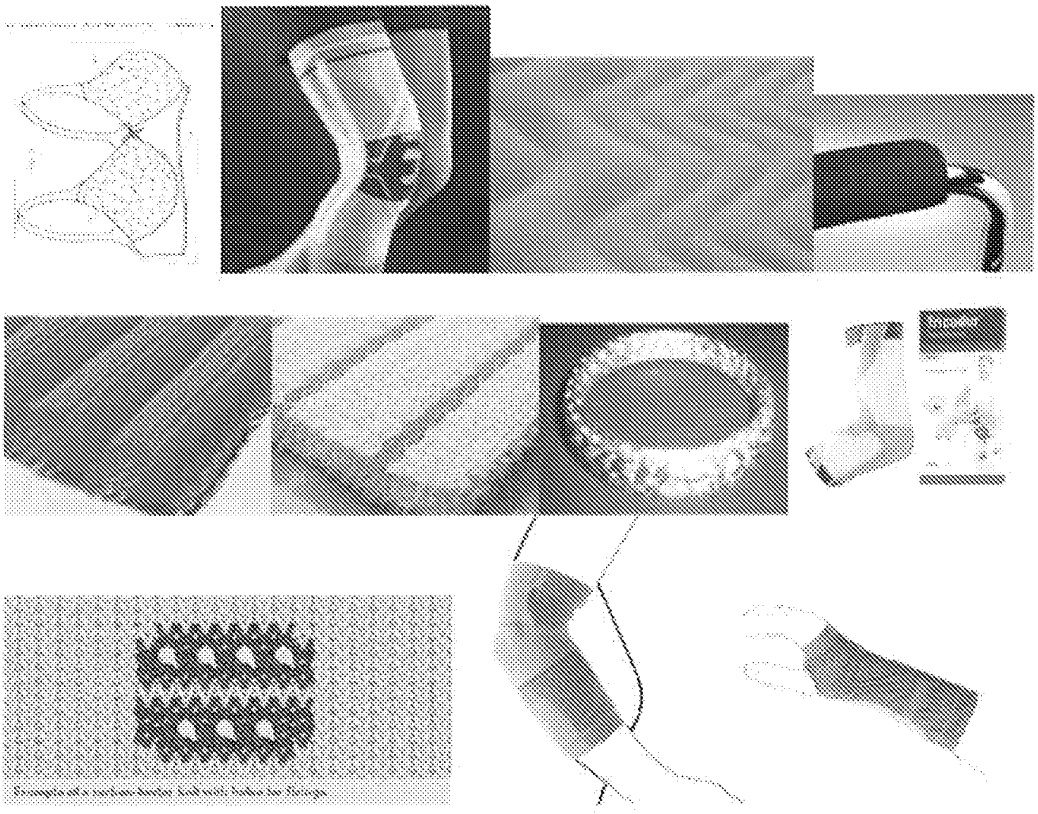
**Above Stoll presentation from 2007 with knit in (inlayed) cables at sleeve cuffs for button holes.**

**[0032]** This technique of a floating yarns to provide a compressible structure in a knitted collar [created in a 'zoned shape'] was NOT invented at Nike, but was borrowed from the medical textile industry, lingerie, upholstery, and aerospace constructions. The stitch technique was also brought as part of our CAD library. There are many examples in machine builders' libraries.



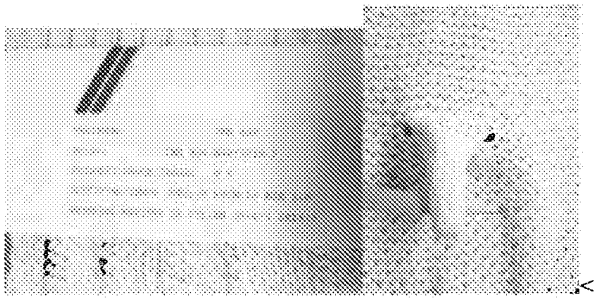
**< Commercial float spacer seat cover made on a Stoll Flat machine**

This padding technique was brought in from our own library of swatches, commercial medical products, machine builders, and finished apparel products in various forms some from our machinery, some in our materials, and brought in to Nike as a concept for integrating padding in the ankle zone and tongue. Spacers are commonly used and already part of 3D knitting industry for comfort regions. This is an industry building block that has been incorporated into the Nike product. It was not invented at Nike.



http://www.stoll.com/technical-textiles/upholstery-fabrics/4_2 - **knit to shape padded upholstery and technical textiles from the machine builder**

- We respectfully suggest that these claims be focused and scoped on the specific footwear described in our Mutual NDA of June 1, 2010 – Schedule A Deliverables only.
- We can not support Nike into areas beyond the scope of footwear as we know this technique was not invented at Nike and is already used in many markets past present and future.
- It was my idea to pad the tongue, not Nike's designers, knowing what techniques to use from my previous experience in 3d technical knit textile development. The adaptation was done for hire on Nike premises.
- We further suggest that the adaptation be filed as a design patent and a copyright.



**< 1987 belt loop technique from Machine builder's original CMS capability swatches. This is the technique used in creating the loop on the tongue. It is common technique for cinching, belting and lacing applications in many industries.**

[0044] **U.S patent Number 6,910,288 – Dua. Footwear incorporating a textile with fusible filaments and fibers** –respectfully commented: **The fusible system used in the Nike shoe is completely different than what is described in this patent.** Nike would not have STEAMABLE fusible in this knit shoe project if we did not supply it and show Bhupesh Dua and the team how it worked and why it was needed to secure an integrated knit system in strategic areas, with specific yarns.
I personally had to first steam swatches, then steam uppers at a flat knitting textile factory in Los Angeles (Trimknits, Inc.) with a vacuum steam table to create the demonstration components to show how I intended the fusible to help provide additional stiffness to portions of the whole shoe upper, which I did not want to flex, but to provide structure to the foot. I also showed Bhupesh and the Nike team how the steam fusible could be used to customize the fit for each wearer. I was never compensated for my R&D time or expenses in Los Angeles. We have many photos of the steam fusible process we calculated and recorded at the time at Trimknits, Inc. in Los Angeles.

We had been using this system of plaiting and floating fusible threads into flat knitted fabrications for various reasons for products in several markets since 1985. It is our opinion, that it is one thing to speculate and theorize how something might be done in a hypothetical textile application, and quite another to have actually employed, hands-on practiced and technically mastered a technique for many years, to contemplate stitch densities, load mapping, the nuances of yarn thickness, temperature, moisture finishing and tension to properly place a fusible adhesive yarn exactly where it's needed anatomically and not elsewhere in a whole garment integrated flat knit component. This is very different and specific; so specific it is engineered down to individual fibers and stitch levels, manipulated digitally in the CAD, like 'painting' an anatomical picture of the foot with steam glue. This special knowledge and technique was brought to Nike, not invented at Nike, nor known to anyone on the Nike team including Bhupesh Dua. This steam fusible is a completely different technique and process than the general thermoplastic fusible described in the above patent. Nike borrowed my machine's plaiting feeders for 3 years, used my original spec, used my swatches, and used fusible yarns from my studio.

Patenting this process to prevent us, the teachers, from using this technique and our native materials and processes that we brought to Nike and which had existed prior to our relationship in both our own practices as well as the knitting industry in general, is not acceptable. We can not support this patent over reaching into other markets and categories beyond footwear.

Patenting this technique beyond footwear, is also not acceptable as this was our technical know how and work we did on our own time and expense to perfect it. We respectfully suggest that these claims be focused and scoped on the specific footwear described in our Mutual NDA of June 1, 2010 – Schedule A Deliverables only.
We also suggest that Nike review the applicability of this patent **(6,910,288)** at all, since the actual fusible IP that I brought to Nike for this shoe process would seem far more protectible as it is different and much more specific to the function and performance of the shoe.

**[0053] ". . . In comparison with conventional manufacturing processes, the use of knitted component 40 may reduce the overall number of manufacturing steps. Additionally, waste may be decreased while increasing recycleability."**

We brought this integrated knitting concept to Nike and taught Nike how I proposed to adapt it to a shoe format and create an integrated structure, knit in one piece, with as little material as possible, and as efficiently as I could possibly get the machinery to function. Nike did not invent this manufacturing process.

**Art to Wear Proves 'Green' Fashion is Good business!**

*Source: Cosmetic Buffs*
*Dated: Aug. 07, 2008*

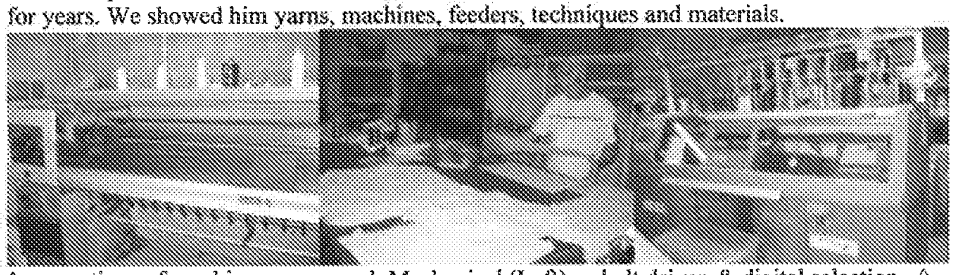
*U.S Knit Designer blocks sale of stocking imports – replaces mainly used makers in USA*

NORTH HOLLYWOOD, Calif. – North Hollywood, CA – Fabdesigns, Inc. today announced its' contemporary knitwear brand, Concetta Bosco, has a unique program focused on developing contemporary lifestyle apparel exclusively for the specialty market. The company which uses yarns from renewable sources such as Rayon – made from wood pulp – bamboo, and other natural fibers stocks only raw materials and makes customized knitwear here in the USA for retailers of better and designer goods. The company already sells to some of the top specialty stores in the USA who are keen on differentiating their stores and maintaining a unique identity in an overly competitive industry.

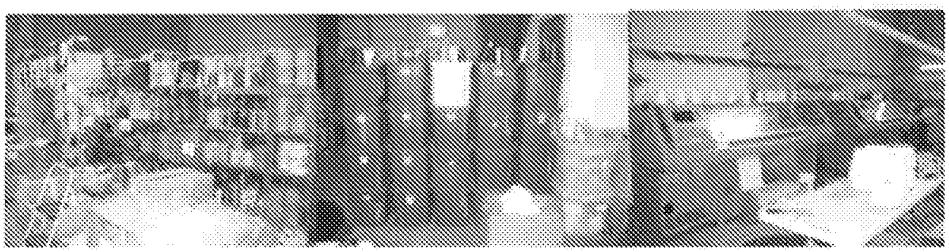
"We already fill a distinctive niche in the specialty store market, supplying exquisite art-to-wear which is high quality, on trend and reasonably priced," says Connie Huffa, Director of Design who has more than 15 years of experience as a knitwear designer. "We are completely vertical which means we create everything in house, designs, fabrics, silhouettes and even our trims. We don't stock any finished garments, only premium quality yarns from the USA and Europe. This saves on energy, materials and space among many other things. The one thing that any designer worries about these days is cheap, imported knock-offs. We don't have that issue. Every piece is made to order by in house expert craftsmen and artists. We sell to finer shops across the USA, Canada and the Caribbean who want items 'sculpted by hand' without the worry of seeing a similar, but less impressive illusion of the same style down the block. So, these specialty boutique customers get the 'real' fashion they want with out the frustration of seeing the styles saturating the market in department stores and discounters. If a larger chain wants to buy from us, we make them their own exclusive styles that suit their customers and climate. We're small enough and agile enough to develop individuality for these stores without the outrageous costs."

Nike and others had tried for 9 years with nothing but a circular knit sock to show for it; a few slipper like prototypes that Nike did not like.

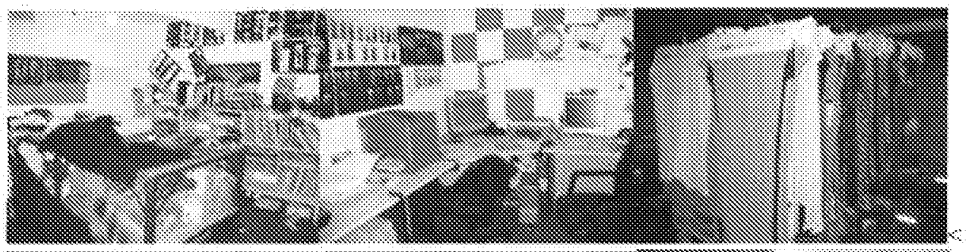
This was one-sided training, with Fabdesigns, Inc. doing the teaching of this manufacturing process. Fabdesigns, Inc. was approached by Nike and met with Nike's representative Bhupesh Dua, early 2008, and we explained to him the technology of what we were using on our own products and Stoll machinery for years. We showed him yarns, machines, feeders, techniques and materials.



^ generations of machines we owned. Mechanical (Left) vs belt driven & digital selection . ^



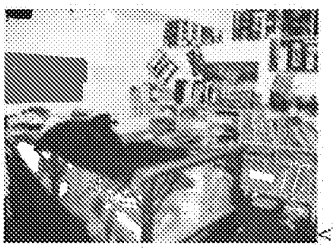
**^ Left: $250,000 plus of fashion, industrial, aerospace, medical, and performance yarns. Center: yarns requiring light, air, and humidity sensitivity storage handling. Far right: medical products – prototyping and production on multiple generations of Stolls**



< swatches



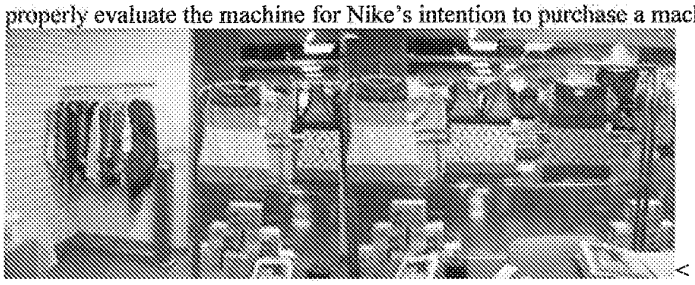
For many years prior to our relationship with Nike, and the entire knit shoe program we engineered other companies' complex technical projects and we sold our own label apparel and accessories to high end luxury boutiques that had extremely high standards for quality, materials and finishing. We made everything in our couple thousand square foot, 2 story, vertically integrated factory in North Hollywood, California. Yarn came in, finished goods were shipped. All this and several hundred of our fabrication concepts were shown to Bhupesh in January of 2008.



**< Bhupesh, my wife Connie, also a textile engineer, and I sat in our design room for several hours, sifting through hundreds swatches, performance yarns, and garments.**
**Side note:** Connie graduated with the same PCT&S BSc degree as Nike's Ed Thomas and Darien Hopkins-Reese; 1 year behind and knows them well. They had the same knitting teacher, Helen Estakrian. Ed joined Nike immediately after graduation. Connie joined Stoll in 1987, after already being at the forefront of flat knitting on Shimas and many other types of knitting equipment already for 4 years with Van Heusen's factories. Connie also taught textiles on a master's level at the same prominent college they all graduated from in '96 through '98. Connie met with Ed in June of 2008 at Nike, to catch up, showing him the same swatches – minus the ones Bhupesh still had on loan.

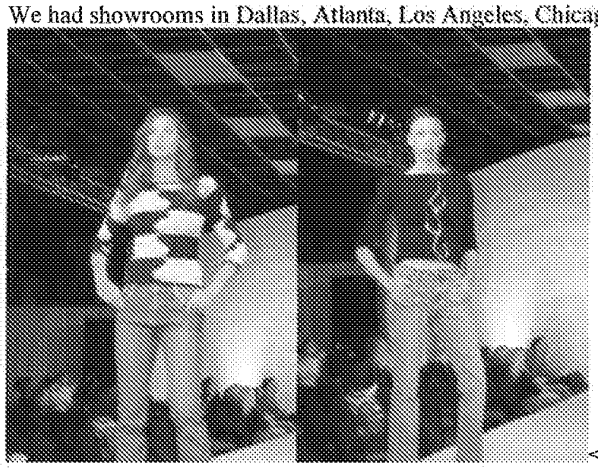
50

Bhupesh 'borrowed' half a dozen of our most cutting edge pieces in January 2008, to bring back to Nike after several hours of conversations of how these could be applied to running shoes and would be interesting to Nike. He spent the whole day at our studio, except for lunch at the British Pub. He said that he wanted to borrow our swatches to prove to his manager that I had the advanced technical skills to properly evaluate the machine for Nike's intention to purchase a machine to create a knit shoe.



**< Our showroom in the Dallas Mart**

We had showrooms in Dallas, Atlanta, Los Angeles, Chicago and a road rep in New York tri-state area.



**< Our designs at Atlanta Mart Fashion show**

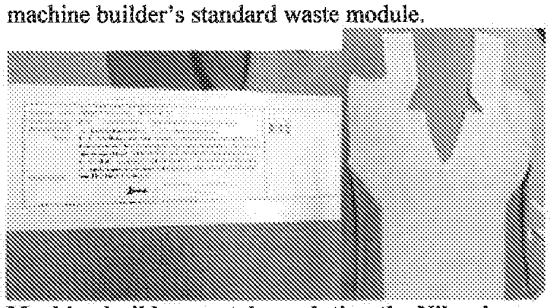
Our signature products had strategically placed monofilament (opaque and transparent) yarns for stretch, transparency, performance yarn areas, strength, rigidity, fused and everything you and everyone else are now reading about and filing for Flyknit. You saw these garments here in our studio

Fabdesigns, Inc. is just one of several technical knit developers in the world that have also created and engineered these same 3D knit to shape techniques for military, aerospace, medical, automotive, outdoor sports, and many other companies sent to all of us by the machine builders when the technical project is not a sweater, is too complex or they don't have staff experienced enough to tackle building the samples, training staff, and setting up the manufacturing plants. We could not practically support Nike in defending this patent beyond footwear.

However, the fact is for footwear, there was and is no one else in the world that knows how to do what I did for Nike to create a complete 3D knit manufacturing platform for developing and mass producing structural and anatomically correct knit shoes and train the staff at Nike to program, QA & QC production best practices on an exponential scale suitable for the anticipated size of this entire project. Plus create lean and sustainable best practices in development and production to minimize materials and waste and optimize efficiency throughout the process

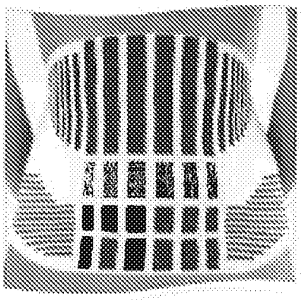
For over 30 years, I have taught people this material saving 3D knit manufacturing system as a master instructor for the machine builder, for FIDM college, Cal State Los Angeles, knitting students at several large apparel companies, clients in several countries, and interns at Fabdesigns. The system I created is not unique to Nike. The waste transition fabric that I built into the Nike shoe process, I created on my own and have been using since 1981. This is unique to my style of cost savings. The knitting principle of this technique goes back to the original CNCA-3F – a fully fashioned Stoll machine of which I was globally

known in the industry for mastery – the go-to technical expert. This is almost as old as Nike itself. My transition technique uses even less material and is far more productive than what is supplied and used by the machine builder. If it saves Nike 2 minutes per shoe, which is an immense savings in itself over the machine builder's standard waste module.

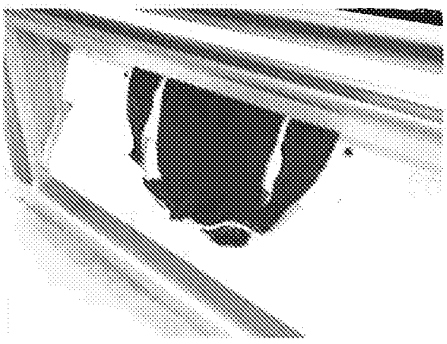


**Machine builder swatch predating the Nike shoe project.** Note the construction of an integrated one piece panel with a void is the same machine knitting path in this example of a V neck with knit in lapel collar as the very first knit shoe prototype I produced for Nike in June 2008, two weeks after Nike received its' machine. This is a basic shape block starting point to build pieces that wrap around body limbs. I chose this type of structure to test the machine for Nike's interest in producing shoes. This is also the similar stitch structure to the first knit shoe prototype that was used for proof of concept that the Stoll 530 machine was viable for Nike's purposes.

This unconventional manufacturing process that integrally knits just what is needed where it is needed, and to shape is what Fabdesigns, Inc. specializes in. It is the whole basis for three dimensional knitting, whole garment technology, knit and wear and technical flat knit textiles. This concept and hundred of examples have been advertised by knitting machine builders, Shima (1995) and Stoll, for nearly 20 years.







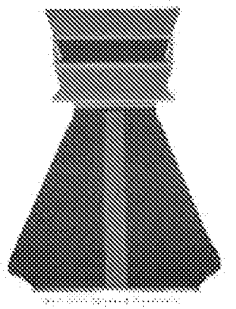
http://www.shimaseiki.com/wholegarment/ **"In sharp contrast, SHIMA SEIKI's revolutionary WHOLEGARMENT knitwear is produced in one entire piece, three-dimensionally, directly on the knitting machine. Consequently it requires no expensive, time-consuming post-production labor"**

http://www.indiantextilejournal.com/articles/FAdetails.asp?id=1457 – **Shima Whole Garment 1995**

http://www.stoll.com/stoll-produkte/knit-wear-class/2_7 **Stoll Knit and Wear technology; stitch density progression**

It is a technically complex manufacturing system that takes ONLY the most skilled technical people at the machine builders to program, due to cost and complicated variables in materials, CAD, and machine types. Nike has only ONE type of machine for production, and only ONE gauge.

*From the CMS technology* **entry level model**





**^ September 1995**

This 'knit in one piece concept' to reduce components, eliminate cutting and minimize sewing, is new to Nike, but not the world and is possible on MANY machine makes and models. Fabdesigns, Inc., specifically Bruce Huffa, has an long well documented career of excelling in bringing this complex manufacturing system to life in many companies, transforming knit production to reduce waste and create 'mass customization' production processes individually created for specific companies to reduce costs and carbon foot print. This is the ability to create lean manufacturing for flat knitting over the entire line of Stoll machinery circa 1978 through the 2013 ADF HP in every gauge, plus other makes and models – not just the one machine specification Nike uses – 530 HP 7.2/14.

One example of how this system I brought to a company created enormous savings and production agility and one which is documented in many text books is French Rags. Brenda French had many types of machines, numerous gauges, and hundreds of product styles. She custom made one of a kind garments with their names knitted inside the garment. http://frenchragshappenings.wordpress.com/the-principals/

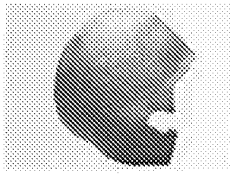
- We respectfully suggest that these manufacturing process claims be focused and scoped on the specific footwear described in our Mutual NDA of June 1, 2010 – Schedule A Deliverables only.
- The manufacturing process is actually inherent in the machine builder's software and engineering and in Nike's case is specific to a Make and Model of machinery. We believe this claim puts Nike at risk as 3D integrated all in one piece technology was brought to Nike, not invented at Nike. And it predates everything Nike has patented for footwear by more than a decade.
- We can not support Nike patenting knit to shape, 3D integrated technical knitting as a manufacturing process, or into areas beyond the scope of footwear as we know this

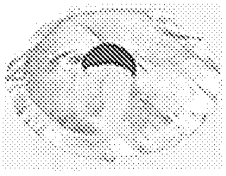
technique was not invented at Nike and is already used in many markets past present and future.

- Supporting this claim beyond footwear would undermine our past present a future work in our industry as well as the entire industry. We believe this general catch all puts Nike at risk.
- We further suggest that the adaptation be filed as a design patent and a copyright.
- Recycleability. Cradle to cradle technology for knits was suggested to Nike for this knit shoe project on the initial consultation with Fabdesigns, Inc. as we had recycled yarns and fabrics in house and showed the swatches to Bhupesh in January of 2008. These were/are commercially available materials, off the shelf from Unifi, which we were using for an initiative for a different apparel project. The concept was to use as little material as possible, having that materials already being recycled, and able to be recycled yet again. This is a 'green' concept we've also brought to automotive consumer products and several other industries. This is a marketing point in our opinion, not a patentable claim. We can't see reasoning to support recycleability as a patentable claim. Perhaps this should be reviewed.
- Sustainability and reduced carbon footprint are industry wide goals for several years, and has been our mission in all Fabdesigns, Inc. projects. The technology is not really a brand new technology, but one based on our own studio techniques and best practices that I, Bruce Huffa, created on my own for years prior to bringing them to Nike. When we met Bhupesh in 2008, we were a small highly technical apparel company with limited resources so we created as little waste as possible and cut out as much sewing and finishing as we could to keep costs down and fashion expectations high for many years. Our factory's scrap was so small that we had no industrial trash service. We had almost zero waste because of our techniques. This materials savings may not be a claim exclusive to Nike as the materials for knitted recycled and recyclable products have been on the market for many years. Some are in use already by Nike's competitors. http://www.repreve.com/business/ProgramsAndProducts/RecyclingCenter.aspx
- Material savings for knitting components to shape have been a benefit of the fully fashion industry since the invention of the machinery. Specific to flat bed machinery: (US2680363 A circa 1954, US2783631 A circa 1957)

[0054] **"the invention is disclosed above and in the accompanying figures with reference to a variety of configurations. The purpose served by the discloser, however, is to provide and example of the various features and concepts related to the invention, not to limit the scope of the invention. One skilled in the relevant art will recognize that numerous variations and modifications may be made to the configurations described above without departing from the scope of the present invention, as defined by the appended claims."**

We absolutely object to patents for this technology reaching beyond footwear. This technology of integrated knitting to shape and combining components was brought to Nike, by Fabdesigns, Inc.'s Bruce Huffa. This integrated knit to shape technology is widely known and employed in the knitting world, specifically the technical textile knitting world, using multiple stitch techniques and multiple yarn types – even multiple gauges. Signing this document would prevent us from using the technology invented by the machine builders to continue making a living creating complex 3 dimensional integrated flat knit textile fabrications.





http://www.stoll.com/technical-textiles/composite-materials-and-industrial-textiles/4_3

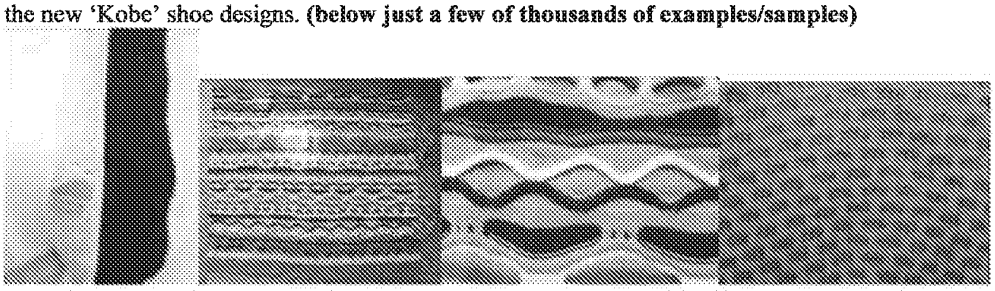
The scope the spacer that we adapted for Nike is specifically for agreed specific types footwear. Shaped spacers already exist in other industries. They are building blocks for other products as noted above. This adaptation was created on our own time and incorporated into Nike products. Signing this document would prevent us from using spacers in any other industry. We respectfully suggest that this be a design patent or a copyright as both shaped spacers and 3D knitting are not exclusive to Nike, though new to Nike. http://www.stoll.com/technical-textiles/upholstery-fabrics/4_2

**Further Notes:** The real origins of these strategic knitting techniques and multi stitch combination fabrications started in the 80's with those loud 3D Coogi / Cosby type sweaters which came about due to technological advancements of CAD and computerized flat knitting machinery that was driven by flat belts rather than chains, gears and digital needle selection rather than mechanical. The advance in multiple technologies allowed inlay, tubes, tunnels, channels, textures, intarsia, and jacquards all in the same line of knitting.



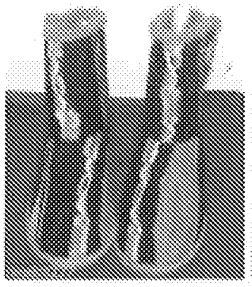
< 1987

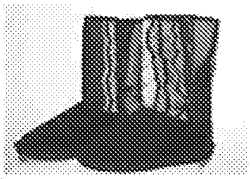
We created and engineered hundreds of these multi textured garments, accessories, socks, hats, gloves, bags, leggings, and more - for knitting factories all over the globe. Almost every factory that has flat machinery makes, or has made these fabrics at some time. We have kept these 1980's techniques in our computer library palette for several decades as they are now public domain for many makes, models and gauges of flat knitting machines. Incidentally, these are the same knit techniques you are seeing pasted into the new 'Kobe' shoe designs. **(below just a few of thousands of examples/samples)**





<1992





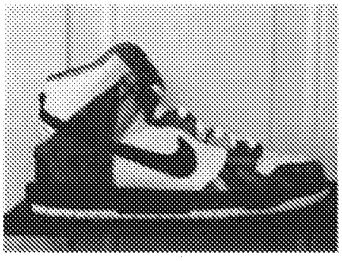
Coogi did have these stitches in shoes.

UNITE

PRODUCTS MEN WOMEN BLOG TOP BRANDS ABOUT CONTACT

UNITE FEBRUARY 15, 2010

Nike Dunk High Premium SB 'Coogi' 'Cosby" "Huxtable" In-store now



Nike SB has delivered the much hyped Dunk High Premium 'Coogi.' UNITE has a limited supply of February's quickest sell-out in-store now. Come in to get your size or call to reserve a pair.

(613) 565 5774

**^(Not sure if this was an actual Nike Coogi partnership?) 2010. Possibly weft knit cut & sew.**

**Claims: [1 through and including 13]**We object to this claim as it extends beyond footwear to incorporate our IP. This is for royalty free use in footwear only. Any other use by Nike requires permission of Fabdesigns, Inc.
I respectfully decline to acknowledge the current registered inventorship of US Patent Application 2008/0110048 to Bhupesh Dua which is incorporated into this patent as it has been protested by me since I learned of its' existence as noted previously. I will not sign this as it is not true.

- **[0047]** The **figure 7G of 51-3345 is inaccurate. It is NOT a vertical inlay. It would be a horizontal inlay because of how the knit shape is formed. The Nike shoe is comprised of knit to shape wedges, zones and complex knit dimensions that would make this absolutely impossible as a vertical inlay. Direction is completely 90 degrees wrong. Secondly, the technology is not there yet to create a vertical inlay in a knit to shape shoe. I am working on perfecting it with a machine builder. Even though I can and have created vertical inlay in a knit to shape shoe format, (I HAVE ALREADY CREATED MULTIPLE VERTICAL INLAYS IN A SHOE FORM) the software is not reliable yet to produce it consistently. Specific**

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**machinery and complex adapted machine accessories are also required.** Without jeopardizing my current IP further, **I assure you that vertical inlays do not and can not look like figure 7G in a shoe.**

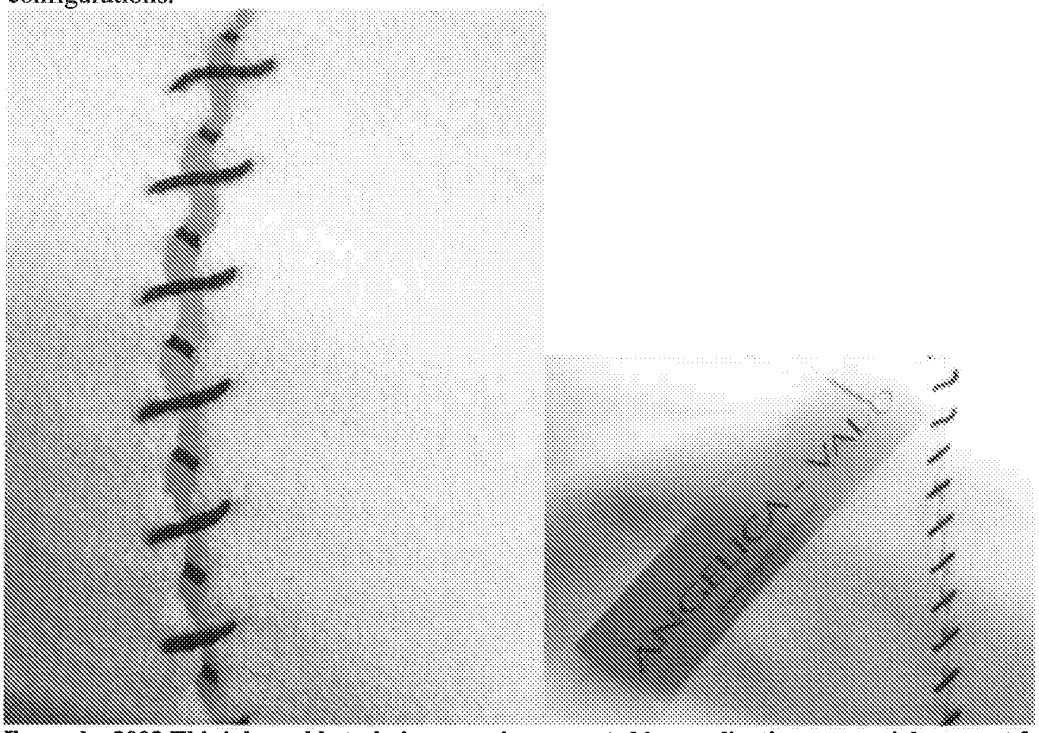
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**As for 51-3723** otherwise known as 'method of lasting an article of footwear" (Strobel)

Front page is fine. Agreement page is as previously noted above – royalty free use for footwear only. This was unpaid work, done in my own time, - no valuable consideration received. Suggest royalty free or such wording.

**Page 3: [0008]** We object to this claim as it extends beyond footwear. This is for royalty free use in footwear only. Any other use by Nike requires permission of Fabdesigns, Inc.
**Page8: [0034]** "As an alternative to flat knitting, lasting element 40 maybe formed through weaving or warp-knitting with a weft insertion." Please check these other industries as we believe these structural configurations may already exist. Without searching prior art, we can not be sure that they are not used for lasting shoes.
**Page 15: [0056]** We object to this claim as it extends beyond footwear. This is for royalty free use in footwear only. Any other use by Nike requires permission of Fabdesigns, Inc.
**Page 20: Abstract:** This is for royalty free use in footwear only. Any other use by Nike requires permission of Fabdesigns, Inc.

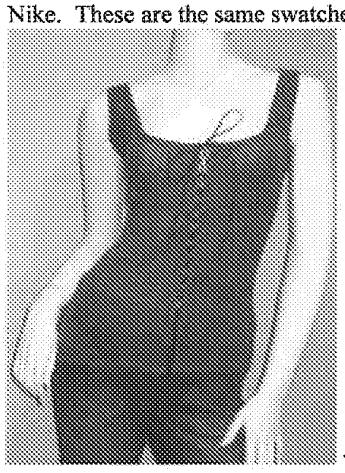
This is a stitch technique that we have used for many years in various sizes, shapes and configurations.



**Example: 2002 This inlay cable technique was incorporated into a client's commercial garment for an adjustable closure to adjust the amount of 'skin' the wearer wanted to show.**

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We also showed you several examples on your visit of this technique that predated our relationship with Nike. These are the same swatches that were shown and lent to Bhupesh in January of 2008.

 **<- our own sweater line 2006**

Per our 2010 mutual NDA, this adapted adjustable inlay cable technique for a closure system between to fixed length panels (straps, strips), where the cable is inserted automatically by the knitting machinery, and flows freely through holes knit in the panels (straps, strips) to provide tensioning adjustment, drawing the opposing sides closer together along substantially all of the length of the panel (strap, strip) components, was developed entirely on our own time, with our materials, our machinery, with no Nike resources, is for royalty free use by Nike in footwear only. Any other use by Nike requires permission of Fabdesigns, Inc. This was unpaid work, done in my own time, with our own resources and at risk to our machinery - no valuable consideration received. Also per our 2010 mutual NDA, Nike has a duty to protect our IP 'as it would its' own.' It might appear that extending the scope of this patent by reaching into other markets beyond footwear as this document does, and into other industries where we currently do business, would harm Fabdesigns, Inc. rather than protect. Further, we also advise that the reaching into other markets where 'inlay' processes already have existed for decades, may put Nike at risk. We can not support Nike into areas beyond the scope of footwear.

Therefore I can't sign a document that sells or assigns this technique, prevents me from using inlay in other technical projects, or requests that I assign public domain techniques that already exist in other industries, but are just now new to Nike.

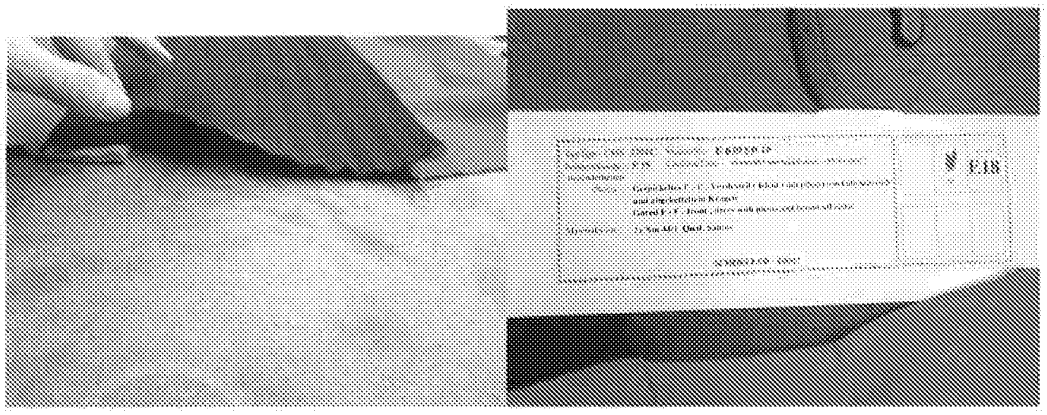
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**As for 51-3764** otherwise known as 'knit tongue'

Front page is fine. This was paid work, done for hire. EXCEPT
**[0004]** Recycleabilty – as noted previously
**[0006]** Needs to be footwear specific as noted previously. This knitting of a flap in a 3 dimensional shape is in public domain for other industries, predating the entire shoe project. See machine builder swatches below. (These were found in less than 10 minutes research and is by no means exhaustive)

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Trend Collecti



**[0045]** This paragraph is ridiculous. It would mean that neither we nor any of the existing people and machine builders could make 3 dimensional knit components. It would mean that the entire manufacturing process that we built for Nike with our own IP, we could not use in ever knitting for any other entity on earth or in our government projects. Totally unacceptable and impractical to defend. We could never agree to sign that this is a valid claim as it would create a situation where the entire knitting industry to cease to exist. You've covered every single category of knit componentry that we discussed in our conversation with you and Eric Gibson here in August 2013. Much of this is already in use in these other industries for many years; some of this uses information we disclosed to Nike as part of the LAUNCH 2013 project that we participated in; and other parts would use our own IP subject to the June 1, 2010 mutual NDA, section 4.1.

Incidentally, we learned from several people (industry colleagues) on the LAUNCH 2013 committee that Nike requested to specifically have Fabdesigns, Inc. advanced knit project removed at Nike's discretion from the finalists in the competition, even though we had reached 5th place in on-line voting. This doesn't matter to us as several of the concepts are currently projects is in development with DOD contractors. We have no intention of disappointing any of our past, present or future clients that rely on our IP. What does matter to us is that Ed Thomas was on the committee and had access to the confidential IP we released. What also matters to us is that the IP for this LAUNCH SYSTEMS 2013 is promised to remain with the respective inventors as per the entry rules and regulations.
We respectfully suggest that this patent be refocused for the specific footwear we agreed to in our mutual NDA June 1, 2013 – schedule A – Deliverables, as we would need to protest this with the patent office, because in the manner that it is currently written seems to reflect a far broader scope than we originally agreed. This list of applications is especially disturbing to us since this is being filed after the LAUNCH SYSTEMS 2013 project, which is sponsored by Nike, and this patent appears to contain elements that were not released to the general public, and only to the LAUNCH SYSTEMS committee and respective sponsors.

**[0053]** This describes the 3 D knitting process – 'unitary construction' Objections as noted above in previous patents. We respectfully suggest that this be refocused for the specific types of footwear previously noted, as we would need to protest this with the patent office in the manner that it is currently written.

**[0054 – 0060]** Inlay already exists. Objections as previously noted for both existing in the market and using our IP in other industries (June 1, 2010). We respectfully suggest that this be refocused for footwear.

**[0061]** Figure 7 is from our IP. Objections as previously noted for both existing in the market and using our IP in other industries (June 1, 2010). We respectfully suggest that these claims be focused and scoped on the specific footwear described in our Mutual NDA of June 1, 2010 – Schedule A Deliverables only.

**[0062-0063]** These describe general properties of inlay – ALL of which already exist in other industries. This includes figures 8a & 8b. This is not practical to defend. We respectfully suggest that these claims be focused and scoped on the specific footwear described in our Mutual NDA of June 1, 2010 – Schedule A Deliverables only.

Also note that in no cases have Nike products used the combination feeder for anything else than an INLAY feature. The inlay feature as shown in Figure 9 WAS possible without the combination feeder. It was just not as efficient. It is also machine make, and model specific as previously noted. General inlay descriptions are not practical to defend beyond footwear as they already exist. (Multiple objections as noted previously)

**[0065-0066]** Plaiting: Generic plaiting already exists as previously noted. The plaiting of steam fusible to digitally place it where it needs to be, is our IP brought to Nike and subject to our June 1, 2010 mutual NDA, section 4.1. We respectfully suggest that these claims be focused and scoped on the specific footwear described in our Mutual NDA of June 1, 2010 – Schedule A Deliverables only.

**[0067]** **Figure 7E** is our IP brought to Nike and subject to our June 1, 2010 mutual NDA, section 4.1. We respectfully suggest that this be refocused for specific footwear. See photos.

**[0068]** Padding with floats: Generic float padding already exists as previously noted. The sculptured padding to digitally place it where it needs to be, is our IP brought to Nike and subject to our June 1, 2010 mutual NDA, section 4.1. We respectfully suggest that this be refocused for specific footwear.

**[0070-0079]** Structured Inlay closure system and base structure reinforcement with tensile members. Generic inlay structures already exist in many industries form medical to aerospace as previously noted. The sculptured inlay to digitally place it where it needs to be, is our IP brought to Nike and subject to our June 1, 2010 mutual NDA, section 4.1. We also further protest the December 2008 patent application that was wrongly attributed. Much of these paragraphs already exist in knit and wear and whole garment technology since 1995 as previously noted. We further respectfully suggest that these claims be focused and scoped on the specific footwear described in our Mutual NDA of June 1, 2010 – Schedule A Deliverables only.

**[0080]** tubular and interlock tuck knits are generic and have been used in 'zones' for medical among many other industries. We further respectfully suggest that these claims be focused and scoped on the specific footwear described in our Mutual NDA of June 1, 2010 – Schedule A Deliverables only.

**[0081-0083]** 1x1 mesh knit, 2x2 mesh knit, 3x2 mesh knit are not technical terms. The loop diagram figures 13A through and including 13H as shown also and have been used in 'zones' for medical among many other industries. We further respectfully suggest that these claims be focused and scoped on the specific footwear described in our Mutual NDA of June 1, 2010 – Schedule A Deliverables only.

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**[0084-0086]** There is no such technical knitting term as 'mock mesh'. This appears to be transfer jacquard, but without seeing the fabric, I am guessing the proper terminology from your description of 'indentations'. Incidentally these are all stitches in the CAD library, which I left properly named in 2011.

**[0087] Padded Zones.** Generic float padding already exists as previously noted. The sculptured padding to digitally place it where it needs to be, is our IP brought to Nike and subject to our June 1, 2010 mutual NDA, section 4.1. We respectfully suggest that these claims be focused and scoped on the specific footwear described in our Mutual NDA of June 1, 2010 – Schedule A Deliverables only.

**[0088]** This paragraph stating surface texture/interest is exactly why we state this should be part of a design patent. The stitch types described here have little to do with the structure and function of the shoe.

**[0089]** 14 A is the first test shoe complete in June 2008 – I support this though it is generic in shape just as the first knit in one piece shoe was. This is absolutely defendable. However **14C I absolutely object to** as it is a represents my IP of the closure system I brought to Nike and which is subject. This is the EXACT same swatch to which Byron had to correct the patent, as Bhupesh had placed his own name on it as sole inventor. Nike's entire investment in the inlay concept and the development of this (as noted in great detail above) swatch from Nike's Milan presentation, which was the birth of the Flyknit, was **$0**. Bhupesh's response to Byron why he put himself solely on this patent, was that, 'he always wanted a knit shoe.' It also took until June 2010 to get my name added to this patent, after Bhupesh finally admitted to Byron that I had been the one who invented this concept in our December 2009 meeting with Byron. I will not sign this Figure, and officially lodge protest. This inlay structure is my IP, created on my own time, with my own resources, at my expense, with no valuable consideration ever from Nike, brought to Nike, and subject to our June 1, 2010 mutual NDA, section 4.1. We respectfully suggest that this be refocused for the specific types of footwear previously noted, and that the original patent be revised and attributed to reflect the truth.

**[0090]** We respectfully suggest that this be refocused for footwear. These statements represent our IP brought to Nike and subject to our June 1, 2010 mutual NDA, section 4.1. We respectfully suggest that this be refocused for specific footwear as previously noted.

**[0096-97]** Description of an Inlay feeder. This is dated, no longer true from two years before this filing date; this information is specific to machine make and model generation, specific to M1+ CAD programmability, specific as previously noted above. Steiger have provided a Tremeur' inlay feeder with direct yarn feed that also knits for several years; Stoll provide a multi- feeder with direct yarn feed that also knit, inlay, and fit 32 per machine on new generations of machines since ITMA 2011. Also note that NIKE products do not currently use the combination benefit that I built into my feeder design. <u>They utilize the inlay and close parking on the same rail features only.</u> This inlay technique was already possible and done without the combination feature using an inlay feeder I created from my own machine parts, tested and swatched on my own time and expense, and later lent to Nike until Spring 2010 when Jason Badden gave a CNC company budget money. The combination feeder optimized the production times. Furthermore this combination inlay structure is my IP, invented on my own time, with my own resources, at my expense, with no valuable consideration ever from Nike, brought to Nike, and subject to our June 1, 2010 mutual NDA, section 4.1. We respectfully suggest that this be refocused for specific types of footwear only as previously noted.

**[0098-0099]** describe inlay practices already in use in many other industries. We respectfully suggest that this be refocused for the specific types of footwear only as previously noted.

**[00100-00109]** full description of my feeder and a lot of general inlay practices already in use in many other industries. We further respectfully suggest that this be refocused for the specific types of footwear only as previously noted.

**[00110- 00116]** describes general knitting on a flat be machine. The pop up and lowering techniques are already features on the Steiger machinery yarn feeds predating this feeder design.

**[00117-00119]** this is a common inlay description. Figures 21E through 2H. in [00119 the yarn feeder moving ahead of the regular feeder is specific to make, model and generation. Both Steiger and Stoll have inlay / knit feeders that move independently of the carriage and perform inlay, intarsia, knit and in addition perform other weave type actions associated with warp knitting.

**[00122-00124]** is a correct depiction of what the combination feeder does, but this is not currently used in ANY Nike product in this manner.

**[00125-00127]** - is a correct depiction of what the combination feeder does, but this is not currently used in ANY Nike product in this manner. It is also not true that 'various conventional knitting machines' can accept this feeder. This feeder is VERY SPECIFIC to make, model and generation of Stoll machinery ONLY.
[00128] Figure 8B is generic inlay NOT PLAITING. Fusible is already used in this inlay manner and inlaid into fabrics on other machine types and generations in many other industries. Plaiting is a different process as described previously and uses a very different knitting technique, and specific fusible technology IP we brought to Nike, subject to our NDA of 2010. The wording in this paragraph needs to be clarified and we respectfully suggest that this be refocused for the specific types of footwear only as previously noted.

[00129] Mock mesh is not a proper knitting term – it does not exist. As noted previously, this may be referring to transfer jacquard. The racking is how the loops get transferred from one bed to the other. Transfer jacquard is not depicted in these figures. Typically the transfer is in one direction only front to back (face of fabric to rear). This is a very common and very basic sweater industry stitch not a patentable technique. We respectfully suggest that this be refocused for the specific types of footwear only, as previously noted, and in only knit to shape, all in one piece integrated knitted upper and related shoe components. This and many other sweater/apparel stitches have already been used in Coogi footwear as noted above.

**[00130]** Darting is not what is going on in the Nike shoes. This is wedge knitting, flasage, goring. Darts are cut and sew terms. Darts in 3D knitting are open folded fabric constructions that stick out - a different construction technique and look. These would resemble 'closed darts'. But the knitted fabric is flat rather than seamed and clipped as in cut and sew. We respectfully suggest that this be refocused for the types of footwear as previously noted only, as it already exists in many industries and is an integral technique to 3 D knitting that would be impractical to defend otherwise.



**These are only a few examples but there are literally thousands of examples in our own library, and the three top machine builder's archives dating back to at least 1987 with the debut of the for digitally operated and belt driven machines. We suggest significant due diligence be employed for further examples.**

**[00132] through [00135] :** Concerns that these, specifically **[00135]** are far overreaching the scope of this patent into fabrics. We're hoping that this is background explanation to the patent office? Please clarify. Concerns below.

[00132] A variety of procedures may be utilized to reduce relative movement between (a) knit element 131 and inlaid strand 132 or (b) knit element 151 and inlaid strand 152. That is, various procedures may be utilized to prevent

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[00132] Tucking an inlay is common practice and generic. It is the basis of smocking in flat knitting.

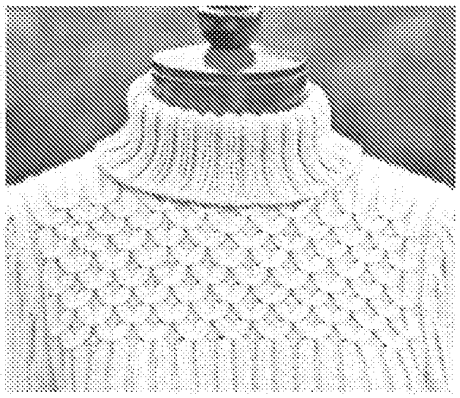
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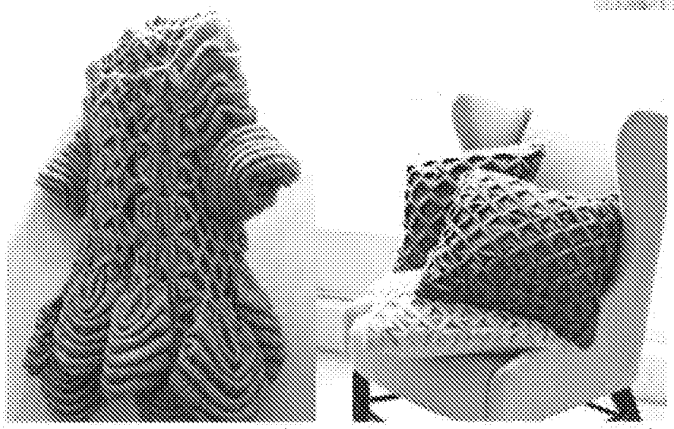
inlaid strands 132 and 152 from slipping, moving through, pulling out, or otherwise becoming displaced from knit elements 131 and 151. For example, fusing one or more yarns that are formed from a thermoplastic polymer materials to inlaid strands 132 and 152 may prevent movement between inlaid strands 132 and 152 and knit elements 131 and 151. Additionally, inlaid strands 132 and 152 may be fixed to knit elements 131 and 151 when periodically tied to knitting needles as a tuck element. That is, inlaid strands 132 and 152 may be formed into tuck stitches at points along their lengths (e.g., once per centimeter) in order to secure inlaid strands 132 and 152 to knit elements 131 and 151 and prevent movement of inlaid strands 132 and 152.

**[00133]** Following the knitting process described above, various operations may be performed to enhance the properties of either of knitted components 130 and 150. For example, a water-repellant coating or other water-resisting treatment may be applied to limit the ability of the knit structures to absorb and retain water. As another example, knitted components 130 and 150 may be steamed to improve loft and induce fusing of the yarns. As discussed above with respect to Figure 8D, yarn 138 may be a non-fusible yarn and yarn 139 may be a fusible yarn. When steamed, yarn 139 may melt or otherwise soften so as to transition from a solid state to a softened or liquid state, and then transition from the softened or liquid state to the solid state when sufficiently cooled. As such, yarn 139 may be utilized to join (a) one portion of yarn 138 to another portion of yarn 138, (b) yarn 138 and inlaid strand 152 to each other, or (c) another element (e.g., logos, trademarks, and textural elements with care instructions and material information) to knitted component 130, for example. Accordingly, a steaming process may be utilized to induce fusing of yarns in knitted components 130 and 150.

**[00134]** Although procedures associated with the steaming process may vary greatly, one method involves pinning one or more knitted components 130 and 150 to a jig during steaming. An advantage of pinning one of knitted components 130 and 150 to a jig is that the resulting dimensions of specific areas of knitted

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**These are only a few quick examples that are commercially available.**
Fusible has already been discussed in detail previously. What is used in the Nike shoe knitting process is a specific fusible technology – our for tucking, plaiting and inlaying steam fusible digitally mapping it and in varying the densities, depending on the flexion and stiffening needed is IP we brought to Nike, subject to our NDA of 2010. The wording in this paragraph needs to be clarified and we respectfully suggest that this be refocused for the specific types of footwear only as previously noted.

**[00133]** The knit process with fusible yarns is used in many industries since the 1970's. it is always fed into the knit system with another yarn or as an inlay or else there will be an undesired separation inside a fabric. The yarns are not joined, but the fusible yarn becomes liquid glue, no longer in yarn format, and fuses the fabric. In the trim industry is it's known as 'steam away' because a desired hole or separation of pieces is wanted. Steaming is the generic way to set the

05

yarn. Nike would not have fusible in this knit shoe project if we did not supply it and show Bhupesh Dua and the team how it worked and why it was needed to secure an integrated knit system. **(See concerns and alternative advice on fusible in above notes and also in notes for other patent)**

Patenting this process to prevent us, the teachers, from using this technique and our native materials that we brought to Nike and which had existed prior to our relationship in both our own practices as well as the knitting industry in general, is not acceptable.

**[00134]** Steaming process do not vary greatly. The temperatures are set by the manufacturer of the respective fusible yarns and twisted yarns. The process we taught Nike is specific to the needs of this shoe project to digitally place the right amount of steam fusible, exactly where it is needed. Pinning processes are generic in the steaming and finishing processes for many industries, especially fully fashioned or knit to shape products. These are best practices from the knitting industry that we also taught Nike. These are not NEW to the industry. What is used in the Nike shoe knitting process is a specific fusible technology – our for tucking, plaiting and inlaying steam fusible digitally mapping it and in varying the densities, depending on the flexion and stiffening needed is IP we brought to Nike, subject to our NDA of 2010. The wording in this paragraph needs to be clarified and we respectfully suggest that this be refocused for the specific types of footwear only as previously noted.

**[00135]** I cannot agree to defend this paragraph. It combines public domain 3 dimensional knitting techniques employed in the industry for decades. It would mean that neither we nor any of the existing people and machine builders could make 3 dimensional knit components. It would mean that the entire manufacturing process that we built for Nike with our own IP and subject to our mutual NDA of 2010, we could not use in ever knitting for any other entity on earth or in our government projects. Totally unacceptable, impractical, and naïve to the existing industry - impossible to defend. We could never agree to sign that this is a valid claim as it would create a situation where the entire knitting industry to cease to exist. Much of this is already in use in these other industries for many years. We respectfully suggest that this be refocused for footwear as we would need to protest this with the patent office in the manner that it is currently written.

components 130 and 150 may be controlled. For example, pins on the jig may be located to hold areas corresponding to perimeter edge 133 of knitted component 130. By retaining specific dimensions for perimeter edge 133, perimeter edge 133 will have the correct length for a portion of the lasting process that joins upper 120 to sole structure 110. Accordingly, pinning areas of knitted components 130 and 150 may be utilized to control the resulting dimensions of knitted components 130 and 150 following the steaming process.

[00135] The knitting process described above for forming knitted component 260 may be applied to the manufacture of knitted components 130 and 150 for footwear 100. The knitting process may also be applied to the manufacture of a variety of other knitted components. That is, knitting processes utilizing one or more combination feeders or other reciprocating feeders may be utilized to form a variety of knitted components. As such, knitted components formed through the knitting process described above, or a similar process, may also be utilized in other types of apparel (e.g., shirts, pants, socks, jackets, undergarments), athletic equipment (e.g., golf bags, baseball and football gloves, soccer ball restriction structures), containers (e.g., backpacks, bags), and upholstery for furniture (e.g., chairs, couches, car seats). The knitted components may also be utilized in bed coverings (e.g., sheets, blankets), table coverings, towels, flags, tents, sails, and parachutes. The knitted components may be utilized as technical textiles for industrial purposes, including structures for automotive and aerospace applications, filter materials, medical textiles (e.g., bandages, swabs, implants), geotextiles for reinforcing embankments, agrotextiles for crop protection, and industrial apparel that protects or insulates against heat and radiation. Accordingly, knitted components formed through the knitting process described above, or a similar process, may be incorporated into a variety of products for both personal and industrial purposes.

The manufacturing process described here using knitting to shape, combination or reciprocating feeders is already in practice in the apparel, equipment, containers, medical, upholstery, technical textiles, aerospace, and all the applications notes. This type of manufacturing is not new to the world and is common best practices.

We use these manufacturing techniques in all these industries, and have done so for many years. As you saw and was explained to you on your visit – 3 D knitting, technical textiles, and these manufacturing processes we taught Nike, are not new to the world though it appears it is news to Nike.

We TAUGHT Nike this manufacturing process in the same way we have taught <u>many</u> other companies in these other industries to use these very same materials and techniques. This is entire the principal of 3D knitting, technical knitted textiles in general, and the basis for our own technical IP, know how and 'tool chest' of flat knitting technology. We and many others have made a living in engineering 3 D flat knitted technical textiles for more than thirty years. We can't agree that this belongs in this patent. Our agreement with Nike is for footwear only, and our existing IP and everything we've created on our own time at our own expense, with out own resources is ours. Whatever is incorporated, is used royalty free by Nike. Signing that this manufacturing process is exclusive to Nike, was developed at Nike or belongs exclusively to Nike is not true, can never be true, and is naïve to even put on paper.

To claim these non-footwear industry applications for Nike in these terms, is something that we will resist, and could not support, as would every other professional and machine builder, in our

01

textile industry. There are other feeders and machinery adaptations that already do all of [00135] 3D knit claims, yarn, fusible, stitch – except for how my feeder design works in being able to knit, and inlay in products. The wording in this document, specifically these paragraphs, is asking for a firestorm from the knitting industry and we would strongly recommend that you revise them for Nike's own benefit.
Machinery that has been commercially on the market for two years also makes most of the feeder applications of knitting, intarsia, and inlay in tight spaces in these fabrics obsolete. This is now germane.

To our own business this paragraph [00135] is troubling to read.

Per our 2010 mutual NDA, much of this was unpaid R&D work, done in my own time, with our own resources and no valuable consideration received. Also per our 2010 mutual NDA, Nike has a duty to protect our IP 'as it would its' own.' It might appear that extending the scope of this patent by reaching into other markets beyond footwear as this document does, and into other industries where we currently do business, would harm Fabdesigns, Inc. rather than protect. Further, we also advise that the reaching into other markets where 'inlay' processes already have existed for decades, may put Nike at risk. We can not support Nike into areas beyond the scope of footwear.

Therefore I can't sign a document that sells or assigns this technique, prevents me from using my own IP and public domain items in other technical projects, or requests that I assign public domain techniques that already exist in other industries, but are just now new to Nike.

**[00136-00139]** Tongue: Much of this is already in use in these other industries for many years as previously noted. It is integral for knitting flaps and other dimensional appendages into a bas material. This is a common building block of 3 dimensional knitting. We respectfully suggest that this claim be refocused for the specific types of footwear only, as previously noted.

Padding was our IP incorporated into a Nike product royalty free.
As I noted to you on your visit, I created multiple shoes with integrated tongues – all prior to Daniel Podhajny joining Nike. They were tabled and put to the box / wall in Mia Hamm. The reason was that the tongue took 12 minutes to knit in and ten seconds to sew in.

**[00140]** I have no idea where this patent 2010/0154256 to Dua came from. I don't believe I have ever seen it except for the front signature page. Given my past experiences, I'd perhaps should like to review what Nike states I invented, please.

**[00141-00142]** We respectfully suggest that this be refocused for the specific types of footwear only, as previously noted. We've seen this in medical applications, apparel, quilted knitted bags, and other industries.

**[00143]** – 'more efficient manufacture.' This is not true as noted above. It is less efficient. The only benefit is the same dye lot of yarn is guaranteed to be used.

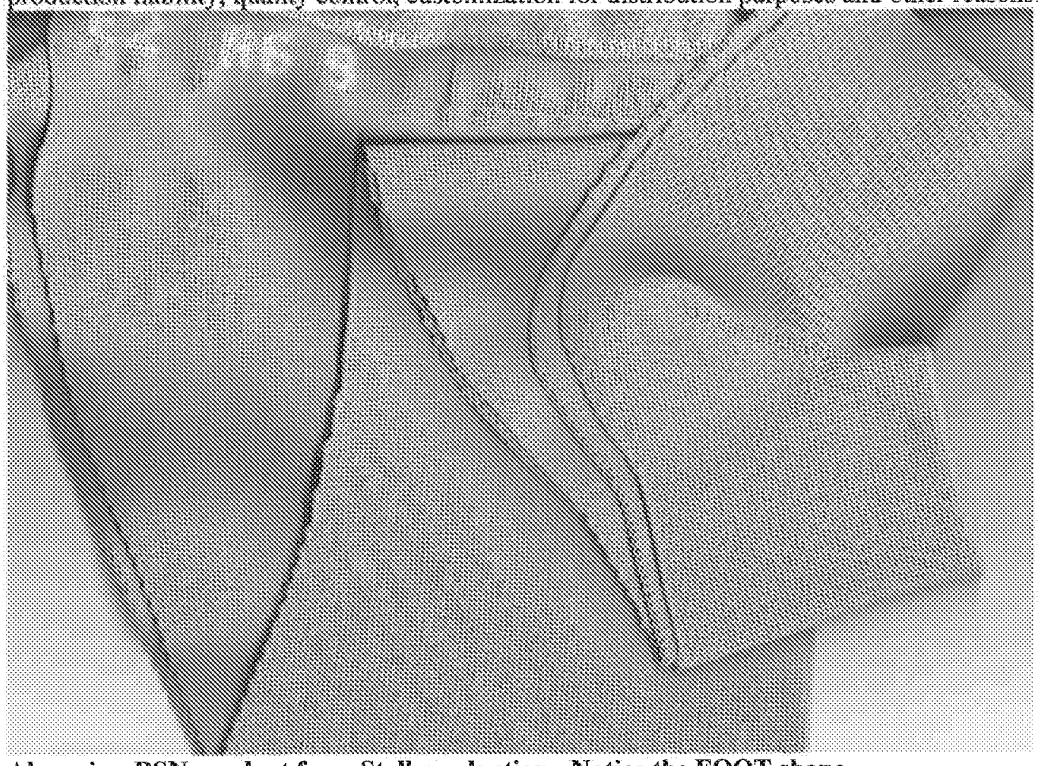
**[00144]** Sculptured compressible padding was brought to Nike. Not invented at Nike. We respectfully suggest that these claims be focused and scoped on the specific footwear described in our Mutual NDA of June 1, 2010 – Schedule A Deliverables only.

**[00145]** We TAUGHT Nike this 3 D appendage manufacturing process in the same way we have taught <u>many</u> other companies in these other industries to use these very same materials and

techniques. This is entire the principal of 3D knitting, technical knitted textiles in general, and the basis for some of our own technical IP, know-how, and 'tool chest' of flat knitting technology. We and many others have made a living in engineering 3 D flat knitted technical textiles for more than thirty years. We can't agree that this belongs in this patent. Signing that this manufacturing process is exclusive to Nike, was developed at Nike or belongs exclusively to Nike is not true, can never be true, and is naïve to even put on paper. We respectfully suggest that these claims be focused and scoped on the specific footwear described in our Mutual NDA of June 1, 2010 – Schedule A Deliverables only.

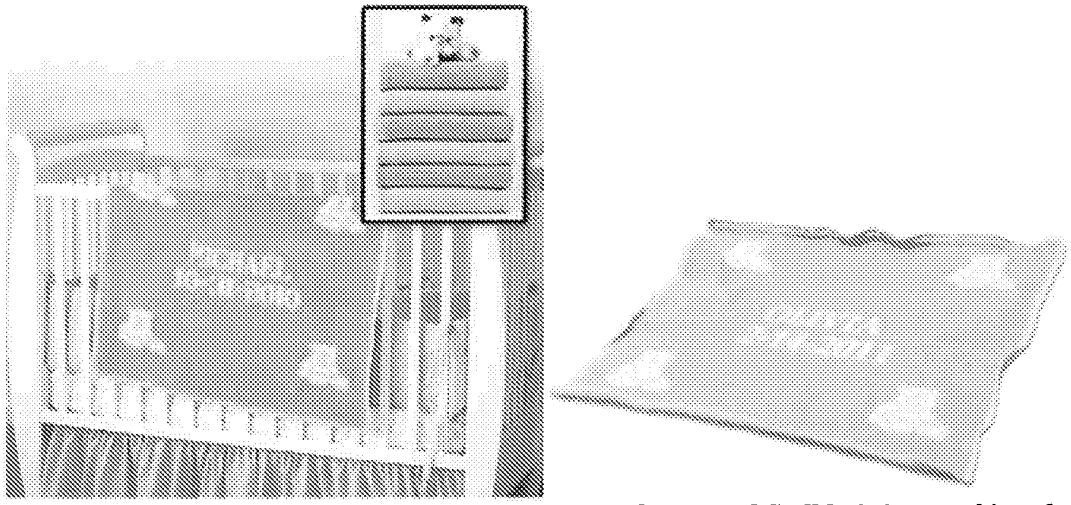
**[00146-00157]** As shown in numerous photos above, this 3 D appendage manufacturing process in the same way we have taught many other companies in these other industries to use these very same materials and techniques. This is entire the principal of 3D knitting since 1987, technical knitted textiles in general, and the basis for some of our own technical IP, know-how, and 'tool chest' of flat knitting technology as well as other experts and machine builders in the technical flat knitting industry. We and many others have made a living in engineering 3 D flat knitted technical textiles for more than thirty years. We can't agree that this belongs in this patent. Signing that this manufacturing process is exclusive to Nike, was developed at Nike or belongs exclusively to Nike is not true, can never be true, and is naïve to even put on paper. We respectfully suggest that this be refocused for the agree specific types of footwear, as it would be far easier to defend.

[00158 - 00163] This is a common feature of the machine builder's software. It is used frequently in medical products which REQUIRE serial numbers and sequential numbering for production liability, quality control, customization for distribution purposes and other reasons.



**Above is a BSN product from Stoll production. Notice the FOOT shape.**

Sequential numbering is also used in aerospace and military knit applications for exactly the same reasons and others that are macabre to describe here. This is a feature inherent in the machine builder's software, not invented at Nike. This entire segment belongs in a design patent. We have used this technology since flat knitting machines used computers and have programs on the Apple IIgs from 1987 that create this exact same sequential alterations.



**The above company** www.personalbabyproducts.com **has owned Stoll knitting machines for nearly 50 years. They, like many companies in the same business, use sequential alteration programs to change the alpha-numerics in each individual unit of production.**

This feature has been available to program into Stoll software in the earliest generations of CAD. The program can be set at night and left to run automatically. On the Apple IIgs the limit of memory was 100 units (hats, mittens, blankets, etc). On the subsequent CAD generations Sirix, and later CAD systems there is not a limitation. Stoll has a program that it sells to medical companies to do many adjustments on an individual basis. Sequential numbering is just one of the features. The cost of that program is $25,000 and has been commercially available for several years.

Daniel Podhajny knows this information and owned/owns a company (with his brother-in-law / relative) that is in this very blanket business in Uruguay. My wife recruited Daniel for Bhupesh, when Bhupesh expressed that the project was growing, and more help was needed, but he didn't know where to look. My wife worked as a knit engineer previously at the same company as Daniel (Tricot St Raphael / Perry Ellis) and was able to obtain references for Bhupesh from the owners at a time when Daniel was out of work. We know his technical background very well.

Signing this document, to state that this sequential numbering was invented at Nike is purely wrong information that you've been given. We have also already seen this used in footwear ads from a Nike's competitor. We suggest that this sequential alteration be dropped entirely.

**Claims:** As previously noted there are numerous objections to this patent. We respectfully suggest that these claims be focused and scoped on the specific footwear described in our Mutual NDA of June 1, 2010 – Schedule A Deliverables only.

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 19753428 |
| **Application Number:** | 13781525 |
| **International Application Number:** | |
| **Confirmation Number:** | 7689 |
| **Title of Invention:** | Article Of Footwear Incorporating A Knitted Component With An Integral Knit Tongue |
| **First Named Inventor/Applicant Name:** | Bhupesh Dua |
| **Customer Number:** | 57618 |
| **Filer:** | Eric M. Gibson/Jose Espejo |
| **Filer Authorized By:** | Eric M. Gibson |
| **Attorney Docket Number:** | 51-3209 |
| **Receipt Date:** | 01-AUG-2014 |
| **Filing Date:** | 28-FEB-2013 |
| **Time Stamp:** | 14:24:32 |
| **Application Type:** | Utility under 35 USC 111(a) |

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| | |
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| Submitted with Payment | no |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Transmittal Letter | 2014-08-01_51-3209_IDS_Cover_letter.pdf | 55185<br>6dab92fd0490446881e8a61cea75cc526417259e | no | 1 |

**Warnings:**

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|---|---|---|---|---|---|
| 2 | Information Disclosure Statement (IDS) Form (SB08) | 2014-08-01_51-3209_IDS.pdf | 28450<br>eabb1e63da931d2145226b6fd92c3a8db90c5163 | no | 3 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| This is not an USPTO supplied IDS fillable form | | | | | |
| 3 | Non Patent Literature | 2014-08-01_51-3209_IDS_Bruce_Huffa_Letter.pdf | 5045650<br>e1f5ee583cd35bb1d8a3222aa266883f026b0079 | no | 71 |
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**New International Application Filed with the USPTO as a Receiving Office**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

**IN THE UNITED STATES PATENT & TRADEMARK OFFICE**

| | | | |
|---|---|---|---|
| Appln. No. | : | 13/781,525 | Confirmation No. 7689 |
| Applicant | : | Bhupesh Dua | |
| Filed | : | February 28, 2013 | |
| Title | : | Article Of Footwear Incorporating A Knitted Component With An Integral Knit Tongue | |
| TC/A.U. | : | 3765 | |
| Examiner | : | Larry D. Worrell Jr. | |
| Attorney Docket No.: | | 51-3209 | |
| Customer No. | : | 57618 | |

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**INFORMATION DISCLOSURE STATEMENT**
**UNDER 37 C.F.R. § 1.97(b)**

Dear Sir:

Submitted herewith are three (3) sheets of Form PTO/SB/08a, listing one (1) non-patent literature document. A copy of the non-patent literature document is submitted herewith.

Applicant's representatives have received the Non-Patent Literature Document listed on the accompanying Information Disclosure Statement. The document is being supplied so that the Examiner may evaluate and consider its relevance to the claimed invention. Submission of this document does not constitute any acknowledgement, admission, or endorsement of the allegations and statements contained therein.

Respectfully submitted,

PLUMSEA LAW GROUP, LLC

Date: August 1, 2014

By: /Eric M. Gibson/
Eric M. Gibson
Registration Number: 59,058
Telephone number: 301-365-9040

PTO/SB/08a (01-10)
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# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

( **Not for submission under 37 CFR 1.99)**

| | |
|---|---|
| Application Number | 13781525 |
| Filing Date | 2013-02-28 |
| First Named Inventor | Bhupesh Dua |
| Art Unit | 3765 |
| Examiner Name | Larry D. Worrell Jr. |
| Attorney Docket Number | 51-3209 |

**U.S.PATENTS**

| Examiner Initial* | Cite No | Patent Number | Kind Code[1] | Issue Date | Name of Patentee or Applicant of cited Document | Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|---|
| | 1 | 1888172 | | 1932-11-15 | Joha | |

If you wish to add additional U.S. Patent citation information please click the Add button.

**U.S.PATENT APPLICATION PUBLICATIONS**

| Examiner Initial* | Cite No | Publication Number | Kind Code[1] | Publication Date | Name of Patentee or Applicant of cited Document | Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear |
|---|---|---|---|---|---|---|
| | 1 | 20050115284 | | 2005-06-02 | Dua | |

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**FOREIGN PATENT DOCUMENTS**

| Examiner Initial* | Cite No | Foreign Document Number[3] | Country Code[2] | Kind Code[4] | Publication Date | Name of Patentee or Applicant of cited Document | Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear | T[5] |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2013126313 | WO | | 2013-08-29 | NIKE INTERNATIONAL LTD | | ☐ |

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**NON-PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published. | T[5] |
|---|---|---|---|

| INFORMATION DISCLOSURE STATEMENT BY APPLICANT ( **Not for submission under 37 CFR 1.99)** | | |
|---|---|---|
| | Application Number | 13781525 |
| | Filing Date | 2013-02-28 |
| | First Named Inventor | Bhupesh Dua |
| | Art Unit | 3765 |
| | Examiner Name | Larry D. Worrell Jr. |
| | Attorney Docket Number | 51-3209 |

| | | | |
|---|---|---|---|
| | 1 | International Search Report and Written Opinion mailed July 30, 2014 in International Application Number PCT/US2014/018845 | ☐ |

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**EXAMINER SIGNATURE**

| Examiner Signature | | Date Considered | |
|---|---|---|---|

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

| INFORMATION DISCLOSURE STATEMENT BY APPLICANT ( **Not for submission under 37 CFR 1.99)** | | |
|---|---|---|
| | Application Number | 13781525 |
| | Filing Date | 2013-02-28 |
| | First Named Inventor | Bhupesh Dua |
| | Art Unit | 3765 |
| | Examiner Name | Larry D. Worrell Jr. |
| | Attorney Docket Number | 51-3209 |

**CERTIFICATION STATEMENT**

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

**OR**

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

**SIGNATURE**

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

| Signature | /Eric M. Gibson/ | Date (YYYY-MM-DD) | 2014-08-12 |
|---|---|---|---|
| Name/Print | Eric M. Gibson | Registration Number | 59,058 |

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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(71) Applicant *(for all designated States except US)*: **NIKE INTERNATIONAL LTD.**; One Bowerman Drive, Beaverton, OR 97005-6453 (US).

(72) Inventors; and
(71) Applicants *(for US only)*: **TATLER, Daren, P.** [GB/US]; C/o Nike, Inc., One Bowerman Drive, Beaverton, OR 97005-6453 (US). **PODHAJNY, Daniel, A.** [UY/US]; C/o Nike, Inc., One Bowerman Drive, Beaverton, OR 97005-6453 (US).

(74) Agents: **GIBSON, Eric, M.** et al.; Plumsea Law Group, LLC, 10411 Motor City Drive, Suite 320, Bethesda, MD 20817 (US).

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*[Continued on next page]*

(54) Title: ARTICLE OF FOOTWEAR INCORPORATING A KNITTED COMPONENT WITH A TONGUE

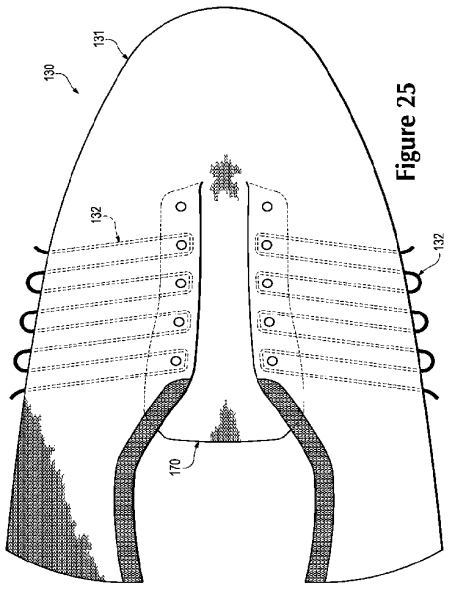



Figure 25

(57) Abstract: Articles of footwear may have an upper that includes a knit element and a tongue. The knit element defines a portion of an exterior surface and an opposite interior surface of the upper, with the interior surface defining a void for receiving a foot. The tongue is formed of unitary knit construction with the knit element and extends through a throat area of the upper. Methods of manufacturing a knitted component for an article of footwear may include knitting a tongue. The tongue is held on needles of a knitting machine. A first portion of a knit element is formed with the knitting machine while the tongue is held on the needles. The tongue is then joined to the first portion of the knit element. Additionally, a second portion of the knit element is formed with the knitting machine.

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UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published**:

— *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*

# ARTICLE OF FOOTWEAR INCORPORATING A KNITTED COMPONENT WITH A TONGUE

## BACKGROUND

**[01]** Conventional articles of footwear generally include two primary elements, an upper and a sole structure. The upper is secured to the sole structure and forms a void on the interior of the footwear for comfortably and securely receiving a foot. The sole structure is secured to a lower area of the upper, thereby being positioned between the upper and the ground. In athletic footwear, for example, the sole structure may include a midsole and an outsole. The midsole often includes a polymer foam material that attenuates ground reaction forces to lessen stresses upon the foot and leg during walking, running, and other ambulatory activities. Additionally, the midsole may include fluid-filled chambers, plates, moderators, or other elements that further attenuate forces, enhance stability, or influence the motions of the foot. The outsole is secured to a lower surface of the midsole and provides a ground-engaging portion of the sole structure formed from a durable and wear-resistant material, such as rubber. The sole structure may also include a sockliner positioned within the void and proximal a lower surface of the foot to enhance footwear comfort.

**[02]** The upper generally extends over the instep and toe areas of the foot, along the medial and lateral sides of the foot, under the foot, and around the heel area of the foot. In some articles of footwear, such as basketball footwear and boots, the upper may extend upward and around the ankle to provide support or protection for the ankle. Access to the void on the interior of the upper is generally provided by an ankle opening in a heel region of the footwear. A lacing system is often incorporated into the upper to adjust the fit of the upper, thereby permitting entry and removal of the foot from the void within the upper. The lacing system also

permits the wearer to modify certain dimensions of the upper, particularly girth, to accommodate feet with varying dimensions. In addition, the upper may include a tongue that extends under the lacing system to enhance adjustability of the footwear, and the upper may incorporate a heel counter to limit movement of the heel.

**[03]** A variety of material elements (e.g., textiles, polymer foam, polymer sheets, leather, synthetic leather) are conventionally utilized in manufacturing the upper. In athletic footwear, for example, the upper may have multiple layers that each include a variety of joined material elements. As examples, the material elements may be selected to impart stretch-resistance, wear-resistance, flexibility, air-permeability, compressibility, comfort, and moisture-wicking to different areas of the upper. In order to impart the different properties to different areas of the upper, material elements are often cut to desired shapes and then joined together, usually with stitching or adhesive bonding. Moreover, the material elements are often joined in a layered configuration to impart multiple properties to the same areas. As the number and type of material elements incorporated into the upper increases, the time and expense associated with transporting, stocking, cutting, and joining the material elements may also increase. Waste material from cutting and stitching processes also accumulates to a greater degree as the number and type of material elements incorporated into the upper increases. Moreover, uppers with a greater number of material elements may be more difficult to recycle than uppers formed from fewer types and numbers of material elements. By decreasing the number of material elements utilized in the upper, therefore, waste may be decreased while increasing the manufacturing efficiency and recyclability of the upper.

SUMMARY

**[04]** Various configurations of an article of footwear may have an upper and a sole structure secured to the upper. The upper includes a knit element and a tongue. The knit element defines a portion of an exterior surface of the upper and an opposite interior surface of the upper, with the interior surface defining a void for receiving a foot. The tongue is formed of unitary knit construction with the knit element and extends through a throat area of the upper.

**[05]** Methods of manufacturing a knitted component for an article of footwear may include knitting a tongue with a knitting machine. The tongue is held on needles of the knitting machine. A first portion of a knit element is formed with the knitting machine while the tongue is held on the needles. The tongue is then joined to the first portion of the knit element. Additionally, a second portion of the knit element is formed with the knitting machine.

**[06]** Methods of knitting may also include providing a knitting pattern with a modifiable field. The modifiable field is updated with data representing a first alphanumeric character. A first component with a knit structure of the first alphanumeric character is formed. The modifiable field is updated with data representing a second alphanumeric character, the second alphanumeric character being different than the first alphanumeric character. Additionally, a second component with a knit structure of the second alphanumeric character is formed.

**[07]** The advantages and features of novelty characterizing aspects of the invention are pointed out with particularity in the appended claims. To gain an improved understanding of the advantages and features of novelty, however, reference may be made to the following descriptive matter and accompanying figures that describe and illustrate various configurations and concepts related to the invention.

FIGURE DESCRIPTIONS

**[08]** The foregoing Summary and the following Detailed Description will be better understood when read in conjunction with the accompanying figures.

**[09]** Figure 1 is a perspective view of an article of footwear.

**[10]** Figure 2 is a lateral side elevational view of the article of footwear.

**[11]** Figure 3 is a medial side elevational view of the article of footwear.

**[12]** Figures 4A-4C are cross-sectional views of the article of footwear, as defined by section lines 4A-4C in Figures 2 and 3.

**[13]** Figure 5 is a top plan view of a first knitted component that forms a portion of an upper of the article of footwear.

**[14]** Figure 6 is a bottom plan view of the first knitted component.

**[15]** Figures 7A-7E are cross-sectional views of the first knitted component, as defined by section lines 7A-7E in Figure 5.

**[16]** Figures 8A and 8B are plan views showing knit structures of the first knitted component.

**[17]** Figure 9 is a top plan view of a second knitted component that may form a portion of the upper of the article of footwear.

**[18]** Figure 10 is a bottom plan view of the second knitted component.

**[19]** Figure 11 is a schematic top plan view of the second knitted component showing knit zones.

**[20]** Figures 12A-12E are cross-sectional views of the second knitted component, as defined by section lines 12A-12E in Figure 9.

**[21]** Figures 13A-13H are loop diagrams of the knit zones.

**[22]** Figures 14A-14C are top plan views corresponding with Figure 5 and depicting further configurations of the first knitted component.

**[23]** Figure 15 is a perspective view of a knitting machine.

**[24]** Figures 16-18 are elevational views of a combination feeder from the knitting machine.

**[25]** Figure 19 is an elevational view corresponding with Figure 16 and showing internal components of the combination feeder.

**[26]** Figures 20A-20C are elevational views corresponding with Figure 19 and showing the operation of the combination feeder.

**[27]** Figures 21A-21I are schematic perspective views of a knitting process utilizing the combination feeder and a conventional feeder.

**[28]** Figures 22A-22C are schematic cross-sectional views of the knitting process showing positions of the combination feeder and the conventional feeder.

**[29]** Figure 23 is a schematic perspective view showing another aspect of the knitting process.

**[30]** Figure 24 is a perspective view of another configuration of the knitting machine.

**[31]** Figure 25 is a top plan view of the first knitted component with a first knitted tongue.

**[32]** Figure 26 is a partial top plan view of the first knitted component with the first knitted tongue.

**[33]** Figure 27 is a cross-sectional view of the first knitted tongue, as defined by section line 27 in Figure 26.

**[34]** Figure 28 is a top plan view of the second knitted component with a second knitted tongue.

**[35]** Figure 29 is a partial top plan view of the second knitted component with the second knitted tongue.

**[36]** Figure 30 is a cross-sectional view of the second knitted tongue, as defined by section line 30 in Figure 29.

**[37]** Figure 31 is a top plan view of a third knitted component with a third knitted tongue.

**[38]** Figure 32 is a partial top plan view of the third knitted component with the third knitted tongue.

**[39]** Figure 33 is a cross-sectional view of the third knitted tongue, as defined by section line 33 in Figure 32.

**[40]** Figure 34 is a top plan view of a fourth knitted component with a fourth knitted tongue.

**[41]** Figure 35 is a cross-sectional view of the fourth knitted component and fourth knitted tongue, as defined by section line 35 in Figure 34.

**[42]** Figures 36A-36G are schematic elevational views of a knitting process for forming the first knitted component with the first knitted tongue.

**[43]** Figure 37 is a schematic elevational view depicting a further example step of the knitting process.

**[44]** Figure 38 is a schematic block diagram of the knitting machine.

**[45]** Figures 39A-39C are partial top plan views corresponding with Figure 26 and depicting sequential variations in the first knitted tongue.

DETAILED DESCRIPTION

**[46]** The following discussion and accompanying figures disclose a variety of concepts relating to knitted components and the manufacture of knitted components. Although the knitted components may be utilized in a variety of products, an article of footwear that incorporates one of the knitted components is disclosed below as an example. In addition to footwear, the knitted components may be utilized in other types of apparel (e.g., shirts, pants, socks, jackets, undergarments), athletic equipment (e.g., golf bags, baseball and football gloves, soccer ball restriction structures), containers (e.g., backpacks, bags), and upholstery for furniture (e.g., chairs, couches, car seats). The knitted components may also be utilized in bed coverings (e.g., sheets, blankets), table coverings, towels, flags, tents, sails, and parachutes. The knitted components may be utilized as technical textiles for industrial purposes, including structures for automotive and aerospace applications, filter materials, medical textiles (e.g. bandages, swabs, implants), geotextiles for reinforcing embankments, agrotextiles for crop protection, and industrial apparel that protects or insulates against heat and radiation. Accordingly, the knitted components and other concepts disclosed herein may be incorporated into a variety of products for both personal and industrial purposes.

**[47]** Footwear Configuration

**[48]** An article of footwear 100 is depicted in Figures 1-4C as including a sole structure 110 and an upper 120. Although footwear 100 is illustrated as having a general configuration suitable for running, concepts associated with footwear 100 may also be applied to a variety of other athletic footwear types, including baseball shoes, basketball shoes, cycling shoes, football shoes, tennis shoes, soccer shoes, training shoes, walking shoes, and hiking boots, for example. The concepts may also be applied to footwear types that are generally considered to be non-athletic, including dress shoes, loafers, sandals, and work boots.

Accordingly, the concepts disclosed with respect to footwear 100 apply to a wide variety of footwear types.

**[49]** For reference purposes, footwear 100 may be divided into three general regions: a forefoot region 101, a midfoot region 102, and a heel region 103. Forefoot region 101 generally includes portions of footwear 100 corresponding with the toes and the joints connecting the metatarsals with the phalanges. Midfoot region 102 generally includes portions of footwear 100 corresponding with an arch area of the foot. Heel region 103 generally corresponds with rear portions of the foot, including the calcaneus bone. Footwear 100 also includes a lateral side 104 and a medial side 105, which extend through each of regions 101-103 and correspond with opposite sides of footwear 100. More particularly, lateral side 104 corresponds with an outside area of the foot (i.e. the surface that faces away from the other foot), and medial side 105 corresponds with an inside area of the foot (i.e., the surface that faces toward the other foot). Regions 101-103 and sides 104-105 are not intended to demarcate precise areas of footwear 100. Rather, regions 101-103 and sides 104-105 are intended to represent general areas of footwear 100 to aid in the following discussion. In addition to footwear 100, regions 101-103 and sides 104-105 may also be applied to sole structure 110, upper 120, and individual elements thereof.

**[50]** Sole structure 110 is secured to upper 120 and extends between the foot and the ground when footwear 100 is worn. The primary elements of sole structure 110 are a midsole 111, an outsole 112, and a sockliner 113. Midsole 111 is secured to a lower surface of upper 120 and may be formed from a compressible polymer foam element (e.g., a polyurethane or ethylvinylacetate foam) that attenuates ground reaction forces (i.e., provides cushioning) when compressed between the foot and the ground during walking, running, or other ambulatory activities. In further configurations, midsole 111 may incorporate plates, moderators, fluid-filled chambers, lasting elements, or motion control members that further

attenuate forces, enhance stability, or influence the motions of the foot, or midsole 21 may be primarily formed from a fluid-filled chamber. Outsole 112 is secured to a lower surface of midsole 111 and may be formed from a wear-resistant rubber material that is textured to impart traction. Sockliner 113 is located within upper 120 and is positioned to extend under a lower surface of the foot to enhance the comfort of footwear 100. Although this configuration for sole structure 110 provides an example of a sole structure that may be used in connection with upper 120, a variety of other conventional or nonconventional configurations for sole structure 110 may also be utilized. Accordingly, the features of sole structure 110 or any sole structure utilized with upper 120 may vary considerably.

**[51]** Upper 120 defines a void within footwear 100 for receiving and securing a foot relative to sole structure 110. The void is shaped to accommodate the foot and extends along a lateral side of the foot, along a medial side of the foot, over the foot, around the heel, and under the foot. Access to the void is provided by an ankle opening 121 located in at least heel region 103. A lace 122 extends through various lace apertures 123 in upper 120 and permits the wearer to modify dimensions of upper 120 to accommodate proportions of the foot. More particularly, lace 122 permits the wearer to tighten upper 120 around the foot, and lace 122 permits the wearer to loosen upper 120 to facilitate entry and removal of the foot from the void (i.e., through ankle opening 121). In addition, upper 120 includes a tongue 124 that extends under lace 122 and lace apertures 123 to enhance the comfort of footwear 100. In further configurations, upper 120 may include additional elements, such as (a) a heel counter in heel region 103 that enhances stability, (b) a toe guard in forefoot region 101 that is formed of a wear-resistant material, and (c) logos, trademarks, and placards with care instructions and material information.

**[52]** Many conventional footwear uppers are formed from multiple material elements (e.g., textiles, polymer foam, polymer sheets, leather, synthetic leather) that are joined through stitching or bonding, for example. In contrast, a majority of upper 120 is formed from a knitted component 130, which extends through each of regions 101-103, along both lateral side 104 and medial side 105, over forefoot region 101, and around heel region 103. In addition, knitted component 130 forms portions of both an exterior surface and an opposite interior surface of upper 120. As such, knitted component 130 defines at least a portion of the void within upper 120. In some configurations, knitted component 130 may also extend under the foot. Referring to Figures 4A-4C, however, a strobel sock 125 is secured to knitted component 130 and an upper surface of midsole 111, thereby forming a portion of upper 120 that extends under sockliner 113.

**[53]** Knitted Component Configuration

**[54]** Knitted component 130 is depicted separate from a remainder of footwear 100 in Figures 5 and 6. Knitted component 130 is formed of unitary knit construction. As utilized herein, a knitted component (e.g., knitted component 130) is defined as being formed of "unitary knit construction" when formed as a one-piece element through a knitting process. That is, the knitting process substantially forms the various features and structures of knitted component 130 without the need for significant additional manufacturing steps or processes. Although portions of knitted component 130 may be joined to each other (e.g., edges of knitted component 130 being joined together) following the knitting process, knitted component 130 remains formed of unitary knit construction because it is formed as a one-piece knit element. Moreover, knitted component 130 remains formed of unitary knit construction when other elements (e.g., lace 122, tongue 124, logos, trademarks, placards with care instructions and material information) are added following the knitting process.

**[55]** The primary elements of knitted component 130 are a knit element 131 and an inlaid strand 132. Knit element 131 is formed from at least one yarn that is manipulated (e.g., with a knitting machine) to form a plurality of intermeshed loops that define a variety of courses and wales. That is, knit element 131 has the structure of a knit textile. Inlaid strand 132 extends through knit element 131 and passes between the various loops within knit element 131. Although inlaid strand 132 generally extends along courses within knit element 131, inlaid strand 132 may also extend along wales within knit element 131. Advantages of inlaid strand 132 include providing support, stability, and structure. For example, inlaid strand 132 assists with securing upper 120 around the foot, limits deformation in areas of upper 120 (e.g., imparts stretch-resistance) and operates in connection with lace 122 to enhance the fit of footwear 100.

**[56]** Knit element 131 has a generally U-shaped configuration that is outlined by a perimeter edge 133, a pair of heel edges 134, and an inner edge 135. When incorporated into footwear 100, perimeter edge 133 lays against the upper surface of midsole 111 and is joined to strobel sock 125. Heel edges 134 are joined to each other and extend vertically in heel region 103. In some configurations of footwear 100, a material element may cover a seam between heel edges 134 to reinforce the seam and enhance the aesthetic appeal of footwear 100. Inner edge 135 forms ankle opening 121 and extends forward to an area where lace 122, lace apertures 123, and tongue 124 are located. In addition, knit element 131 has a first surface 136 and an opposite second surface 137. First surface 136 forms a portion of the exterior surface of upper 120, whereas second surface 137 forms a portion of the interior surface of upper 120, thereby defining at least a portion of the void within upper 120.

**[57]** Inlaid strand 132, as noted above, extends through knit element 131 and passes between the various loops within knit element 131. More particularly, inlaid strand 132 is located within the knit structure of knit element 131, which may

have the configuration of a single textile layer in the area of inlaid strand 132, and between surfaces 136 and 137, as depicted in Figures 7A-7D. When knitted component 130 is incorporated into footwear 100, therefore, inlaid strand 132 is located between the exterior surface and the interior surface of upper 120. In some configurations, portions of inlaid strand 132 may be visible or exposed on one or both of surfaces 136 and 137. For example, inlaid strand 132 may lay against one of surfaces 136 and 137, or knit element 131 may form indentations or apertures through which inlaid strand passes. An advantage of having inlaid strand 132 located between surfaces 136 and 137 is that knit element 131 protects inlaid strand 132 from abrasion and snagging.

**[58]** Referring to Figures 5 and 6, inlaid strand 132 repeatedly extends from perimeter edge 133 toward inner edge 135 and adjacent to a side of one lace aperture 123, at least partially around the lace aperture 123 to an opposite side, and back to perimeter edge 133. When knitted component 130 is incorporated into footwear 100, knit element 131 extends from a throat area of upper 120 (i.e., where lace 122, lace apertures 123, and tongue 124 are located) to a lower area of upper 120 (i.e., where knit element 131 joins with sole structure 110. In this configuration, inlaid strand 132 also extends from the throat area to the lower area. More particularly, inlaid strand repeatedly passes through knit element 131 from the throat area to the lower area.

**[59]** Although knit element 131 may be formed in a variety of ways, courses of the knit structure generally extend in the same direction as inlaid strands 132. That is, courses may extend in the direction extending between the throat area and the lower area. As such, a majority of inlaid strand 132 extends along the courses within knit element 131. In areas adjacent to lace apertures 123, however, inlaid strand 132 may also extend along wales within knit element 131. More particularly, sections of inlaid strand 132 that are parallel to inner edge 135 may extend along the wales.

**[60]** As discussed above, inlaid strand 132 passes back and forth through knit element 131. Referring to Figures 5 and 6, inlaid strand 132 also repeatedly exits knit element 131 at perimeter edge 133 and then re-enters knit element 131 at another location of perimeter edge 133, thereby forming loops along perimeter edge 133. An advantage to this configuration is that each section of inlaid strand 132 that extends between the throat area and the lower area may be independently tensioned, loosened, or otherwise adjusted during the manufacturing process of footwear 100. That is, prior to securing sole structure 110 to upper 120, sections of inlaid strand 132 may be independently adjusted to the proper tension.

**[61]** In comparison with knit element 131, inlaid strand 132 may exhibit greater stretch-resistance. That is, inlaid strand 132 may stretch less than knit element 131. Given that numerous sections of inlaid strand 132 extend from the throat area of upper 120 to the lower area of upper 120, inlaid strand 132 imparts stretch-resistance to the portion of upper 120 between the throat area and the lower area. Moreover, placing tension upon lace 122 may impart tension to inlaid strand 132, thereby inducing the portion of upper 120 between the throat area and the lower area to lay against the foot. As such, inlaid strand 132 operates in connection with lace 122 to enhance the fit of footwear 100.

**[62]** Knit element 131 may incorporate various types of yarn that impart different properties to separate areas of upper 120. That is, one area of knit element 131 may be formed from a first type of yarn that imparts a first set of properties, and another area of knit element 131 may be formed from a second type of yarn that imparts a second set of properties. In this configuration, properties may vary throughout upper 120 by selecting specific yarns for different areas of knit element 131. The properties that a particular type of yarn will impart to an area of knit element 131 partially depend upon the materials that form the various filaments and fibers within the yarn. Cotton, for example, provides a soft hand,

natural aesthetics, and biodegradability. Elastane and stretch polyester each provide substantial stretch and recovery, with stretch polyester also providing recyclability. Rayon provides high luster and moisture absorption. Wool also provides high moisture absorption, in addition to insulating properties and biodegradability. Nylon is a durable and abrasion-resistant material with relatively high strength. Polyester is a hydrophobic material that also provides relatively high durability. In addition to materials, other aspects of the yarns selected for knit element 131 may affect the properties of upper 120. For example, a yarn forming knit element 131 may be a monofilament yarn or a multifilament yarn. The yarn may also include separate filaments that are each formed of different materials. In addition, the yarn may include filaments that are each formed of two or more different materials, such as a bicomponent yarn with filaments having a sheath-core configuration or two halves formed of different materials. Different degrees of twist and crimping, as well as different deniers, may also affect the properties of upper 120. Accordingly, both the materials forming the yarn and other aspects of the yarn may be selected to impart a variety of properties to separate areas of upper 120.

**[63]** As with the yarns forming knit element 131, the configuration of inlaid strand 132 may also vary significantly. In addition to yarn, inlaid strand 132 may have the configurations of a filament (e.g., a monofilament), thread, rope, webbing, cable, or chain, for example. In comparison with the yarns forming knit element 131, the thickness of inlaid strand 132 may be greater. In some configurations, inlaid strand 132 may have a significantly greater thickness than the yarns of knit element 131. Although the cross-sectional shape of inlaid strand 132 may be round, triangular, square, rectangular, elliptical, or irregular shapes may also be utilized. Moreover, the materials forming inlaid strand 132 may include any of the materials for the yarn within knit element 131, such as cotton, elastane, polyester, rayon, wool, and nylon. As noted above, inlaid strand 132 may exhibit greater stretch-resistance than knit element 131. As such, suitable materials for

inlaid strands 132 may include a variety of engineering filaments that are utilized for high tensile strength applications, including glass, aramids (e.g., para-aramid and meta-aramid), ultra-high molecular weight polyethylene, and liquid crystal polymer. As another example, a braided polyester thread may also be utilized as inlaid strand 132.

**[64]** An example of a suitable configuration for a portion of knitted component 130 is depicted in Figure 8A. In this configuration, knit element 131 includes a yarn 138 that forms a plurality of intermeshed loops defining multiple horizontal courses and vertical wales. Inlaid strand 132 extends along one of the courses and alternates between being located (a) behind loops formed from yarn 138 and (b) in front of loops formed from yarn 138. In effect, inlaid strand 132 weaves through the structure formed by knit element 131. Although yarn 138 forms each of the courses in this configuration, additional yarns may form one or more of the courses or may form a portion of one or more of the courses.

**[65]** Another example of a suitable configuration for a portion of knitted component 130 is depicted in Figure 8B. In this configuration, knit element 131 includes yarn 138 and another yarn 139. Yarns 138 and 139 are plated and cooperatively form a plurality of intermeshed loops defining multiple horizontal courses and vertical wales. That is, yarns 138 and 139 run parallel to each other. As with the configuration in Figure 8A, inlaid strand 132 extends along one of the courses and alternates between being located (a) behind loops formed from yarns 138 and 139 and (b) in front of loops formed from yarns 138 and 139. An advantage of this configuration is that the properties of each of yarns 138 and 139 may be present in this area of knitted component 130. For example, yarns 138 and 139 may have different colors, with the color of yarn 138 being primarily present on a face of the various stitches in knit element 131 and the color of yarn 139 being primarily present on a reverse of the various stitches in knit element 131. As another example, yarn 139 may be formed from a yarn that is softer and more

comfortable against the foot than yarn 138, with yarn 138 being primarily present on first surface 136 and yarn 139 being primarily present on second surface 137.

**[66]** Continuing with the configuration of Figure 8B, yarn 138 may be formed from at least one of a thermoset polymer material and natural fibers (e.g., cotton, wool, silk), whereas yarn 139 may be formed from a thermoplastic polymer material. In general, a thermoplastic polymer material melts when heated and returns to a solid state when cooled. More particularly, the thermoplastic polymer material transitions from a solid state to a softened or liquid state when subjected to sufficient heat, and then the thermoplastic polymer material transitions from the softened or liquid state to the solid state when sufficiently cooled. As such, thermoplastic polymer materials are often used to join two objects or elements together. In this case, yarn 139 may be utilized to join (a) one portion of yarn 138 to another portion of yarn 138, (b) yarn 138 and inlaid strand 132 to each other, or (c) another element (e.g., logos, trademarks, and placards with care instructions and material information) to knitted component 130, for example. As such, yarn 139 may be considered a fusible yarn given that it may be used to fuse or otherwise join portions of knitted component 130 to each other. Moreover, yarn 138 may be considered a non-fusible yarn given that it is not formed from materials that are generally capable of fusing or otherwise joining portions of knitted component 130 to each other. That is, yarn 138 may be a non-fusible yarn, whereas yarn 139 may be a fusible yarn. In some configurations of knitted component 130, yarn 138 (i.e., the non-fusible yarn) may be substantially formed from a thermoset polyester material and yarn 139 (i.e., the fusible yarn) may be at least partially formed from a thermoplastic polyester material.

**[67]** The use of plated yarns may impart advantages to knitted component 130. When yarn 139 is heated and fused to yarn 138 and inlaid strand 132, this process may have the effect of stiffening or rigidifying the structure of knitted

component 130. Moreover, joining (a) one portion of yarn 138 to another portion of yarn 138 or (b) yarn 138 and inlaid strand 132 to each other has the effect of securing or locking the relative positions of yarn 138 and inlaid strand 132, thereby imparting stretch-resistance and stiffness. That is, portions of yarn 138 may not slide relative to each other when fused with yarn 139, thereby preventing warping or permanent stretching of knit element 131 due to relative movement of the knit structure. Another benefit relates to limiting unraveling if a portion of knitted component 130 becomes damaged or one of yarns 138 is severed. Also, inlaid strand 132 may not slide relative to knit element 131, thereby preventing portions of inlaid strand 132 from pulling outward from knit element 131. Accordingly, areas of knitted component 130 may benefit from the use of both fusible and non-fusible yarns within knit element 131.

**[68]** Another aspect of knitted component 130 relates to a padded area adjacent to ankle opening 121 and extending at least partially around ankle opening 121. Referring to Figure 7E, the padded area is formed by two overlapping and at least partially coextensive knitted layers 140, which may be formed of unitary knit construction, and a plurality of floating yarns 141 extending between knitted layers 140. Although the sides or edges of knitted layers 140 are secured to each other, a central area is generally unsecured. As such, knitted layers 140 effectively form a tube or tubular structure, and floating yarns 141 may be located or inlaid between knitted layers 140 to pass through the tubular structure. That is, floating yarns 141 extend between knitted layers 140, are generally parallel to surfaces of knitted layers 140, and also pass through and fill an interior volume between knitted layers 140. Whereas a majority of knit element 131 is formed from yarns that are mechanically-manipulated to form intermeshed loops, floating yarns 141 are generally free or otherwise inlaid within the interior volume between knitted layers 140. As an additional matter, knitted layers 140 may be at least partially formed from a stretch yarn. An advantage of this configuration is that knitted layers will effectively compress floating yarns 141 and provide an

elastic aspect to the padded area adjacent to ankle opening 121. That is, the stretch yarn within knitted layers 140 may be placed in tension during the knitting process that forms knitted component 130, thereby inducing knitted layers 140 to compress floating yarns 141. Although the degree of stretch in the stretch yarn may vary significantly, the stretch yarn may stretch at least one-hundred percent in many configurations of knitted component 130.

**[69]** The presence of floating yarns 141 imparts a compressible aspect to the padded area adjacent to ankle opening 121, thereby enhancing the comfort of footwear 100 in the area of ankle opening 121. Many conventional articles of footwear incorporate polymer foam elements or other compressible materials into areas adjacent to an ankle opening. In contrast with the conventional articles of footwear, portions of knitted component 130 formed of unitary knit construction with a remainder of knitted component 130 may form the padded area adjacent to ankle opening 121. In further configurations of footwear 100, similar padded areas may be located in other areas of knitted component 130. For example, similar padded areas may be located as an area corresponding with joints between the metatarsals and proximal phalanges to impart padding to the joints. As an alternative, a terry loop structure may also be utilized to impart some degree of padding to areas of upper 120.

**[70]** Based upon the above discussion, knitted component 130 imparts a variety of features to upper 120. Moreover, knitted component 130 provides a variety of advantages over some conventional upper configurations. As noted above, conventional footwear uppers are formed from multiple material elements (e.g., textiles, polymer foam, polymer sheets, leather, synthetic leather) that are joined through stitching or bonding, for example. As the number and type of material elements incorporated into an upper increases, the time and expense associated with transporting, stocking, cutting, and joining the material elements may also increase. Waste material from cutting and stitching processes also accumulates

to a greater degree as the number and type of material elements incorporated into the upper increases. Moreover, uppers with a greater number of material elements may be more difficult to recycle than uppers formed from fewer types and numbers of material elements. By decreasing the number of material elements utilized in the upper, therefore, waste may be decreased while increasing the manufacturing efficiency and recyclability of the upper. To this end, knitted component 130 forms a substantial portion of upper 120, while increasing manufacturing efficiency, decreasing waste, and simplifying recyclability.

**[71]** Further Knitted Component Configurations

**[72]** A knitted component 150 is depicted in Figures 9 and 10 and may be utilized in place of knitted component 130 in footwear 100. The primary elements of knitted component 150 are a knit element 151 and an inlaid strand 152. Knit element 151 is formed from at least one yarn that is manipulated (e.g., with a knitting machine) to form a plurality of intermeshed loops that define a variety of courses and wales. That is, knit element 151 has the structure of a knit textile. Inlaid strand 152 extends through knit element 151 and passes between the various loops within knit element 151. Although inlaid strand 152 generally extends along courses within knit element 151, inlaid strand 152 may also extend along wales within knit element 151. As with inlaid strand 132, inlaid strand 152 imparts stretch-resistance and, when incorporated into footwear 100, operates in connection with lace 122 to enhance the fit of footwear 100.

**[73]** Knit element 151 has a generally U-shaped configuration that is outlined by a perimeter edge 153, a pair of heel edges 154, and an inner edge 155. In addition, knit element 151 has a first surface 156 and an opposite second surface 157. First surface 156 may form a portion of the exterior surface of upper 120, whereas second surface 157 may form a portion of the interior surface of upper 120, thereby defining at least a portion of the void within upper 120. In many

configurations, knit element 151 may have the configuration of a single textile layer in the area of inlaid strand 152. That is, knit element 151 may be a single textile layer between surfaces 156 and 157. In addition, knit element 151 defines a plurality of lace apertures 158.

**[74]** Similar to inlaid strand 132, inlaid strand 152 repeatedly extends from perimeter edge 153 toward inner edge 155, at least partially around one of lace apertures 158, and back to perimeter edge 153. In contrast with inlaid strand 132, however, some portions of inlaid strand 152 angle rearwards and extend to heel edges 154. More particularly, the portions of inlaid strand 152 associated with the most rearward lace apertures 158 extend from one of heel edges 154 toward inner edge 155, at least partially around one of the most rearward lace apertures 158, and back to one of heel edges 154. Additionally, some portions of inlaid strand 152 do not extend around one of lace apertures 158. More particularly, some sections of inlaid strand 152 extend toward inner edge 155, turn in areas adjacent to one of lace apertures 158, and extend back toward perimeter edge 153 or one of heel edges 154.

**[75]** Although knit element 151 may be formed in a variety of ways, courses of the knit structure generally extend in the same direction as inlaid strands 152. In areas adjacent to lace apertures 158, however, inlaid strand 152 may also extend along wales within knit element 151. More particularly, sections of inlaid strand 152 that are parallel to inner edge 155 may extend along wales.

**[76]** In comparison with knit element 151, inlaid strand 152 may exhibit greater stretch-resistance. That is, inlaid strand 152 may stretch less than knit element 151. Given that numerous sections of inlaid strand 152 extend through knit element 151, inlaid strand 152 may impart stretch-resistance to portions of upper 120 between the throat area and the lower area. Moreover, placing tension upon lace 122 may impart tension to inlaid strand 152, thereby inducing the portions of upper 120 between the throat area and the lower area to lay against the foot.

Additionally, given that numerous sections of inlaid strand 152 extend toward heel edges 154, inlaid strand 152 may impart stretch-resistance to portions of upper 120 in heel region 103. Moreover, placing tension upon lace 122 may induce the portions of upper 120 in heel region 103 to lay against the foot. As such, inlaid strand 152 operates in connection with lace 122 to enhance the fit of footwear 100.

**[77]** Knit element 151 may incorporate any of the various types of yarn discussed above for knit element 131. Inlaid strand 152 may also be formed from any of the configurations and materials discussed above for inlaid strand 132. Additionally, the various knit configurations discussed relative to Figures 8A and 8B may also be utilized in knitted component 150. More particularly, knit element 151 may have areas formed from a single yarn, two plated yarns, or a fusible yarn and a non-fusible yarn, with the fusible yarn joining (a) one portion of the non-fusible yarn to another portion of the non-fusible yarn or (b) the non-fusible yarn and inlaid strand 152 to each other.

**[78]** A majority of knit element 131 is depicted as being formed from a relatively untextured textile and a common or single knit structure (e.g., a tubular knit structure). In contrast, knit element 151 incorporates various knit structures that impart specific properties and advantages to different areas of knitted component 150. Moreover, by combining various yarn types with the knit structures, knitted component 150 may impart a range of properties to different areas of upper 120. Referring to Figure 11, a schematic view of knitted component 150 shows various zones 160-169 having different knit structures, each of which will now be discussed in detail. For purposes of reference, each of regions 101-103 and sides 104 and 105 are shown in Figure 11 to provide a reference for the locations of knit zones 160-169 when knitted component 150 is incorporated into footwear 100.

**[79]** A tubular knit zone 160 extends along a majority of perimeter edge 153 and through each of regions 101-103 on both of sides 104 and 105. Tubular knit zone 160 also extends inward from each of sides 104 and 105 in an area approximately located at an interface regions 101 and 102 to form a forward portion of inner edge 155. Tubular knit zone 160 forms a relatively untextured knit configuration. Referring to Figure 12A, a cross-section through an area of tubular knit zone 160 is depicted, and surfaces 156 and 157 are substantially parallel to each other. Tubular knit zone 160 imparts various advantages to footwear 100. For example, tubular knit zone 160 has greater durability and wear resistance than some other knit structures, especially when the yarn in tubular knit zone 160 is plated with a fusible yarn. In addition, the relatively untextured aspect of tubular knit zone 160 simplifies the process of joining strobel sock 125 to perimeter edge 153. That is, the portion of tubular knit zone 160 located along perimeter edge 153 facilitates the lasting process of footwear 100. For purposes of reference, Figure 13A depicts a loop diagram of the manner in which tubular knit zone 160 is formed with a knitting process.

**[80]** Two stretch knit zones 161 extend inward from perimeter edge 153 and are located to correspond with a location of joints between metatarsals and proximal phalanges of the foot. That is, stretch zones extend inward from perimeter edge in the area approximately located at the interface regions 101 and 102. As with tubular knit zone 160, the knit configuration in stretch knit zones 161 may be a tubular knit structure. In contrast with tubular knit zone 160, however, stretch knit zones 161 are formed from a stretch yarn that imparts stretch and recovery properties to knitted component 150. Although the degree of stretch in the stretch yarn may vary significantly, the stretch yarn may stretch at least one-hundred percent in many configurations of knitted component 150.

**[81]** A tubular and interlock tuck knit zone 162 extends along a portion of inner edge 155 in at least midfoot region 102. Tubular and interlock tuck knit zone 162 also

forms a relatively untextured knit configuration, but has greater thickness than tubular knit zone 160. In cross-section, tubular and interlock tuck knit zone 162 is similar to Figure 12A, in which surfaces 156 and 157 are substantially parallel to each other. Tubular and interlock tuck knit zone 162 imparts various advantages to footwear 100. For example, tubular and interlock tuck knit zone 162 has greater stretch resistance than some other knit structures, which is beneficial when lace 122 places tubular and interlock tuck knit zone 162 and inlaid strands 152 in tension. For purposes of reference, Figure 13B depicts a loop diagram of the manner in which tubular and interlock tuck knit zone 162 is formed with a knitting process.

**[82]** A 1x1 mesh knit zone 163 is located in forefoot region 101 and spaced inward from perimeter edge 153. 1x1 mesh knit zone has a C-shaped configuration and forms a plurality of apertures that extend through knit element 151 and from first surface 156 to second surface 157, as depicted in Figure 12B. The apertures enhance the permeability of knitted component 150, which allows air to enter upper 120 and moisture to escape from upper 120. For purposes of reference, Figure 13C depicts a loop diagram of the manner in which 1x1 mesh knit zone 163 is formed with a knitting process.

**[83]** A 2x2 mesh knit zone 164 extends adjacent to 1x1 mesh knit zone 163. In comparison with 1x1 mesh knit zone 163, 2x2 mesh knit zone 164 forms larger apertures, which may further enhance the permeability of knitted component 150. For purposes of reference, Figure 13D depicts a loop diagram of the manner in which 2x2 mesh knit zone 164 is formed with a knitting process.

**[84]** A 3x2 mesh knit zone 165 is located within 2x2 mesh knit zone 164, and another 3x2 mesh knit zone 165 is located adjacent to one of stretch zones 161. In comparison with 1x1 mesh knit zone 163 and 2x2 mesh knit zone 164, 3x2 mesh knit zone 165 forms even larger apertures, which may further enhance the permeability of knitted component 150. For purposes of reference, Figure 13E

depicts a loop diagram of the manner in which 3x2 mesh knit zone 165 is formed with a knitting process.

**[85]** A 1x1 mock mesh knit zone 166 is located in forefoot region 101 and extends around 1x1 mesh knit zone 163. In contrast with mesh knit zones 163-165, which form apertures through knit element 151, 1x1 mock mesh knit zone 166 forms indentations in first surface 156, as depicted in Figure 12C. In addition to enhancing the aesthetics of footwear 100, 1x1 mock mesh knit zone 166 may enhance flexibility and decrease the overall mass of knitted component 150. For purposes of reference, Figure 13F depicts a loop diagram of the manner in which 1x1 mock mesh knit zone 166 is formed with a knitting process.

**[86]** Two 2x2 mock mesh knit zones 167 are located in heel region 103 and adjacent to heel edges 154. In comparison with 1x1 mock mesh knit zone 166, 2x2 mock mesh knit zones 167 forms larger indentations in first surface 156. In areas where inlaid strands 152 extend through indentations in 2x2 mock mesh knit zones 167, as depicted in Figure 12D, inlaid strands 152 may be visible and exposed in a lower area of the indentations. For purposes of reference, Figure 13G depicts a loop diagram of the manner in which 2x2 mock mesh knit zones 167 are formed with a knitting process.

**[87]** Two 2x2 hybrid knit zones 168 are located in midfoot region 102 and forward of 2x2 mock mesh knit zones 167. 2x2 hybrid knit zones 168 share characteristics of 2x2 mesh knit zone 164 and 2x2 mock mesh knit zones 167. More particularly, 2x2 hybrid knit zones 168 form apertures having the size and configuration of 2x2 mesh knit zone 164, and 2x2 hybrid knit zones 168 form indentations having the size and configuration of 2x2 mock mesh knit zones 167. In areas where inlaid strands 152 extend through indentations in 2x2 hybrid knit zones 168, as depicted in Figure 12E, inlaid strands 152 are visible and exposed. For purposes of reference, Figure 13H depicts a loop diagram of the manner in which 2x2 hybrid knit zones 168 are formed with a knitting process.

**[88]** Knitted component 150 also includes two padded zones 169 having the general configuration of the padded area adjacent to ankle opening 121 and extending at least partially around ankle opening 121, which was discussed above for knitted component 130. As such, padded zones 169 are formed by two overlapping and at least partially coextensive knitted layers, which may be formed of unitary knit construction, and a plurality of floating yarns extending between the knitted layers.

**[89]** A comparison between Figures 9 and 10 reveals that a majority of the texturing in knit element 151 is located on first surface 156, rather than second surface 157. That is, the indentations formed by mock mesh knit zones 166 and 167, as well as the indentations in 2x2 hybrid knit zones 168, are formed in first surface 156. This configuration has an advantage of enhancing the comfort of footwear 100. More particularly, this configuration places the relatively untextured configuration of second surface 157 against the foot. A further comparison between Figures 9 and 10 reveals that portions of inlaid strand 152 are exposed on first surface 156, but not on second surface 157. This configuration also has an advantage of enhancing the comfort of footwear 100. More particularly, by spacing inlaid strand 152 from the foot by a portion of knit element 151, inlaid strands 152 will not contact the foot.

**[90]** Additional configurations of knitted component 130 are depicted in Figures 14A-14C. Although discussed in relation to kitted component 130, concepts associated with each of these configurations may also be utilized with knitted component 150. Referring to Figure 14A, inlaid strands 132 are absent from knitted component 130. Although inlaid strands 132 impart stretch-resistance to areas of knitted component 130, some configurations may not require the stretch-resistance from inlaid strands 132. Moreover, some configurations may benefit from greater stretch in upper 120. Referring to Figure 14B, knit element 131 includes two flaps 142 that are formed of unitary knit construction with a

remainder of knit element 131 and extend along the length of knitted component 130 at perimeter edge 133. When incorporated into footwear 100, flaps 142 may replace strobel sock 125. That is, flaps 142 may cooperatively form a portion of upper 120 that extends under sockliner 113 and is secured to the upper surface of midsole 111. Referring to Figure 14C, knitted component 130 has a configuration that is limited to midfoot region 102. In this configuration, other material elements (e.g., textiles, polymer foam, polymer sheets, leather, synthetic leather) may be joined to knitted component 130 through stitching or bonding, for example, to form upper 120.

**[91]** Based upon the above discussion, each of knitted components 130 and 150 may have various configurations that impart features and advantages to upper 120. More particularly, knit elements 131 and 151 may incorporate various knit structures and yarn types that impart specific properties to different areas of upper 120, and inlaid strands 132 and 152 may extend through the knit structures to impart stretch-resistance to areas of upper 120 and operate in connection with lace 122 to enhance the fit of footwear 100.

**[92]** Knitting Machine And Feeder Configurations

**[93]** Although knitting may be performed by hand, the commercial manufacture of knitted components is generally performed by knitting machines. An example of a knitting machine 200 that is suitable for producing either of knitted components 130 and 150 is depicted in Figure 15. Knitting machine 200 has a configuration of a V-bed flat knitting machine for purposes of example, but either of knitted components 130 and 150 or aspects of knitted components 130 and 150 may be produced on other types of knitting machines.

**[94]** Knitting machine 200 includes two needle beds 201 that are angled with respect to each other, thereby forming a V-bed. Each of needle beds 201 include a plurality of individual needles 202 that lay on a common plane. That is, needles

202 from one needle bed 201 lay on a first plane, and needles 202 from the other needle bed 201 lay on a second plane. The first plane and the second plane (i.e., the two needle beds 201) are angled relative to each other and meet to form an intersection that extends along a majority of a width of knitting machine 200. As described in greater detail below, needles 202 each have a first position where they are retracted and a second position where they are extended. In the first position, needles 202 are spaced from the intersection where the first plane and the second plane meet. In the second position, however, needles 202 pass through the intersection where the first plane and the second plane meet.

**[95]** A pair of rails 203 extend above and parallel to the intersection of needle beds 201 and provide attachment points for multiple standard feeders 204 and combination feeders 220. Each rail 203 has two sides, each of which accommodates either one standard feeder 204 or one combination feeder 220. As such, knitting machine 200 may include a total of four feeders 204 and 220. As depicted, the forward-most rail 203 includes one combination feeder 220 and one standard feeder 204 on opposite sides, and the rearward-most rail 203 includes two standard feeders 204 on opposite sides. Although two rails 203 are depicted, further configurations of knitting machine 200 may incorporate additional rails 203 to provide attachment points for more feeders 204 and 220.

**[96]** Due to the action of a carriage 205, feeders 204 and 220 move along rails 203 and needle beds 201, thereby supplying yarns to needles 202. In Figure 15, a yarn 206 is provided to combination feeder 220 by a spool 207. More particularly, yarn 206 extends from spool 207 to various yarn guides 208, a yarn take-back spring 209, and a yarn tensioner 210 before entering combination feeder 220. Although not depicted, additional spools 207 may be utilized to provide yarns to feeders 204.

**[97]** Standard feeders 204 are conventionally-utilized for a V-bed flat knitting machine, such as knitting machine 200. That is, existing knitting machines

incorporate standard feeders 204. Each standard feeder 204 has the ability to supply a yarn that needles 202 manipulate to knit, tuck, and float. As a comparison, combination feeder 220 has the ability to supply a yarn (e.g., yarn 206) that needles 202 knit, tuck, and float, and combination feeder 220 has the ability to inlay the yarn. Moreover, combination feeder 220 has the ability to inlay a variety of different strands (e.g., filament, thread, rope, webbing, cable, chain, or yarn). Accordingly, combination feeder 220 exhibits greater versatility than each standard feeder 204.

**[98]** As noted above, combination feeder 220 may be utilized when inlaying a yarn or other strand, in addition to knitting, tucking, and floating the yarn. Conventional knitting machines, which do not incorporate combination feeder 220, may also inlay a yarn. More particularly, conventional knitting machines that are supplied with an inlay feeder may also inlay a yarn. A conventional inlay feeder for a V-bed flat knitting machine includes two components that operate in conjunction to inlay the yarn. Each of the components of the inlay feeder are secured to separate attachment points on two adjacent rails, thereby occupying two attachment points. Whereas an individual standard feeder 204 only occupies one attachment point, two attachment points are generally occupied when an inlay feeder is utilized to inlay a yarn into a knitted component. Moreover, whereas combination feeder 220 only occupies one attachment point, a conventional inlay feeder occupies two attachment points.

**[99]** Given that knitting machine 200 includes two rails 203, four attachment points are available in knitting machine 200. If a conventional inlay feeder were utilized with knitting machine 200, only two attachment points would be available for standard feeders 204. When using combination feeder 220 in knitting machine 200, however, three attachment points are available for standard feeders 204. Accordingly, combination feeder 220 may be utilized when inlaying a yarn or

other strand, and combination feeder 220 has an advantage of only occupying one attachment point.

**[100]** Combination feeder 220 is depicted individually in Figures 16-19 as including a carrier 230, a feeder arm 240, and a pair of actuation members 250. Although a majority of combination feeder 220 may be formed from metal materials (e.g., steel, aluminum, titanium), portions of carrier 230, feeder arm 240, and actuation members 250 may be formed from polymer, ceramic, or composite materials, for example. As discussed above, combination feeder 220 may be utilized when inlaying a yarn or other strand, in addition to knitting, tucking, and floating a yarn. Referring to Figure 16 specifically, a portion of yarn 206 is depicted to illustrate the manner in which a strand interfaces with combination feeder 220.

**[101]** Carrier 230 has a generally rectangular configuration and includes a first cover member 231 and a second cover member 232 that are joined by four bolts 233. Cover members 231 and 232 define an interior cavity in which portions of feeder arm 240 and actuation members 250 are located. Carrier 230 also includes an attachment element 234 that extends outward from first cover member 231 for securing feeder 220 to one of rails 203. Although the configuration of attachment element 234 may vary, attachment element 234 is depicted as including two spaced protruding areas that form a dovetail shape, as depicted in Figure 17. A reverse dovetail configuration on one of rails 203 may extend into the dovetail shape of attachment element 234 to effectively join combination feeder 220 to knitting machine 200. It should also be noted that second cover member 234 forms a centrally-located and elongate slot 235, as depicted in Figure 18.

**[102]** Feeder arm 240 has a generally elongate configuration that extends through carrier 230 (i.e., the cavity between cover members 231 and 232) and outward from a lower side of carrier 230. In addition to other elements, feeder arm 240 includes an actuation bolt 241, a spring 242, a pulley 243, a loop 244, and a dispensing area 245. Actuation bolt 241 extends outward from feeder arm 240

and is located within the cavity between cover members 231 and 232. One side of actuation bolt 241 is also located within slot 235 in second cover member 232, as depicted in Figure 18. Spring 242 is secured to carrier 230 and feeder arm 240. More particularly, one end of spring 242 is secured to carrier 230, and an opposite end of spring 242 is secured to feeder arm 240. Pulley 243, loop 244, and dispensing area 245 are present on feeder arm 240 to interface with yarn 206 or another strand. Moreover, pulley 243, loop 244, and dispensing area 245 are configured to ensure that yarn 206 or another strand smoothly passes through combination feeder 220, thereby being reliably-supplied to needles 202. Referring again to Figure 16, yarn 206 extends around pulley 243, through loop 244, and into dispensing area 245. In addition, yarn 206 extends out of a dispensing tip 246, which is an end region of feeder arm 240, to then supply needles 202.

**[103]** Each of actuation members 250 includes an arm 251 and a plate 252. In many configurations of actuation members 250, each arm 251 is formed as a one-piece element with one of plates 252. Whereas arms 251 are located outside of carrier 230 and at an upper side of carrier 230, plates 252 are located within carrier 250. Each of arms 251 has an elongate configuration that defines an outside end 253 and an opposite inside end 254, and arms 251 are positioned to define a space 255 between both of inside ends 254. That is, arms 251 are spaced from each other. Plates 252 have a generally planar configuration. Referring to Figure 19, each of plates 252 define an aperture 256 with an inclined edge 257. Moreover, actuation bolt 241 of feeder arm 240 extends into each aperture 256.

**[104]** The configuration of combination feeder 220 discussed above provides a structure that facilitates a translating movement of feeder arm 240. As discussed in greater detail below, the translating movement of feeder arm 240 selectively positions dispensing tip 246 at a location that is above or below the intersection of needle beds 201. That is, dispensing tip 246 has the ability to reciprocate

through the intersection of needle beds 201. An advantage to the translating movement of feeder arm 240 is that combination feeder 220 (a) supplies yarn 206 for knitting, tucking, and floating when dispensing tip 246 is positioned above the intersection of needle beds 201 and (b) supplies yarn 206 or another strand for inlaying when dispensing tip 246 is positioned below the intersection of needle beds 201. Moreover, feeder arm 240 reciprocates between the two positions depending upon the manner in which combination feeder 220 is being utilized.

**[105]** In reciprocating through the intersection of needle beds 201, feeder arm 240 translates from a retracted position to an extended position. When in the retracted position, dispensing tip 246 is positioned above the intersection of needle beds 201. When in the extended position, dispensing tip 246 is positioned below the intersection of needle beds 201. Dispensing tip 246 is closer to carrier 230 when feeder arm 240 is in the retracted position than when feeder arm 240 is in the extended position. Similarly, dispensing tip 246 is further from carrier 230 when feeder arm 240 is in the extended position than when feeder arm 240 is in the retracted position. In other words, dispensing tip 246 moves away from carrier 230 when in the extended position, and dispensing tip 246 moves closer to carrier 230 when in the retracted position.

**[106]** For purposes of reference in Figures 16-20C, as well as further figures discussed later, an arrow 221 is positioned adjacent to dispensing area 245. When arrow 221 points upward or toward carrier 230, feeder arm 240 is in the retracted position. When arrow 221 points downward or away from carrier 230, feeder arm 240 is in the extended position. Accordingly, by referencing the position of arrow 221, the position of feeder arm 240 may be readily ascertained.

**[107]** The natural state of feeder arm 240 is the retracted position. That is, when no significant forces are applied to areas of combination feeder 220, feeder arm remains in the retracted position. Referring to Figures 16-19, for example, no

forces or other influences are shown as interacting with combination feeder 220, and feeder arm 240 is in the retracted position. The translating movement of feeder arm 240 may occur, however, when a sufficient force is applied to one of arms 251. More particularly, the translating movement of feeder arm 240 occurs when a sufficient force is applied to one of outside ends 253 and is directed toward space 255. Referring to Figures 20A and 20B, a force 222 is acting upon one of outside ends 253 and is directed toward space 255, and feeder arm 240 is shown as having translated to the extended position. Upon removal of force 222, however, feeder arm 240 will return to the retracted position. It should also be noted that Figure 20C depicts force 222 as acting upon inside ends 254 and being directed outward, and feeder arm 240 remains in the retracted position.

**[108]** As discussed above, feeders 204 and 220 move along rails 203 and needle beds 201 due to the action of carriage 205. More particularly, a drive bolt within carriage 205 contacts feeders 204 and 220 to push feeders 204 and 220 along needle beds 201. With respect to combination feeder 220, the drive bolt may either contact one of outside ends 253 or one of inside ends 254 to push combination feeder 220 along needle beds 201. When the drive bolt contacts one of outside ends 253, feeder arm 240 translates to the extended position and dispensing tip 246 passes below the intersection of needle beds 201. When the drive bolt contacts one of inside ends 254 and is located within space 255, feeder arm 240 remains in the retracted position and dispensing tip 246 is above the intersection of needle beds 201. Accordingly, the area where carriage 205 contacts combination feeder 220 determines whether feeder arm 240 is in the retracted position or the extended position.

**[109]** The mechanical action of combination feeder 220 will now be discussed. Figures 19-20B depict combination feeder 220 with first cover member 231 removed, thereby exposing the elements within the cavity in carrier 230. By comparing Figure 19 with Figures 20A and 20B, the manner in which force 222 induces

feeder arm 240 to translate may be apparent. When force 222 acts upon one of outside ends 253, one of actuation members 250 slides in a direction that is perpendicular to the length of feeder arm 240. That is, one of actuation members 250 slides horizontally in Figures 19-20B. The movement of one of actuation members 250 causes actuation bolt 241 to engage one of inclined edges 257. Given that the movement of actuation members 250 is constrained to the direction that is perpendicular to the length of feeder arm 240, actuation bolt 241 rolls or slides against inclined edge 257 and induces feeder arm 240 to translate to the extended position. Upon removal of force 222, spring 242 pulls feeder arm 240 from the extended position to the retracted position.

**[110]** Based upon the above discussion, combination feeder 220 reciprocates between the retracted position and the extended position depending upon whether a yarn or other strand is being utilized for knitting, tucking, or floating or being utilized for inlaying. Combination feeder 220 has a configuration wherein the application of force 222 induces feeder arm 240 to translate from the retracted position to the extended position, and removal of force 222 induces feeder arm 240 to translate from the extended position to the retracted position. That is, combination feeder 220 has a configuration wherein the application and removal of force 222 causes feeder arm 240 to reciprocate between opposite sides of needle beds 201. In general, outside ends 253 may be considered actuation areas, which induce movement in feeder arm 240. In further configurations of combination feeder 220, the actuation areas may be in other locations or may respond to other stimuli to induce movement in feeder arm 240. For example, the actuation areas may be electrical inputs coupled to servomechanisms that control movement of feeder arm 240. Accordingly, combination feeder 220 may have a variety of structures that operate in the same general manner as the configuration discussed above.

**[111]** Knitting Process

**[112]** The manner in which knitting machine 200 operates to manufacture a knitted component will now be discussed in detail. Moreover, the following discussion will demonstrate the operation of combination feeder 220 during a knitting process. Referring to Figure 21A, a portion of knitting machine 200 that includes various needles 202, rail 203, standard feeder 204, and combination feeder 220 is depicted. Whereas combination feeder 220 is secured to a front side of rail 203, standard feeder 204 is secured to a rear side of rail 203. Yarn 206 passes through combination feeder 220, and an end of yarn 206 extends outward from dispensing tip 246. Although yarn 206 is depicted, any other strand (e.g., filament, thread, rope, webbing, cable, chain, or yarn) may pass through combination feeder 220. Another yarn 211 passes through standard feeder 204 and forms a portion of a knitted component 260, and loops of yarn 211 forming an uppermost course in knitted component 260 are held by hooks located on ends of needles 202.

**[113]** The knitting process discussed herein relates to the formation of knitted component 260, which may be any knitted component, including knitted components that are similar to knitted components 130 and 150. For purposes of the discussion, only a relatively small section of knitted component 260 is shown in the figures in order to permit the knit structure to be illustrated. Moreover, the scale or proportions of the various elements of knitting machine 200 and knitted component 260 may be enhanced to better illustrate the knitting process.

**[114]** Standard feeder 204 includes a feeder arm 212 with a dispensing tip 213. Feeder arm 212 is angled to position dispensing tip 213 in a location that is (a) centered between needles 202 and (b) above an intersection of needle beds 201. Figure 22A depicts a schematic cross-sectional view of this configuration. Note that needles 202 lay on different planes, which are angled relative to each other.

That is, needles 202 from needle beds 201 lay on the different planes. Needles 202 each have a first position and a second position. In the first position, which is shown in solid line, needles 202 are retracted. In the second position, which is shown in dashed line, needles 202 are extended. In the first position, needles 202 are spaced from the intersection where the planes upon which needle beds 201 lay meet. In the second position, however, needles 202 are extended and pass through the intersection where the planes upon which needle beds 201 meet. That is, needles 202 cross each other when extended to the second position. It should be noted that dispensing tip 213 is located above the intersection of the planes. In this position, dispensing tip 213 supplies yarn 211 to needles 202 for purposes of knitting, tucking, and floating.

**[115]** Combination feeder 220 is in the retracted position, as evidenced by the orientation of arrow 221. Feeder arm 240 extends downward from carrier 230 to position dispensing tip 246 in a location that is (a) centered between needles 202 and (b) above the intersection of needle beds 201. Figure 22B depicts a schematic cross-sectional view of this configuration. Note that dispensing tip 246 is positioned in the same relative location as dispensing tip 213 in Figure 22A.

**[116]** Referring now to Figure 21B, standard feeder 204 moves along rail 203 and a new course is formed in knitted component 260 from yarn 211. More particularly, needles 202 pulled sections of yarn 211 through the loops of the prior course, thereby forming the new course. Accordingly, courses may be added to knitted component 260 by moving standard feeder 204 along needles 202, thereby permitting needles 202 to manipulate yarn 211 and form additional loops from yarn 211.

**[117]** Continuing with the knitting process, feeder arm 240 now translates from the retracted position to the extended position, as depicted in Figure 21C. In the extended position, feeder arm 240 extends downward from carrier 230 to position dispensing tip 246 in a location that is (a) centered between needles 202 and (b)

below the intersection of needle beds 201. Figure 22C depicts a schematic cross-sectional view of this configuration. Note that dispensing tip 246 is positioned below the location of dispensing tip 246 in Figure 22B due to the translating movement of feeder arm 240.

**[118]** Referring now to Figure 21D, combination feeder 220 moves along rail 203 and yarn 206 is placed between loops of knitted component 260. That is, yarn 206 is located in front of some loops and behind other loops in an alternating pattern. Moreover, yarn 206 is placed in front of loops being held by needles 202 from one needle bed 201, and yarn 206 is placed behind loops being held by needles 202 from the other needle bed 201. Note that feeder arm 240 remains in the extended position in order to lay yarn 206 in the area below the intersection of needle beds 201. This effectively places yarn 206 within the course recently formed by standard feeder 204 in Figure 21B.

**[119]** In order to complete inlaying yarn 206 into knitted component 260, standard feeder 204 moves along rail 203 to form a new course from yarn 211, as depicted in Figure 21E. By forming the new course, yarn 206 is effectively knit within or otherwise integrated into the structure of knitted component 260. At this stage, feeder arm 240 may also translate from the extended position to the retracted position.

**[120]** Figures 21D and 21E show separate movements of feeders 204 and 220 along rail 203. That is, Figure 21D shows a first movement of combination feeder 220 along rail 203, and Figure 21E shows a second and subsequent movement of standard feeder 204 along rail 203. In many knitting processes, feeders 204 and 220 may effectively move simultaneously to inlay yarn 206 and form a new course from yarn 211. Combination feeder 220, however, moves ahead or in front of standard feeder 204 in order to position yarn 206 prior to the formation of the new course from yarn 211.

**[121]** The general knitting process outlined in the above discussion provides an example of the manner in which inlaid strands 132 and 152 may be located in knit elements 131 and 151. More particularly, knitted components 130 and 150 may be formed by utilizing combination feeder 220 to effectively insert inlaid strands 132 and 152 into knit elements 131. Given the reciprocating action of feeder arm 240, inlaid strands may be located within a previously formed course prior to the formation of a new course.

**[122]** Continuing with the knitting process, feeder arm 240 now translates from the retracted position to the extended position, as depicted in Figure 21F. Combination feeder 220 then moves along rail 203 and yarn 206 is placed between loops of knitted component 260, as depicted in Figure 21G. This effectively places yarn 206 within the course formed by standard feeder 204 in Figure 21E. In order to complete inlaying yarn 206 into knitted component 260, standard feeder 204 moves along rail 203 to form a new course from yarn 211, as depicted in Figure 21H. By forming the new course, yarn 206 is effectively knit within or otherwise integrated into the structure of knitted component 260. At this stage, feeder arm 240 may also translate from the extended position to the retracted position.

**[123]** Referring to Figure 21H, yarn 206 forms a loop 214 between the two inlaid sections. In the discussion of knitted component 130 above, it was noted that inlaid strand 132 repeatedly exits knit element 131 at perimeter edge 133 and then re-enters knit element 131 at another location of perimeter edge 133, thereby forming loops along perimeter edge 133, as seen in Figures 5 and 6. Loop 214 is formed in a similar manner. That is, loop 214 is formed where yarn 206 exits the knit structure of knitted component 260 and then re-enters the knit structure.

**[124]** As discussed above, standard feeder 204 has the ability to supply a yarn (e.g., yarn 211) that needles 202 manipulate to knit, tuck, and float. Combination

feeder 220, however, has the ability to supply a yarn (e.g., yarn 206) that needles 202 knit, tuck, or float, as well as inlaying the yarn. The above discussion of the knitting process describes the manner in which combination feeder 220 inlays a yarn while in the extended position. Combination feeder 220 may also supply the yarn for knitting, tucking, and floating while in the retracted position. Referring to Figure 21I, for example, combination feeder 220 moves along rail 203 while in the retracted position and forms a course of knitted component 260 while in the retracted position. Accordingly, by reciprocating feeder arm 240 between the retracted position and the extended position, combination feeder 220 may supply yarn 206 for purposes of knitting, tucking, floating, and inlaying. An advantage to combination feeder 220 relates, therefore, to its versatility in supplying a yarn that may be utilized for a greater number of functions than standard feeder 204

**[125]** The ability of combination feeder 220 to supply yarn for knitting, tucking, floating, and inlaying is based upon the reciprocating action of feeder arm 240. Referring to Figures 22A and 22B, dispensing tips 213 and 246 are at identical positions relative to needles 220. As such, both feeders 204 and 220 may supply a yarn for knitting, tucking, and floating. Referring to Figure 22C, dispensing tip 246 is at a different position. As such, combination feeder 220 may supply a yarn or other strand for inlaying. An advantage to combination feeder 220 relates, therefore, to its versatility in supplying a yarn that may be utilized for knitting, tucking, floating, and inlaying.

**[126]** Further Knitting Process Considerations

**[127]** Additional aspects relating to the knitting process will now be discussed. Referring to Figure 23, the upper course of knitted component 260 is formed from both of yarns 206 and 211. More particularly, a left side of the course is formed from yarn 211, whereas a right side of the course is formed from yarn 206. Additionally, yarn 206 is inlaid into the left side of the course. In order to form this configuration, standard feeder 204 may initially form the left side of the

course from yarn 211. Combination feeder 220 then lays yarn 206 into the right side of the course while feeder arm 240 is in the extended position. Subsequently, feeder arm 240 moves from the extended position to the retracted position and forms the right side of the course. Accordingly, combination feeder may inlay a yarn into one portion of a course and then supply the yarn for purposes of knitting a remainder of the course.

**[128]** Figure 24 depicts a configuration of knitting machine 200 that includes four combination feeders 220. As discussed above, combination feeder 220 has the ability to supply a yarn (e.g., yarn 206) for knitting, tucking, floating, and inlaying. Given this versatility, standard feeders 204 may be replaced by multiple combination feeders 220 in knitting machine 200 or in various conventional knitting machines.

**[129]** Figure 8B depicts a configuration of knitted component 130 where two yarns 138 and 139 are plated to form knit element 131, and inlaid strand 132 extends through knit element 131. The general knitting process discussed above may also be utilized to form this configuration. As depicted in Figure 15, knitting machine 200 includes multiple standard feeders 204, and two of standard feeders 204 may be utilized to form knit element 131, with combination feeder 220 depositing inlaid strand 132. Accordingly, the knitting process discussed above in Figures 21A-21I may be modified by adding another standard feeder 204 to supply an additional yarn. In configurations where yarn 138 is a non-fusible yarn and yarn 139 is a fusible yarn, knitted component 130 may be heated following the knitting process to fuse knitted component 130.

**[130]** The portion of knitted component 260 depicted in Figures 21A-21I has the configuration of a rib knit textile with regular and uninterrupted courses and wales. That is, the portion of knitted component 260 does not have, for example, any mesh areas similar to mesh knit zones 163-165 or mock mesh areas similar to mock mesh knit zones 166 and 167. In order to form mesh knit zones 163-165

in either of knitted components 150 and 260, a combination of a racked needle bed 201 and a transfer of stitch loops from front to back needle beds 201 and back to front needle beds 201 in different racked positions is utilized. In order to form mock mesh areas similar to mock mesh knit zones 166 and 167, a combination of a racked needle bed and a transfer of stitch loops from front to back needle beds 201 is utilized.

**[131]** Courses within a knitted component are generally parallel to each other. Given that a majority of inlaid strand 152 follows courses within knit element 151, it may be suggested that the various sections of inlaid strand 152 should be parallel to each other. Referring to Figure 9, for example, some sections of inlaid strand 152 extend between edges 153 and 155 and other sections extend between edges 153 and 154. Various sections of inlaid strand 152 are, therefore, not parallel. The concept of forming darts may be utilized to impart this non-parallel configuration to inlaid strand 152. More particularly, courses of varying length may be formed to effectively insert wedge-shaped structures between sections of inlaid strand 152. The structure formed in knitted component 150, therefore, where various sections of inlaid strand 152 are not parallel, may be accomplished through the process of darting.

**[132]** Although a majority of inlaid strands 152 follow courses within knit element 151, some sections of inlaid strand 152 follow wales. For example, sections of inlaid strand 152 that are adjacent to and parallel to inner edge 155 follow wales. This may be accomplished by first inserting a section of inlaid strand 152 along a portion of a course and to a point where inlaid strand 152 is intended to follow a wale. Inlaid strand 152 is then kicked back to move inlaid strand 152 out of the way, and the course is finished. As the subsequent course is being formed, inlay strand 152 is again kicked back to move inlaid strand 152 out of the way at the point where inlaid strand 152 is intended to follow the wale, and the course is finished. This process is repeated until inlaid strand 152 extends a desired

distance along the wale. Similar concepts may be utilized for portions of inlaid strand 132 in knitted component 130.

**[133]** A variety of procedures may be utilized to reduce relative movement between (a) knit element 131 and inlaid strand 132 or (b) knit element 151 and inlaid strand 152. That is, various procedures may be utilized to prevent inlaid strands 132 and 152 from slipping, moving through, pulling out, or otherwise becoming displaced from knit elements 131 and 151. For example, fusing one or more yarns that are formed from thermoplastic polymer materials to inlaid strands 132 and 152 may prevent movement between inlaid strands 132 and 152 and knit elements 131 and 151. Additionally, inlaid strands 132 and 152 may be fixed to knit elements 131 and 151 when periodically fed to knitting needles as a tuck element. That is, inlaid strands 132 and 152 may be formed into tuck stitches at points along their lengths (e.g., once per centimeter) in order to secure inlaid strands 132 and 152 to knit elements 131 and 151 and prevent movement of inlaid strands 132 and 152.

**[134]** Following the knitting process described above, various operations may be performed to enhance the properties of either of knitted components 130 and 150. For example, a water-repellant coating or other water-resisting treatment may be applied to limit the ability of the knit structures to absorb and retain water. As another example, knitted components 130 and 150 may be steamed to improve loft and induce fusing of the yarns. As discussed above with respect to Figure 8B, yarn 138 may be a non-fusible yarn and yarn 139 may be a fusible yarn. When steamed, yarn 139 may melt or otherwise soften so as to transition from a solid state to a softened or liquid state, and then transition from the softened or liquid state to the solid state when sufficiently cooled. As such, yarn 139 may be utilized to join (a) one portion of yarn 138 to another portion of yarn 138, (b) yarn 138 and inlaid strand 132 to each other, or (c) another element (e.g., logos, trademarks, and placards with care instructions and material

information) to knitted component 130, for example. Accordingly, a steaming process may be utilized to induce fusing of yarns in knitted components 130 and 150.

**[135]** Although procedures associated with the steaming process may vary greatly, one method involves pinning one of knitted components 130 and 150 to a jig during steaming. An advantage of pinning one of knitted components 130 and 150 to a jig is that the resulting dimensions of specific areas of knitted components 130 and 150 may be controlled. For example, pins on the jig may be located to hold areas corresponding to perimeter edge 133 of knitted component 130. By retaining specific dimensions for perimeter edge 133, perimeter edge 133 will have the correct length for a portion of the lasting process that joins upper 120 to sole structure 110. Accordingly, pinning areas of knitted components 130 and 150 may be utilized to control the resulting dimensions of knitted components 130 and 150 following the steaming process.

**[136]** The knitting process described above for forming knitted component 260 may be applied to the manufacture of knitted components 130 and 150 for footwear 100. The knitting process may also be applied to the manufacture of a variety of other knitted components. That is, knitting processes utilizing one or more combination feeders or other reciprocating feeders may be utilized to form a variety of knitted components. As such, knitted components formed through the knitting process described above, or a similar process, may also be utilized in other types of apparel (e.g., shirts, pants, socks, jackets, undergarments), athletic equipment (e.g., golf bags, baseball and football gloves, soccer ball restriction structures), containers (e.g., backpacks, bags), and upholstery for furniture (e.g., chairs, couches, car seats). The knitted components may also be utilized in bed coverings (e.g., sheets, blankets), table coverings, towels, flags, tents, sails, and parachutes. The knitted components may be utilized as technical textiles for industrial purposes, including structures for automotive and

aerospace applications, filter materials, medical textiles (e.g. bandages, swabs, implants), geotextiles for reinforcing embankments, agrotextiles for crop protection, and industrial apparel that protects or insulates against heat and radiation. Accordingly, knitted components formed through the knitting process described above, or a similar process, may be incorporated into a variety of products for both personal and industrial purposes.

**[137]** Knitted Components With Tongues

**[138]** In footwear 100, tongue 124 is separate from knitted component 130 and joined to knitted component 130, possibly with stitching, an adhesive, or thermal bonding. Moreover, tongue 124 is discussed as being added to knitted component 130 following the knitting process. As depicted in Figures 25 and 26, however, knitted component 130 includes a knitted tongue 170 that is formed of unitary knit construction with knit element 131. That is, knit element 131 and tongue 170 are formed as a one-piece element through a knitting process, which will be discussed in greater detail below. Although tongue 124 or another tongue may be joined to knit element 131 after knitted component 130 is formed, tongue 170 or another knitted tongue may be formed during the knitting process and of unitary knit construction with a portion of knitted component 130.

**[139]** Tongue 170 is located within a throat area (i.e., where lace 122 and lace apertures 123 are located) of knitted component 130 and extends along the throat area. When incorporated into footwear 100, for example, tongue 170 extends from a forward portion of the throat area to ankle opening 121. As with knit element 131, tongue 170 is depicted as being formed from a relatively untextured textile and a common or single knit structure. Tongue 170 is also depicted in Figure 27 as having a generally planar configuration. Examples of knit structures that may impart this configuration for tongue 170, as well as knit element 131, are any of the various knit structures in knit zones 160-162 discussed above. In further configurations, however, apertures may be formed in

areas of tongue 170 by utilizing the knit structures of mesh knit zones 163-165, indentations may be formed in areas of tongue 170 by utilizing the knit structures of mock mesh knit zones 166 or 167, or a combination of apertures and indentations may be formed in areas of tongue 170 by utilizing the knit structure of hybrid knit zone 168. Additionally, areas of tongue 170 may have a padded aspect when formed to have layers and floating yarns, for example, that are similar to padded zone 169. Accordingly, the untextured and planar aspect of tongue 170 is shown for purposes of example, and various features may be imparted through the use of different knit structures.

**[140]** Referring to Figures 28 and 29, a knitted tongue 175 is depicted as being formed of unitary knit construction with knit element 151 of knitted component 150. Tongue 175 has the same general shape as tongue 170, but may have a padded aspect with greater thickness. More particularly, tongue 175 is depicted in Figure 30 as including two overlapping and at least partially coextensive knitted layers 176, which may be formed of unitary knit construction, and a plurality of yarn loops 177 located between layers 176. Although the sides or edges of layers 176 are secured or knit to each other, a central area is generally unsecured. As such, layers 176 effectively form a tube or tubular structure, and yarn loops 177 are located between and extend outward from one of layers 176. In effect, yarn loops 177 fill an interior volume between layers 176 and impart a compressible or padded aspect to tongue 175. It should also be noted that each of layers 176 and yarn loops 177 may be formed of unitary knit construction during the knitting process that forms knitted component 150.

**[141]** Another knitted component 180 is depicted in Figure 31 as including a knit element 181, an inlaid strand 182, and a knitted tongue 183. With the exception of the presence of tongue 183, knitted component 180 has a general structure of a knitted component disclosed in U.S. Patent Application Publication 2010/0154256 to Dua, which is incorporated herein by reference. Tongue 183 is

formed of unitary knit construction with knit element 181 and includes various knit structures. Referring to Figure 32, for example, peripheral areas of tongue 183 exhibit an untextured configuration that may have any of the various knit structures in knit zones 160-162. At least two areas of tongue 183 incorporate apertures and may have any of the various knit structures in mesh knit zones 163-165. Referring to Figure 33, a central area of tongue 183 has a compressible or padded aspect that includes two overlapping and at least partially coextensive knitted layers 184, which may be formed of unitary knit construction, and a plurality of floating yarns 185 extending between layers 184. The central area of tongue 183 may exhibit, therefore, the knit structure of padded zone 169. Although the sides or edges of layers 184 are secured to each other, a central area is generally unsecured. As such, layers 184 effectively form a tube or tubular structure, and floating yarns 185 may be located or inlaid between layers 184 to pass through the tubular structure. That is, floating yarns 185 extend between layers 184, are generally parallel to surfaces of layers 184, and also pass through and fill an interior volume between layers 184. Whereas a majority of tongue 183 is formed from yarns that are mechanically-manipulated to form intermeshed loops, floating yarns 185 are generally free or otherwise inlaid within the interior volume between layers 184. As an additional matter, layers 184 may be at least partially formed from a stretch yarn to impart the advantages discussed above for knitted layers 140 and floating yarns 141.

**[142]** Tongue 183 provides an example of the manner in which various knit structures may be utilized. As discussed above, the peripheral areas of tongue 183 exhibit an untextured configuration, two areas of tongue 183 incorporate apertures, and the central area of tongue 183 includes knitted layers 184 and floating yarns 185 to provide a compressible or padded aspect. Mock mesh knit structures and hybrid knit structures may also be utilized. Accordingly, various knit structures may be incorporated into tongue 183 or any other knitted tongue (e.g., tongues 170 and 175) to impart different properties or aesthetics.

**[143]** Tongue 170 is secured to a forward portion of the throat area of knit element 131. That is, tongue 170 is joined through knitting to knit element 131 in a portion of the throat area that is closest to forefoot region 101 in footwear 100. Each of tongues 175 and 183 are respectively secured or knit to a similar position in knitted components 150 and 180. Referring to Figures 34 and 35, however, a knitted tongue 190 is secured along a length of the throat area of a configuration of knitted component 131 that does not include inlaid strand 132 or lace apertures 123. More particularly, edges of tongue 190 are knit to an area of knit element 131 that is spaced outward from inner edge 135. Accordingly, any of the configurations of tongues 170, 175, 183, and 190 may be secured (e.g., through unitary knit construction) to various locations in the throat areas of knitted components 130, 150, and 180.

**[144]** Advantages of constructing tongue 170 during the knitting process and of unitary knit construction are more efficient manufacture and common properties. More particularly, manufacturing efficiency may be increased by forming more of knitted component 130 during the knitting process and eliminating various steps (e.g., making a separate tongue, securing the tongue) that are often performed manually. Tongue 170 and knit element 131 may also have common properties when formed from the same yarn (or type of yarn) or with similar knit structures. For example, utilizing the same yarn in both of tongue 170 and knit element 131 imparts similar durability, strength, stretch, wear-resistance, biodegradability, thermal, and hydrophobic properties. In addition to physical properties, utilizing the same yarn in both of tongue 170 and knit element 131 may impart common aesthetic or tactile properties, such as color, sheen, and texture. Utilizing the same knit structures in both of tongue 170 and knit element 131 may also impart common physical properties and aesthetic properties. These advantages may also be present when at least a portion of knit element 131 and at least a portion of tongue 170 are formed from a common yarn (or type of yarn) or with common knit structures.

**[145]** Tongue 175 includes yarn loops 177 between layers 176, and tongue 183 includes floating yarns 185 between layers 184. A benefit of yarn loops 177 and floating yarns 185 is that compressible or padded areas are formed. In addition to yarn loops 177 and floating yarns 185, other types of free yarn sections may be utilized. For purposes of the present application, "free yarn sections" or variants thereof is defined as segments or portions of yarns that are not directly forming intermeshed loops (e.g., that define courses and wales) of a knit structure, such as floating yarns, inlaid yarns, terry loops, ends of yarns, and cut segments of yarn, for example. Moreover, it should be noted that free yarn sections may be one portion of an individual yarn, with other portions of the yarn forming intermeshed loops of the knit structure, For example, the portion of a yarn forming terry loops (e.g., the free yarn sections) may be between portions of the yarn forming intermeshed loops of a knit structure. As an alternative to free yarn sections, foam materials or other types of compressible materials may be utilized within either of tongues 175 and 183.

**[146]** As a final matter, although tongue 170 is disclosed in combination with knitted component 130, tongue 170 may also be utilized with knitted components 150 and 180, as well as other knitted components. Similarly, tongues 175, 183, and 190 may be utilized with any of knitted components 130, 150, and 180, as well as other knitted components. The combinations disclosed herein are, therefore, for purposes of example and other combinations may also be utilized. Moreover, the specific configurations of tongues 170, 175, 183, and 190 are also meant to provide examples and may also vary significantly. For example, the position of layers 184 and floating yarns 185 may be enlarged, moved to a periphery of tongue 183, or removed from tongue 183. Accordingly, the various combinations and configurations are intended to provide examples, and other combinations and configurations may also be utilized.

**[147]** Tongue Knitting Process

**[148]** The manner in which knitting machine 200 operates to manufacture a knitted component with a tongue will now be discussed in detail. Moreover, the following discussion will demonstrate the manner in which knit element 131 and tongue 170 are formed of unitary knit construction, but similar processes may be utilized for other knitted components and tongues. Referring to Figures 36A-36G, a portion of knitting machine 200 is schematically-depicted as including needle beds 201, one rail 203, one standard feeder 204, and one combination feeder 220. It should be understood that although knitted component 130 is formed between needle beds 201, knitted component 130 is shown adjacent to needle beds 201 to (a) be more visible during discussion of the knitting process and (b) show the position of portions of knitted component 130 relative to each other and needle beds 201. Also, although one rail 203, one standard feeder 204, and one combination feeder 220 are depicted, additional rails 203, standard feeders 204, and combination feeders 220 may be utilized. Accordingly, the general structure of knitting machine 200 is simplified for purposes of explaining the knitting process.

**[149]** Initially, a portion of tongue 170 is formed by knitting machine 200, as depicted in Figure 36A. In forming this portion of tongue 170, standard feeder 204 repeatedly moves along rail 203 and various courses are formed from at least yarn 211. More particularly, needles 202 pull sections of yarn 211 through loops of a prior course, thereby forming another course. This action continues until tongue 170 is substantially formed, as depicted in Figure 36B. It should be noted at this stage that although tongue 170 is depicted as being formed from one yarn 211, additional yarns may be incorporated into tongue 170 from further standard feeders 204. For example, a fusible yarn may be incorporated into at least the upper or final course of tongue 170 to assist with ensuring that tongue 170 is properly joined or knitted with knit element 131. Additionally, at least the final

course of tongue 170 may include cross-tuck stitches with a relatively tight or dense knit to ensure that tongue 170 remains properly positioned on needles 202 during later stages of the knitting process.

**[150]** Knitting machine 200 now begins the process of forming knit element 131, as depicted in Figure 36C, in accordance with the knitting process discussed previously. As the knitting process continues, combination feeder 220 inlays yarn 206 to form inlaid strand 132, as depicted in Figure 36D, also in accordance with the knitting process discussed previously. Through a comparison of Figures 36C and 36D, tongue 170 remains stationary relative to needle beds 201, but knit element 131 moves downward and may overlap tongue 170 as successive courses are formed in knit element 131. This continues until a course is formed that is intended to join tongue 170 to knit element 131. More particularly, tongue 170 remains stationary relative to needle beds 201 as portions of knitted component 131 are formed. At the point depicted in Figure 36E, however, a course is formed that (a) extends across the final course of tongue 170, which includes the cross-tuck stitches, and (b) joins with the final course of tongue 170. In effect, this course joins tongue 170 to knit element 131. At this stage, therefore, knit element 131 and tongue 170 are effectively formed of unitary knit construction.

**[151]** Once tongue 170 is joined to knit element 131, knitting machine 200 continues the process of forming courses, thereby forming more of knit element 131, as depicted in Figure 36F. Given that tongue 170 is now joined to knit element 131, tongue 170 moves downward with knit element 131 as successive courses are formed, as seen through a comparison of Figures 36E and 36F. Moving forward, knitting machine 200 continues the process of forming courses in knit element 131 until knitted component 130 is substantially formed, as depicted in Figure 36G.

**[152]** Now that the general process associated with forming knitted component 130 to include tongue 170 is presented, additional aspects of the knitting process will be discussed. As noted above, a fusible yarn may be incorporated into at least the final course of tongue 170 to assist with ensuring that tongue 170 is properly joined or knitted with knit element 131. In some knitting processes, the yarn forming the final course of tongue 170 is cut. By incorporating the fusible yarn into the final course of tongue 170, the knit structure at the interface of tongue 170 with knit element 131 may be strengthened. That is, melting of the fusible yarn will fuse or otherwise join the sections of yarn at the interface and prevent unraveling of the cut yarn.

**[153]** Also as noted above, at least the final course of tongue 170 may include cross-tuck stitches with a relatively tight or dense knit to ensure that tongue 170 remains properly positioned on needles 202 during later stages of the knitting process. During a majority of the knitting process that forms knit element 131, tongue 170 remains stationary relative to needle beds 201. Movement, vibration, or other actions of knitting machine 200 may, however, dislodge portions of the final course from needles 202, thereby forming dropped stitches. By forming cross-tuck stitches with a relatively tight or dense knit, fewer dropped stitches are formed. Moreover, if dropped stitches are formed, the fusible yarn within the final course will fuse or otherwise join the dropped stitches within the knit structure.

**[154]** Once tongue 170 is knit, various needles 202 hold tongue 170 in position while knit element 131 is formed. In effect, the needles 202 that hold tongue 170 are unavailable for further knitting until tongue 170 is joined with knit element 131. As a result, only those needles 202 located beyond the edges (i.e., to the right and to the left) of tongue 170 are available for forming knit element 131. The final course of tongue 170 should, therefore, have equal or less width than the distance between opposite sides of inner edge 135 in the area where tongue 170 is joined with knit element 131. In other words, the design of knitted component

130 should account for (a) the length of the final course of tongue 170 and (b) the number of needles 202 that are reserved for holding tongue 170 while knit element 131 is formed.

**[155]** In the knitting process discussed above, both tongue 170 and knit element 131 are formed from yarn 211. Whereas tongue 170 remains stationary relative to needle beds 201 through a portion of the knitting process, portions of knit element 131 move downward as successive courses are formed. Given that a segment of yarn 211 may extend from the final course of tongue 170 to the first course of knit element 131 (i.e., the bottom edges of knit element 131), this segment of yarn should have sufficient length to account for the downward movement of the first course of knit element 131. In effect, a comparison of Figures 36C-36E, demonstrates that the first course of knit element 131 moves downward and away from the final course of tongue 170 as knit element 131 is formed. Accordingly, if a segment of yarn 211 extends from the final course of tongue 170 to the first course of knit element 131, this segment of yarn should have sufficient length to account for the growing distance between the final course of tongue 170 and the first course of knit element 131.

**[156]** Although various methods may be employed to account for the growing distance between the final course of tongue 170 and the first course of knit element 131, Figure 37 depicts an expansion section 195 as being formed following the formation of tongue 170. Expansion section 195 may then be cast off of needles 202. As the distance between the final course of tongue 170 and the first course of knit element 131 increases, expansion section 195 may unravel and lengthen. That is, unraveling of expansion section 195 may be used to effectively lengthen the section of yarn 211 between the final course of tongue 170 and the first course of knit element 131. In some configurations, expansion section 195 may be formed as a jersey fabric to facilitate unraveling.

**[157]** The various Figures 36A-36G show knitted component 130 as being formed independently. In some knitting processes, however, a waste element is knit prior to forming knitted component 130. The waste element engages various rollers that provide a downward force upon knitted component 130. The downward force ensures that courses move away from needles 202 as later courses are formed.

**[158]** Based upon the above discussion, knit element 131 and tongue 170 may be formed of unitary knit construction through a single knitting process. As described, tongue 170 is formed first and remains stationary upon needle beds 201 as knit element 131 is formed. After a course is formed that joins knit element 131 and tongue 170, knit element 131 and tongue 170 move downward together as further portions of knit element 131 are formed.

**[159]** Sequential Alterations

**[160]** Knitting machine 200 includes, among other elements, a knitting mechanism 270, a pattern 280, and a computing device 290, as schematically-depicted in Figure 38. Knitting mechanism 270 includes many of the mechanical components of knitting machine 200 (e.g., needles 202, feeders 204 and 220, carriage 205) that mechanically-manipulate yarns 206 and 211 to form a knitted component (e.g., knitted component 130). Pattern 280 includes data on the knitted component, including the yarns that are utilized for each stitch, the type of knit structures formed by each stitch, and the specific needles 202 and feeders 204 and 220 that are used for each stitch, for example. The operation of knitting machine 200 is governed by computing device 290, which reads data from pattern 280 and directs the corresponding operation of knitting mechanism 270.

**[161]** Multiple and substantially identical knitted components may be formed by knitting machine 200. More particularly, computing device 290 may repeatedly read pattern 280 and direct knitting mechanism 270 to form substantially identical

knitted components. In general, therefore, each knitted component that is formed will be substantially identical to other knitted components that are formed based upon a particular pattern 280. Referring to Figures 39A-39C, however, three versions of tongue 170 are shown. Whereas Figure 39A depicts tongue 170 as including a knit structure (e.g., yarns with different colors) with alphanumeric characters that form "1 OF 100," Figures 39B and 39C respectively depict tongue 170 as including knit structures with alphanumeric characters that form "2 OF 100" and "3 OF 100."

**[162]** One manner of accomplishing the sequential alterations of the type shown in Figures 39A-39C is to create multiple patterns. In effect, each of the configurations of tongue 170 shown in Figures 39A-39C may have a different pattern. As an alternative, an application (e.g., software) run by computing device 290 may alter pattern 280 while each successive tongue 170 is formed to provide sequential alterations. For example, pattern 280 may include a modifiable field 281, which is an area of pattern 280 that can be updated or changed by computing device 290. For purposes of reference, portions of pattern 280 that correspond with "1," "2," and "3" in Figures 39A-39C may be governed by modifiable field 281. Computing device 290 may include a counter, for example, that updates modifiable field 281 with each successive knitted component that is formed. Accordingly, sequential alterations of pattern 280 may be automated through the use of an application run by computing device 290, thereby rectifying the need for different patterns 280 for each sequential variation of tongue 170.

**[163]** In operation, pattern 280 with modifiable field 281 is provided by an operator, designer, or manufacturer, for example. Computing device 290 may either form a first knitted component with a default setting for modifiable field 281 or may update modifiable field 281 according to other instructions or data. As such, for example, tongue 170 of Figure 39A may be knitted with "1 OF 100." Computing

device 290 now updates modifiable field 281 with data representing another alphanumeric character, possibly a sequential alphanumeric character when computing device 290 includes a counter, and tongue 170 of Figure 39B may be knitted with "2 OF 100." The procedure repeats and computing device 290 updates modifiable field 281 with data representing another alphanumeric character and tongue 170 of Figure 39C may be knitted with "3 OF 100." Accordingly, modifiable field of pattern 280 may be repeatedly updated with data representing different alphanumeric characters, possibly sequential alphanumeric characters.

**[164]** The invention is disclosed above and in the accompanying figures with reference to a variety of configurations. The purpose served by the disclosure, however, is to provide an example of the various features and concepts related to the invention, not to limit the scope of the invention. One skilled in the relevant art will recognize that numerous variations and modifications may be made to the configurations described above without departing from the scope of the present invention, as defined by the appended claims.

CLAIMS

1. A method of manufacturing a knitted component for an article of footwear, the method comprising:

knitting a tongue with a knitting machine;

holding the tongue on needles of the knitting machine;

knitting a first portion of a knit element with the knitting machine while the tongue is held on the needles;

joining the tongue to the first portion of the knit element; and

knitting a second portion of the knit element with the knitting machine.

2. The method recited in claim 1, further including a step of selecting the knitting machine to be a flat knitting machine.

3. The method recited in claim 1, further including a step of knitting an expansion section following the step of knitting the tongue, and wherein the step of knitting the first portion of the knit element includes unraveling the expansion section.

4. The method recited in claim 1, wherein the step of knitting the tongue includes forming a course of the tongue to include at least one of (a) a fusible yarn and (b) cross-tuck stitches.

5. The method recited in claim 1, wherein the step of joining the tongue includes forming a course with the knitting machine that joins the tongue to the knit element.

6. A method of manufacturing a knitted component for an article of footwear, the method comprising:

knitting a tongue with a knitting machine;

knitting a first portion of a knit element with the knitting machine, the tongue being stationary with respect to a needle bed of the knitting machine during knitting of the first portion of the knit element, and the first portion of the knit element moving with respect to the tongue during knitting of the first portion of the knit element;

forming a course with the knitting machine that joins the tongue to the knit element; and

knitting a second portion of the knit element with the knitting machine, the tongue and the first portion of the knit element moving together during knitting of the second portion of the knit element.

7. The method recited in claim 6, further including a step of selecting the knitting machine to be a flat knitting machine.

8. The method recited in claim 6, further including a step of knitting an expansion section following the step of knitting the tongue, and wherein the step of knitting the first portion of the knit element includes unraveling the expansion section.

9. The method recited in claim 6, wherein the step of knitting the tongue includes forming a final course of the tongue to include at least one of (a) a fusible yarn and (b) cross-tuck stitches.

10. A method of knitting comprising:

providing a knitting pattern with a modifiable field;

updating the modifiable field with data representing a first alphanumeric character;

knitting a first component with a knit structure of the first alphanumeric character;

updating the modifiable field with data representing a second alphanumeric character, the second alphanumeric character being different than the first alphanumeric character; and

knitting a second component with a knit structure of the second alphanumeric character.

11. The method recited in claim 10, wherein the second alphanumeric character is sequential from the first alphanumeric character.

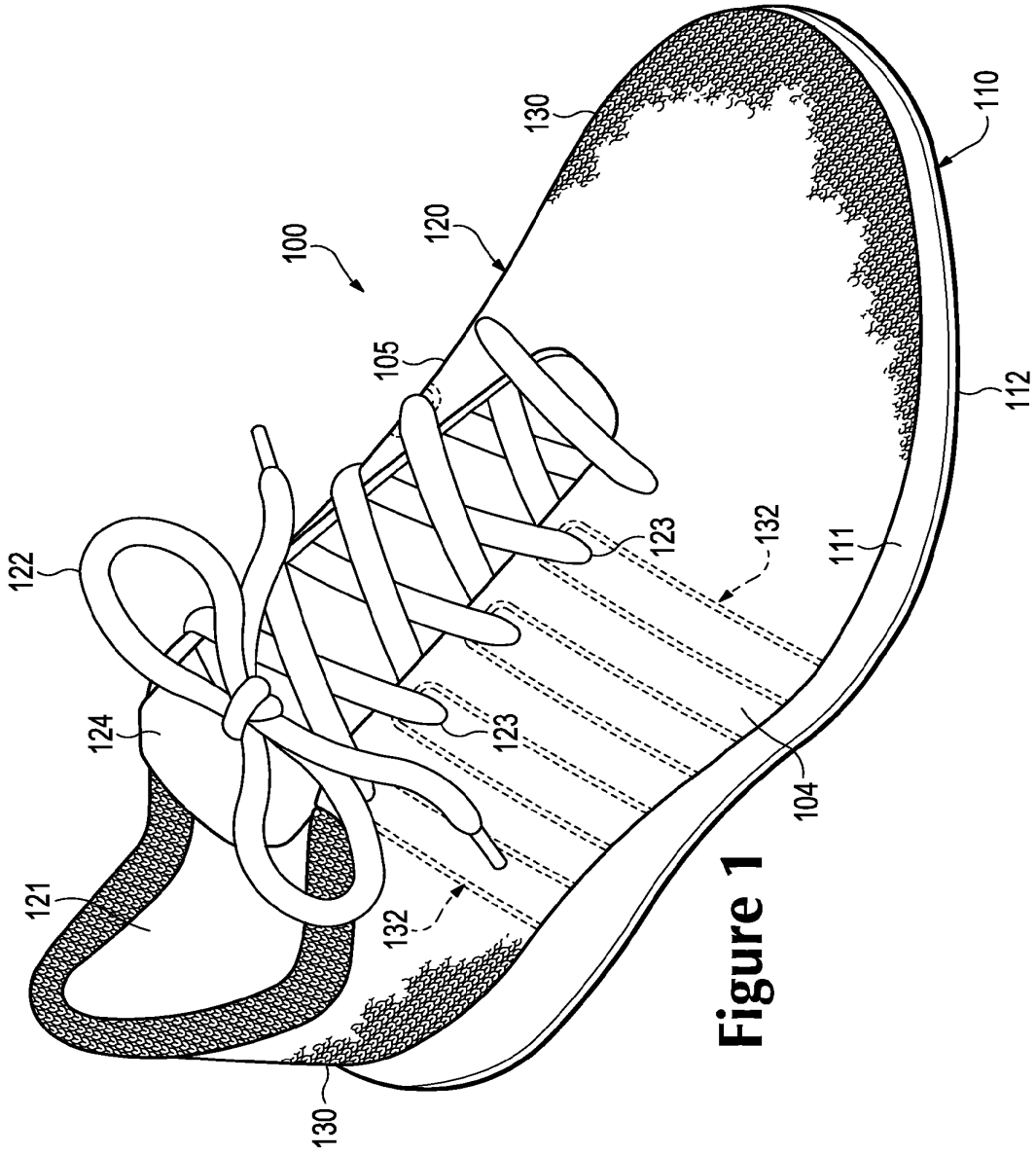



Figure 1

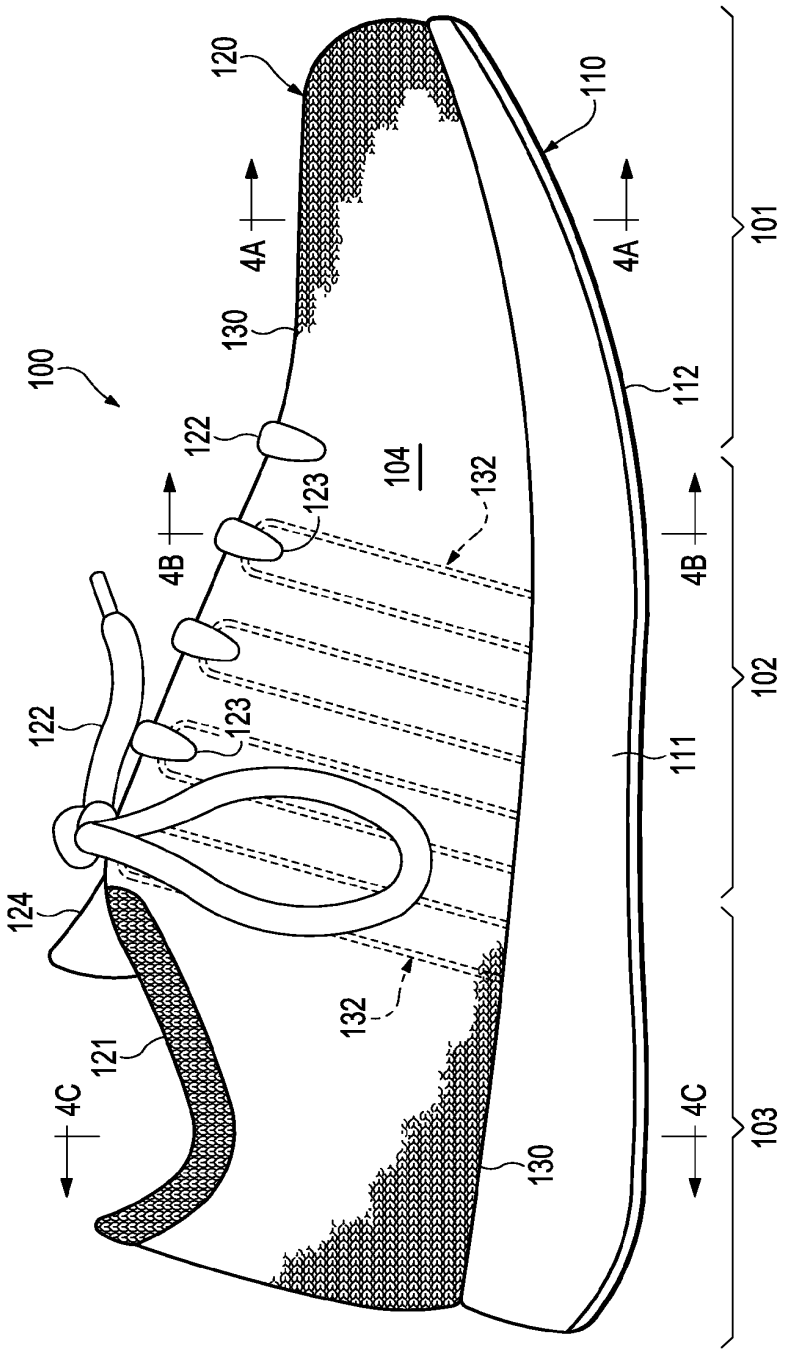

120
110
4A
4A
130
100
112
122
104
132
123
4B
4B
122
123
102
111
124
132
121
4C
4C
130
101
103

Figure 2

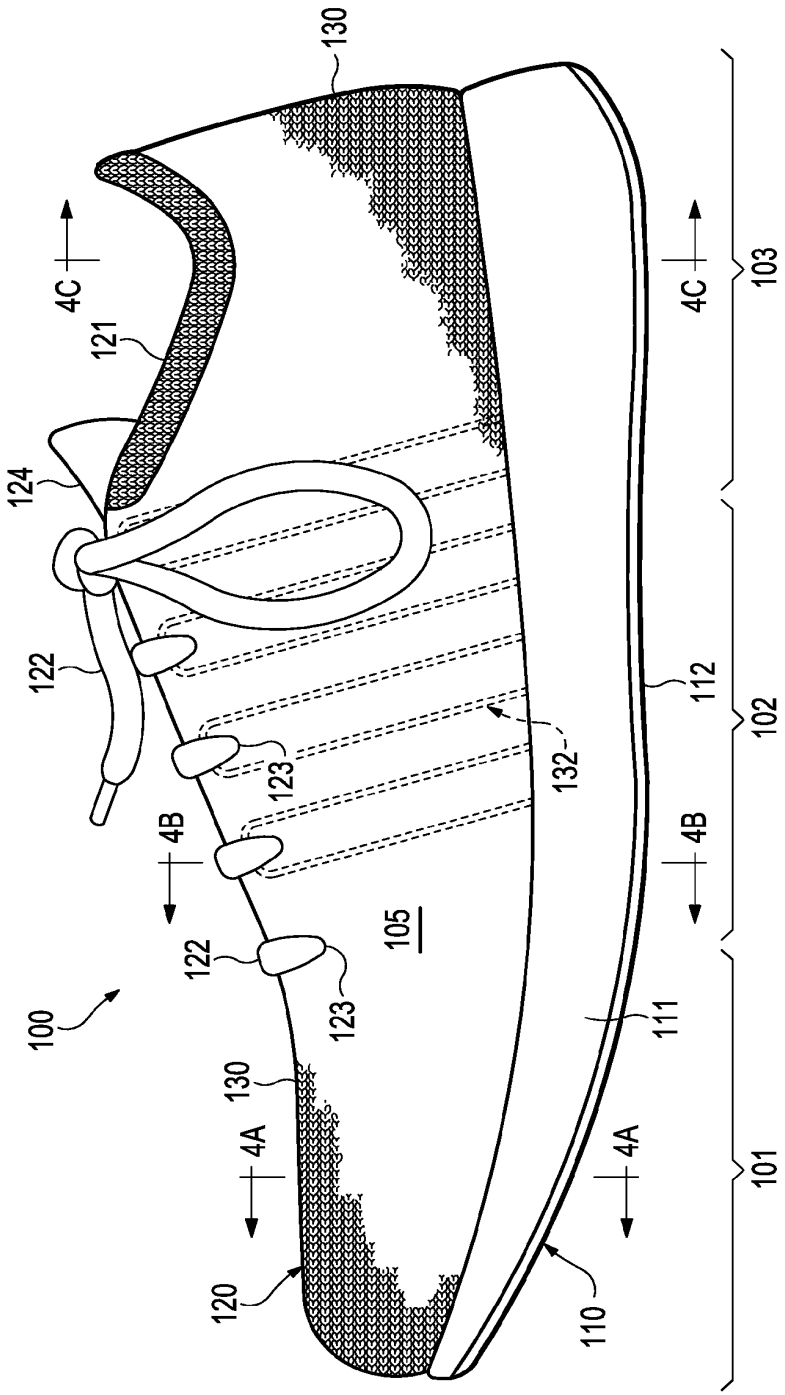

130
4C
121
124
122
123
132
4B
105
122
123
100
130
4A
120
110
111
112
4C
4B
4A
103
102
101

Figure 3

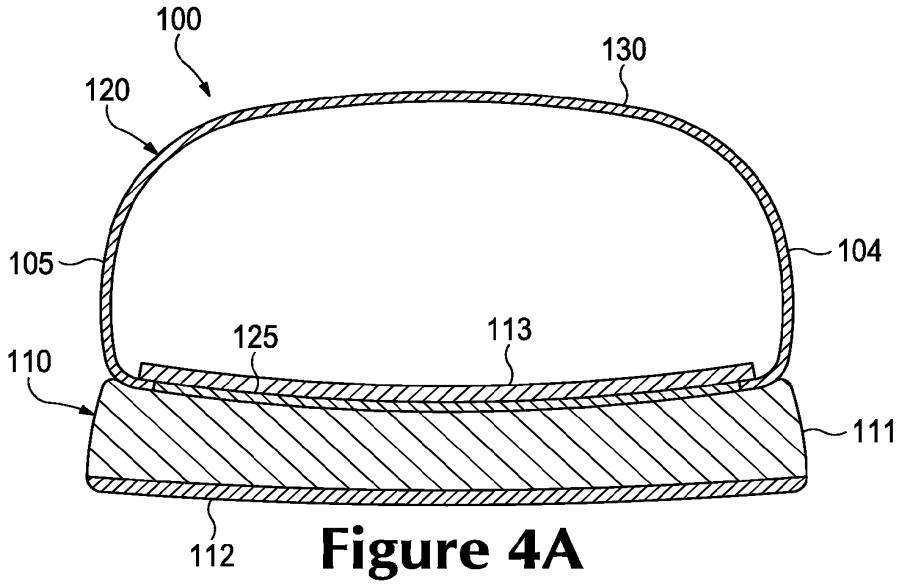



Figure 4A

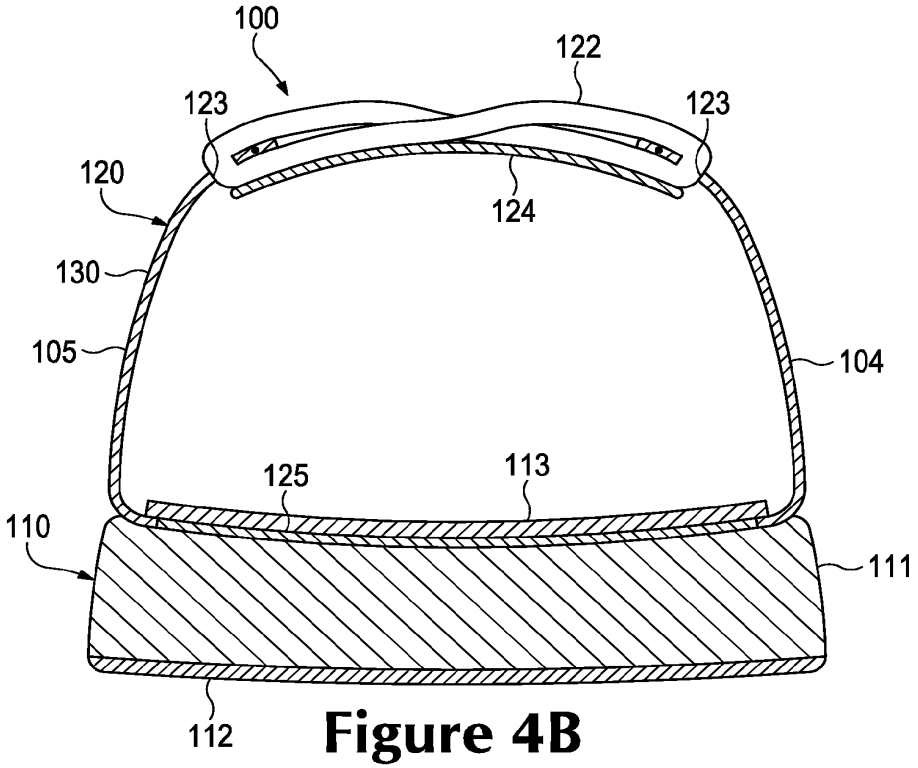



Figure 4B

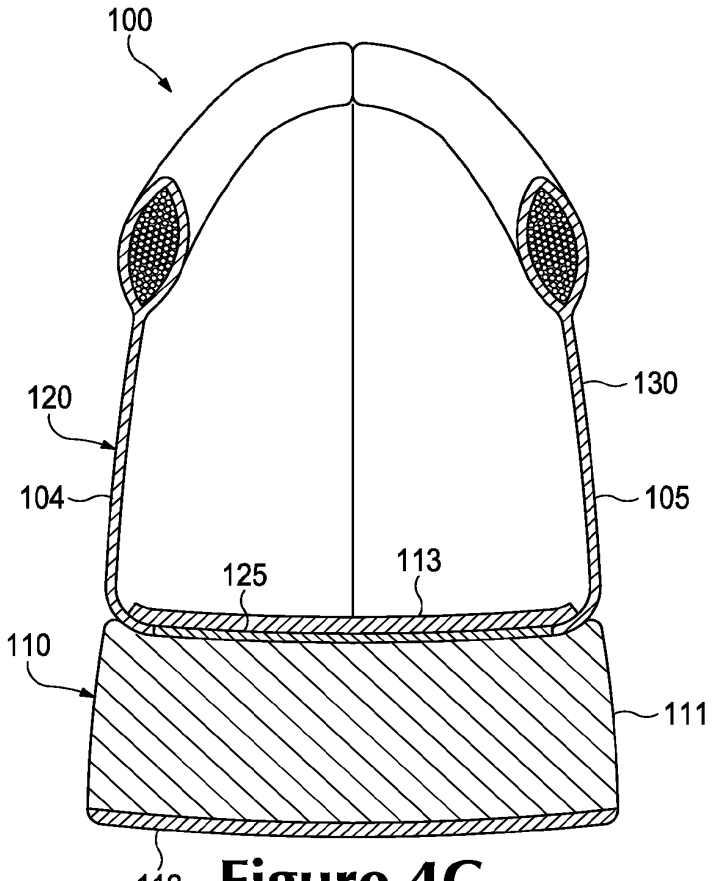



Figure 4C

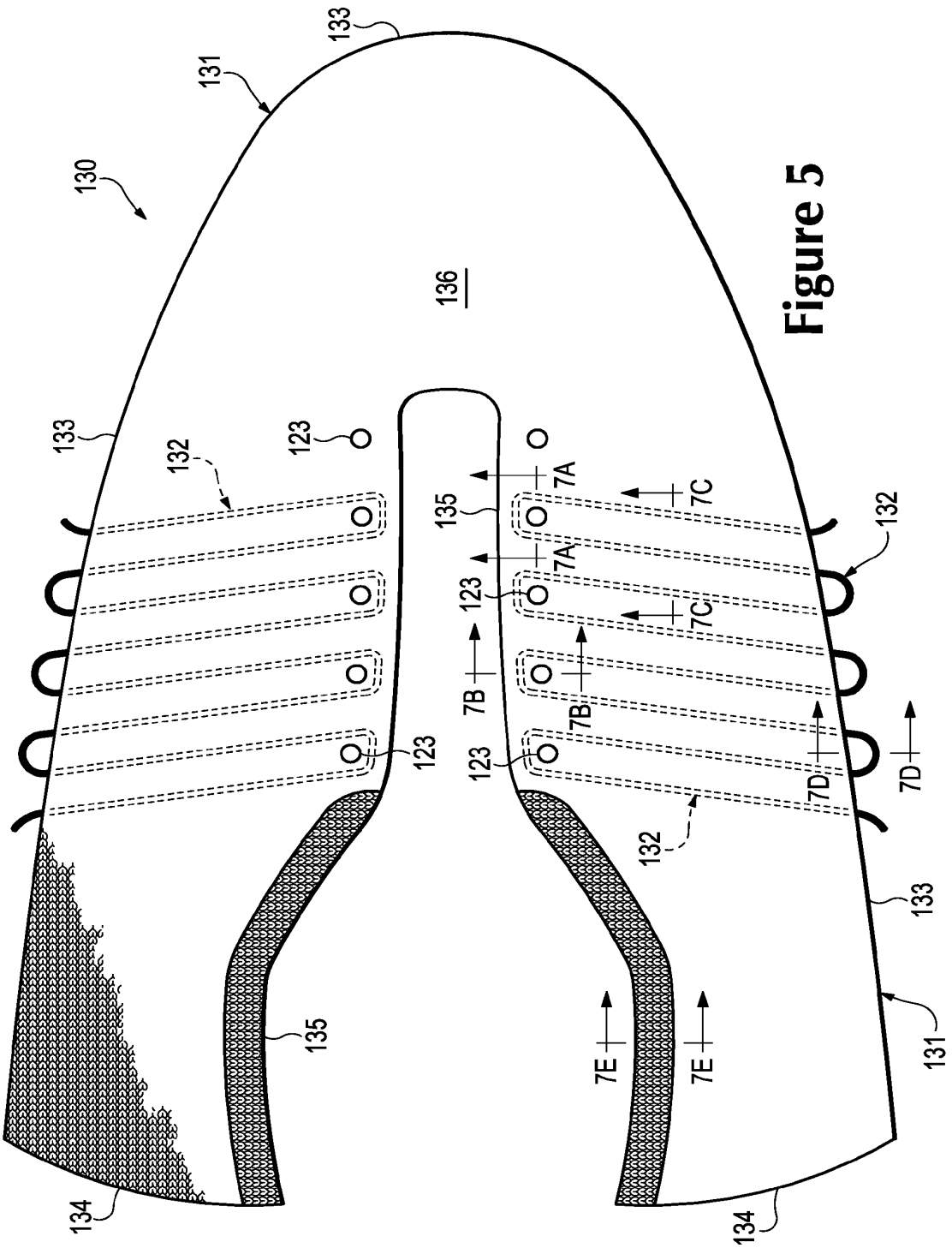



Figure 5

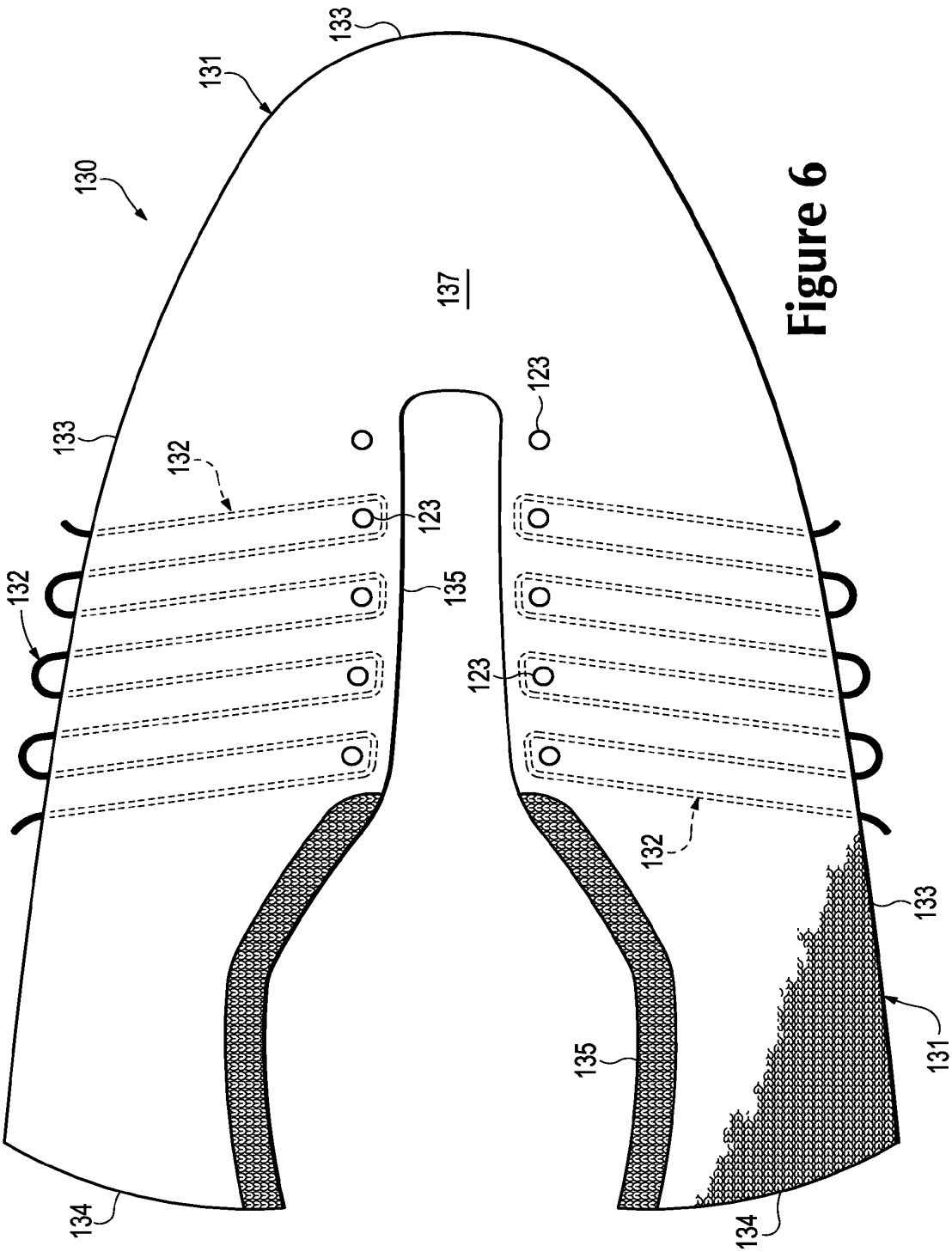



Figure 6

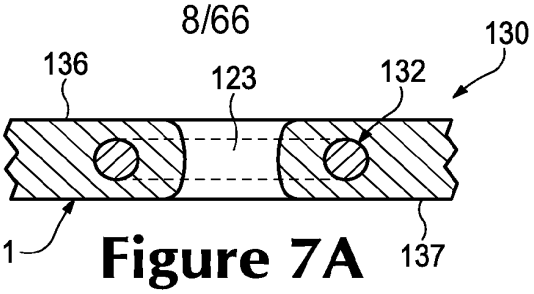



Figure 7A

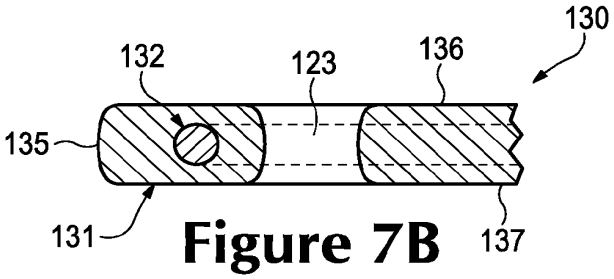



Figure 7B

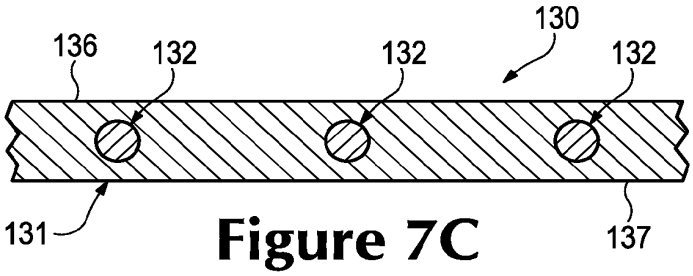



Figure 7C

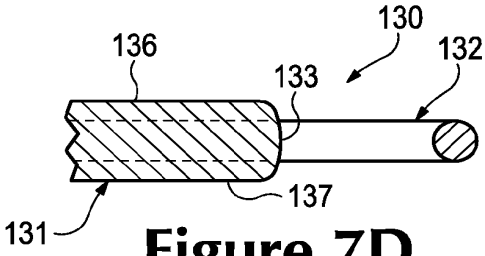



Figure 7D

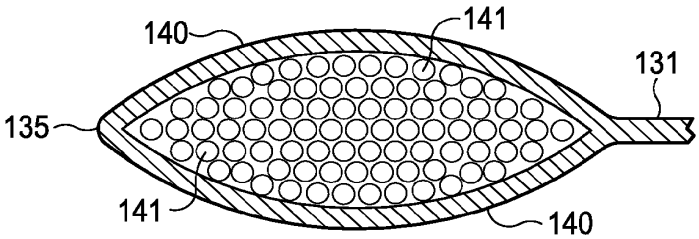



Figure 7E

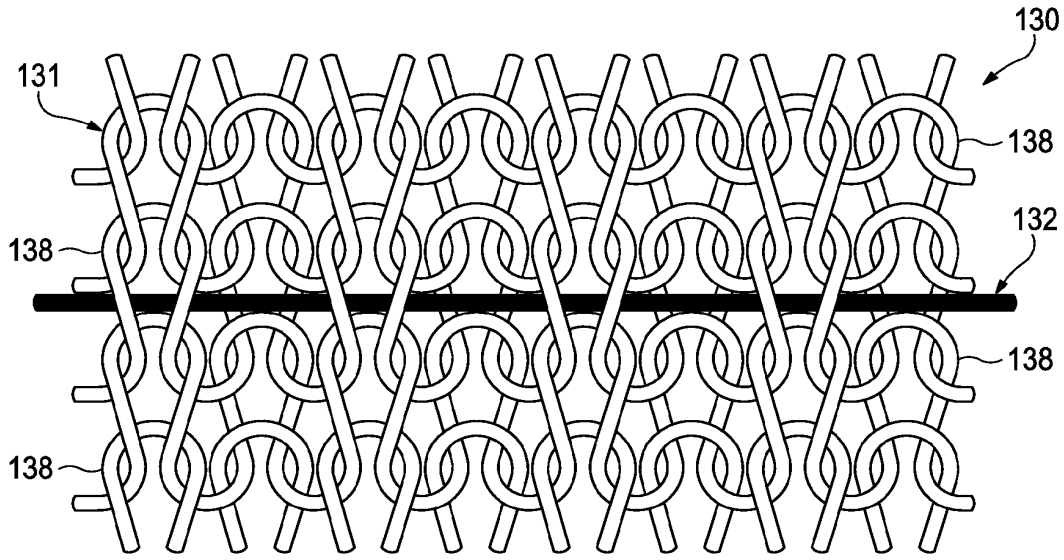



Figure 8A

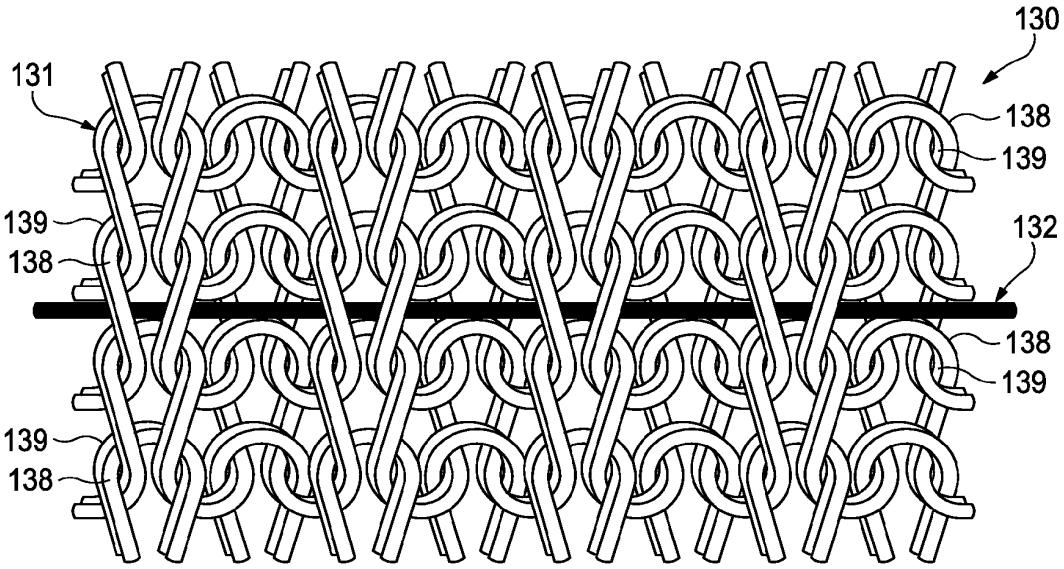



Figure 8B

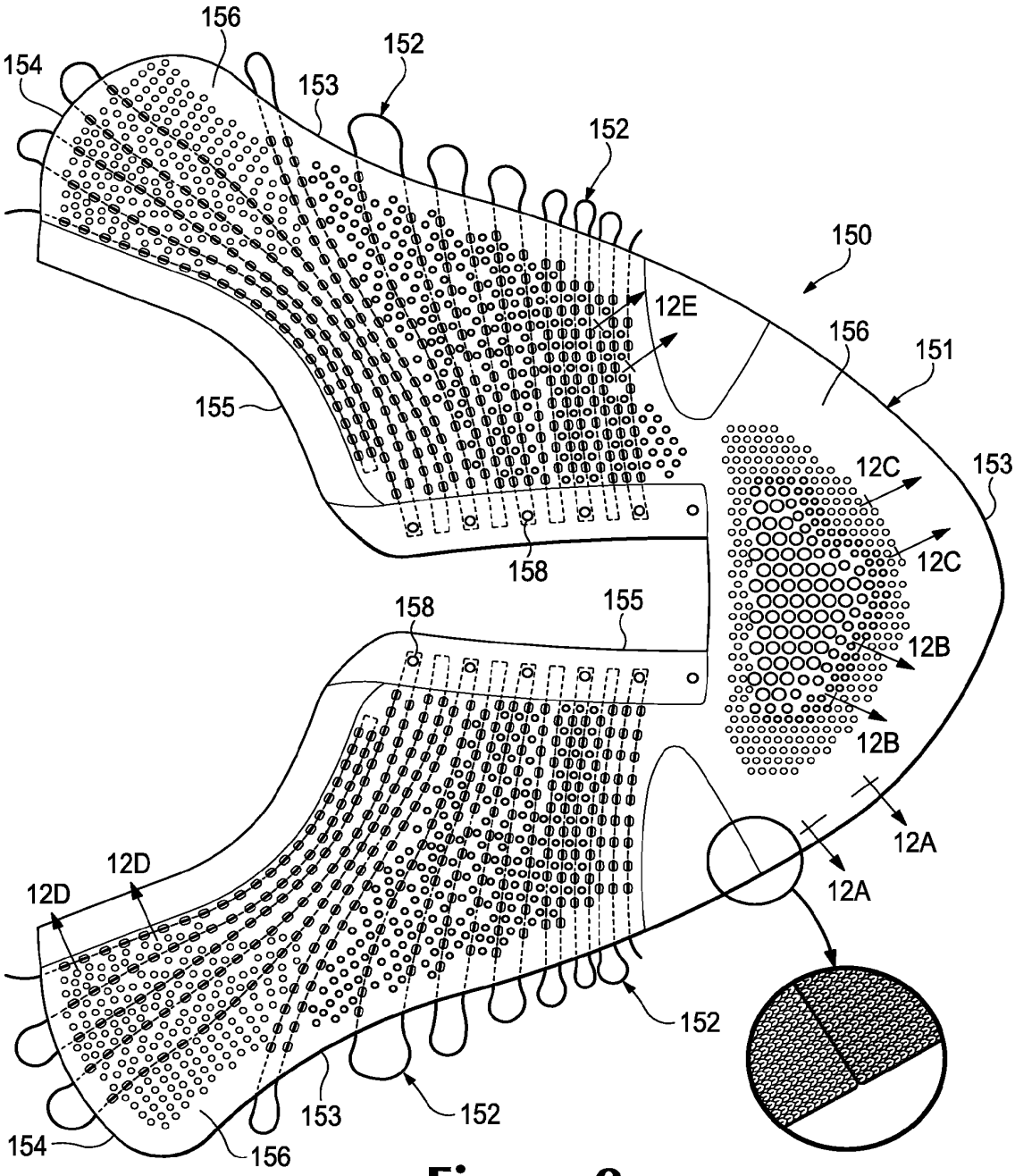

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Figure 9

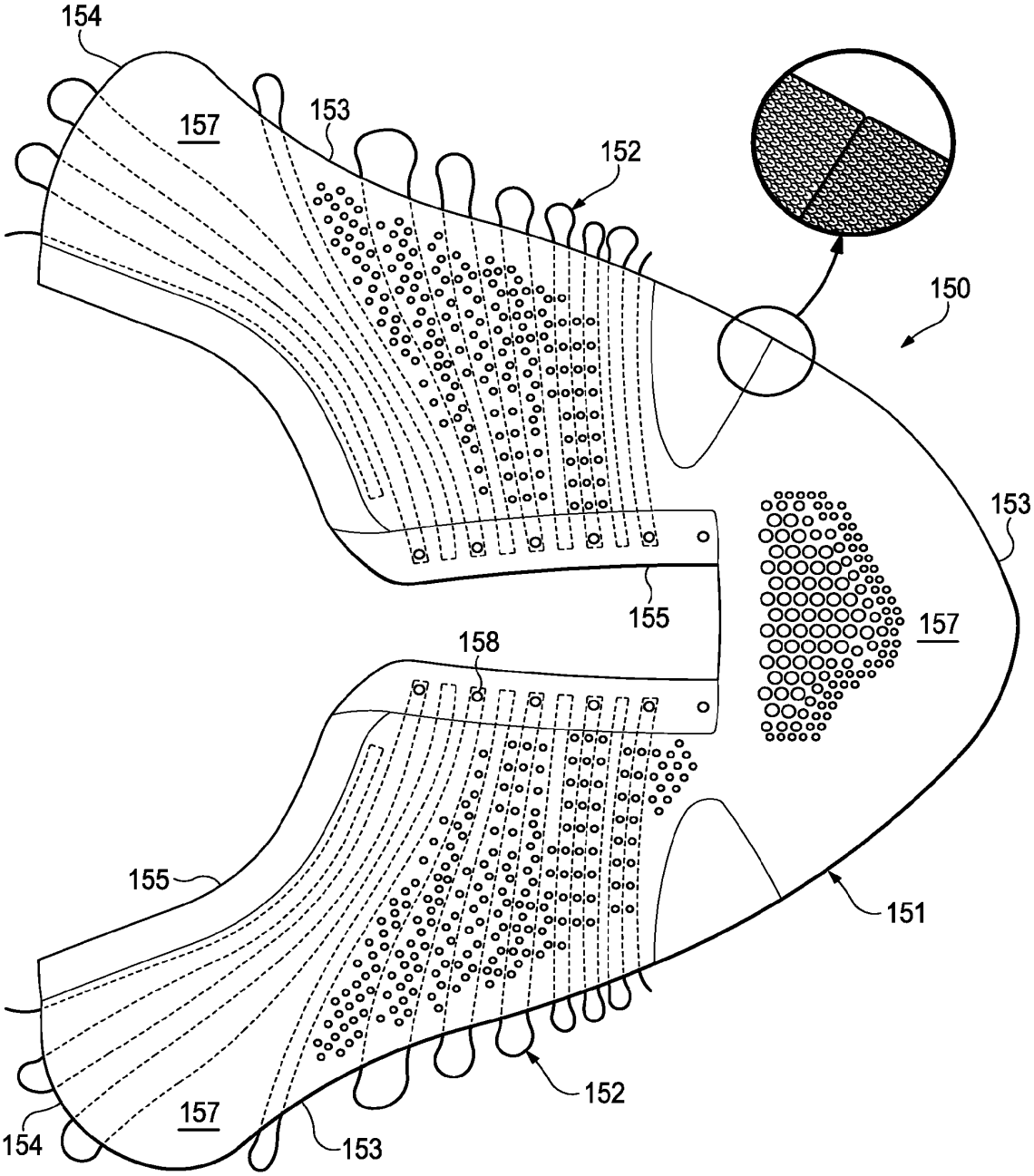



**Figure 10**

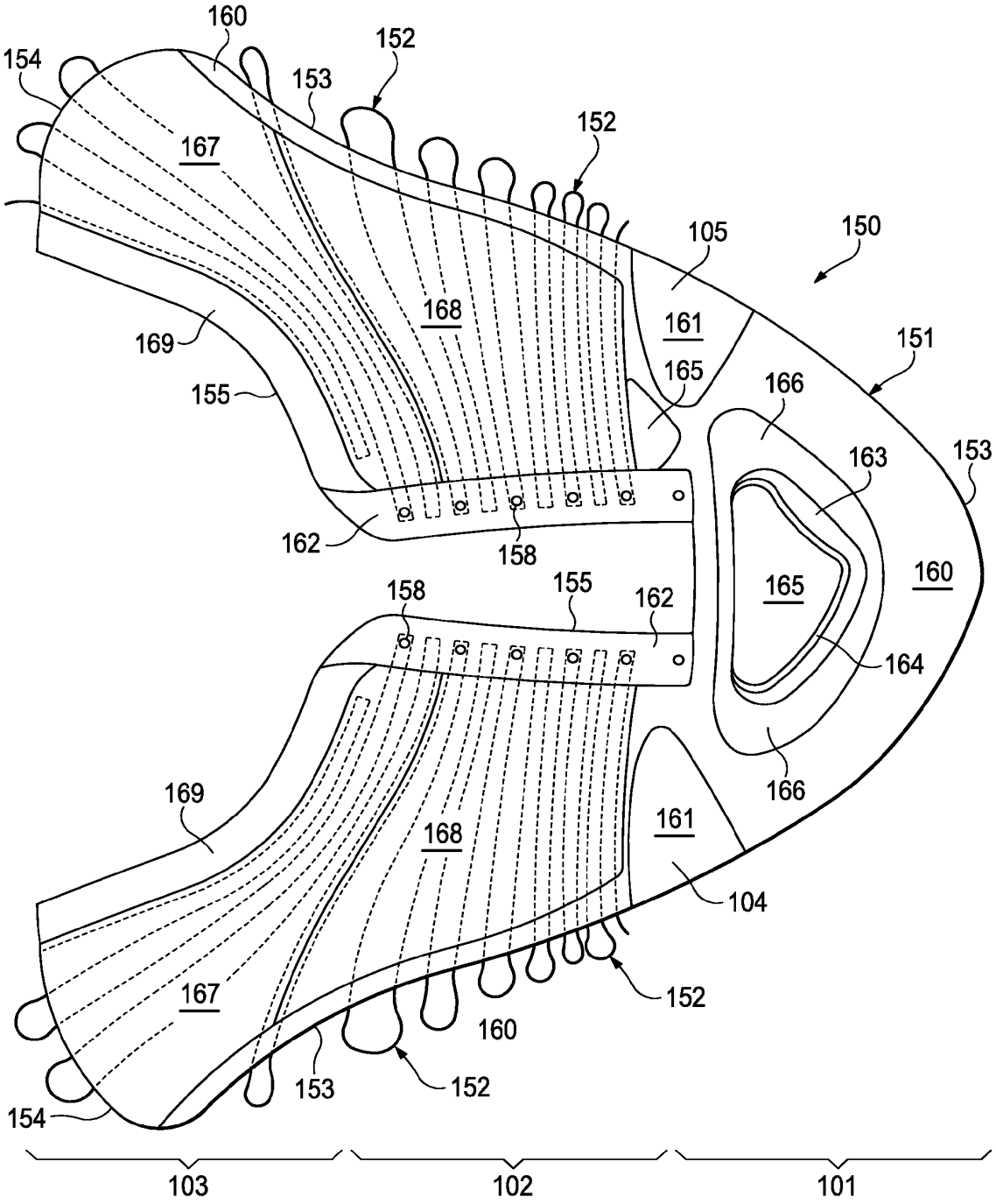
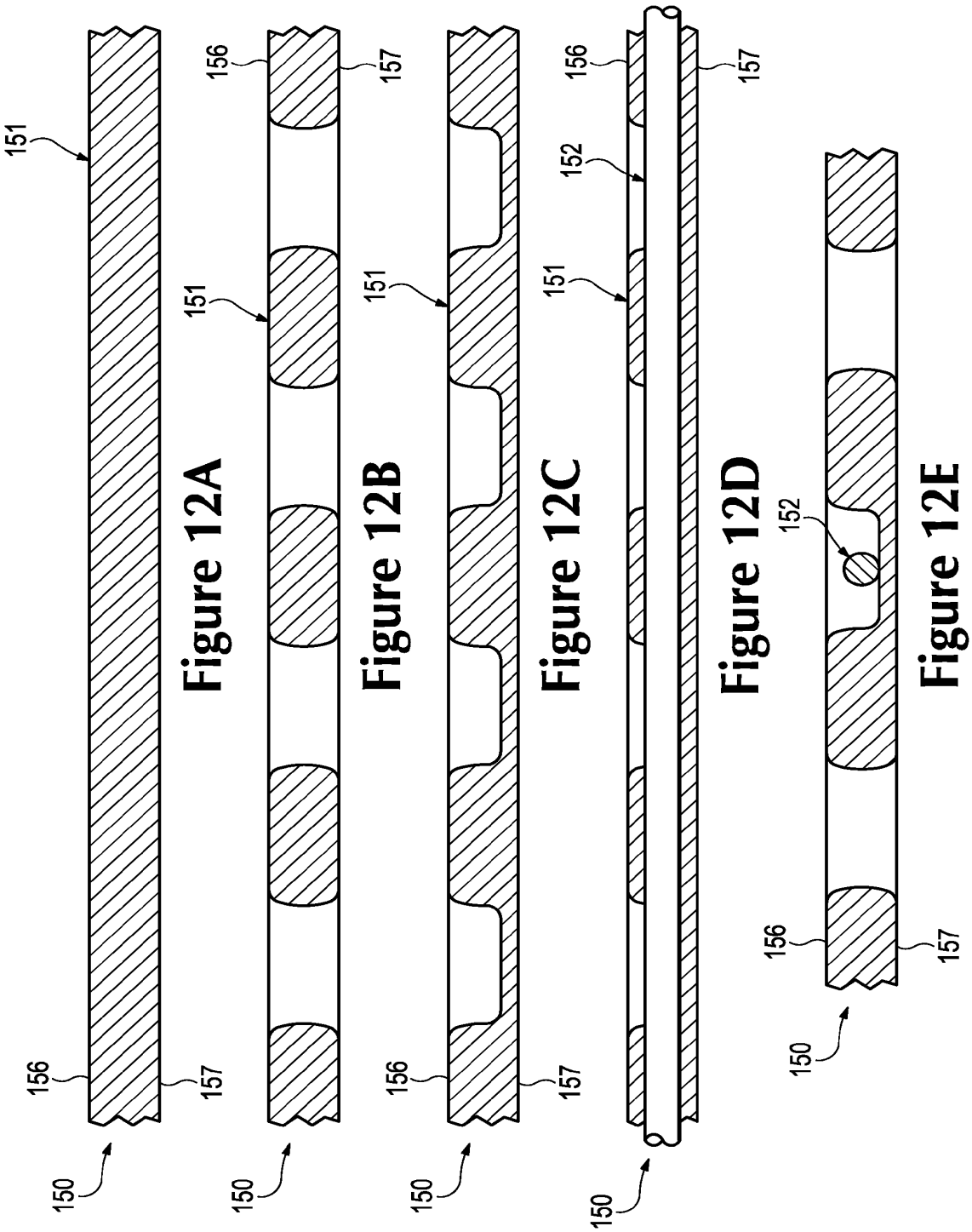

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**Figure 11**


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Figure 12A
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Figure 12B
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Figure 12C
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Figure 12D
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Figure 12E

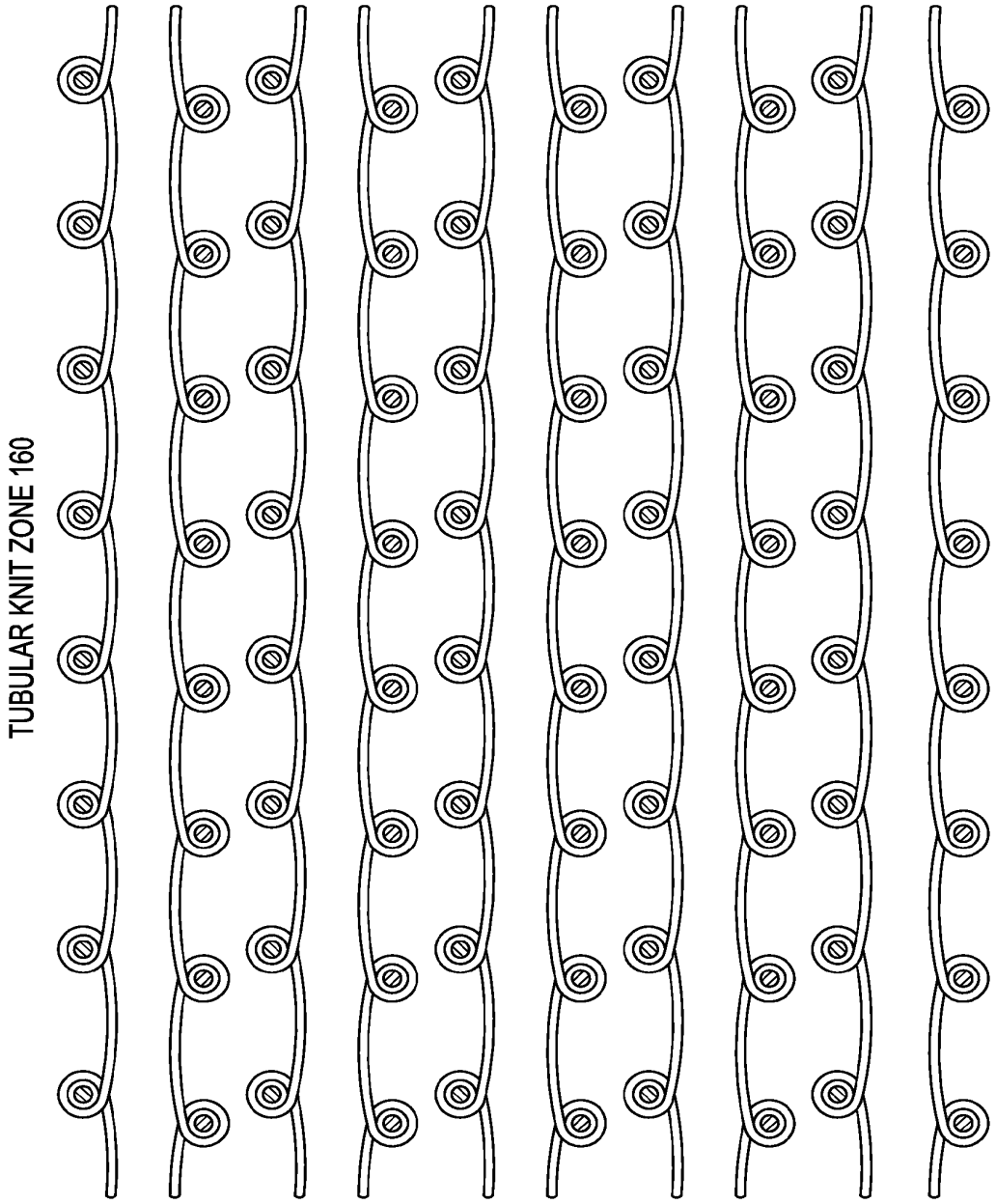



Figure 13A

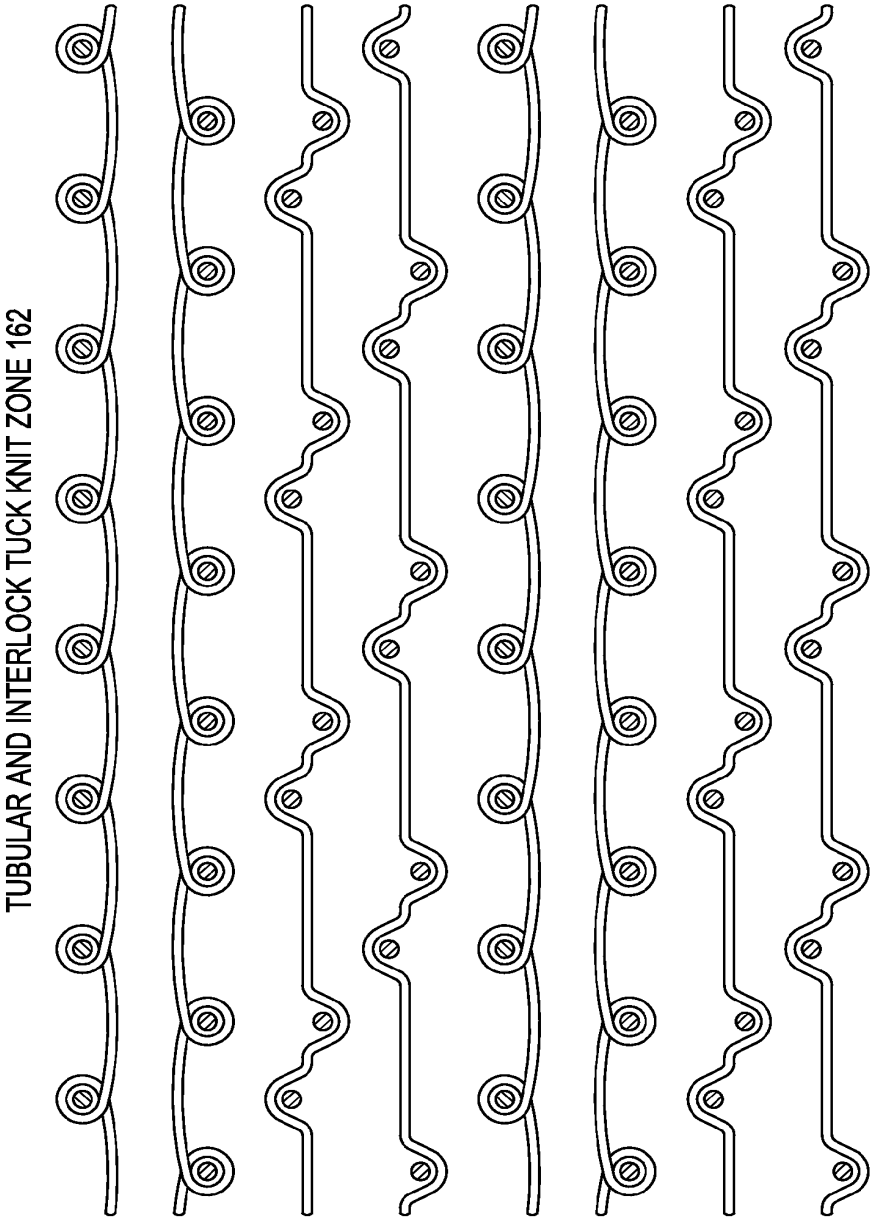



Figure 13B

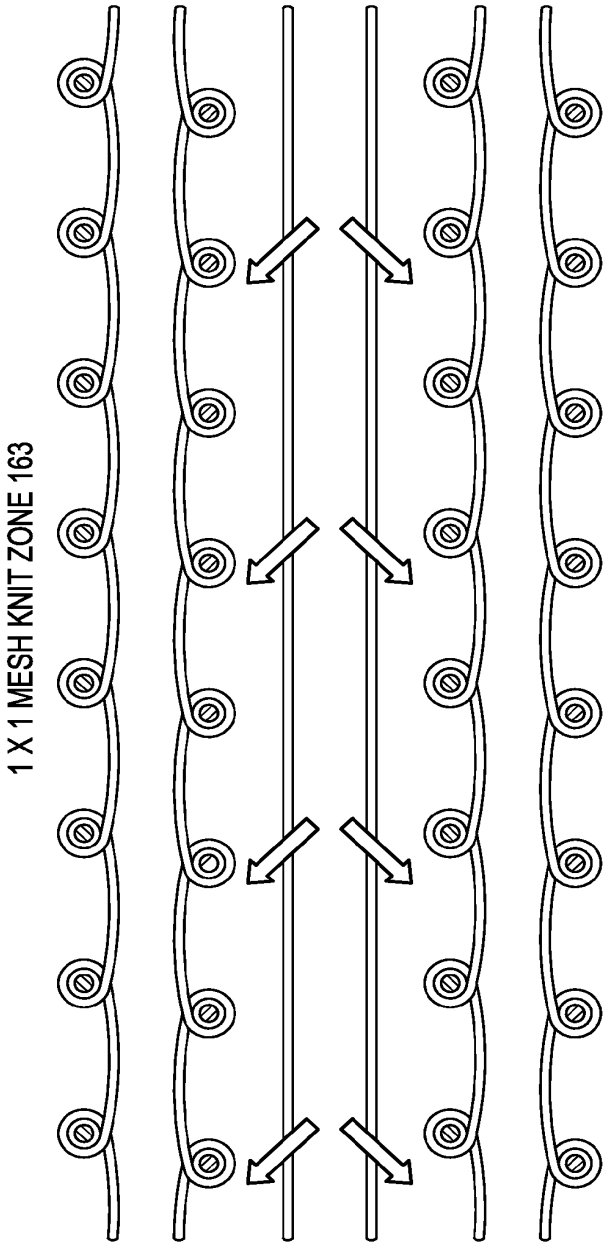



Figure 13C

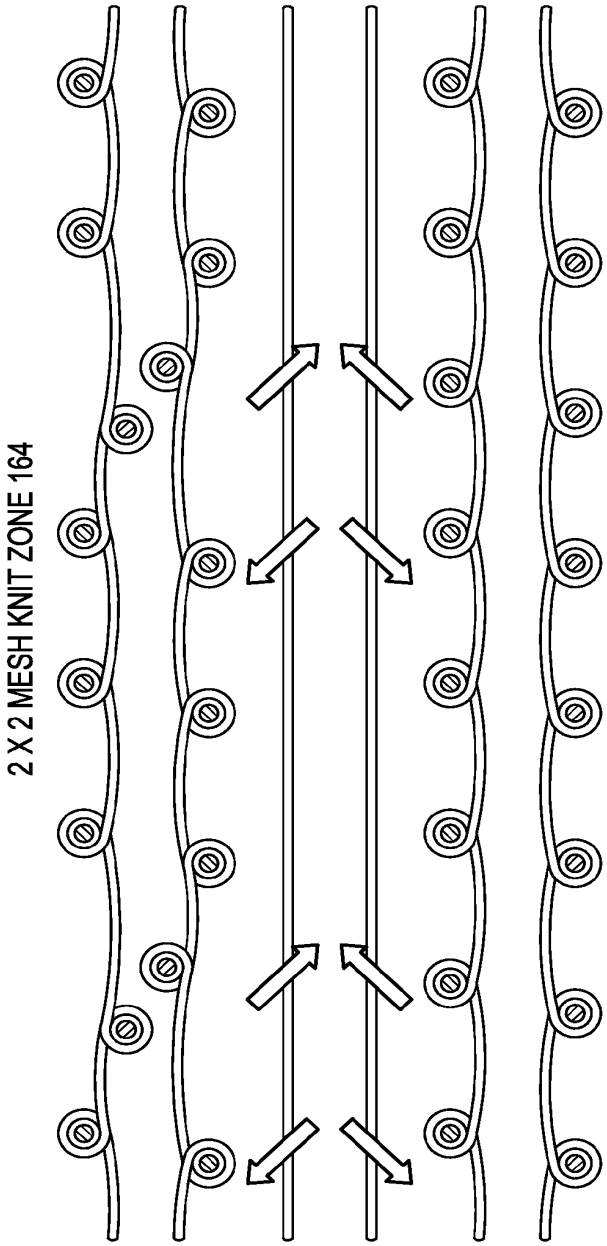



Figure 13D

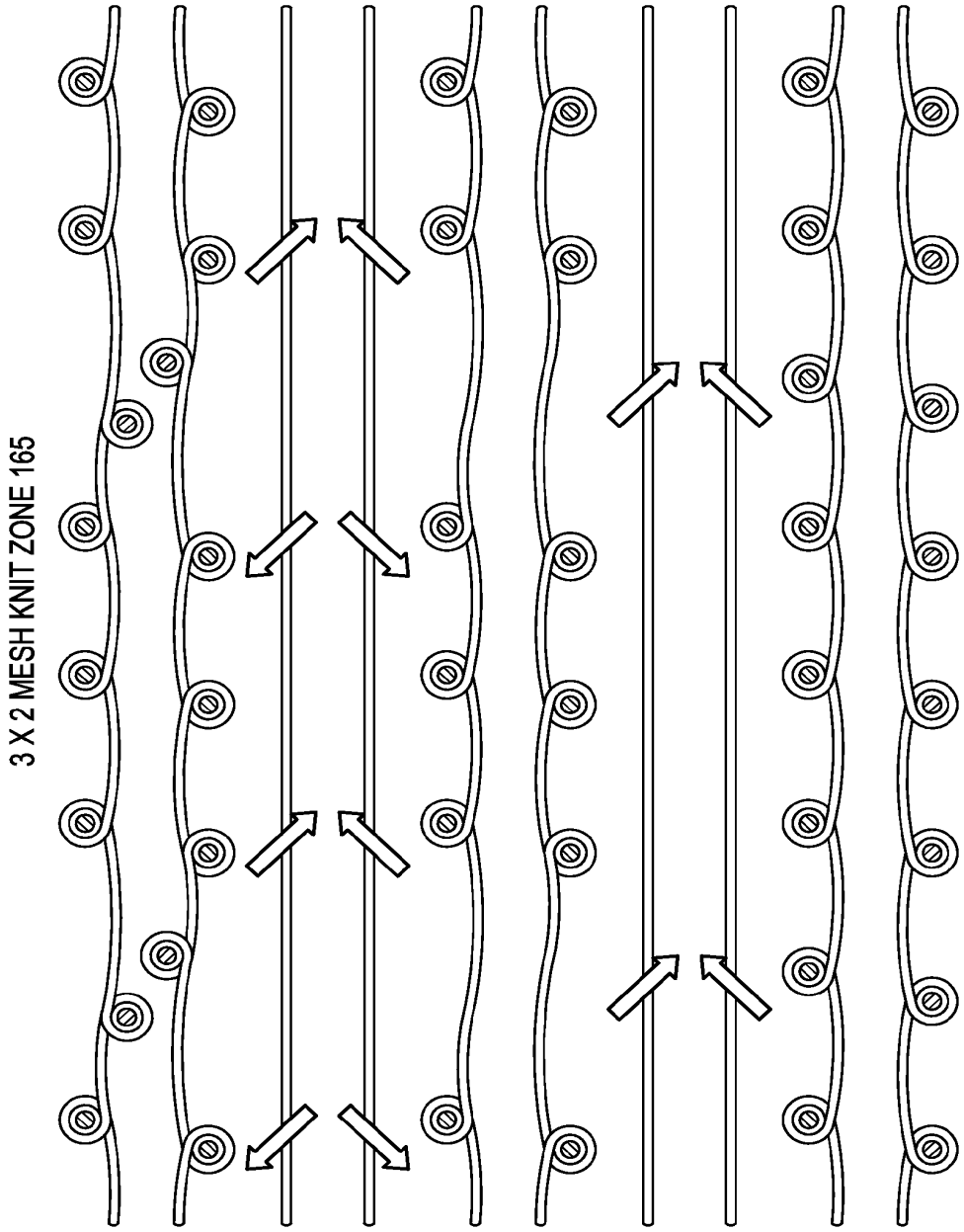



Figure 13E

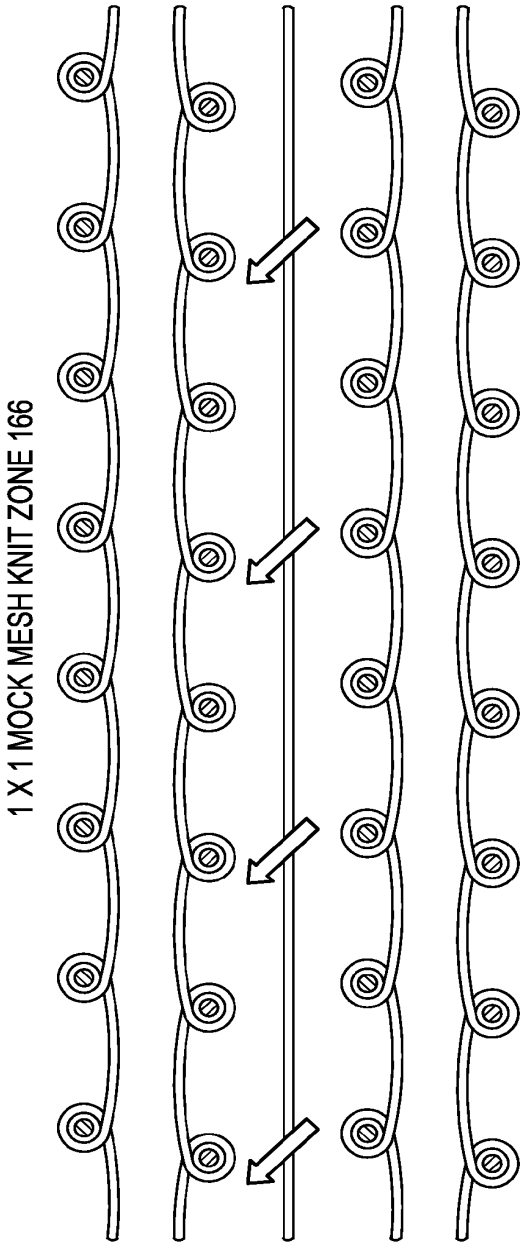



Figure 13F

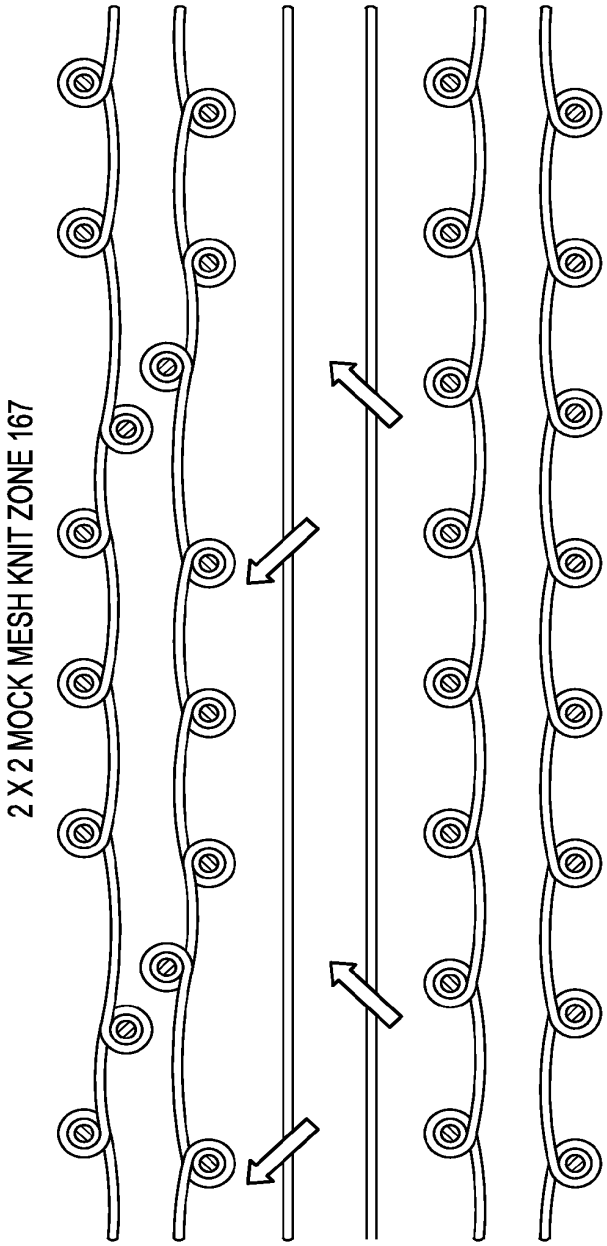



Figure 13G

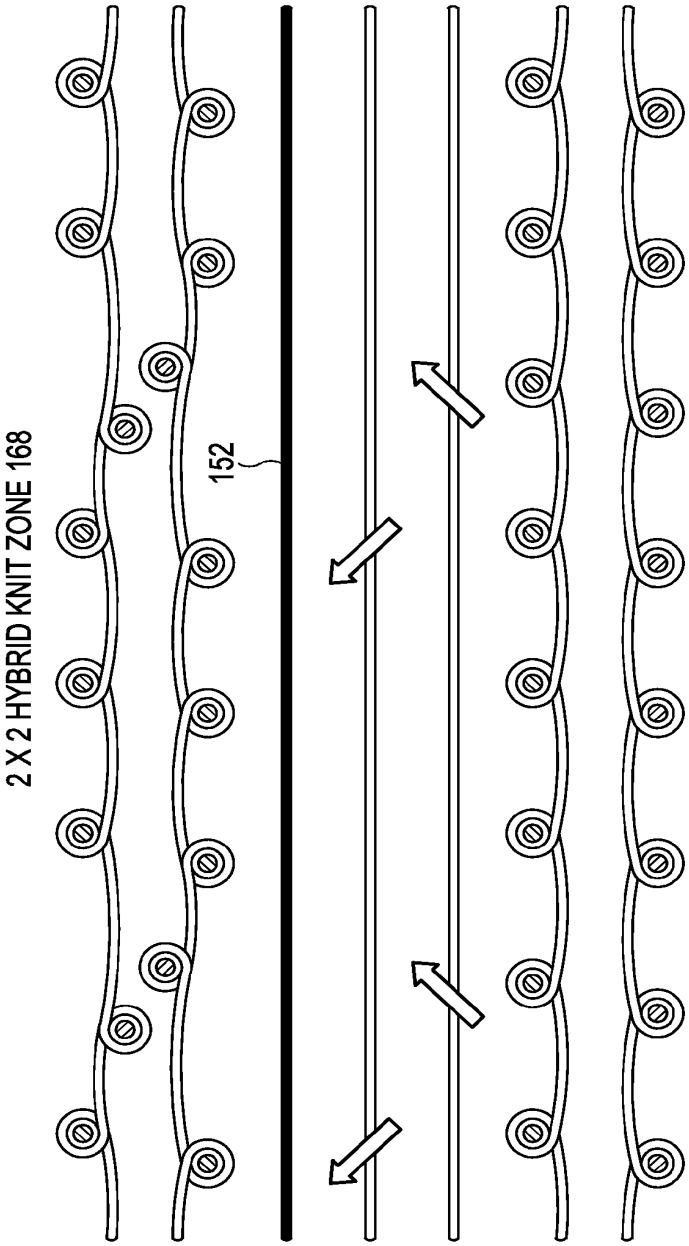



Figure 13H

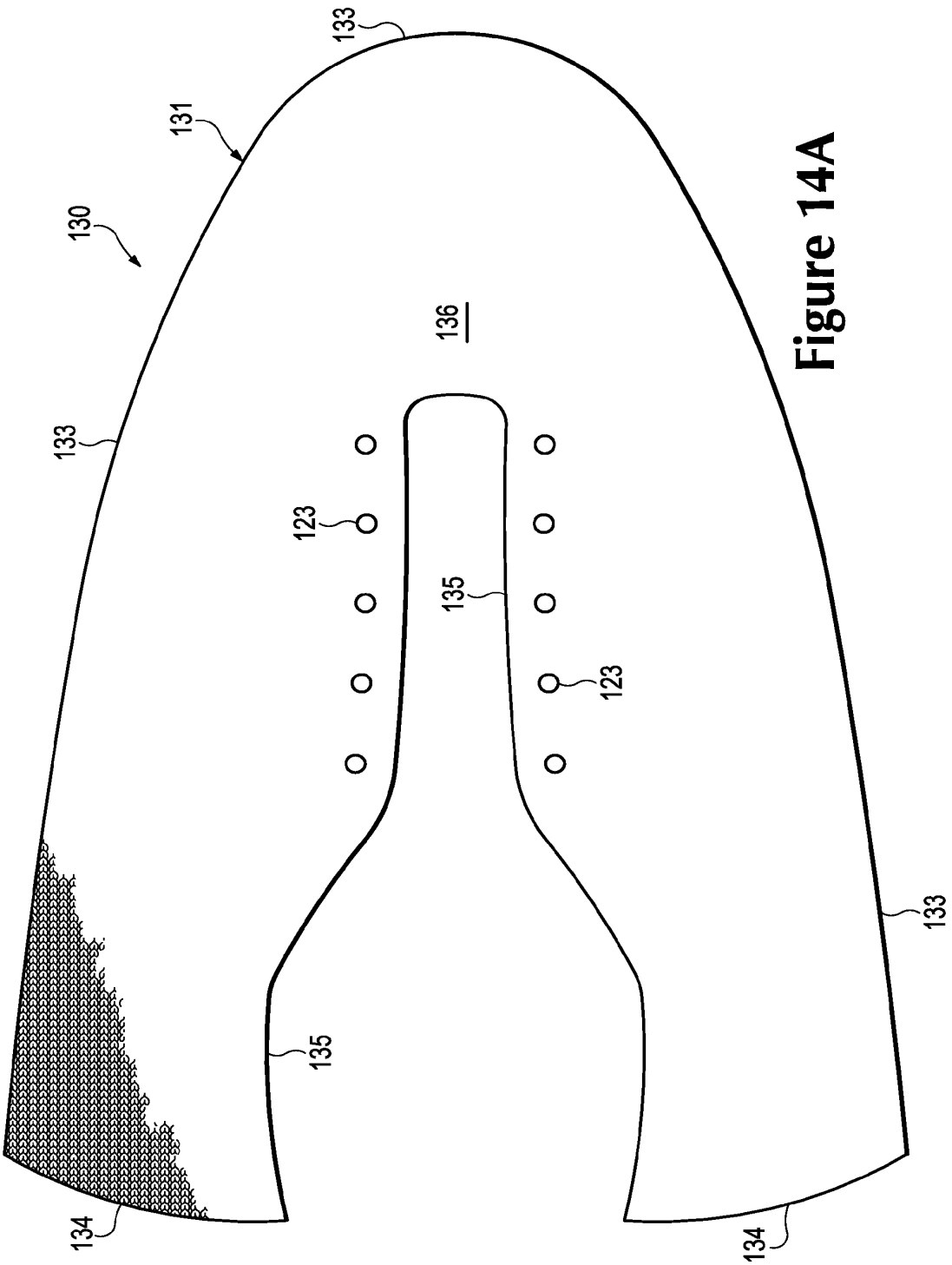



Figure 14A

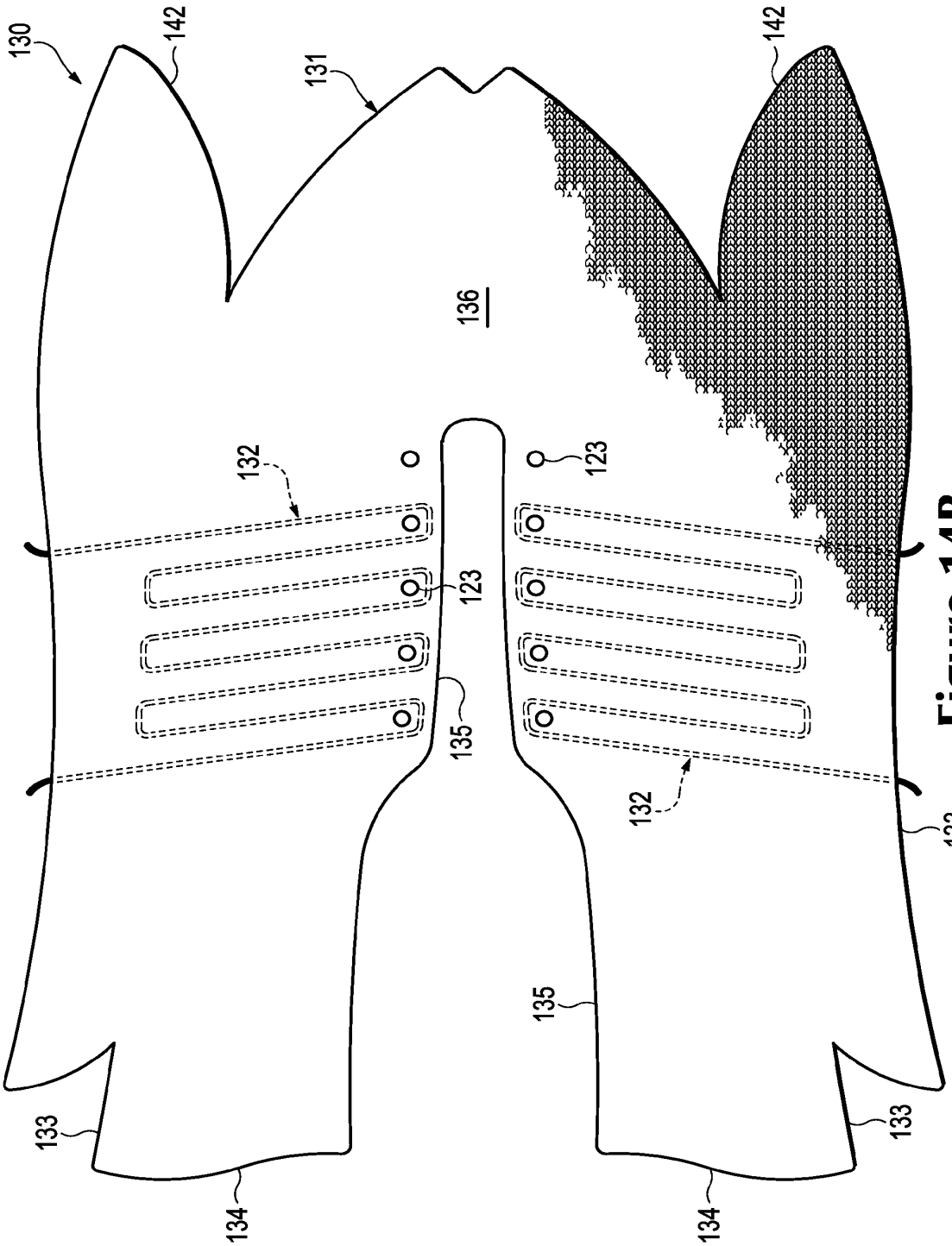



Figure 14B

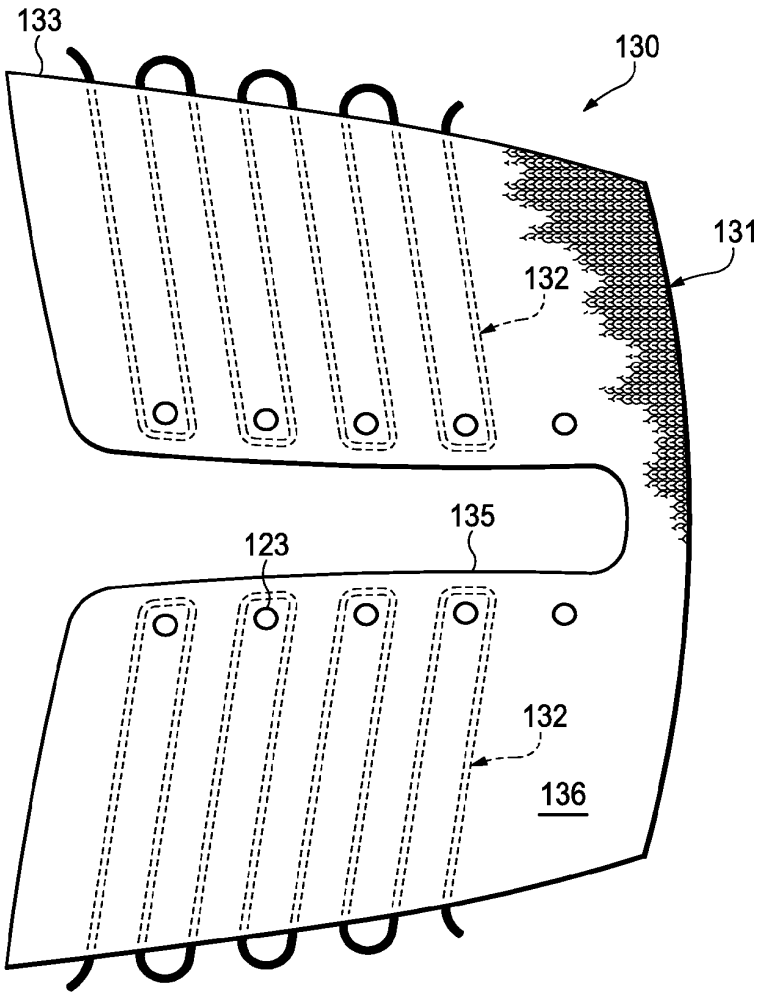



Figure 14C

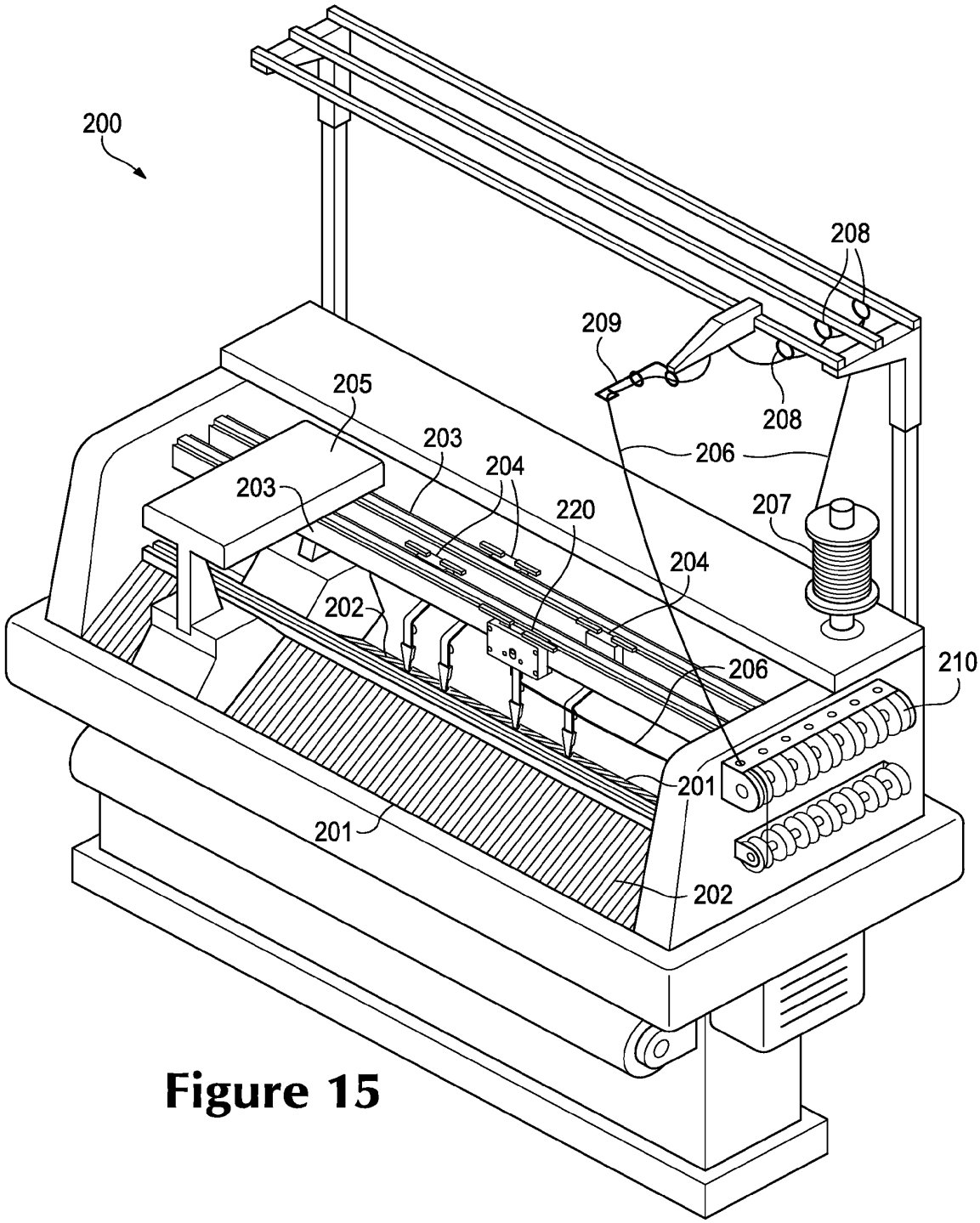

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Figure 15

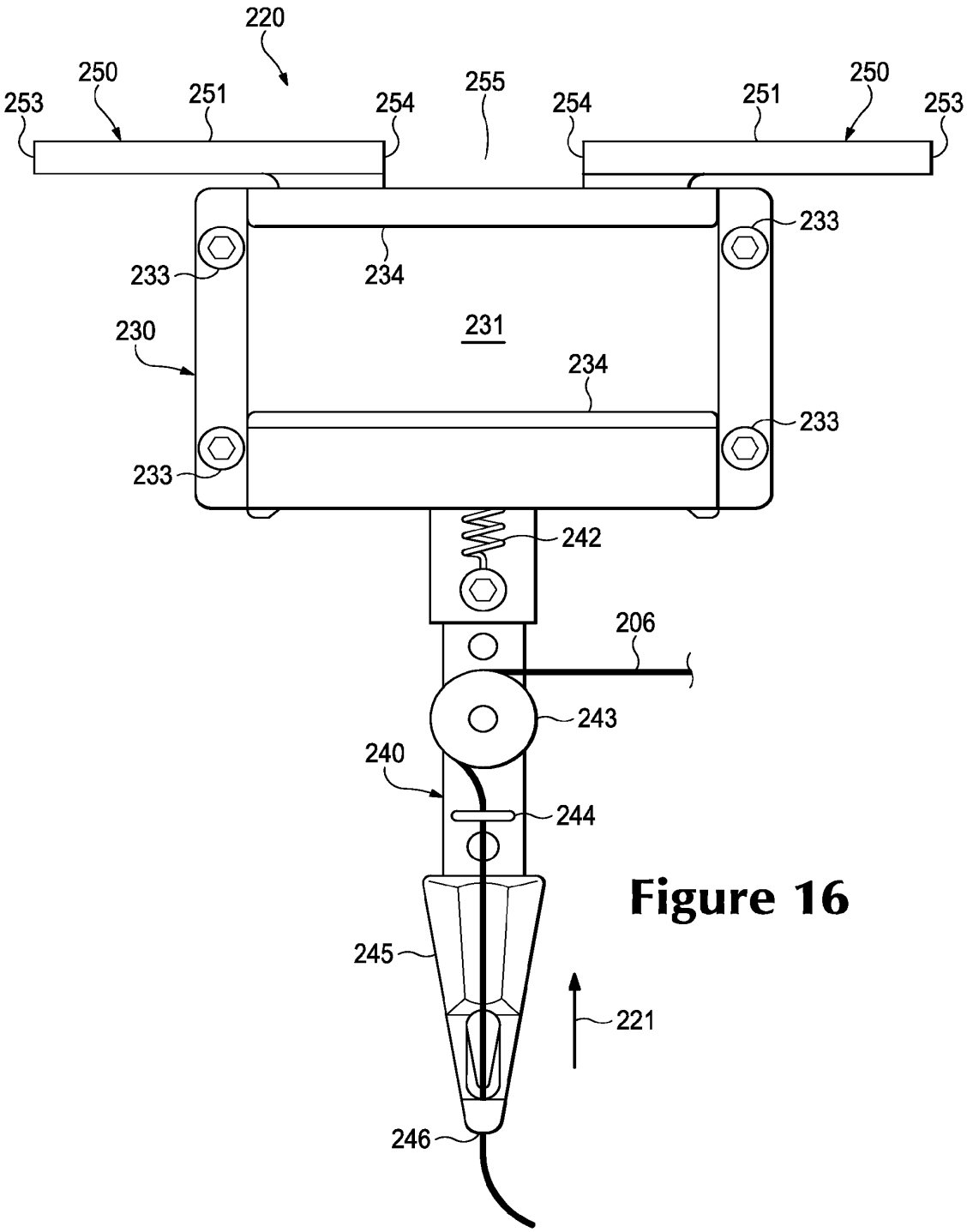

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Figure 16

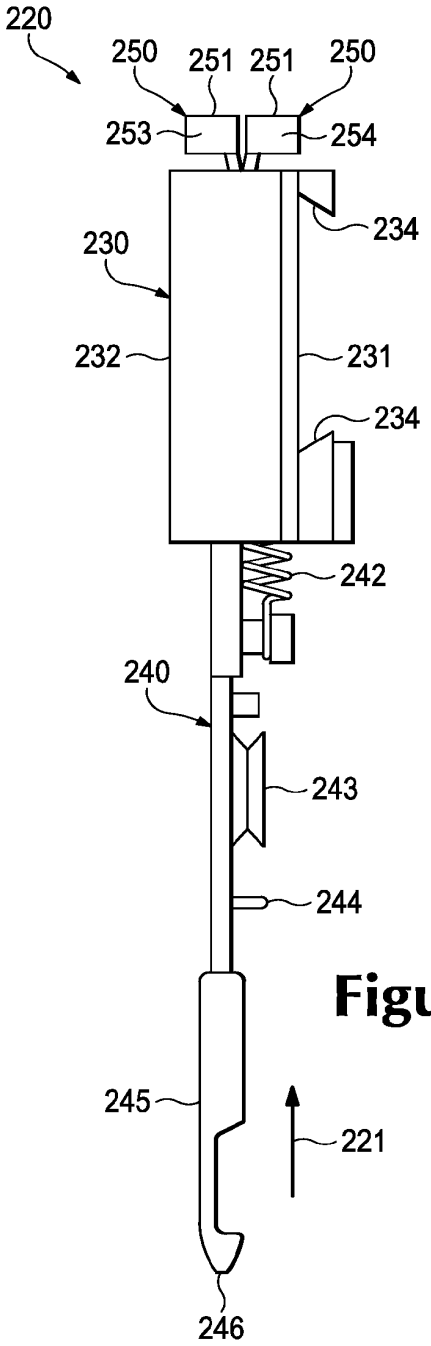

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Figure 17

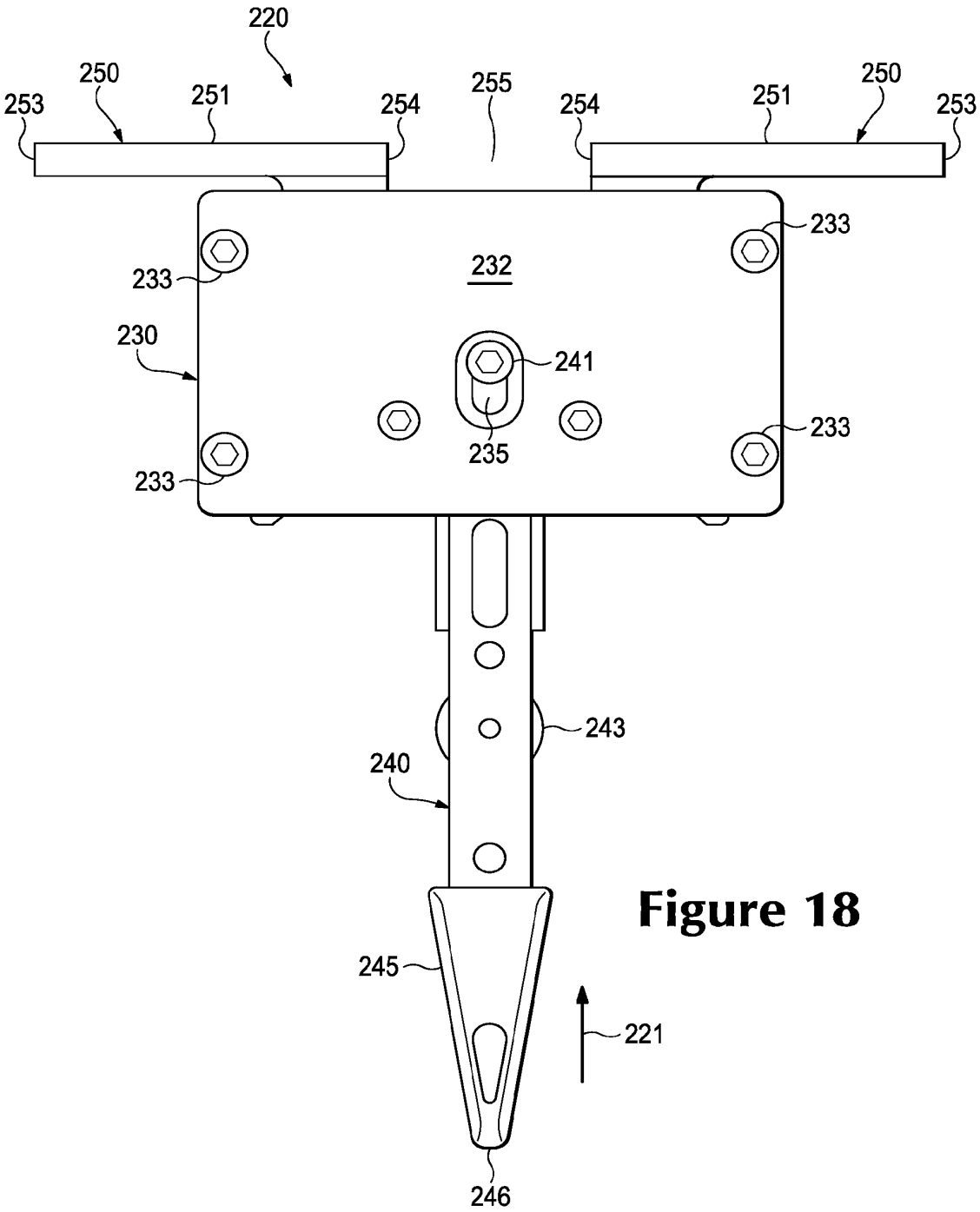

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Figure 18

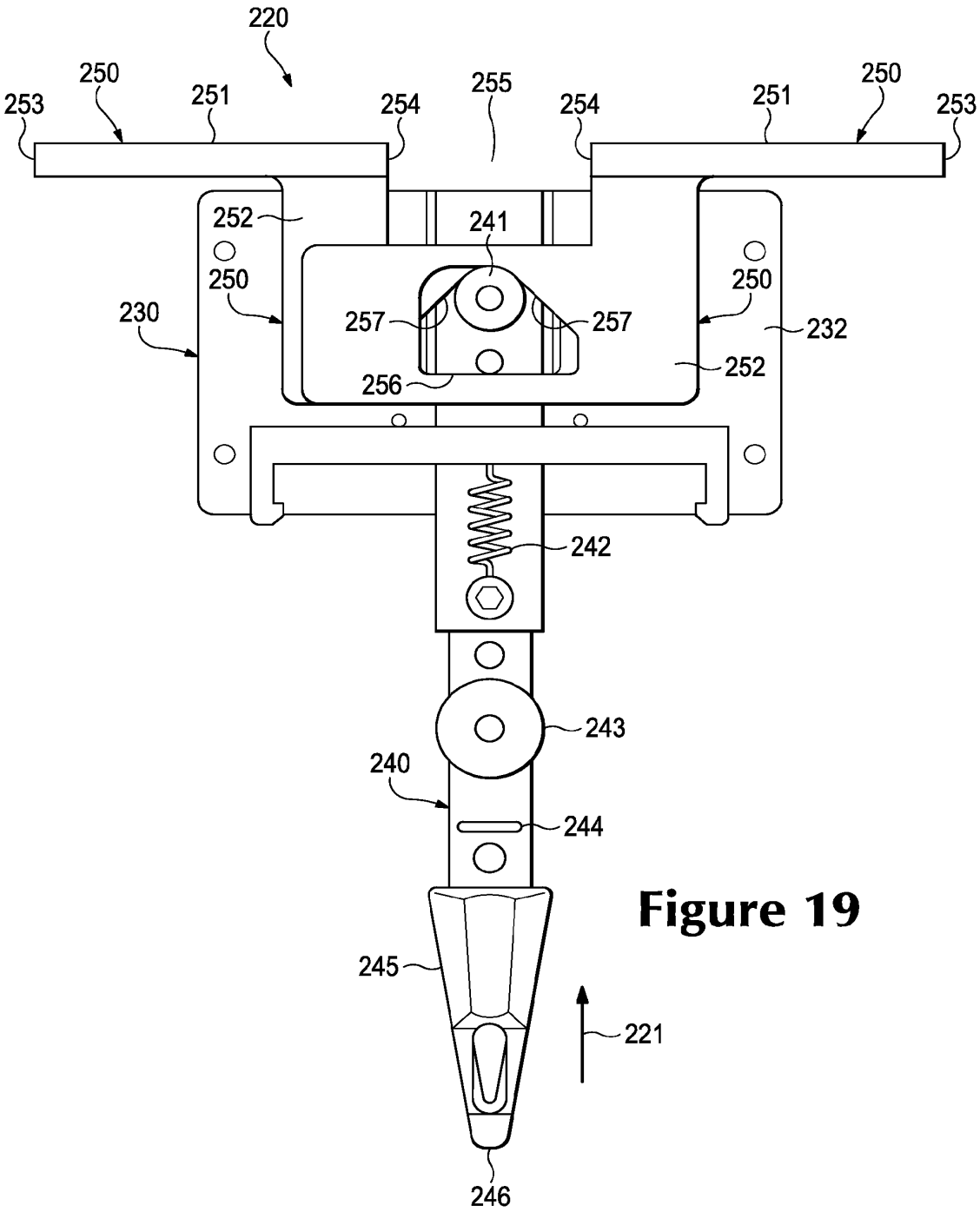

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Figure 19

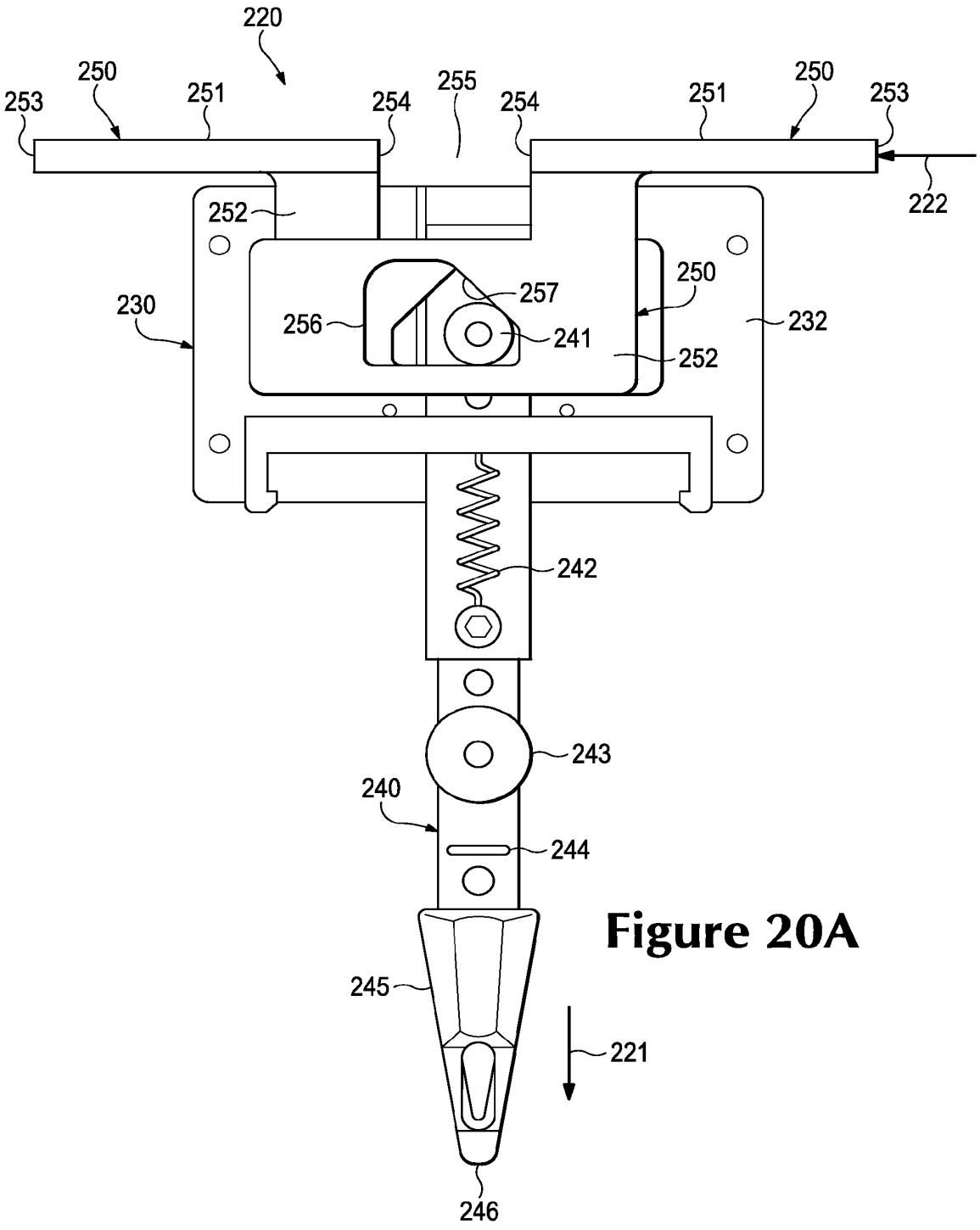

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Figure 20A

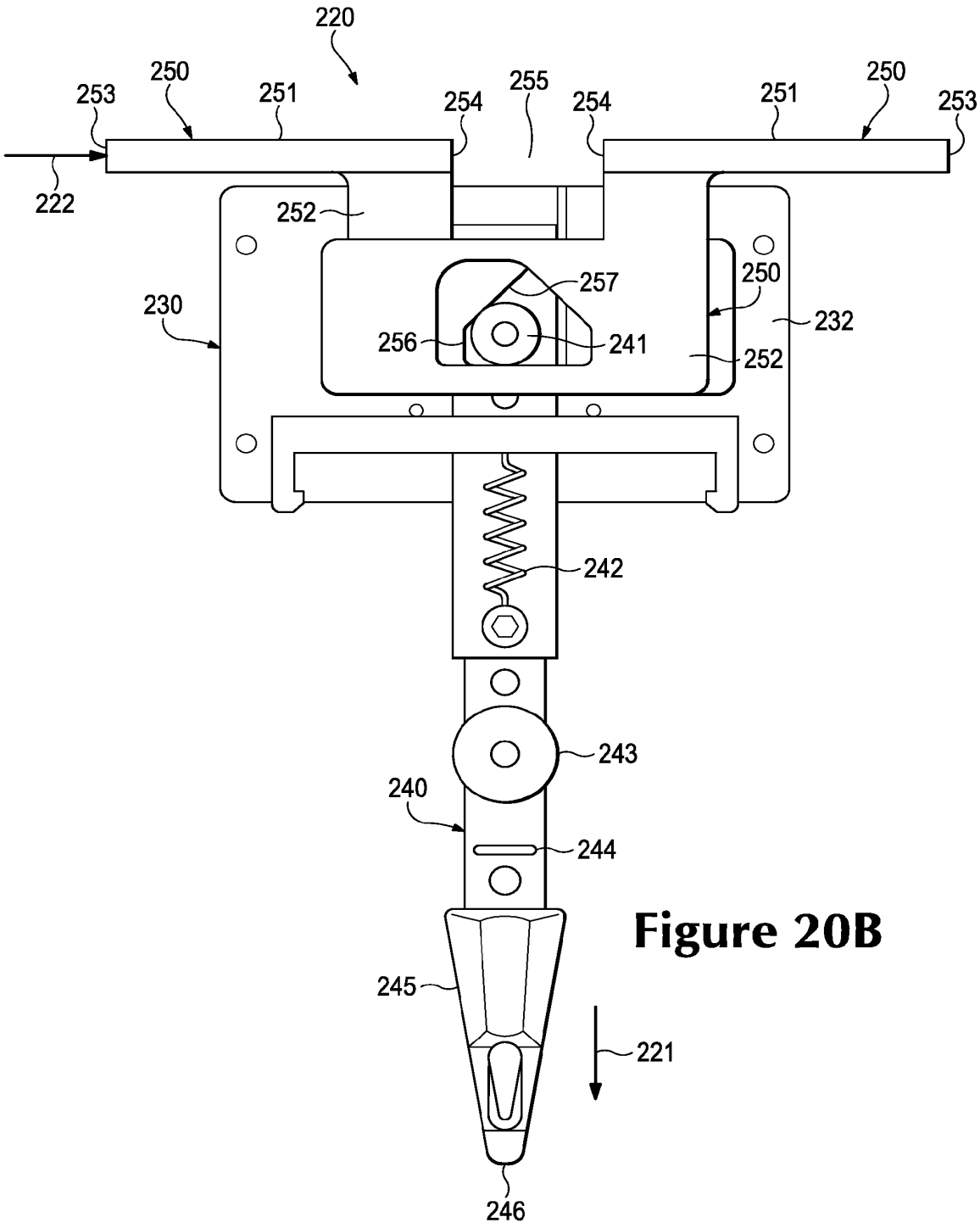

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Figure 20B

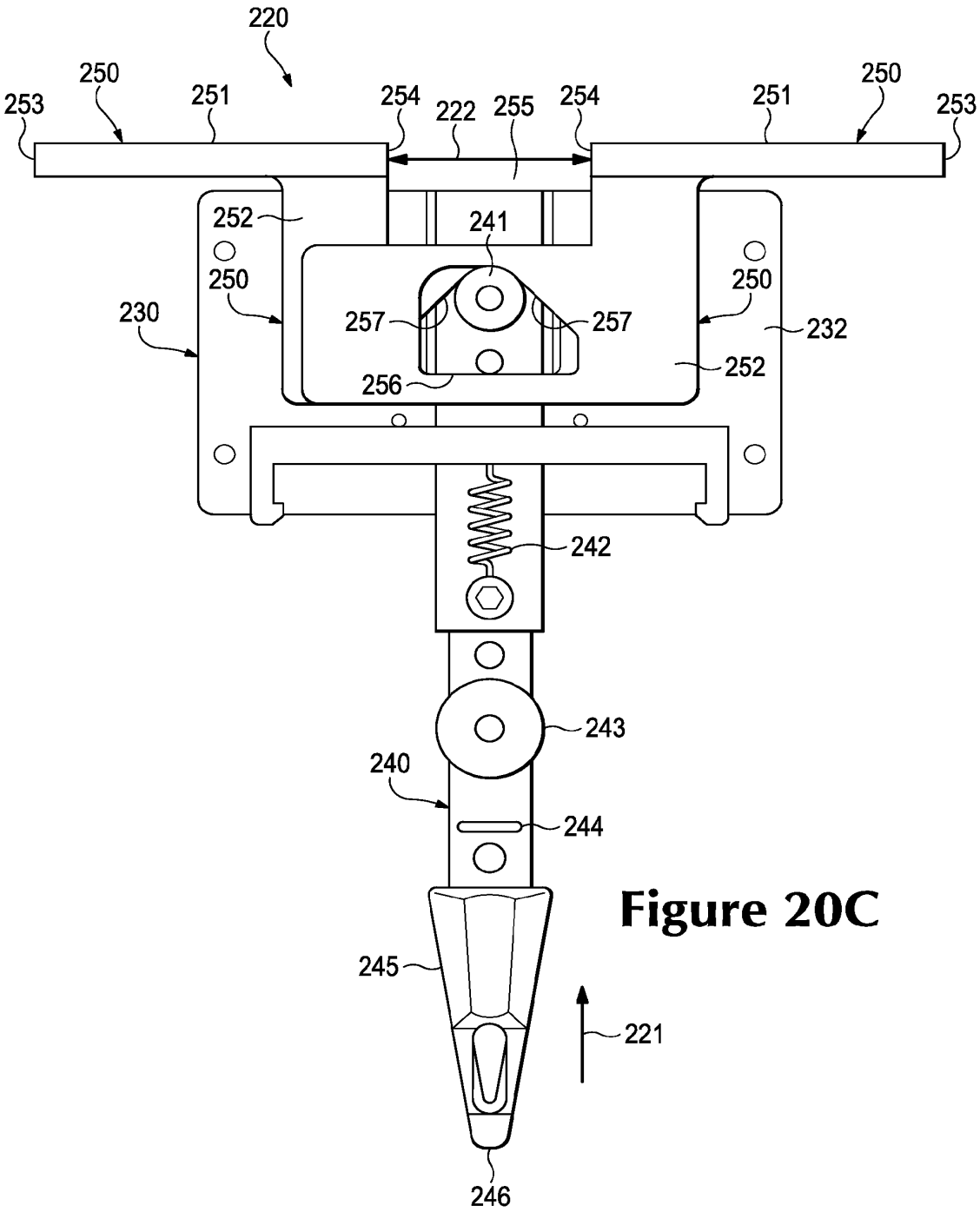

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Figure 20C

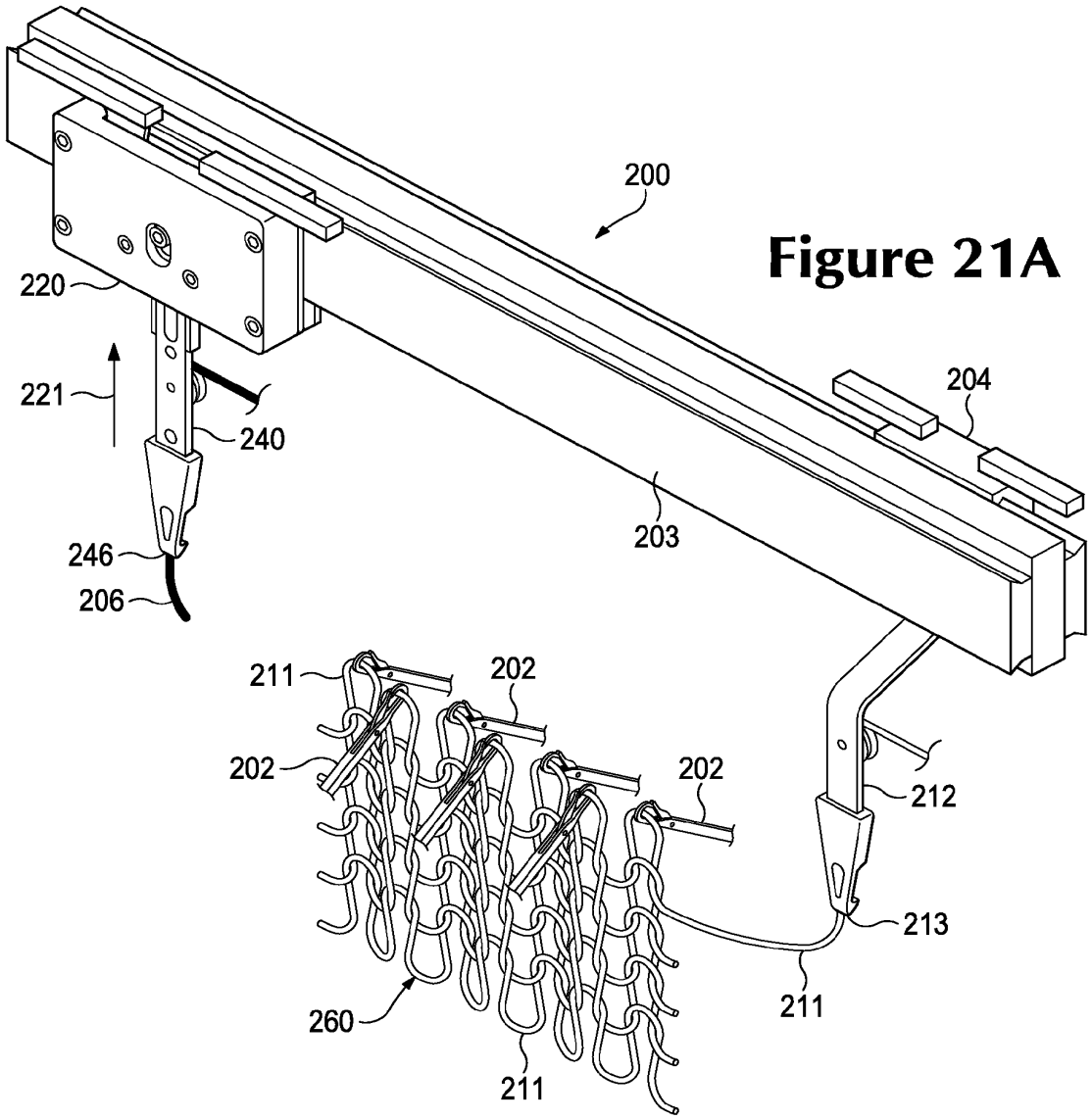

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Figure 21A

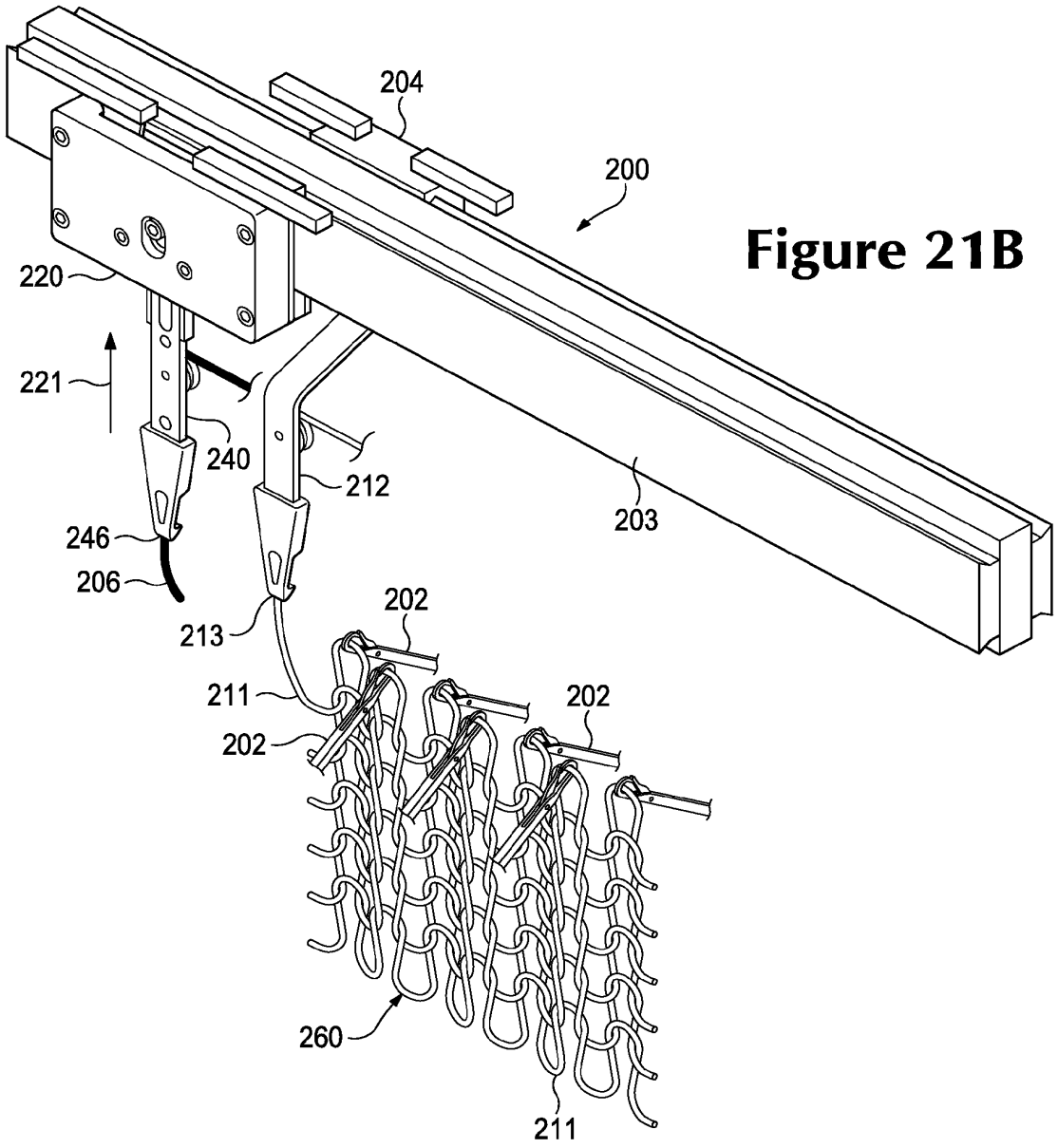



Figure 21B

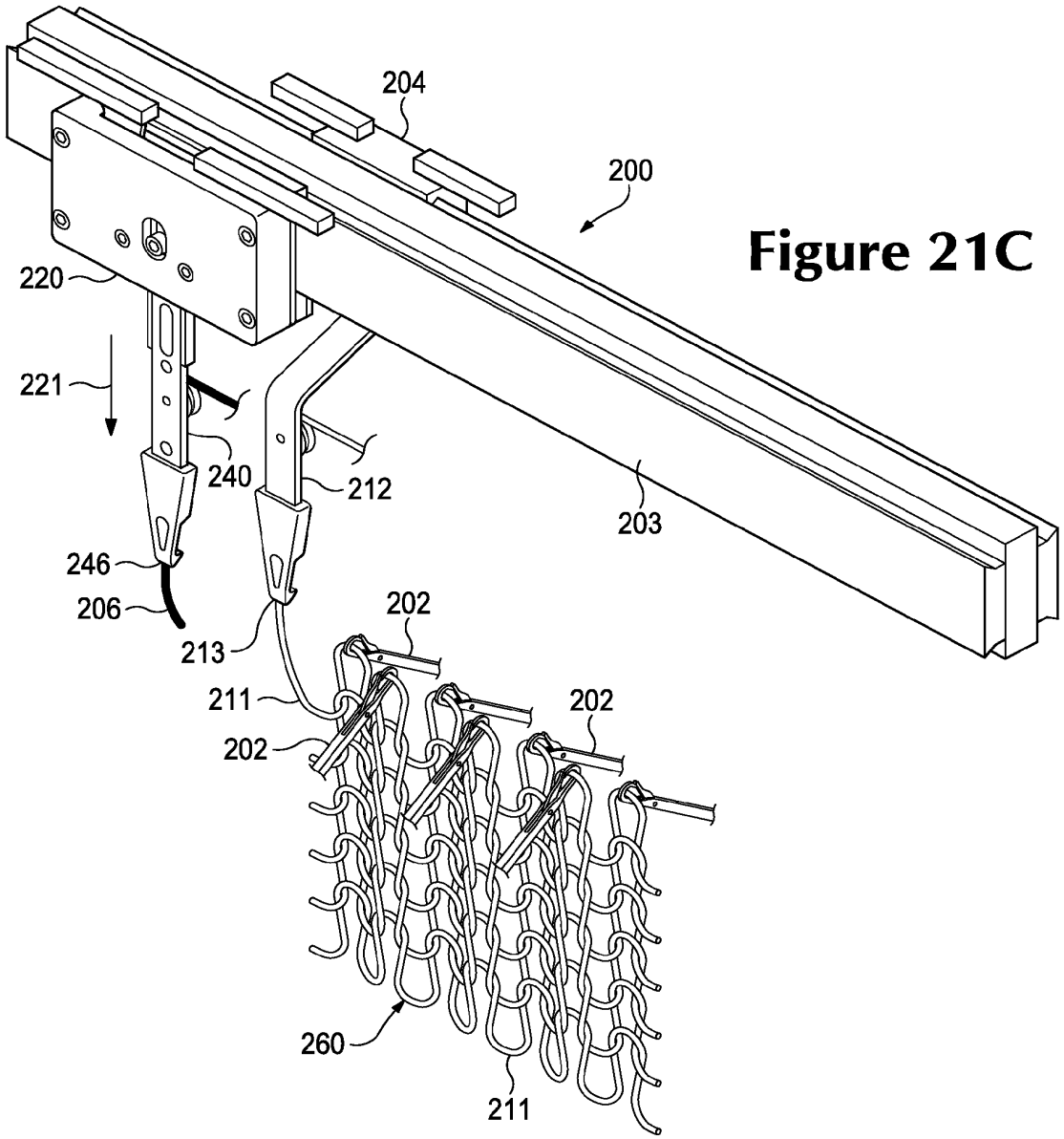



Figure 21C

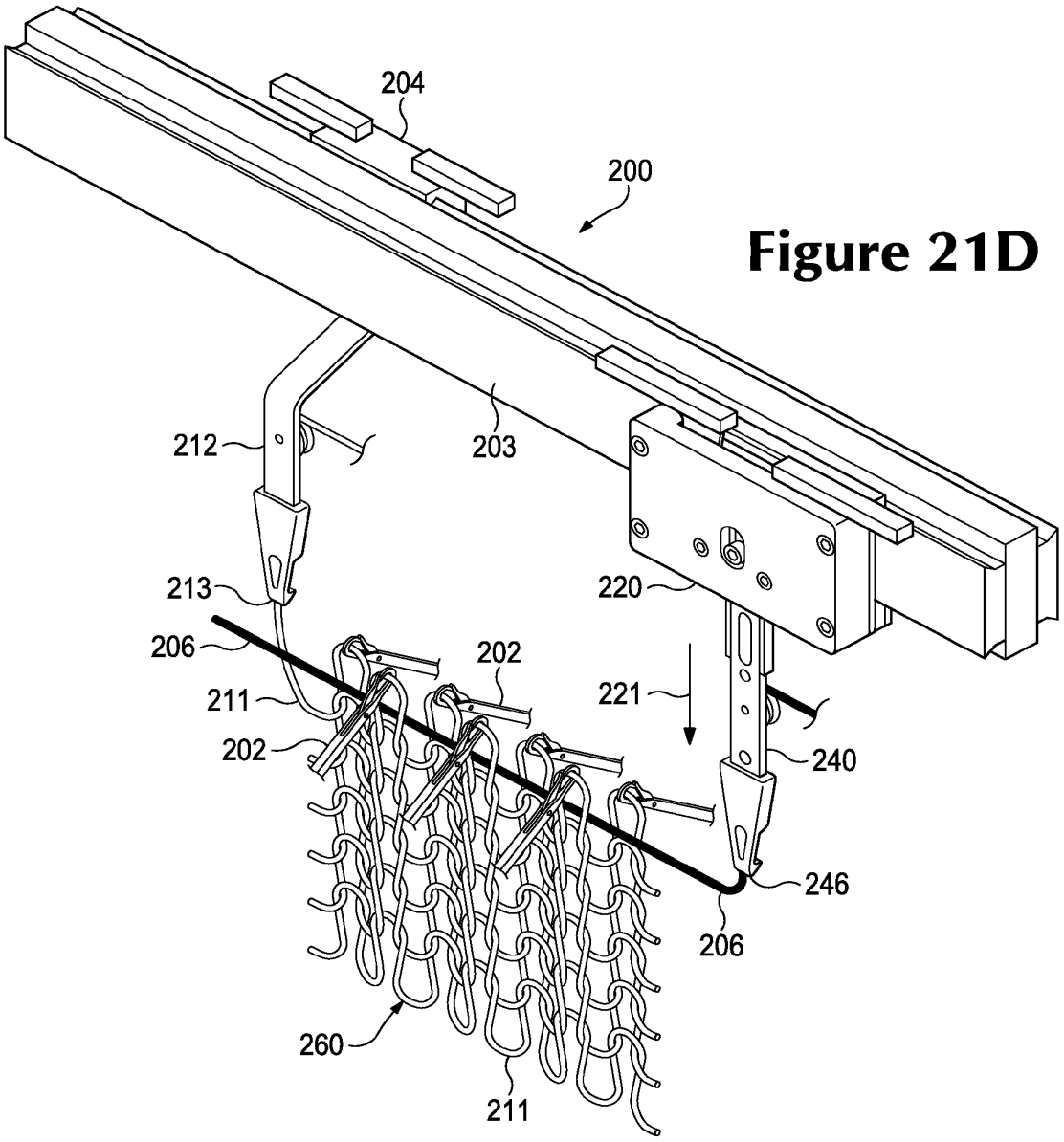



Figure 21D

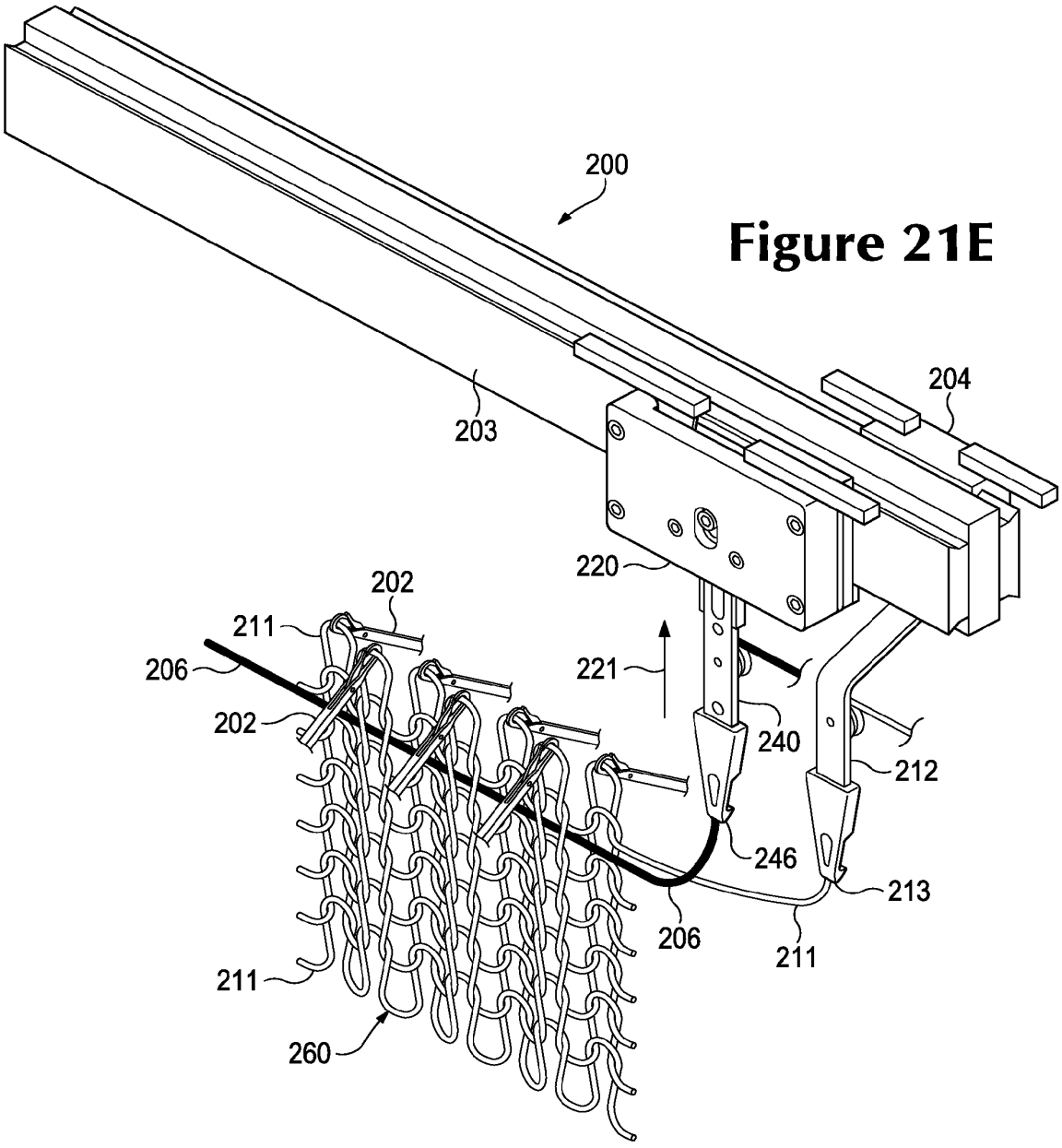

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Figure 21E

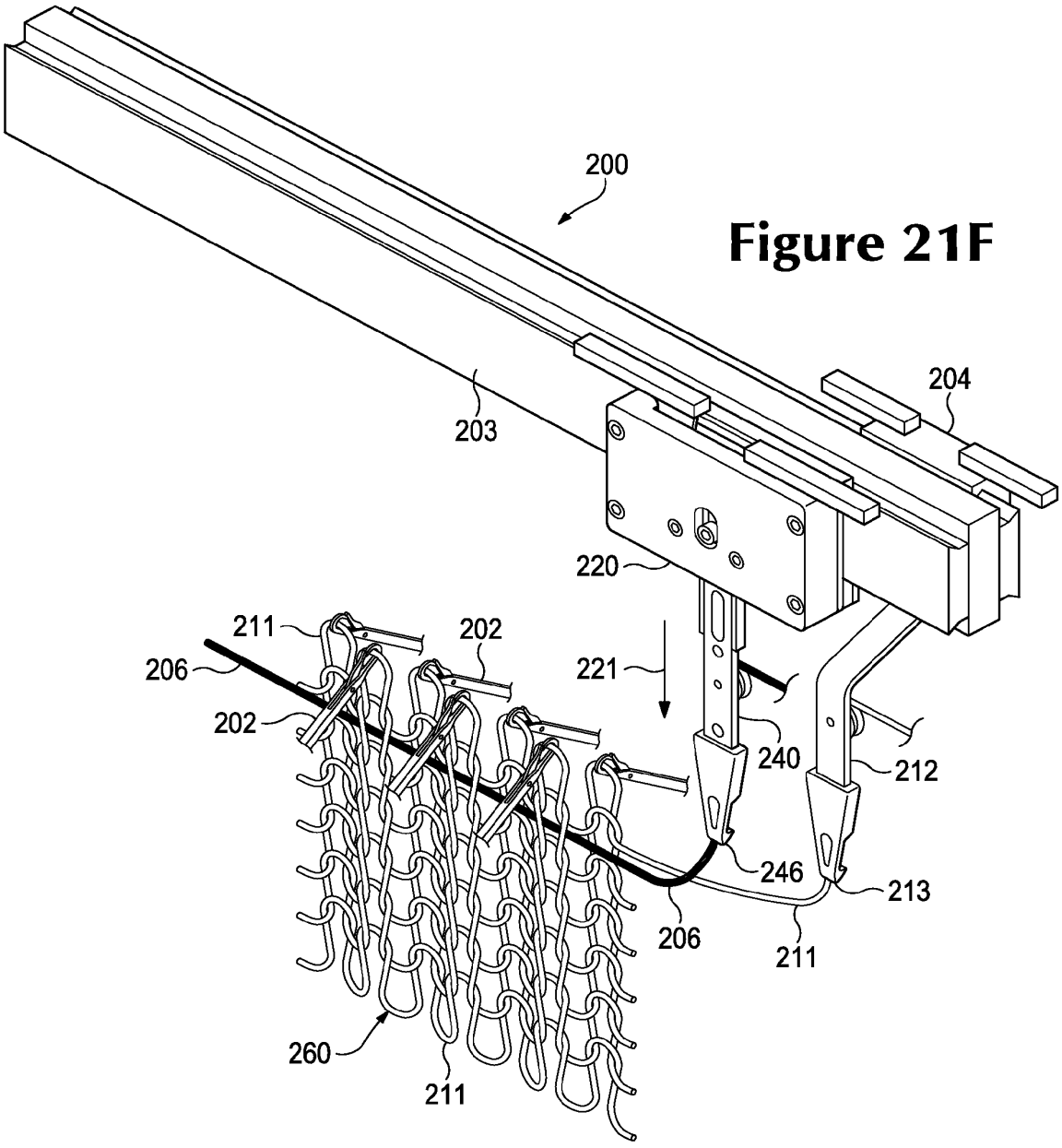

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Figure 21F

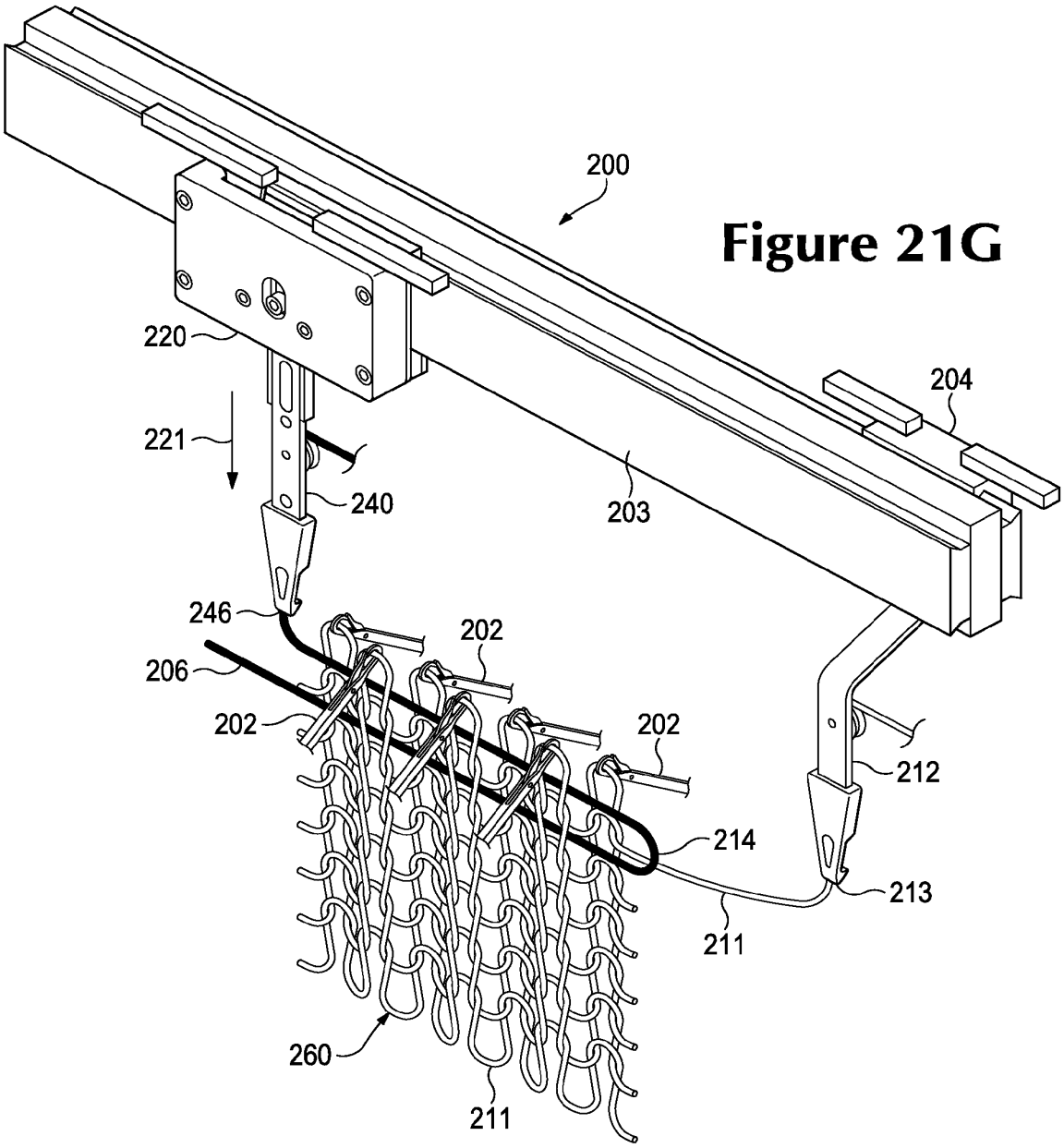

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Figure 21G

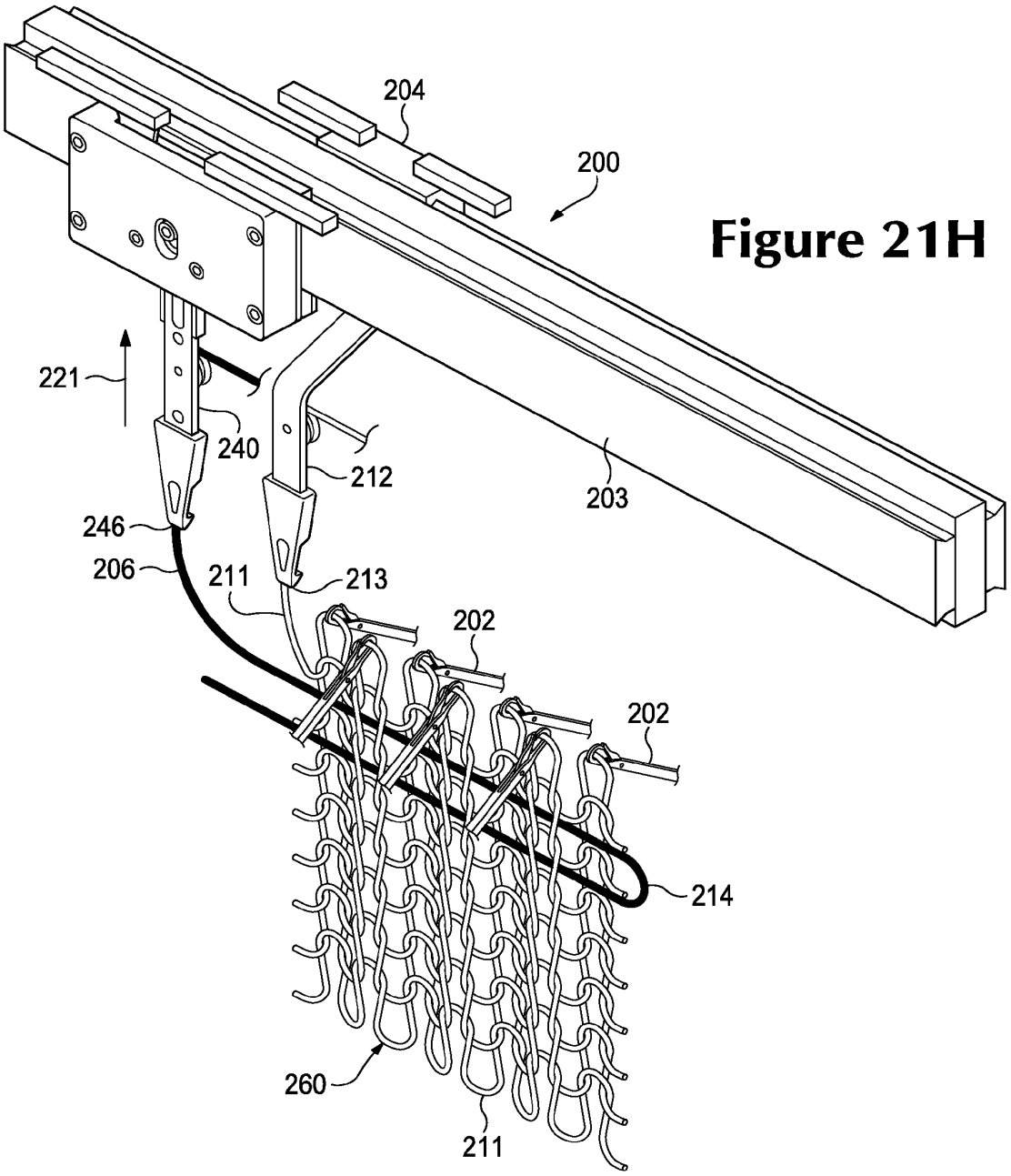



Figure 21H

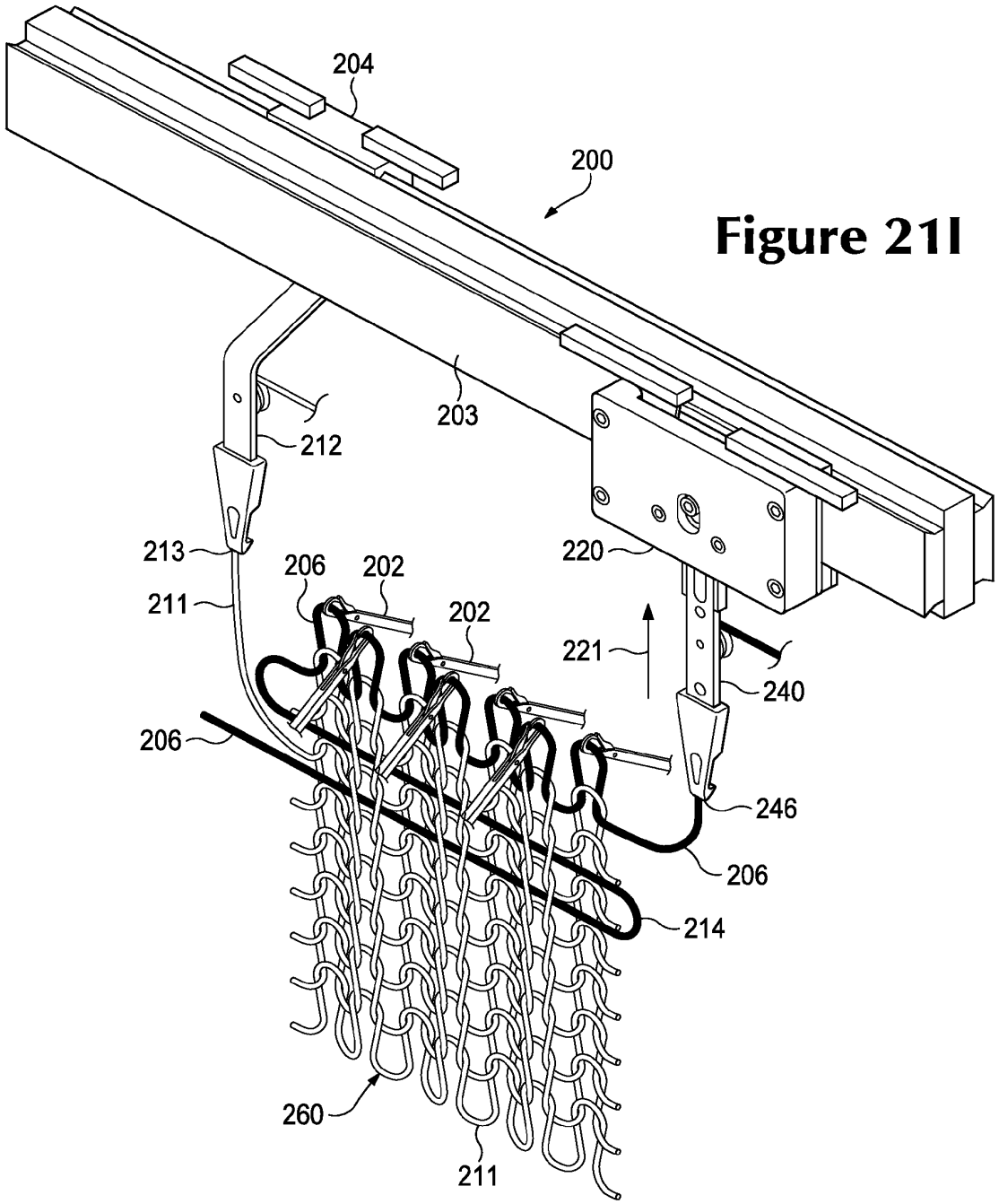

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Figure 21I

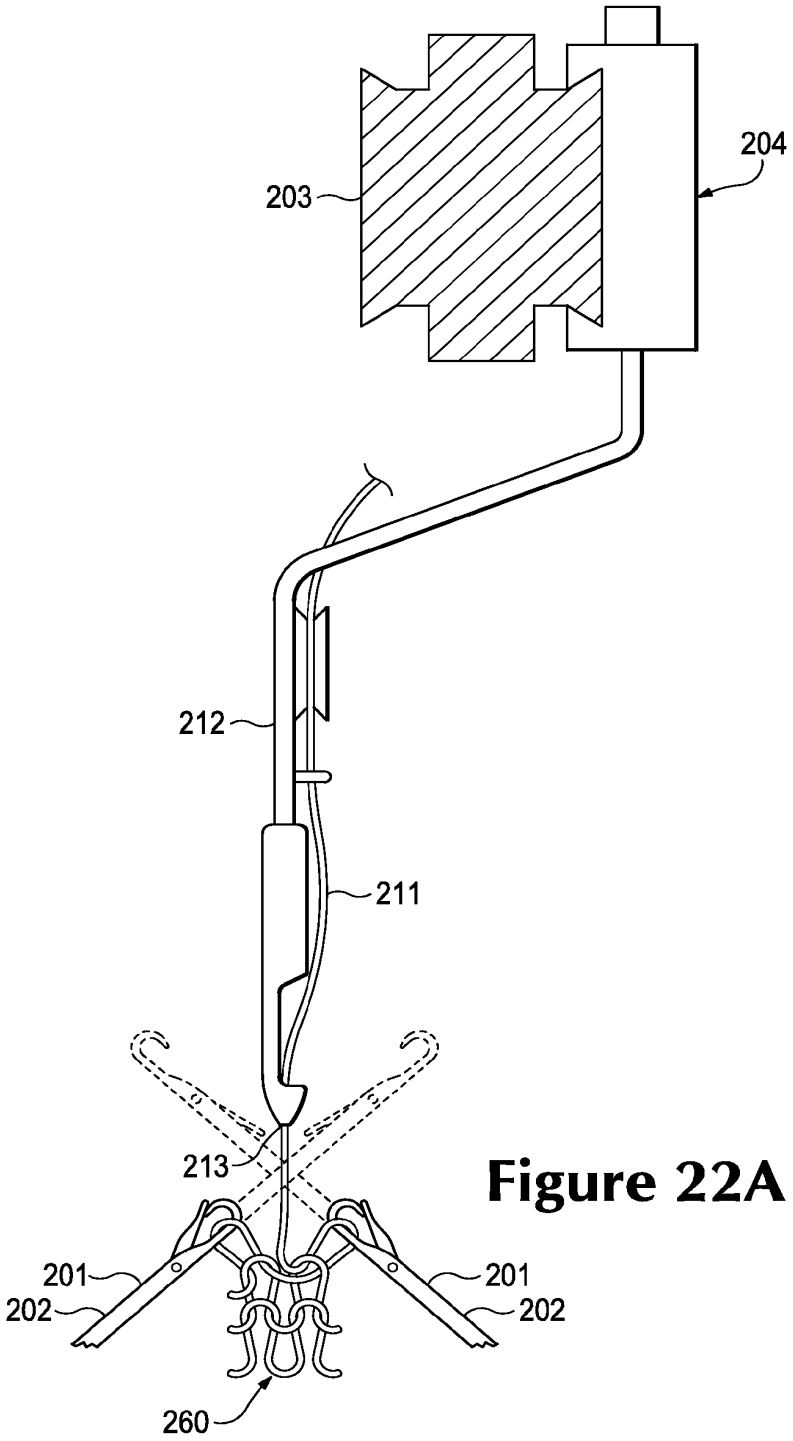



Figure 22A

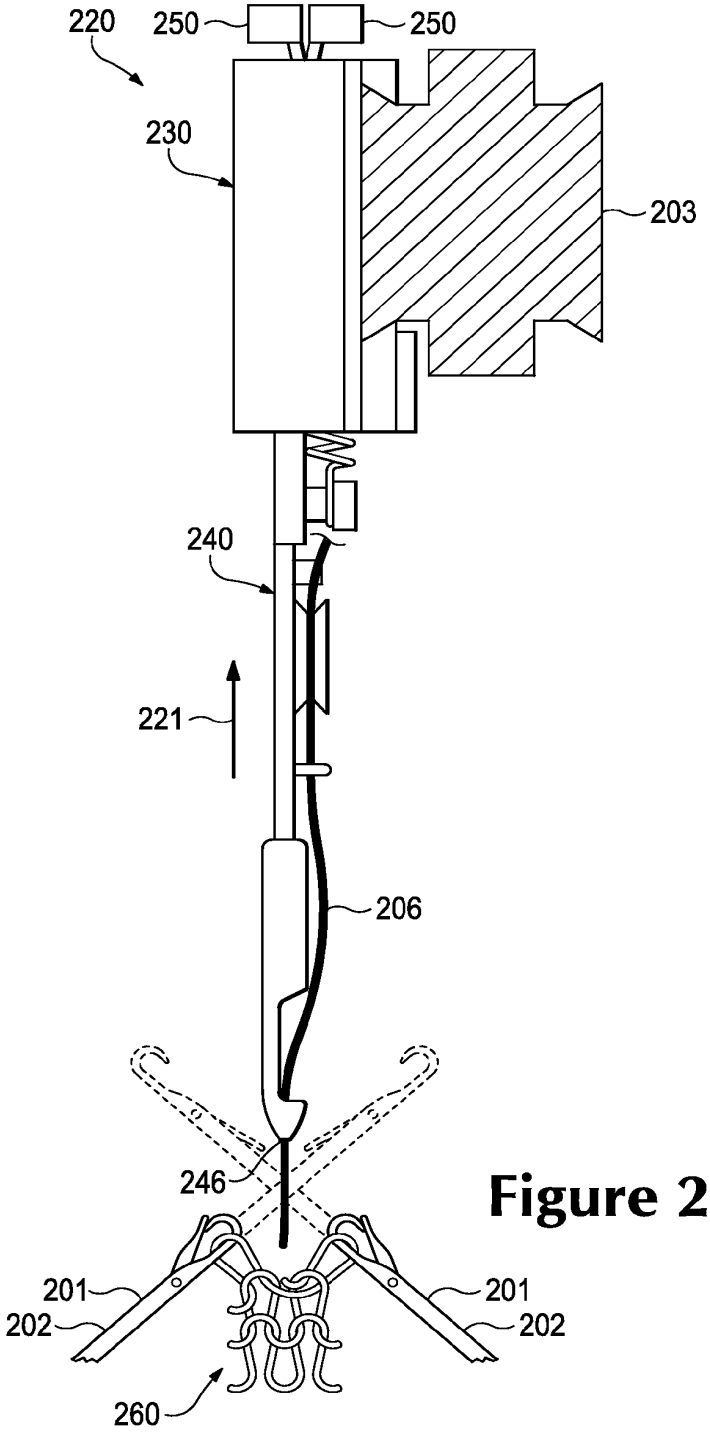



Figure 22B

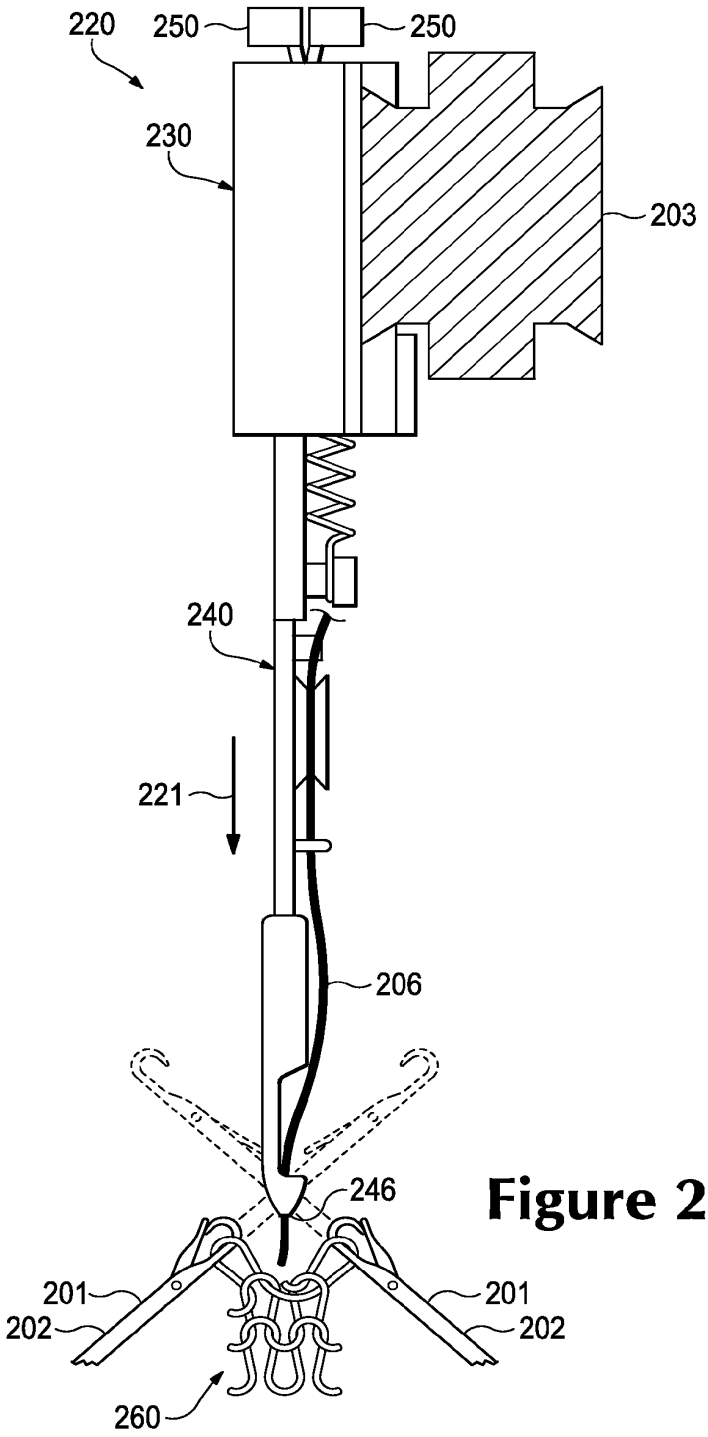



Figure 22C

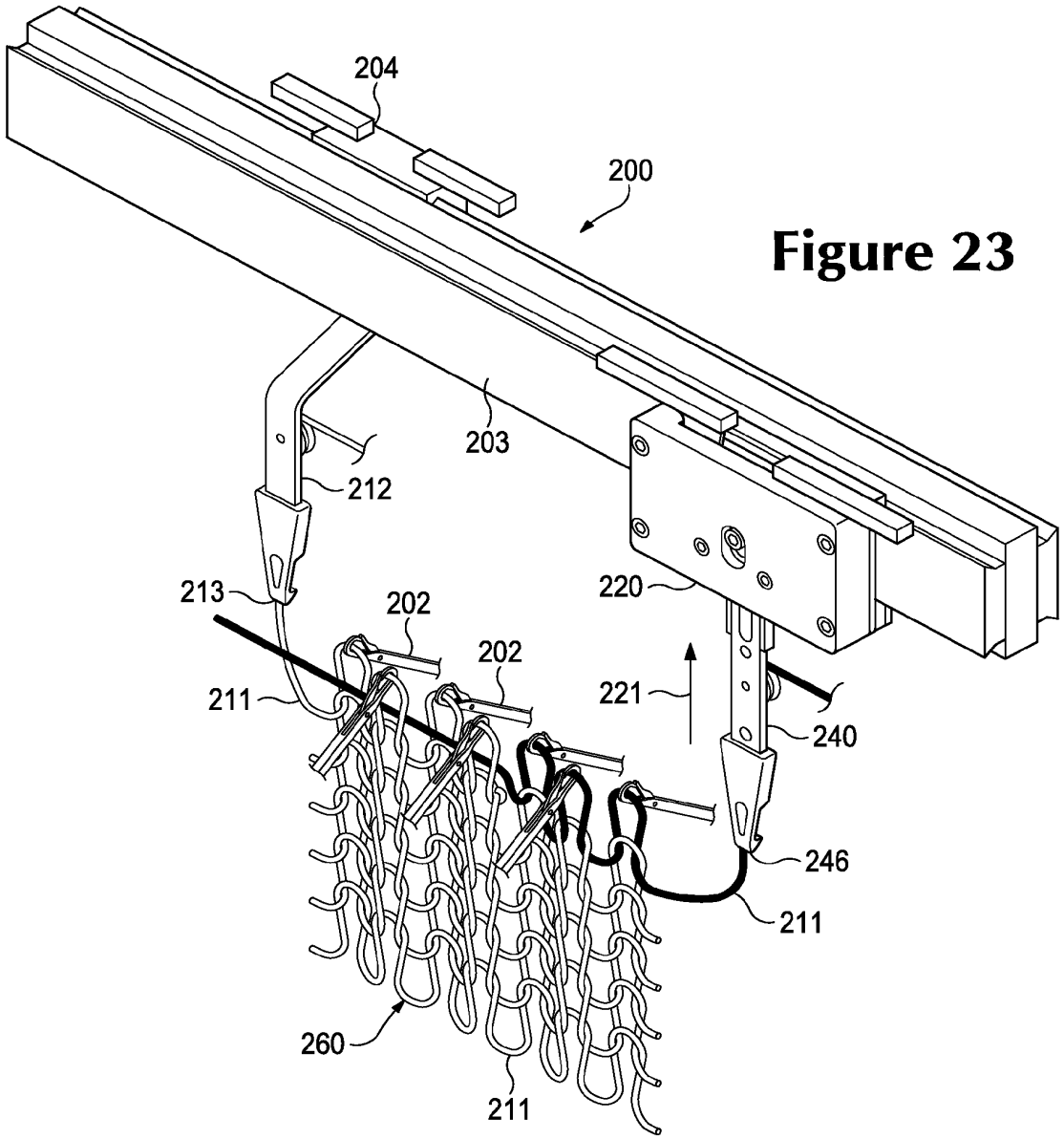



**Figure 23**

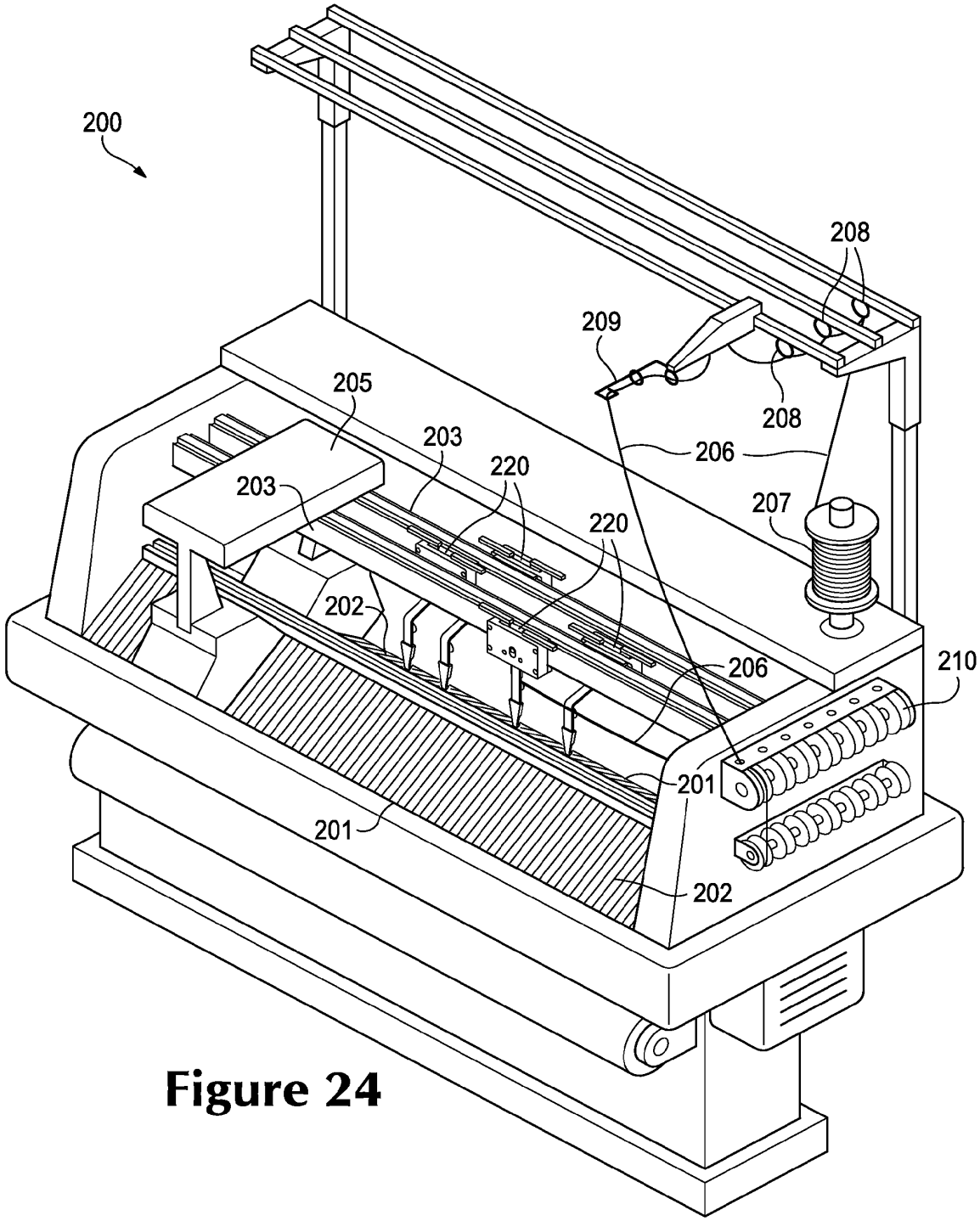

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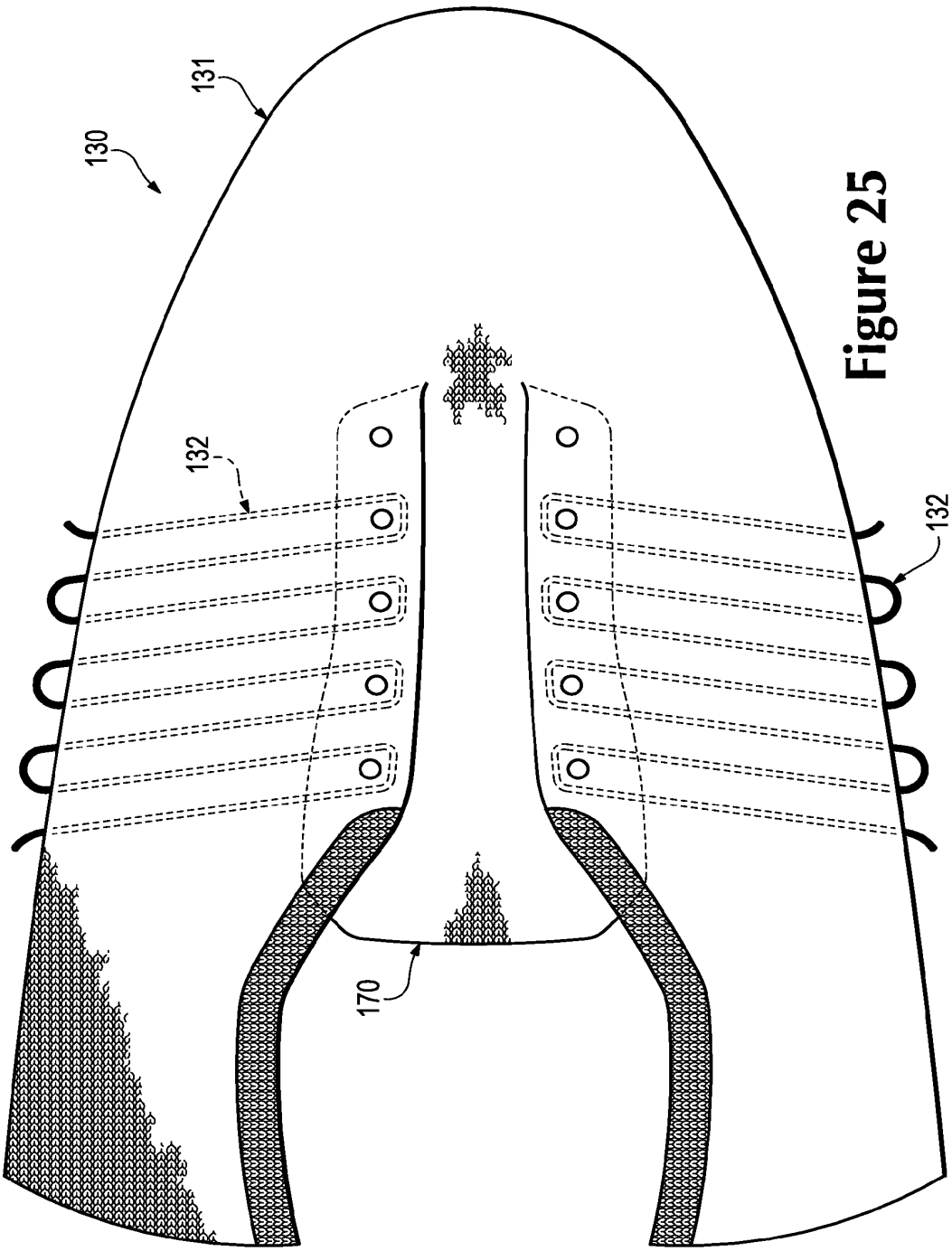



Figure 25

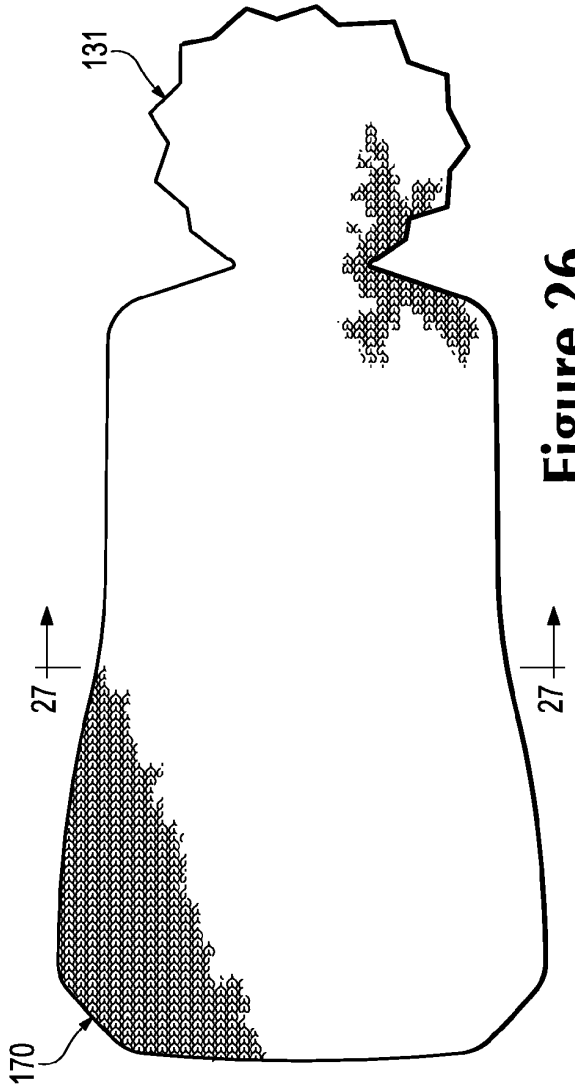



Figure 26

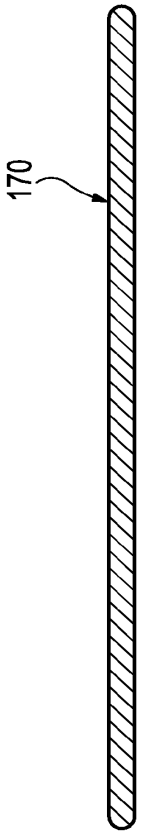



Figure 27

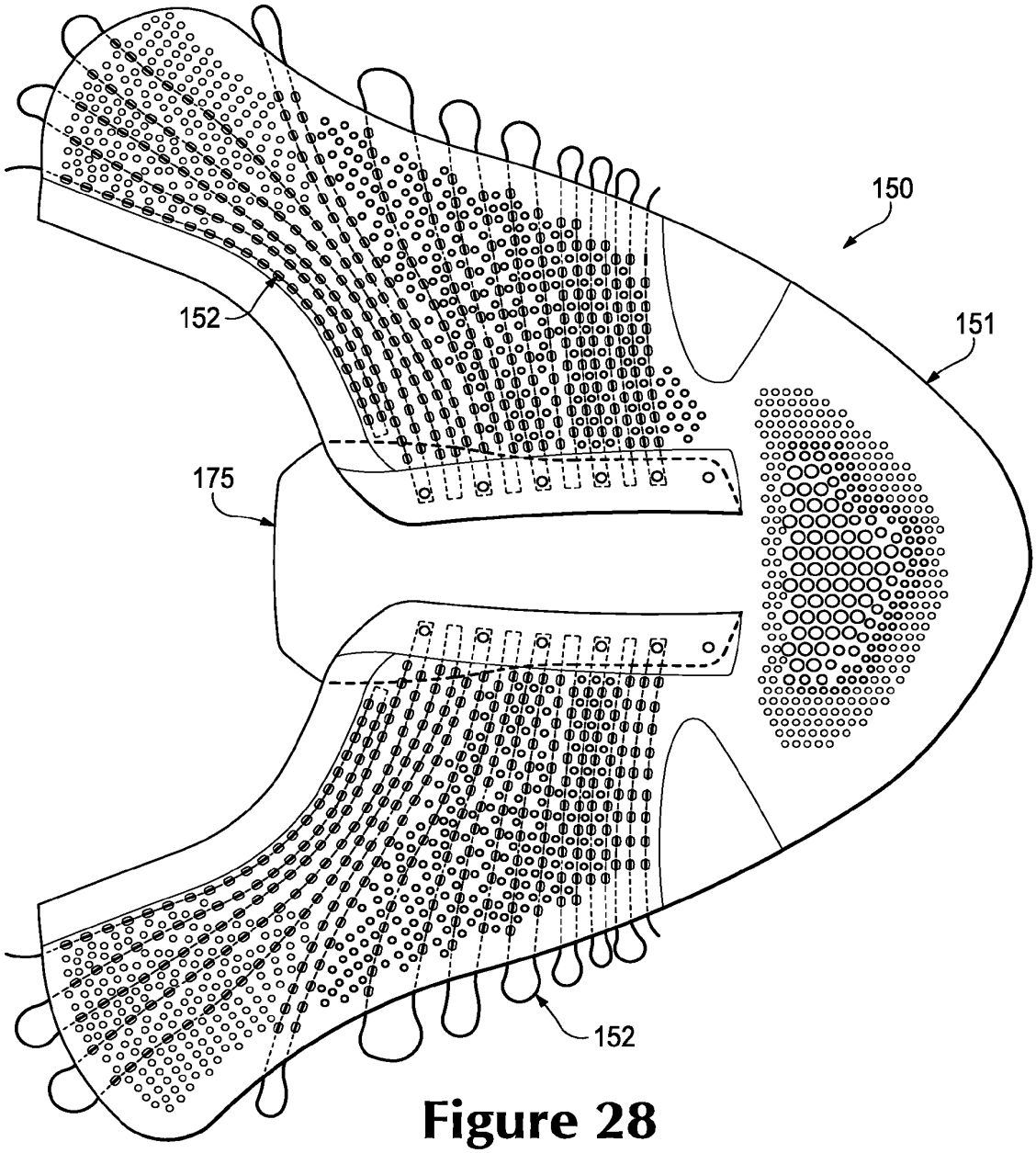



Figure 28

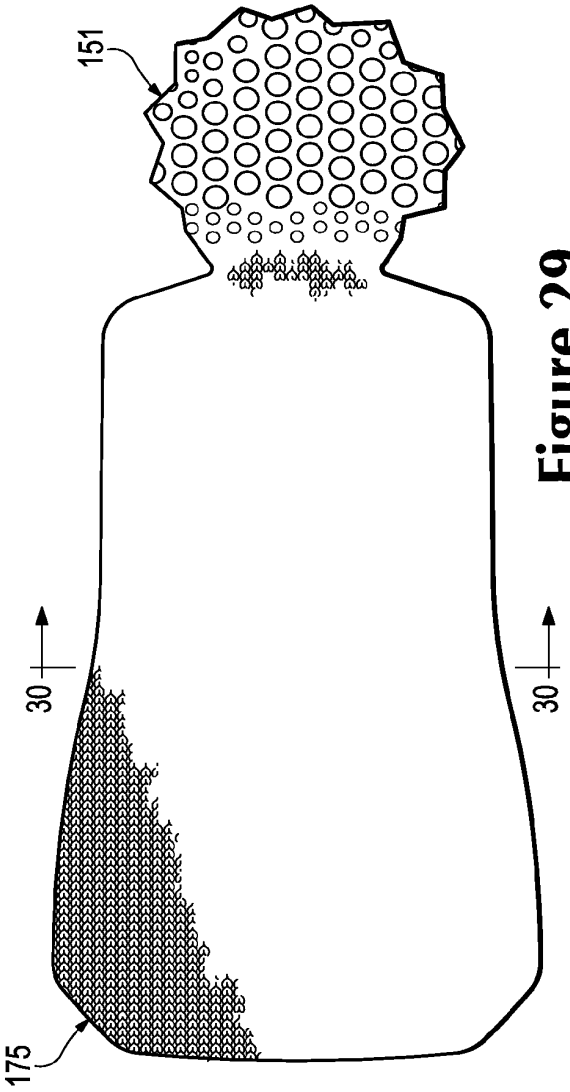



Figure 29

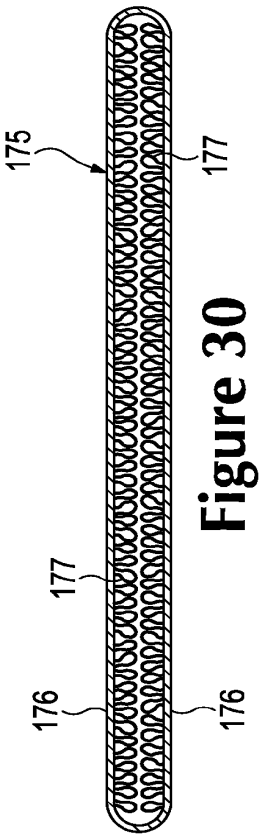



Figure 30

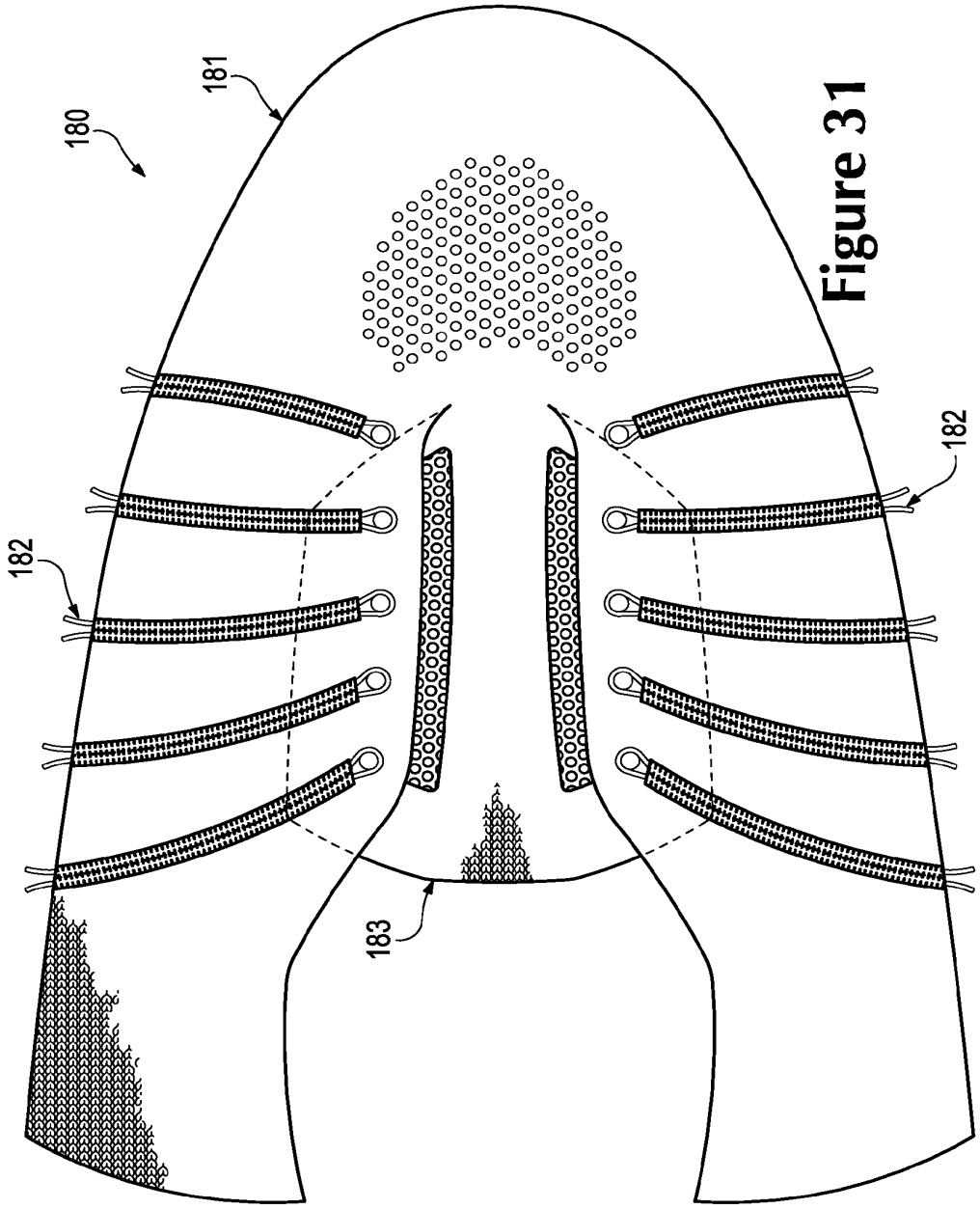



Figure 31

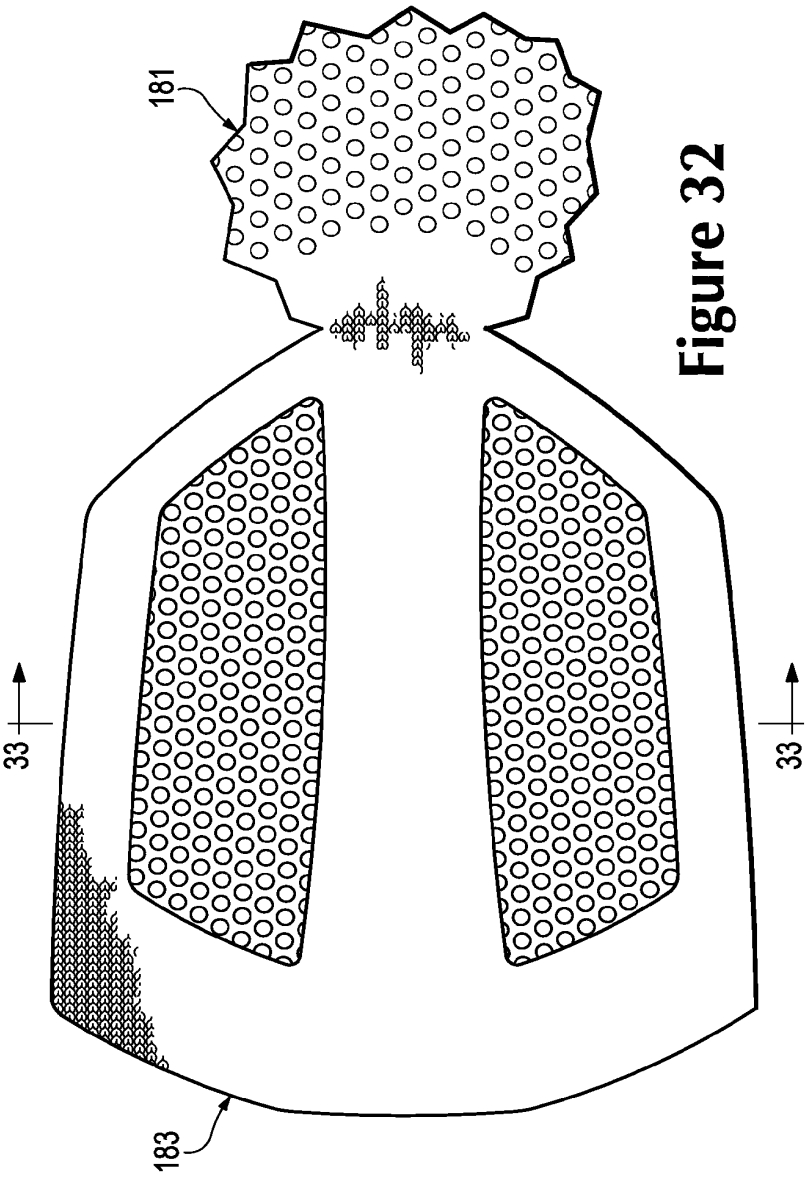



Figure 32

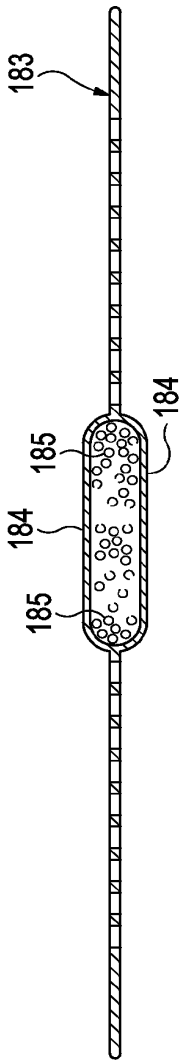



Figure 33

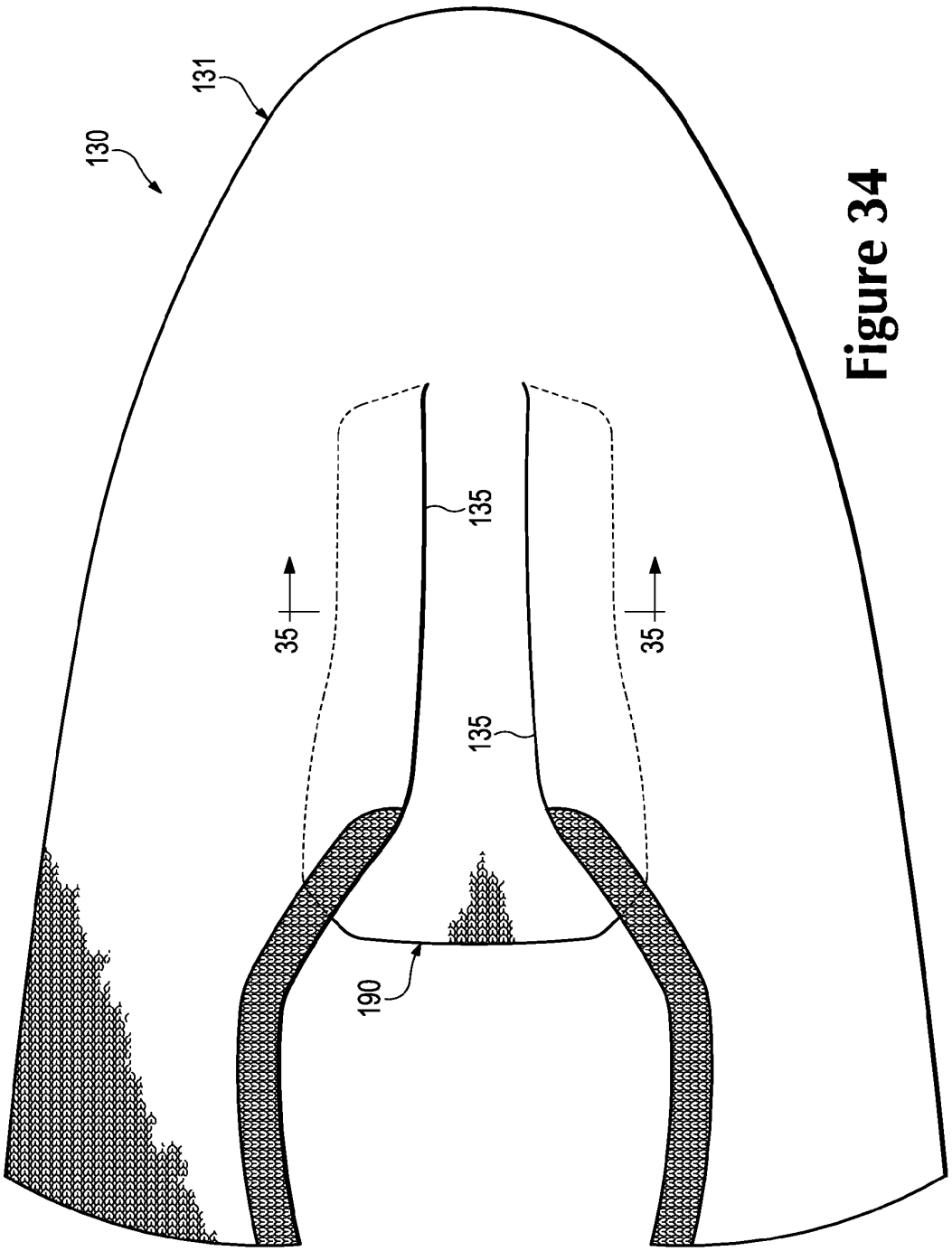



Figure 34

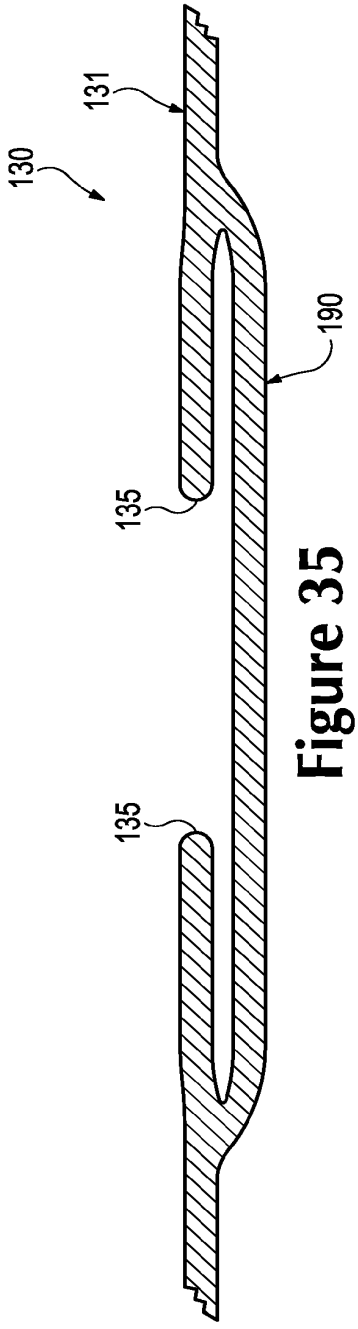



Figure 35

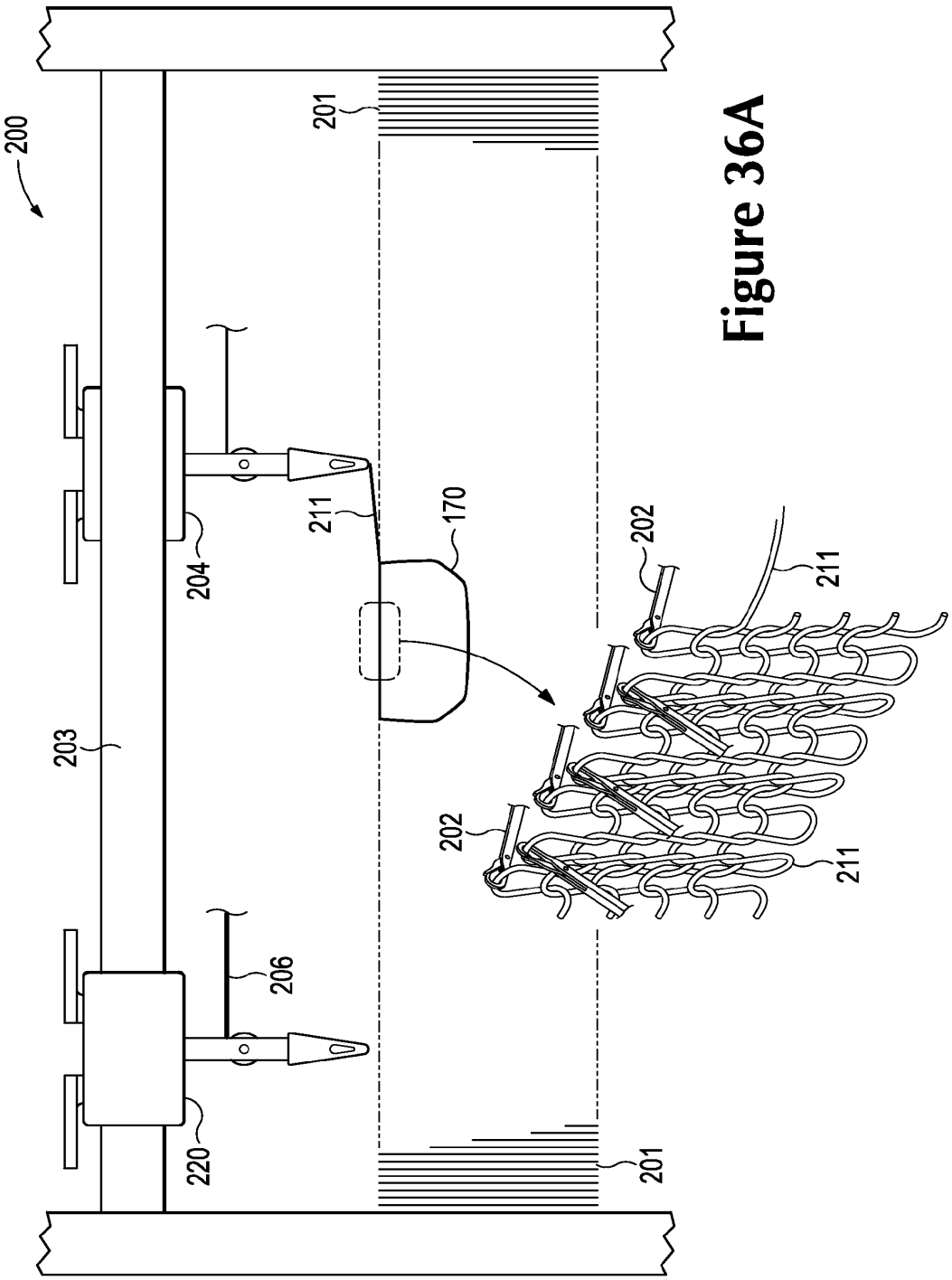



Figure 36A

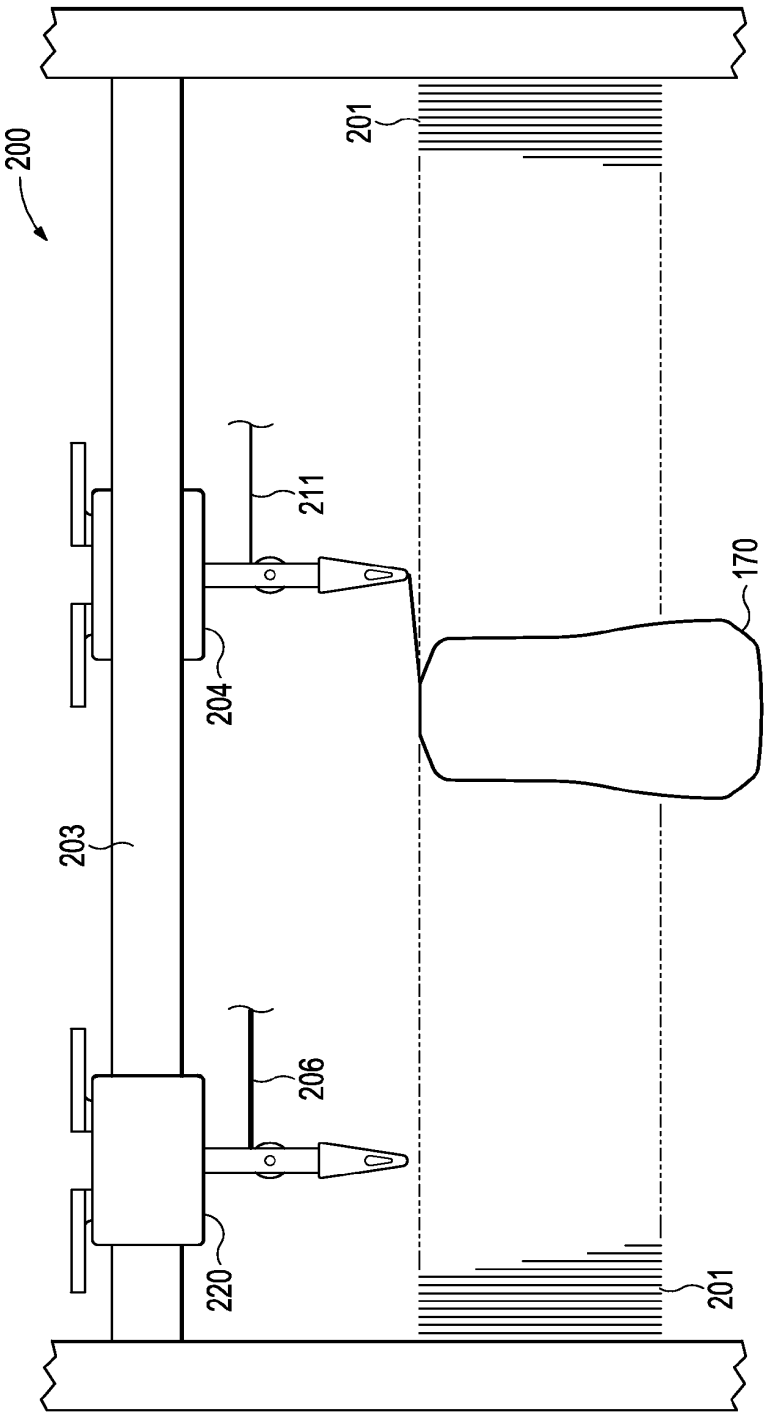



Figure 36B

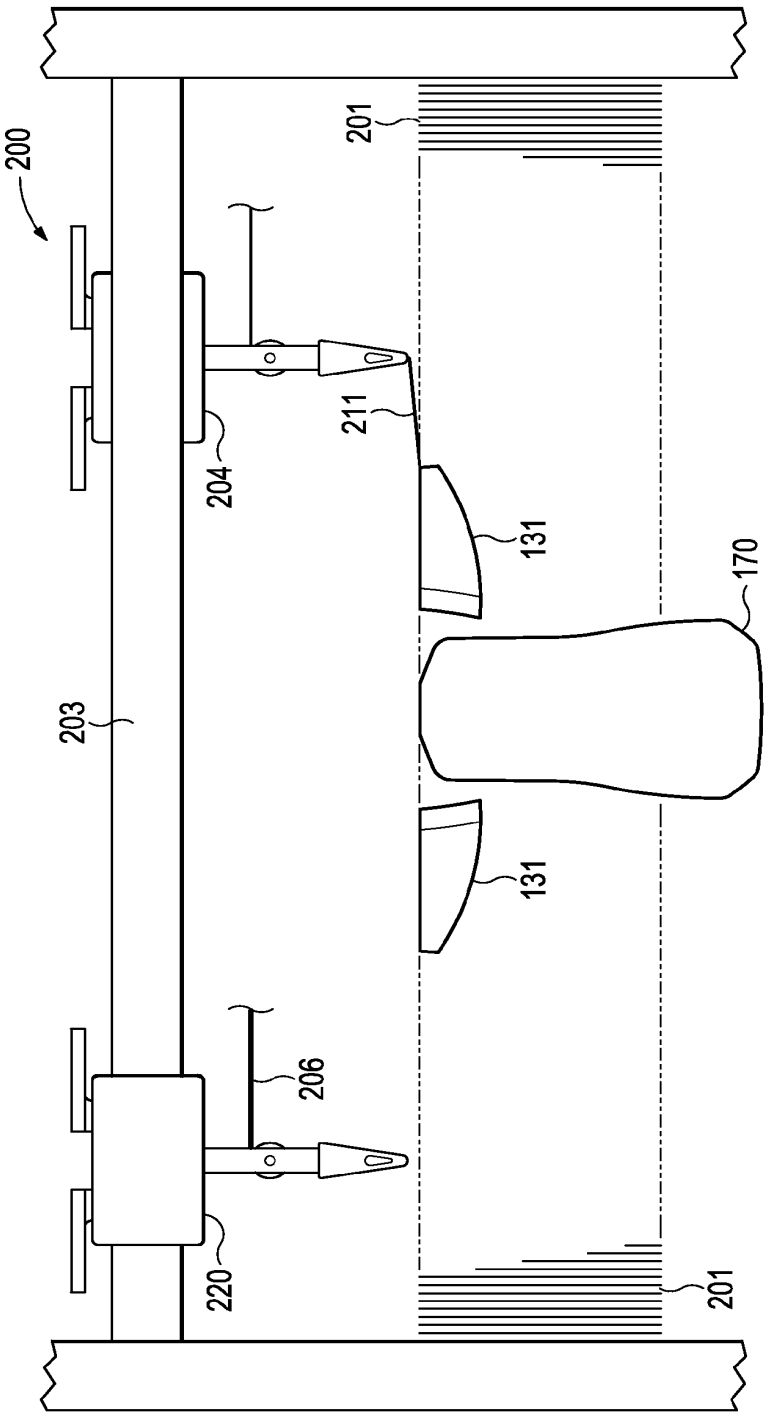



Figure 36C

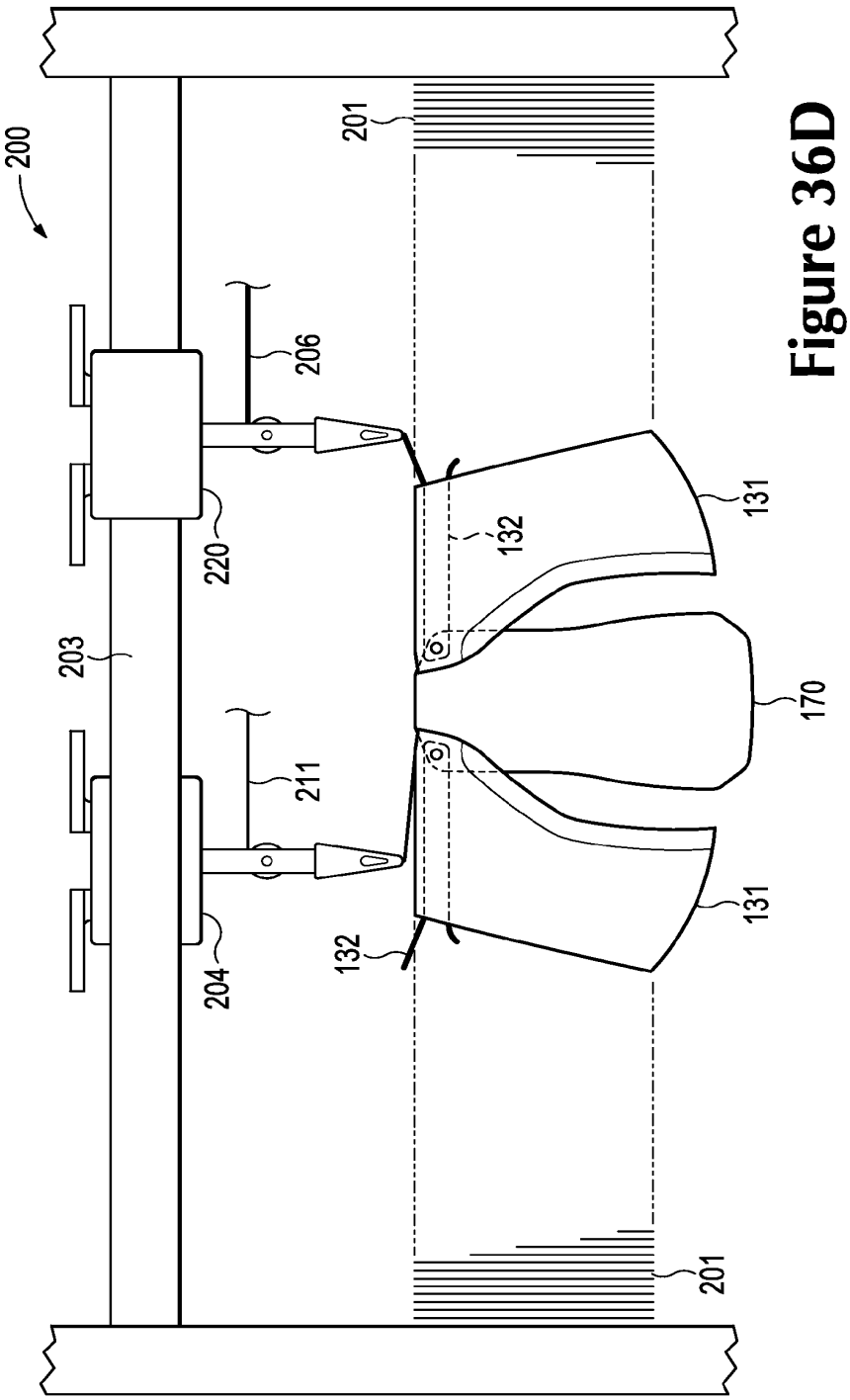



Figure 36D

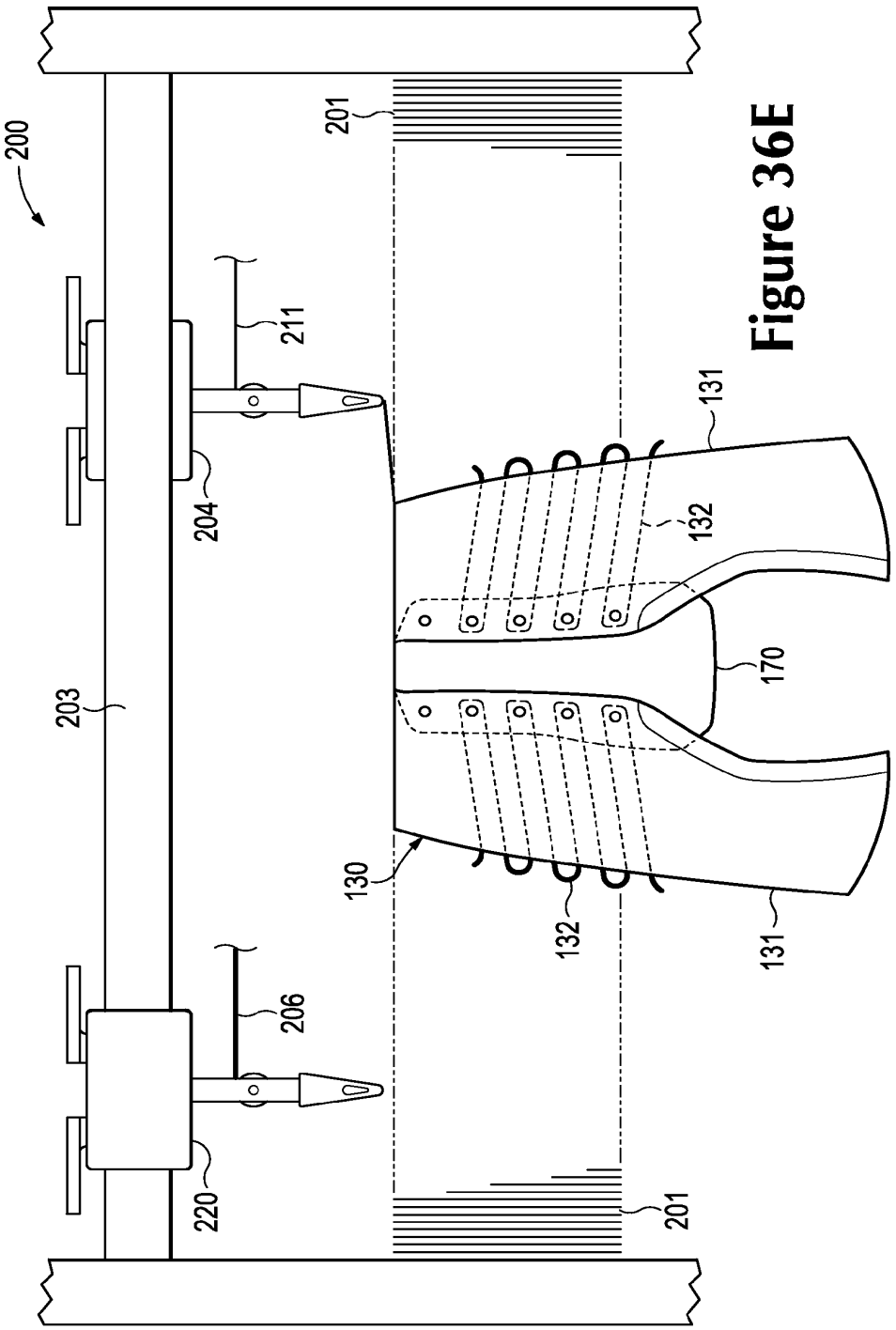



Figure 36E

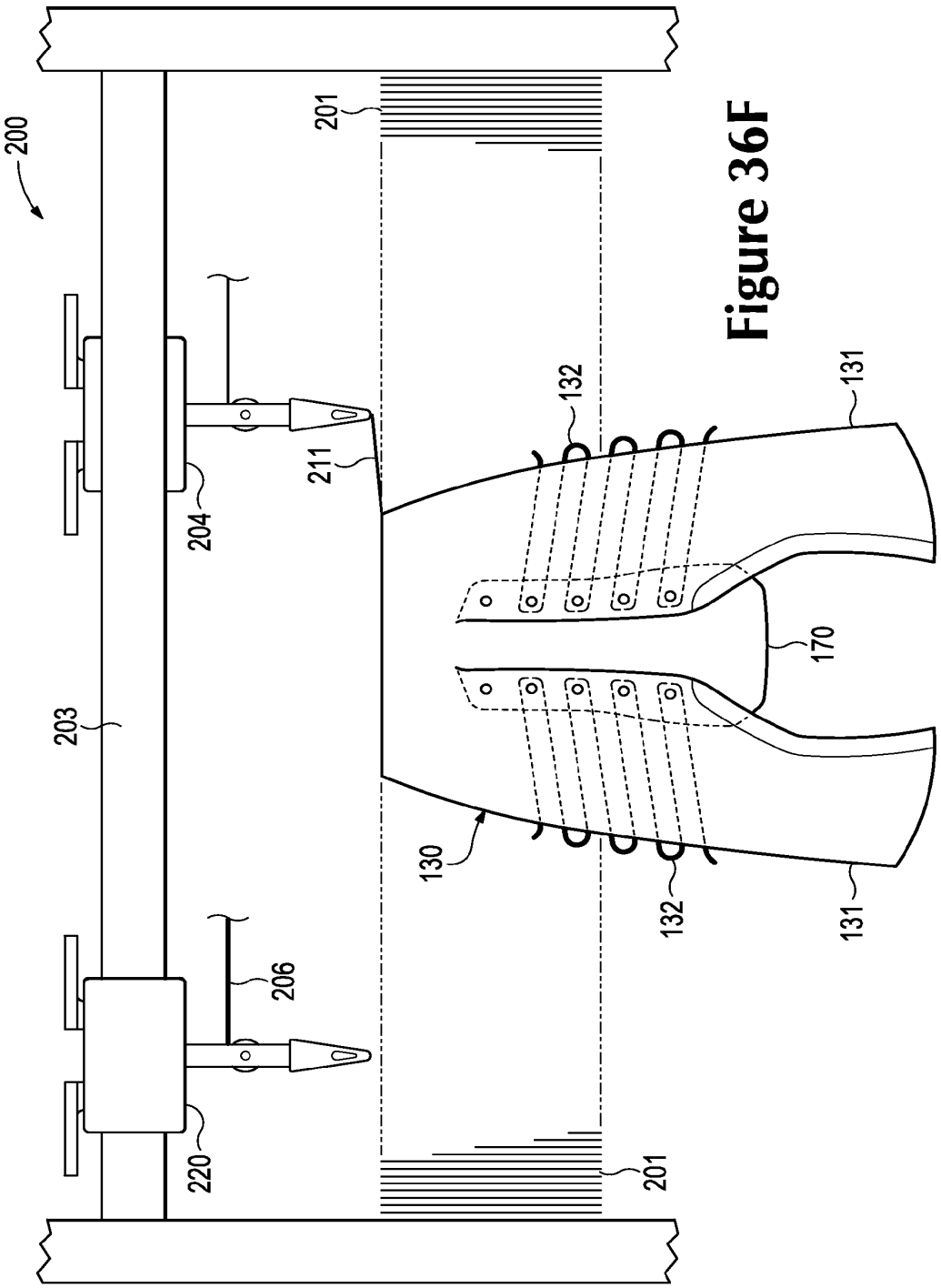



Figure 36F

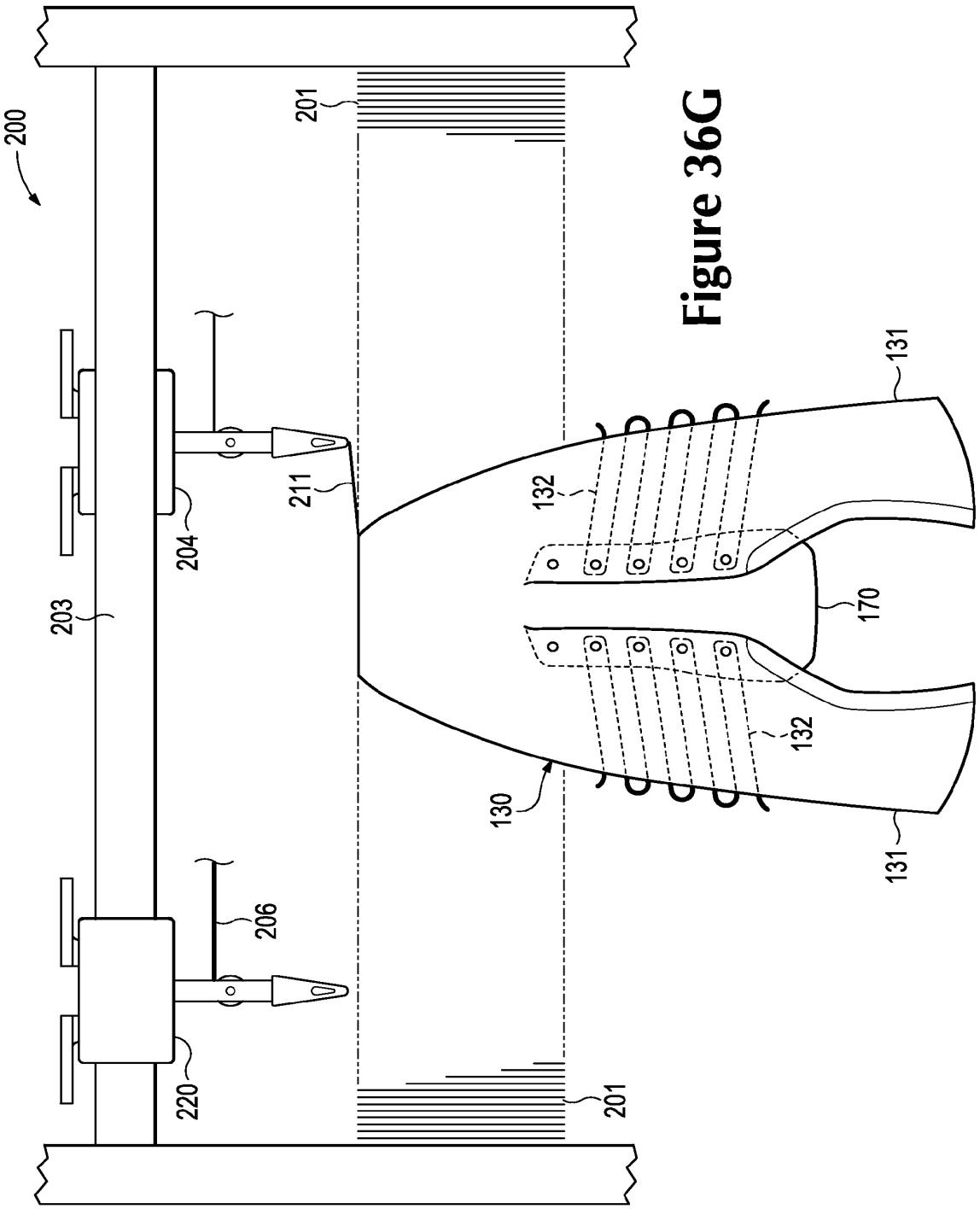



Figure 36G

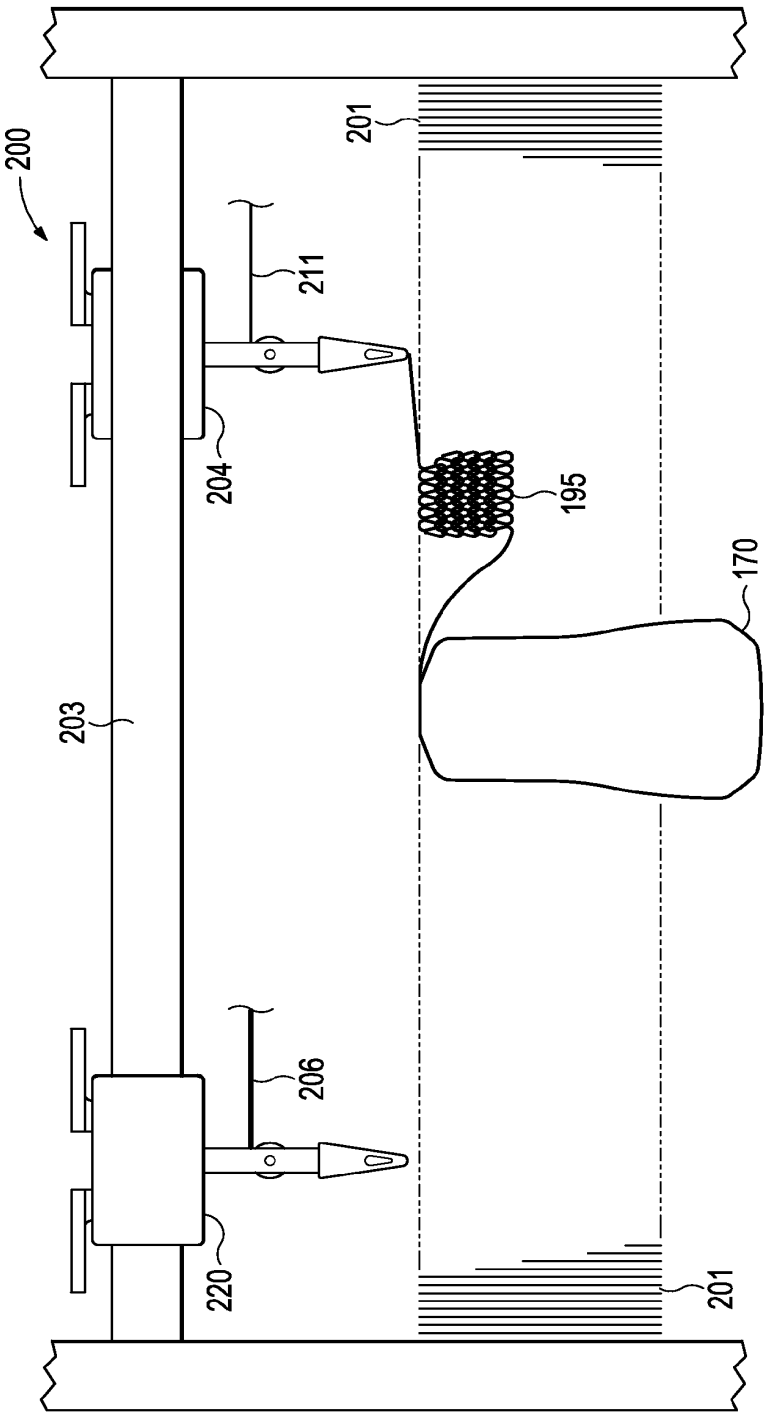



Figure 37

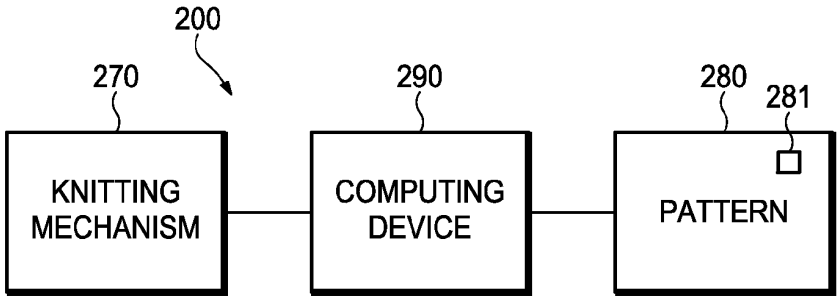

200
270
290
280
281
KNITTING MECHANISM
COMPUTING DEVICE
PATTERN

**Figure 38**

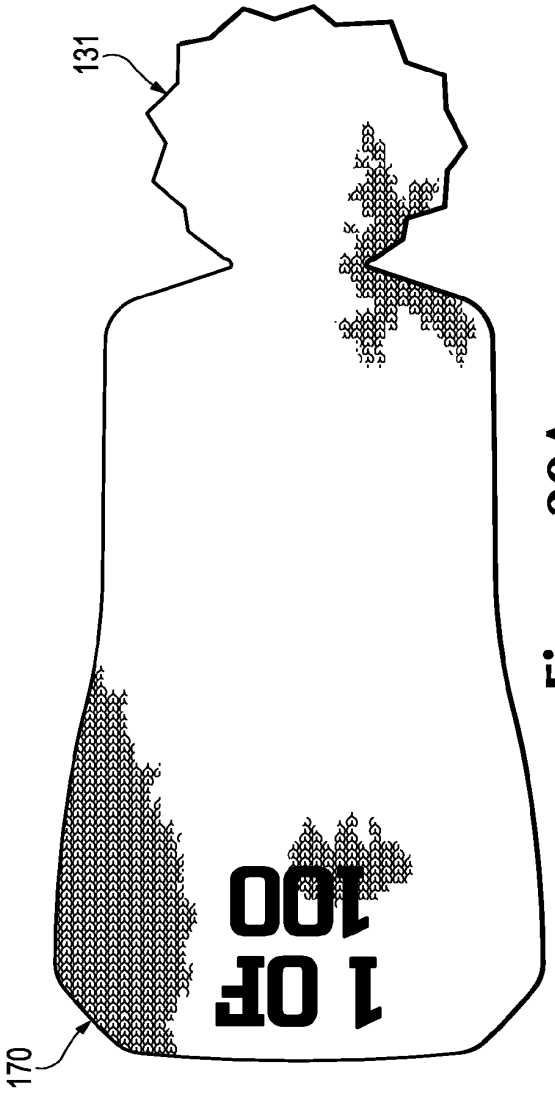



Figure 39A

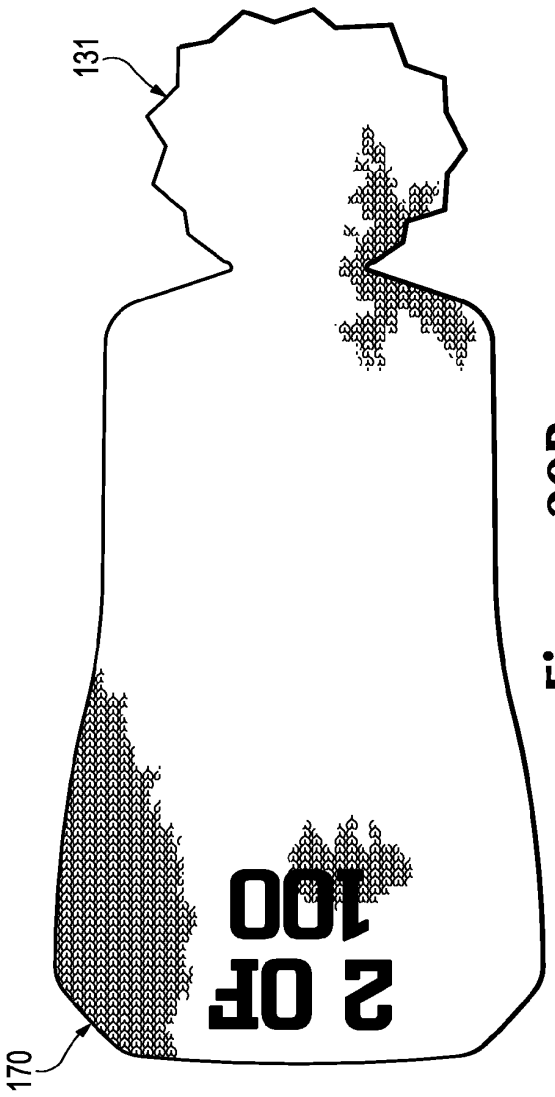



Figure 39B

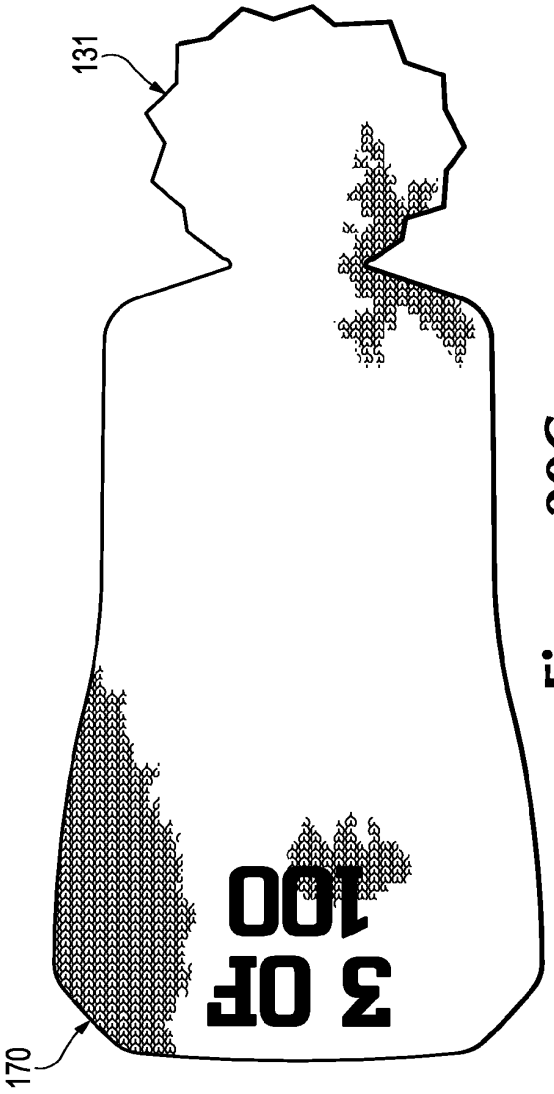



Figure 39C

# PATENT COOPERATION TREATY

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From the INTERNATIONAL SEARCHING AUTHORITY

**PCT**

To:
Gibson, Eric M.
PLUMSEA LAW GROUP, LLC
10411 Motor City Drive, Suite 320
Bethesda, MD 20817
ETATS-UNIS D'AMERIQUE

DOCKETED 8/6/2014
PDF WDF/MLA
ISR

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT AND THE WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

| | |
|---|---|
| Applicant's or agent's file reference<br>51-3930 | Date of mailing *(day/month/year)*<br>30 July 2014 (30-07-2014)<br>**FOR FURTHER ACTION** See paragraphs 1 and 4 below |
| International application No.<br>PCT/US2014/018845 | International filing date *(day/month/year)*<br>27 February 2014 (27-02-2014) |
| Applicant<br>NIKE INTERNATIONAL LTD | |

1. [X] The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

   **Filing of amendments and statement under Article 19:**
   The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

   **When?** The time limit for filing such amendments is normally two months from the date of transmittal of the International Search Report.

   **How?** Directly to the International Bureau of WIPO, 34 chemin des Colombettes 1211 Geneva 20, Switzerland, Fascimile No.: (41-22) 338.82.70

   **For more detailed instructions, see** *PCT Applicant's Guide*, International Phase, paragraphs 9.004 - 9.011.

2. [ ] The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. [ ] **With regard to any protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

   [ ] the protest together with the decision thereon has been transmitted to the International Bureau together with any applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

   [ ] no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

   The applicant may **submit comments on an informal basis on the written opinion of the International Searching Authority** to the International Bureau. These comments will be made available to the public after international publication. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established.

   Shortly after the expiration of **18 months from the priority date, the international application will be published** by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau before the completion of the technical preparations for international publication (Rules 90*bis*.1 and 90*bis*.3).

   Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase **until 30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for **entry into the national phase** before those designated Offices. In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months. For details about the applicable time limits, Office by Office, see www.wipo.int/pct/en/texts/time_limits.html and the *PCT Applicant's Guide*, National Chapters.

   Within **19 months from the priority date, the applicant may request that a supplementary international search be carried out** by a different International Searching Authority that offers this service (Rule 45*bis*.1). The procedure for requesting supplementary international search is described in the *PCT Applicant's Guide*, International Phase, paragraphs 8.006-8.032.

| Name and mailing address of the International Searching Authority | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2<br>NL-2280 HV Rijswijk<br>Tel. (+31-70) 340-2040<br>Fax: (+31-70) 340-3016 | DE BRUIJN, John<br>Tel: +31 (0)70 340-3077 |

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# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| Applicant's or agent's file reference | FOR FURTHER ACTION | see Form PCT/ISA/220 as well as, where applicable, item 5 below. |
|---|---|---|
| 51-3930 | | |
| International application No. | International filing date *(day/month/year)* | (Earliest) Priority Date *(day/month/year)* |
| PCT/US2014/018845 | 27 February 2014 (27-02-2014) | 28 February 2013 (28-02-2013) |
| Applicant | | |
| NIKE INTERNATIONAL LTD. | | |

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 5 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. **Basis of the report**
   a. With regard to the **language,** the international search was carried out on the basis of:
      [X] the international application in the language in which it was filed
      [ ] a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b))
   b. [ ] This international search report has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43.6*bis*(a)).
   c. [ ] With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. [X] **Certain claims were found unsearchable** (See Box No. II)

3. [ ] **Unity of invention is lacking** (see Box No III)

4. With regard to the **title,**
   [X] the text is approved as submitted by the applicant
   [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**
   [X] the text is approved as submitted by the applicant
   [ ] the text has been established, according to Rule 38.2, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority

6. With regard to the **drawings,**
   a. the figure of the **drawings** to be published with the abstract is Figure No. 1
      [X] as suggested by the applicant
      [ ] as selected by this Authority, because the applicant failed to suggest a figure
      [ ] as selected by this Authority, because this figure better characterizes the invention
   b. [ ] none of the figures is to be published with the abstract

Form PCT/ISA/210 (first sheet) (July 2009)

# INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2014/018845

**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 21-27
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

International application No
PCT/US2014/018845

A. CLASSIFICATION OF SUBJECT MATTER
INV. A43B1/04 A43B23/04 A43B23/26
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A43B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | US 2005/115284 A1 (DUA BHUPESH [US])<br>2 June 2005 (2005-06-02)<br><br>the whole document | 1-4,<br>8-10,<br>13-16,<br>19,20 |
| X | US 1 888 172 A (JOHA ELMER N)<br>15 November 1932 (1932-11-15)<br>the whole document | 1-3,7,<br>13-15,18 |
| X,P | WO 2013/126313 A2 (NIKE INTERNATIONAL LTD;<br>TATLER DAREN P [US]; PODHAJNY DANIEL A<br>[US]) 29 August 2013 (2013-08-29)<br>paragraph [0137] - paragraph [0162];<br>figures 25-39 | 1-8,10,<br>11,13-19 |

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 23 July 2014 | 30/07/2014 |

| Name and mailing address of the ISA/ | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040,<br>Fax: (+31-70) 340-3016 | Millward, Richard |

1

Form PCT/ISA/210 (second sheet) (April 2005)

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2014/018845

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| US 2005115284 A1 | 02-06-2005 | US 6931762 B1 | 23-08-2005 |
| | | US 2005115284 A1 | 02-06-2005 |
| | | US 2006130359 A1 | 22-06-2006 |
| US 1888172 A | 15-11-1932 | NONE | |
| WO 2013126313 A2 | 29-08-2013 | TW 201402030 A | 16-01-2014 |
| | | US 8448474 B1 | 28-05-2013 |
| | | US 2013212907 A1 | 22-08-2013 |
| | | US 2014144190 A1 | 29-05-2014 |
| | | US 2014150296 A1 | 05-06-2014 |
| | | WO 2013126313 A2 | 29-08-2013 |

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

Continuation of Box II.2

Claims Nos.: 21-27

The present application contains 27 claims, of which claims 1,13 and 21 are independent product claims. There is no clear distinction between the independent claims because of overlapping scope. There are so many independent claims, and they are drafted in such a way that the claims as a whole are not in compliance with the provisions of clarity and conciseness of Article 6 PCT, as it is particularly burdensome for a skilled person to establish the subject-matter for which protection is sought. The non-compliance with the substantive provisions is to such an extent, that the search was performed taking into consideration the non-compliance in determining the extent of the search (PCT Guidelines 9.19 and 9.25).

The search was based on the subject-matter that, as far as can be understood, could reasonably be expected to be claimed later in the procedure, and the corresponding claims, namely claims 1 and 13.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guidelines C-IV, 7.2), should the problems which led to the Article 17(2) declaration be overcome.

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# PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

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PCT

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43*bis*.1)

Date of mailing
*(day/month/year)* see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

**FOR FURTHER ACTION**
See paragraph 2 below

| International application No. | International filing date *(day/month/year)* | Priority date *(day/month/year)* |
|---|---|---|
| PCT/US2014/018845 | 27.02.2014 | 28.02.2013 |

International Patent Classification (IPC) or both national classification and IPC
INV. A43B1/04 A43B23/04 A43B23/26

Applicant
NIKE INTERNATIONAL LTD.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notifed the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

| Name and mailing address of the ISA: | Date of completion of this opinion | Authorized Officer |
|---|---|---|
| European Patent Office<br>P.B. 5818 Patentlaan 2<br>NL-2280 HV Rijswijk - Pays Bas<br>Tel. +31 70 340 - 2040<br>Fax: +31 70 340 - 3016 | see form PCT/ISA/210 | Millward, Richard<br>Telephone No. +31 70 340-3345 |

Form PCT/ISA/237 (Cover Sheet) (July 2009)

**Box No. I Basis of the opinion**

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:

   a. (means)

      ☐ on paper

      ☐ in electronic form

   b. (time)

      ☐ in the international application as filed

      ☐ together with the international application in electronic form

      ☐ subsequently to this Authority for the purposes of search

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

**Box No. II Priority**

1. ☒ The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43*bis*.1 and 64.1) is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of

☐ the entire international application

☒ claims Nos. 21-27

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international search *(specify)*:

☐ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. are so unclear that no meaningful opinion could be formed *(specify)*:

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed *(specify)*:

☒ no international search report has been established for the whole application or for said claims Nos. 21-27

☐ a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:

- ☐ furnish a sequence listing on paper complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.
- ☐ furnish a sequence listing in electronic form complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.
- ☐ pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rules 13*ter*.1(a) or (b).

☒ See Supplemental Box for further details

**Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

| | | | |
|---|---|---|---|
| Novelty (N) | Yes: | Claims | 5, 6, 11, 12, 17 |
| | No: | Claims | 1-4, 7-10, 13-16, 18-20 |
| Inventive step (IS) | Yes: | Claims | 5, 6, 11, 12, 17 |
| | No: | Claims | 1-4, 7-10, 13-16, 18-20 |
| Industrial applicability (IA) | Yes: | Claims | 1-20 |
| | No: | Claims | |

2. Citations and explanations

**see separate sheet**

**Box No. VI Certain documents cited**

1. Certain published documents (Rules 43*bis*.1 and 70.10)

and / or

2. Non-written disclosures (Rules 43*bis*.1 and 70.9)

**see form 210**

**Box No. VII Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

**see separate sheet**

Re Item III

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1 The present application contains 27 claims, of which claims 1,13 and 21 are independent product claims. There is no clear distinction between the independent claims because of overlapping scope. There are so many independent claims, and they are drafted in such a way that the claims as a whole are not in compliance with the provisions of clarity and conciseness of Article 6 PCT, as it is particularly burdensome for a skilled person to establish the subject-matter for which protection is sought.

1.1 The non-compliance with the substantive provisions is to such an extent, that the search was performed taking into consideration the non-compliance in determining the extent of the search (PCT Guidelines 9.19 and 9.25).

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

2 Reference is made to the following documents:

D1 US 2005/115284 A1 (DUA BHUPESH [US]) 2 June 2005 (2005-06-02)

D2 US 1 888 172 A (JOHA ELMER N) 15 November 1932 (1932-11-15)

3 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

3.1 The document D1 discloses:

An article of footwear (10; figure 1; paragraph 0020) having

an upper (30) and a sole structure (20) secured to the upper,

the article of footwear (10) incorporating a knitted component (paragraphs 0023-0031)

comprising: a portion of the knitted component defining the upper (30), the upper including a portion of at least one of an exterior surface of the knitted component and an opposite interior surface of the knitted component, the interior surface defining a void for receiving a foot (figures 1 and 3); and

an integral knit tongue (33) formed of unitary knit construction with the upper and extending through a throat area of the knitted component; and
wherein the integral knit tongue (33) is joined to a forward portion of the throat area and at least along a portion of a lateral side and a medial side of the throat area of the knitted component extending from the forward portion to an ankle opening of the upper (figures 1 and 3).

3.1.1 Therefore, the subject-matter of claim 1 is not new (Article 33(2) PCT).

3.2 The same objection applies *mutatis mutandis* to the subject-matter of claim 13, which is also consequently, not new (Article 33(2)PCT)

4 Regarding the dependent claims:

4.1 Dependent claims 2-4,7-10,14-16 and 18-20 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/ or inventive step, since those features are known from either or both of D1 and D2 (see the search report for indication).

4.2 The combination of the features of dependent claims 5,6,11,12 and 17 is neither known from, nor rendered obvious by, the available prior art. There would be no motivation, based on the teachings of the currently available prior art, for the skilled man to modify the shoes/knitted components of D1 or D2 such as to arrive at any of the said claims.

**Re Item VI**

**Certain documents cited**

| Application No<br>Patent No | Publication date<br>*(day/month/year)* | Filing date<br>*(day/month/year)* | Priority date *(valid claim)*<br>*(day/month/year)* |
|---|---|---|---|
| WO2013/126313 | 29/08/2013 | 19/02/2013 | 20/02/2012 |

5 The current assessment is based on the assumption that all claims enjoy priority rights from the filing date of the priority document. If it later turns out that this is not correct, the document listed above could become relevant.

**Re Item VII**

**Certain defects in the international application**

6 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in D1 or D2 is not mentioned in the description, nor are these documents identified therein.

7 Independent claims 1 and 13 are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art being placed in the preamble (Rule 6.3(b)(i) PCT) and the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

8 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

9 Claim 1 has all the features of claim 13, and is therefore not appropriately formulated as a claim dependent on the latter (Rule 6.4 PCT).

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 19838740 |
| **Application Number:** | 13781525 |
| **International Application Number:** | |
| **Confirmation Number:** | 7689 |
| **Title of Invention:** | Article Of Footwear Incorporating A Knitted Component With An Integral Knit Tongue |
| **First Named Inventor/Applicant Name:** | Bhupesh Dua |
| **Customer Number:** | 57618 |
| **Filer:** | Eric M. Gibson/Jose Espejo |
| **Filer Authorized By:** | Eric M. Gibson |
| **Attorney Docket Number:** | 51-3209 |
| **Receipt Date:** | 12-AUG-2014 |
| **Filing Date:** | 28-FEB-2013 |
| **Time Stamp:** | 11:47:12 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | no |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Information Disclosure Statement (IDS) Form (SB08) | 2014-08-12_51-3209_IDS.pdf | 28663<br>a655a353ab65ad0b5affb69d01ba6fa887d19055 | no | 3 |

| | |
|---|---|
| **Warnings:** | |
| **Information:** | |

| This is not an USPTO supplied IDS fillable form | | | | | |
|---|---|---|---|---|---|
| 2 | Foreign Reference | 2014-08-12_51-3209_IDS_WO2013126313A2.pdf | 4331204<br>42660954ecf0b1a254ae72babc4f8ab7e5fe493f | no | 125 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 3 | Non Patent Literature | 2014-08-12_51-3209_IDS_ISR.pdf | 756381<br>740cacee55922f1e00f1ce16a803b0707f49cc4a | no | 13 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | **Total Files Size (in bytes):** | 5116248 | | |

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**New Applications Under 35 U.S.C. 111**
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

**IN THE UNITED STATES PATENT & TRADEMARK OFFICE**

| | | | |
|---|---|---|---|
| Appln. No. | : | 13/781,525 | Confirmation No. 7689 |
| Applicant | : | Bhupesh DUA | |
| Filed | : | 2/28/2013 | |
| Title | : | Article Of Footwear Incorporating A Knitted Component With An Integral Knit Tongue | |
| TC/A.U. | : | 3765 | |
| Examiner | : | Larry D. Worrell, Jr. | |
| Attorney Docket No.: | | 51-3209 | |
| Customer No. | : | 57618 | |

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**PRELIMINARY AMENDMENT**

Please amend the above-identified application as follows:

**Amendments to the Specification** begin on page 2 of this paper.

**Remarks/Arguments** begin on page 4 of this paper.

**Amendments to the Specification**

Please replace paragraph [00111] with the following amended paragraph:

**[00111]** In this embodiment, a first yarn 1801 from a spool (not shown) passes through first standard feeder 1800 and an end of yarn 1801 extends outward from a dispensing tip at the end of first standard feeder 1800. Although yarn 1801 is depicted, any other strand (e.g., filament, thread, rope, webbing, cable, chain, or yarn) may pass through first standard feeder 1800. A second yarn 1803 similarly passes through second standard feeder 1802 and extends outward from a dispensing tip. In an exemplary embodiment, first yarn 1801 and second yarn 1803 may be used to form portions of ~~second~~first knitted component 500. In this embodiment, loops of first yarn 1801 are shown forming an uppermost course of medial heel edge 507 of ~~second~~first knitted component 500 and are held by hooks located on ends of needles 1703 and needles 1704. Similarly, loops of second yarn 1803 may be used to form lateral heel edge 506 of ~~second~~first knitted component 500.

Please replace paragraph [00112] with the following amended paragraph:

**[00112]** Next, as shown in FIG. 19, knitting machine 1700 may use a similar process to add additional courses to the material forming ~~second~~first knitted component 500 to form further portions, including lateral perimeter edge 504, medial perimeter edge 505, lateral inner edge 508, medial inner edge 509, and front inner edge 510 of integral knit tongue 512. In this embodiment, first standard feeder 1800 and second standard feeder 1802 may form integral knit tongue 512 according to the loop diagram illustrated in FIG. 16, above. FIG. 20 illustrates knitting machine 1700 completing the courses associated with knitting integral knit tongue 512, lateral raised element 514, medial raised element 515, and a portion of the rest of ~~second~~first knitted component 500 forming upper 502. FIG. 21 illustrates knitting machine 1700 nearly completing the knitting process of forming ~~second~~first knitted component 500. By adding additional courses using a similar process, ~~second~~first knitted component 500 may be completed.

## REMARKS

This Preliminary Amendment is submitted prior to the issuance of a First Office Action. The specification has been amended to correct typographical errors. No new matter has been added.

All of the pending claims in this application are believed to be in condition for allowance. No fee is believed due. Should the Examiner have any questions or determine that any further action is desirable to place this application in even better condition for allowance, the Examiner is encouraged to contact the Applicant's representative at the number listed below.

Any fee for consideration of this response is hereby authorized to be charged to Deposit Account Number 502846.

Respectfully submitted,

PLUMSEA LAW GROUP, LLC

Date: August 22, 2014 By: /Eric M. Gibson/

Eric M. Gibson
Registration Number: 59,058
Telephone number: 301-365-9040

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 19935826 |
| **Application Number:** | 13781525 |
| **International Application Number:** | |
| **Confirmation Number:** | 7689 |
| **Title of Invention:** | Article Of Footwear Incorporating A Knitted Component With An Integral Knit Tongue |
| **First Named Inventor/Applicant Name:** | Bhupesh Dua |
| **Customer Number:** | 57618 |
| **Filer:** | Eric M. Gibson/Jose Espejo |
| **Filer Authorized By:** | Eric M. Gibson |
| **Attorney Docket Number:** | 51-3209 |
| **Receipt Date:** | 22-AUG-2014 |
| **Filing Date:** | 28-FEB-2013 |
| **Time Stamp:** | 09:46:15 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | no |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Preliminary Amendment | 2014-08-22_51-3209_Preliminary_Amendment_Specification.pdf | 73686<br>a9306ed95b9212415d6235c71cfb432b94561f38 | no | 4 |

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|---|---|
| **Warnings:** | |
| **Information:** | |

| | |
|---|---|
| **Total Files Size (in bytes):** | 73686 |

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**New Applications Under 35 U.S.C. 111**
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

( **Not for submission under 37 CFR 1.99)**

| | |
|---|---|
| Application Number | 13781525 |
| Filing Date | 2013-02-28 |
| First Named Inventor | Bhupesh Dua |
| Art Unit | 3765 |
| Examiner Name | Larry D. Worrell Jr. |
| Attorney Docket Number | 51-3209 |

**U.S.PATENTS**

| Examiner Initial* | Cite No | Patent Number | Kind Code[1] | Issue Date | Name of Patentee or Applicant of cited Document | Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear |
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**U.S.PATENT APPLICATION PUBLICATIONS**

| Examiner Initial* | Cite No | Publication Number | Kind Code[1] | Publication Date | Name of Patentee or Applicant of cited Document | Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear |
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**FOREIGN PATENT DOCUMENTS**

| Examiner Initial* | Cite No | Foreign Document Number[3] | Country Code[2] | Kind Code[4] | Publication Date | Name of Patentee or Applicant of cited Document | Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear | T[5] |
|---|---|---|---|---|---|---|---|---|
| | 1 | 00/30480 | WO | | 2000-06-02 | KUNERT GES MBH | | ☐ |

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| Examiner Initials* | Cite No | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published. | T[5] |
|---|---|---|---|

| INFORMATION DISCLOSURE STATEMENT BY APPLICANT ( Not for submission under 37 CFR 1.99) | | |
|---|---|---|
| | Application Number | 13781525 |
| | Filing Date | 2013-02-28 |
| | First Named Inventor | Bhupesh Dua |
| | Art Unit | 3765 |
| | Examiner Name | Larry D. Worrell Jr. |
| | Attorney Docket Number | 51-3209 |

| | | | |
|---|---|---|---|
| | 1 | International Preliminary Report on Patentability (including Written Opinion of the ISA) mailed September 4, 2014 in International Application Number PCT/US2013/026618. | ☐ |

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**EXAMINER SIGNATURE**

| Examiner Signature | | Date Considered | |
|---|---|---|---|

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

| INFORMATION DISCLOSURE STATEMENT BY APPLICANT ( **Not for submission under 37 CFR 1.99)** | | |
|---|---|---|
| | Application Number | 13781525 |
| | Filing Date | 2013-02-28 |
| | First Named Inventor | Bhupesh Dua |
| | Art Unit | 3765 |
| | Examiner Name | Larry D. Worrell Jr. |
| | Attorney Docket Number | 51-3209 |

**CERTIFICATION STATEMENT**

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

**OR**

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

**SIGNATURE**

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

| Signature | /Eric M. Gibson/ | Date (YYYY-MM-DD) | 2014-09-30 |
|---|---|---|---|
| Name/Print | Eric M. Gibson | Registration Number | 59,058 |

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

**PCT** WELTORGANISATION FÜR GEISTIGES EIGENTUM
Internationales Büro

INTERNATIONALE ANMELDUNG VERÖFFENTLICHT NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES PATENTWESENS (PCT)

**(51) Internationale Patentklassifikation 7 :**
**A41B 11/10, D04B 1/26**

**A1**

**(11) Internationale Veröffentlichungsnummer: WO 00/30480**

**(43) Internationales Veröffentlichungsdatum:** 2. Juni 2000 (02.06.00)

**(21) Internationales Aktenzeichen:** PCT/AT99/00264

**(22) Internationales Anmeldedatum:** 4. November 1999 (04.11.99)

**(30) Prioritätsdaten:**
GM 771/98 19. November 1998 (19.11.98) AT

**(71) Anmelder:** KUNERT GESELLSCHAFT mbH [AT/AT]; Schweizer Strasse 96, A–6830 Rankweil (AT).

**(72) Erfinder:** KATZENSCHLAGER, Siegfried; Schweizer Strasse 96, A–6830 Rankweil (AT).

**(74) Anwälte:** HOLZER, Walter usw.; Schottenring 16, Börsegebäude, A–1010 Wien (AT).

**(81) Bestimmungsstaaten:** DE (Gebrauchsmuster), FI (Gebrauchsmuster), NO, europäisches Patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

**Veröffentlicht**
*Mit internationalem Recherchenbericht.*

**(54) Title:** HOSIERY FOOTLET

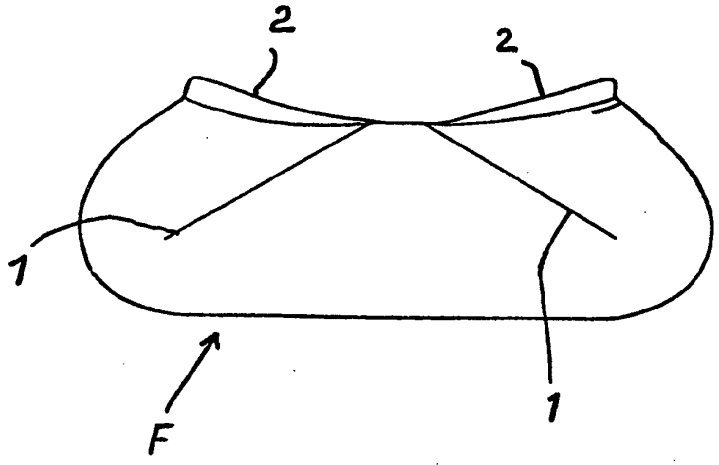
**(54) Bezeichnung:** FEINSTRUMPFFÜSSLING

**(57) Abstract**

The invention relates to a hosiery footlet which is knitted without seam from two heels (1) and has a knitted collar (2) consisting of a simple rim with elastane trim.

**(57) Zusammenfassung**

Feinstrumpffüssling, der nahtlos mit zwei Pendelfersen (1) gestrickt ist und einen Strickbund (2) aus einem Einfachrand mit Elasthanbesetzung aufweist.



*LEDIGLICH ZUR INFORMATION*

Codes zur Identifizierung von PCT-Vertragsstaaten auf den Kopfbögen der Schriften, die internationale Anmeldungen gemäss dem PCT veröffentlichen.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **AL** | Albanien | **ES** | Spanien | **LS** | Lesotho | **SI** | Slowenien |
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# Feinstrumpffüßling

Die Erfindung betrifft einen Feinstrumpffüßling.

Es ist bekannt, derartige Füßlinge aus gestrickten Schläuchen herzustellen, die an der Sohle und/oder am Bund vernäht werden. Diese Ausführung hat den Nachteil, daß sie Druckstellen erzeugen kann.

Die Erfindung zielt darauf ab, einen Feinstrumpffüßling zu schaffen, der für Konsumenten im Sommer eine hygienische Alternative zu Strümpfen, Socken, Strumpfhosen u.dgl. darstellt, insbesondere beim Tragen geschlossener Schuhe.

Der erfindungsgemäße Feinstrumpffüßling zeichnet sich dadurch aus, daß er nahtlos mit zwei Pendelfersen gestrickt ist und einen Strickbund aus einem Einfachrand mit Elasthanbesetzung aufweist.

Die Erfindung wird nachfolgend an einem Ausführungsbeispiel unter Bezugnahme auf die Zeichnung näher erläutert, in welcher ein Füßling gemäß der Erfindung schematisch dargestellt ist.

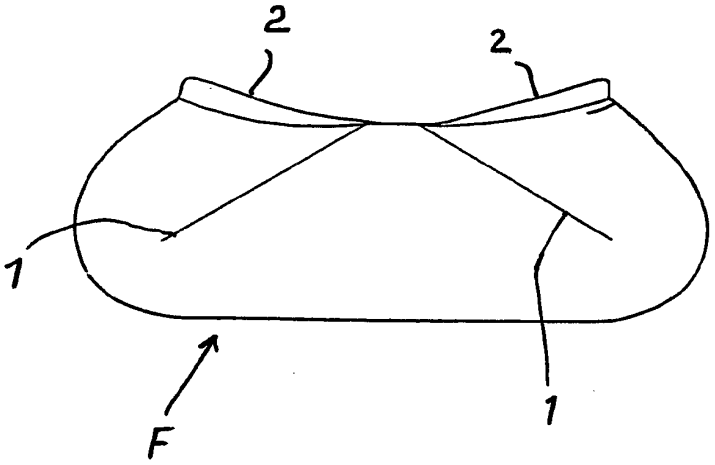
Der nahtlose Feinstrumpffüßling weist einen einstückig gestrickten Fußteil F auf, der auf einem üblichen Feinstrumpfautomaten mit einer Pendeleinrichtung mit zwei aufeinanderfolgend gestrickten Pendelfersen hergestellt wird. Am Beginn und am Ende des Strickvorganges wird als Strickbund 2 ein Einfachrand ohne Überhang der Fäden erzeugt, welcher aus Elasthan besteht und das Produkt abschließt. Durch einen starken Einzug des Elasthangarnes im Einfachrand wird ein Auflösen des Gestrickes verhindert.

Der Fußteil kann aus BW-Umwindungsgarn, aus PA-Texturgarn u.dgl. hergestellt werden.

Ansprüche:

1. Feinstrumpffüßling, dadurch gekennzeichnet, daß er nahtlos mit zwei Pendelfersen (1) gestrickt ist und einen Strickbund (2) aus einem Einfachrand mit Elasthanbesetzung aufweist.

2. Feinstrumpffüßling nach Anspruch 1, dadurch gekennzeichnet, daß er aus BW-Umwindungsgarn oder PA-Texturgarn hergestellt ist.


2
2
1
F
1

# INTERNATIONAL SEARCH REPORT

Inte onal Application No
PCT/AT 99/00264

**A. CLASSIFICATION OF SUBJECT MATTER**
IPC 7 A41B11/10 D04B1/26

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A41B D04B A43B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | EP 0 632 972 A (PEDRINI GM CALZIFICIO)<br>11 January 1995 (1995-01-11)<br>column 1, line 25 - line 26<br>column 1, line 51 -column 2, line 17;<br>figure<br>--- | 1 |
| A | US 3 600 909 A (KAPLAN MORRIS)<br>24 August 1971 (1971-08-24)<br>column 1, line 25<br>column 1, line 41<br>column 2, line 4; claim 1; figures 1,2<br>--- | 1,2 |
| A | DE 35 03 891 A (ESDA STRUMPFKOMBINAT VEB)<br>19 September 1985 (1985-09-19)<br>page 2, paragraph 5 -page 3, paragraph 1<br>---<br>-/-- | 1 |

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 14 January 2000 | 24/01/2000 |

| Name and mailing address of the ISA | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040, Tx. 31 651 epo nl.<br>Fax: (+31-70) 340-3016 | Monné, E |

Form PCT/ISA/210 (second sheet) (July 1992)

# INTERNATIONAL SEARCH REPORT

Inte onal Application No
PCT/AT 99/00264

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication,where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | US 3 143 870 A (SMITH)<br>11 August 1964 (1964-08-11)<br>column 1, line 18<br>column 2, line 13<br>column 2, line 48 - line 50; figures 1,2 | 1 |
| A | US 3 059 458 A (SARBO)<br>23 October 1962 (1962-10-23)<br>column 1, line 38<br>column 2, line 38 - line 40<br>column 2, line 47<br>column 2, line 55; figures | 1,2 |

1

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte onal Application No
PCT/AT 99/00264

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| EP 0632972 A | 11-01-1995 | IT 1262758 B | 04-07-1996 |
| | | AT 142851 T | 15-10-1996 |
| | | DE 69400558 D | 24-10-1996 |
| | | DE 69400558 T | 06-02-1997 |
| | | DK 632972 T | 30-12-1996 |
| | | ES 2092391 T | 16-11-1996 |
| | | GR 3021521 T | 31-01-1997 |
| | | SI 632972 T | 30-04-1999 |
| US 3600909 A | 24-08-1971 | NONE | |
| DE 3503891 A | 19-09-1985 | DD 223475 A | 12-06-1985 |
| | | IT 1180735 B | 23-09-1987 |
| US 3143870 A | 11-08-1964 | NONE | |
| US 3059458 A | 23-10-1962 | CH 390838 A | |
| | | DE 1231384 B | 29-12-1966 |
| | | FR 1241388 A | 21-12-1960 |
| | | GB 907207 A | |
| | | LU 37875 A | |

Form PCT/ISA/210 (patent family annex) (July 1992)

# INTERNATIONALER RECHERCHENBERICHT

Inte onales Aktenzeichen
PCT/AT 99/00264

**A. KLASSIFIZIERUNG DES ANMELDUNGSGEGENSTANDES**
IPK 7 A41B11/10 D04B1/26

Nach der internationalen Patentklassifikation (IPK) oder nach der nationalen Klassifikation und der IPK

**B. RECHERCHIERTE GEBIETE**

Recherchierter Mindestprüfstoff (Klassifikationssystem und Klassifikationssymbole )
IPK 7 A41B D04B A43B

Recherchierte aber nicht zum Mindestprüfstoff gehörende Veröffentlichungen, soweit diese unter die recherchierten Gebiete fallen

Während der internationalen Recherche konsultierte elektronische Datenbank (Name der Datenbank und evtl. verwendete Suchbegriffe)

**C. ALS WESENTLICH ANGESEHENE UNTERLAGEN**

| Kategorie° | Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile | Betr. Anspruch Nr. |
|---|---|---|
| A | EP 0 632 972 A (PEDRINI GM CALZIFICIO)<br>11. Januar 1995 (1995-01-11)<br>Spalte 1, Zeile 25 - Zeile 26<br>Spalte 1, Zeile 51 -Spalte 2, Zeile 17;<br>Abbildung<br>--- | 1 |
| A | US 3 600 909 A (KAPLAN MORRIS)<br>24. August 1971 (1971-08-24)<br>Spalte 1, Zeile 25<br>Spalte 1, Zeile 41<br>Spalte 2, Zeile 4; Anspruch 1; Abbildungen<br>1,2<br>--- | 1,2 |
| A | DE 35 03 891 A (ESDA STRUMPFKOMBINAT VEB)<br>19. September 1985 (1985-09-19)<br>Seite 2, Absatz 5 -Seite 3, Absatz 1<br>---<br>-/-- | 1 |

[X] Weitere Veröffentlichungen sind der Fortsetzung von Feld C zu entnehmen

[X] Siehe Anhang Patentfamilie

° Besondere Kategorien von angegebenen Veröffentlichungen :

"A" Veröffentlichung, die den allgemeinen Stand der Technik definiert, aber nicht als besonders bedeutsam anzusehen ist

"E" älteres Dokument, das jedoch erst am oder nach dem internationalen Anmeldedatum veröffentlicht worden ist

"L" Veröffentlichung, die geeignet ist, einen Prioritätsanspruch zweifelhaft erscheinen zu lassen, oder durch die das Veröffentlichungsdatum einer anderen im Recherchenbericht genannten Veröffentlichung belegt werden soll oder die aus einem anderen besonderen Grund angegeben ist (wie ausgeführt)

"O" Veröffentlichung, die sich auf eine mündliche Offenbarung, eine Benutzung, eine Ausstellung oder andere Maßnahmen bezieht

"P" Veröffentlichung, die vor dem internationalen Anmeldedatum, aber nach dem beanspruchten Prioritätsdatum veröffentlicht worden ist

"T" Spätere Veröffentlichung, die nach dem internationalen Anmeldedatum oder dem Prioritätsdatum veröffentlicht worden ist und mit der Anmeldung nicht kollidiert, sondern nur zum Verständnis des der Erfindung zugrundeliegenden Prinzips oder der ihr zugrundeliegenden Theorie angegeben ist

"X" Veröffentlichung von besonderer Bedeutung; die beanspruchte Erfindung kann allein aufgrund dieser Veröffentlichung nicht als neu oder auf erfinderischer Tätigkeit beruhend betrachtet werden

"Y" Veröffentlichung von besonderer Bedeutung; die beanspruchte Erfindung kann nicht als auf erfinderischer Tätigkeit beruhend betrachtet werden, wenn die Veröffentlichung mit einer oder mehreren anderen Veröffentlichungen dieser Kategorie in Verbindung gebracht wird und diese Verbindung für einen Fachmann naheliegend ist

"&" Veröffentlichung, die Mitglied derselben Patentfamilie ist

| Datum des Abschlusses der internationalen Recherche | Absendedatum des internationalen Recherchenberichts |
|---|---|
| 14. Januar 2000 | 24/01/2000 |

| Name und Postanschrift der internationalen Recherchenbehörde | Bevollmächtigter Bediensteter |
|---|---|
| Europäisches Patentamt. P.B. 5818 Patentlaan 2<br>NL – 2280 HV Rijswijk<br>Tel. (+31–70) 340–2040. Tx. 31 651 epo nl,<br>Fax: (+31–70) 340–3016 | Monné, E |

1

Formblatt PCT/ISA/210 (Blatt 2) (Juli 1992)

# INTERNATIONALER RECHERCHENBERICHT

Inte. ɔnales Aktenzeichen
PCT/AT 99/00264

C.(Fortsetzung) ALS WESENTLICH ANGESEHENE UNTERLAGEN

| Kategorie° | Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile | Betr. Anspruch Nr. |
|---|---|---|
| A | US 3 143 870 A (SMITH)<br>11. August 1964 (1964-08-11)<br>Spalte 1, Zeile 18<br>Spalte 2, Zeile 13<br>Spalte 2, Zeile 48 - Zeile 50; Abbildungen<br>1,2 | 1 |
| A | US 3 059 458 A (SARBO)<br>23. Oktober 1962 (1962-10-23)<br>Spalte 1, Zeile 38<br>Spalte 2, Zeile 38 - Zeile 40<br>Spalte 2, Zeile 47<br>Spalte 2, Zeile 55; Abbildungen | 1,2 |

1

Formblatt PCT/ISA/210 (Fortsetzung von Blatt 2) (Juli 1992)

## INTERNATIONALER RECHERCHENBERICHT

Inte ›nales Aktenzeichen
PCT/AT 99/00264

| Im Recherchenbericht angeführtes Patentdokument | Datum der Veröffentlichung | Mitglied(er) der Patentfamilie | Datum der Veröffentlichung |
|---|---|---|---|
| EP 0632972 A | 11-01-1995 | IT 1262758 B | 04-07-1996 |
| | | AT 142851 T | 15-10-1996 |
| | | DE 69400558 D | 24-10-1996 |
| | | DE 69400558 T | 06-02-1997 |
| | | DK 632972 T | 30-12-1996 |
| | | ES 2092391 T | 16-11-1996 |
| | | GR 3021521 T | 31-01-1997 |
| | | SI 632972 T | 30-04-1999 |
| US 3600909 A | 24-08-1971 | KEINE | |
| DE 3503891 A | 19-09-1985 | DD 223475 A | 12-06-1985 |
| | | IT 1180735 B | 23-09-1987 |
| US 3143870 A | 11-08-1964 | KEINE | |
| US 3059458 A | 23-10-1962 | CH 390838 A | |
| | | DE 1231384 B | 29-12-1966 |
| | | FR 1241388 A | 21-12-1960 |
| | | GB 907207 A | |
| | | LU 37875 A | |

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IPER

**PATENT COOPERATION TREATY**



From the INTERNATIONAL BUREAU

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# PCT

NOTIFICATION CONCERNING TRANSMITTAL OF COPY OF INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (CHAPTER I OF THE PATENT COOPERATION TREATY)
(PCT Rule 44bis.1(c))

To:

GIBSON, Eric, M.
Plumsea Law Group, LLC
10411 Motor City Drive, Suite 320
Bethesda, MD 20817
ETATS-UNIS D'AMERIQUE

Date of mailing *(day/month/year)*
04 September 2014 (04.09.2014)

Applicant's or agent's file reference
51-3178

**IMPORTANT NOTICE**

| International application No. | International filing date *(day/month/year)* | Priority date *(day/month/year)* |
|---|---|---|
| PCT/US2013/026618 | 19 February 2013 (19.02.2013) | 20 February 2012 (20.02.2012) |

Applicant
NIKE INTERNATIONAL LTD. et al

The International Bureau transmits herewith a copy of the international preliminary report on patentability (Chapter I of the Patent Cooperation Treaty).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. +41 22 338 82 70

Authorized officer
Philippe Bécamel

e-mail: pt03.pct@wipo.int

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**PATENT COOPERATION TREATY**

# PCT

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## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

| | | |
|---|---|---|
| Applicant's or agent's file reference<br>51-3178 | **FOR FURTHER ACTION** See item 4 below | |
| International application No.<br>PCT/US2013/026618 | International filing date *(day/month/year)*<br>19 February 2013 (19.02.2013) | Priority date *(day/month/year)*<br>20 February 2012 (20.02.2012) |
| International Patent Classification (8th edition unless older edition indicated)<br>See relevant information in Form PCT/ISA/237 | | |
| Applicant<br>NIKE INTERNATIONAL LTD. | | |

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 8 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

| | | |
|---|---|---|
| ☒ | Box No. I | Basis of the report |
| ☐ | Box No. II | Priority |
| ☒ | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| ☒ | Box No. IV | Lack of unity of invention |
| ☒ | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| ☐ | Box No. VI | Certain documents cited |
| ☒ | Box No. VII | Certain defects in the international application |
| ☒ | Box No. VIII | Certain observations on the international application |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

| | |
|---|---|
| | Date of issuance of this report<br>26 August 2014 (26.08.2014) |
| The International Bureau of WIPO<br>34, chemin des Colombettes<br>1211 Geneva 20, Switzerland<br>Facsimile No. +41 22 338 82 70 | Authorized officer<br>Philippe Bécamel<br>e-mail: pt03.pct@wipo.int |

Form PCT/IB/373 (January 2004)

# PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

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see form PCT/ISA/220

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SEP 22 2014
PLUMSEA LAW GROUP

# PCT

## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing
*(day/month/year)* see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

**FOR FURTHER ACTION**
See paragraph 2 below

| International application No. | International filing date *(day/month/year)* | Priority date *(day/month/year)* |
|---|---|---|
| PCT/US2013/026618 | 19.02.2013 | 20.02.2012 |

International Patent Classification (IPC) or both national classification and IPC
INV. D04B7/04 A43B23/02 A43B23/26

Applicant
NIKE INTERNATIONAL LTD.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

| Name and mailing address of the ISA: | Date of completion of this opinion | Authorized Officer |
|---|---|---|
| European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0<br>Fax. +49 89 2399 - 4465 | see form PCT/ISA/210 | Zirkler, Stefanie<br>Telephone No. +49 89 2399-2056 |

Form PCT/ISA/237 (Cover Sheet) (July 2009)

**Box No. I Basis of the opinion**

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed

   ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:

   a. (means)

      ☐ on paper

      ☐ in electronic form

   b. (time)

      ☐ in the international application as filed

      ☐ together with the international application in electronic form

      ☐ subsequently to this Authority for the purposes of search

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of

☐ the entire international application

☒ claims Nos. 10, 11

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international search *(specify)*:

☐ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. are so unclear that no meaningful opinion could be formed *(specify)*:

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed *(specify)*:

☒ no international search report has been established for the whole application or for said claims Nos. 10, 11

☐ a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:

- ☐ furnish a sequence listing on paper complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.
- ☐ furnish a sequence listing in electronic form complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in a form and manner acceptable to it.
- ☐ pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rules 13*ter*.1(a) or (b).

☐ See Supplemental Box for further details

**Box No. IV Lack of unity of invention**

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has, within the applicable time limit:

   ☐ paid additional fees

   ☐ paid additional fees under protest and, where applicable, the protest fee

   ☐ paid additional fees under protest but the applicable protest fee was not paid

   ☒ not paid additional fees

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is

   ☐ complied with

   ☒ not complied with for the following reasons:

   **see separate sheet**

4. Consequently, this report has been established in respect of the following parts of the international application:

   ☐ all parts.

   ☒ the parts relating to claims Nos. 1-9

**Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

| | | | |
|---|---|---|---|
| Novelty (N) | Yes: | Claims | 2-4, 7-9 |
| | No: | Claims | 1, 5, 6 |
| Inventive step (IS) | Yes: | Claims | 3, 4, 8, 9 |
| | No: | Claims | 1, 2, 5-7 |
| Industrial applicability (IA) | Yes: | Claims | 1-9 |
| | No: | Claims | |

2. Citations and explanations

**see separate sheet**

**Box No. VII Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:

**see separate sheet**

**Box No. VIII Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

## Re Item IV

**Lack of unity of invention**

This Authority considers that the application does not meet the requirements of unity of invention and that there are two inventions covered by the claims indicated as follows:

**1. invention:** claims 1 to 9

A method of knitting an article of footwear comprising a tongue, a first and a second portion.

**2. invention:** claims 10, 11

A method of knitting a knitting pattern with a modifiable field.

The only technical features those two inventions have in common is that they both refer to a method of knitting which as such is known without question. Hence, the two inventions are not so linked as to form a single general inventive concept, as required by **Rule 13.1 PCT**.

## Re Item VIII

**Certain observations on the international application**

Claim 5 is not clear, because it does not clearly state to what part of the footwear the tongue is joined. Referring to claim 1 what seems to meant is the following: "...*joining the tongue to the first portion of the knit element*..."

## Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Reference is made to the following document:

D1 WO 00/30480 A1

1 The present application does not meet the criteria of Article 33(1) PCT for the following reasons:

1.1 Document D1 discloses (the references in parentheses applying to document D1) a method of knitting an article of footwear, in particular a sock liner (Fig. 1), the method comprising knitting an instep portion, or tongue, holding the instep portion on needles, knitting a sole portion, or first portion, while the the instep portion is held on the needles, joining the instep portion to the sole portion (Fig. 1 (1)) and knitting a heel portion, or second portion.

**Hence, due to a broad wording of claim 1, its subject-matter is not new (Article 33(1) and 33(2) PCT).**

1.2 The subject-matter of **claim 6** correspond in substance to that of claim 1 and is as such also not new **(Article 33(1) and 33(2) PCT)**.

1.3 Document D1 is also novelty-destroying for the subject-matter of dependent **claim 5 (Article 33(1) and 33(2) PCT)**.

1.4 Dependent **claims 2, 4, 7 and 9** do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step **(Article 33(1), 33(2) and 33(3) PCT)**.

2 The combination of the features of dependent **claims 3 and 8** is neither known from, nor rendered obvious by, the available prior art.

## Re Item VII

### Certain defects in the international application

3 Contrary to the requirements of **Rule 5.1(a)(ii) PCT**, the relevant background art disclosed in D1 is not mentioned in the description, nor is this document identified therein.

4 Independent claims 1 and 6 are not in the two-part form in accordance with **Rule 6.3(b) PCT**, which in the present case would be appropriate, with those features known in combination from the prior art being placed in the preamble (Rule 6.3(b)(i) PCT) and the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 20282022 |
| **Application Number:** | 13781525 |
| **International Application Number:** | |
| **Confirmation Number:** | 7689 |
| **Title of Invention:** | Article Of Footwear Incorporating A Knitted Component With An Integral Knit Tongue |
| **First Named Inventor/Applicant Name:** | Bhupesh Dua |
| **Customer Number:** | 57618 |
| **Filer:** | Eric M. Gibson/Jose Espejo |
| **Filer Authorized By:** | Eric M. Gibson |
| **Attorney Docket Number:** | 51-3209 |
| **Receipt Date:** | 30-SEP-2014 |
| **Filing Date:** | 28-FEB-2013 |
| **Time Stamp:** | 12:12:40 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | no |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Information Disclosure Statement (IDS) Form (SB08) | 2014-09-30_51-3209_IDS.pdf | 28581<br>665b41e96fe96ae23c79cfd1ac07661c78437aac | no | 3 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |

| This is not an USPTO supplied IDS fillable form | | | | | |
|---|---|---|---|---|---|
| 2 | Foreign Reference | 2014-09-30_51-3209_IDS_WO0030480A1.pdf | 316580<br>5bfe30acb09c3692d71eeb569e00179694cda82d | no | 11 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 3 | Non Patent Literature | 2014-09-30_51-3209_IDS_IPER.pdf | 440625<br>277b86bdd1355c5a9166bbba669ed063ba9260b3 | no | 9 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | **Total Files Size (in bytes):** | 785786 | | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

PTO/SB/08a (01-10)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

( **Not for submission under 37 CFR 1.99)**

| | |
|---|---|
| Application Number | 13781525 |
| Filing Date | 2013-02-28 |
| First Named Inventor | Bhupesh Dua |
| Art Unit | 3765 |
| Examiner Name | Larry D. Worrell Jr. |
| Attorney Docket Number | 51-3209 |

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| Examiner Initial* | Cite No | Patent Number | Kind Code[1] | Issue Date | Name of Patentee or Applicant of cited Document | Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear |
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| | 1 | 6321574 | | 2001-11-27 | Marker et al. | |

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**FOREIGN PATENT DOCUMENTS**

| Examiner Initial* | Cite No | Foreign Document Number[3] | Country Code[2] | Kind Code[4] | Publication Date | Name of Patentee or Applicant of cited Document | Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear | T[5] |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2005160697 | JP | | 2005-06-23 | ASICS CORP | | ☐ |
| | 2 | 1782156 | CN | | 2006-06-07 | NIPPON MAYER LTD | | ☐ |
| | 3 | 102271548 | CN | | 2011-12-07 | NIKE INTERNATIONAL LTD | | ☐ |

| INFORMATION DISCLOSURE STATEMENT BY APPLICANT ( **Not for submission under 37 CFR 1.99)** | | |
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| | Art Unit | 3765 |
| | Examiner Name | Larry D. Worrell Jr. |
| | Attorney Docket Number | 51-3209 |

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**NON-PATENT LITERATURE DOCUMENTS**

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|---|---|---|---|
| | 1 | Taiwanese Office Action dated November 14, 2014 in Taiwanese Patent Application Number 102105769. | ☐ |

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**EXAMINER SIGNATURE**

| Examiner Signature | | Date Considered | |
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| INFORMATION DISCLOSURE STATEMENT BY APPLICANT ( **Not for submission under 37 CFR 1.99)** | | |
|---|---|---|
| | Application Number | 13781525 |
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| | First Named Inventor | Bhupesh Dua |
| | Art Unit | 3765 |
| | Examiner Name | Larry D. Worrell Jr. |
| | Attorney Docket Number | 51-3209 |

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Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

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☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☐ See attached certification statement.

☐ The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

**SIGNATURE**

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

| Signature | /Eric M. Gibson/ | Date (YYYY-MM-DD) | 2014-12-02 |
|---|---|---|---|
| Name/Print | Eric M. Gibson | Registration Number | 59,058 |

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# Bibliographic data: JP2005160697 (A) — 2005-06-23

## SHOES FOR LONG DISTANCE RUNNING

**Inventor(s):** TAMURA HISAYOSHI; FUJITA HISANORI; NISHIWAKI TAKASHI; NAKABE NOBORU ± (TAMURA HISAYOSHI, ; FUJITA HISANORI, ; NISHIWAKI TAKASHI, ; NAKABE NOBORU)

**Applicant(s):** ASICS CORP ± (ASICS CORP)

**Classification:** **- international:** ***A43B23/02; A43B5/06;*** (IPC1-7): A43B23/02; A43B5/06

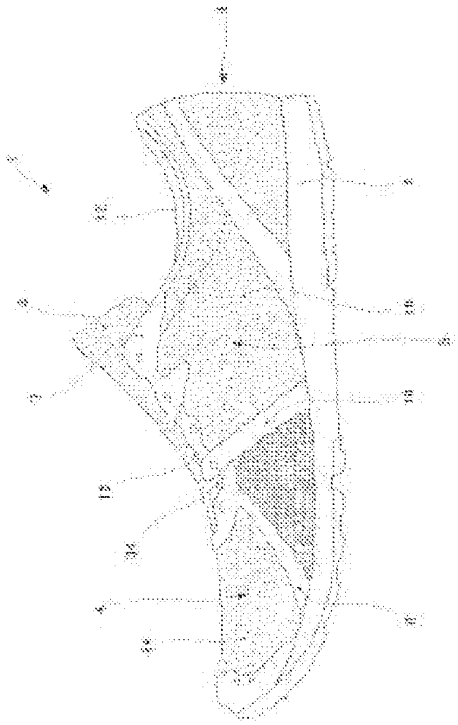
**- cooperative:** **A43B1/04**

**Application number:** JP20030403009 20031202

**Priority number(s):** JP20030403009 20031202

## Abstract of JP2005160697 (A)

PROBLEM TO BE SOLVED: To solve the problem that the weight reduction in shoes is limited in a conventional constitution since sport shoes such as shoes for a long distance running need a light weight, permeability and constitution of bearing traveling of the long distance. ;SOLUTION: The upper 3 of the shoe for the long distance running is formed of a mesh cloth consisting of a Russell knit. An outer reinforcing material and an inner reinforcing material are provided at a part where a fifth metatarsophalangeal joint makes contact with a first metatarsophalangeal joint. A plurality of vent holes are provided through the outer reinforcing material and the inner reinforcing material. ;COPYRIGHT: (C)2005,JPO&NCIPI



(19)日本国特許庁(JP)　(12)公開特許公報(A)　(11)特許出願公開番号
特開2005-160697
(P2005-160697A)
(43)公開日　平成17年6月23日(2005.6.23)

| (51)Int.Cl.[7] | F I | | テーマコード（参考） |
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| A43B 5/06 | A43B 5/06 | | |

審査請求 有　請求項の数 8　OL　（全 10 頁）

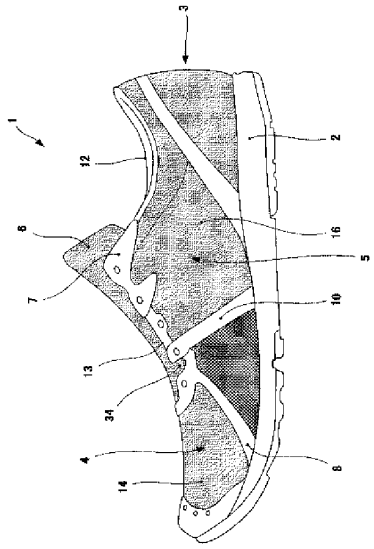
(21)出願番号　特願2003-403009 (P2003-403009)
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最終頁に続く

(54)【発明の名称】長距離用シューズ

(57)【要約】
【課題】　長距離用シューズのような運動靴においては、軽量で通気性がよく、長距離の走行に耐えうる構成が必要となってくるため、従来のような構成では軽量化に限界がある。
【解決手段】　甲被３をラッセル編からなるメッシュ生地で形成し、第５中足趾節関節及び第１中足趾節関節とが接する部分に外補強材及び内補強材を設け、この外補強材及び内補強材に複数の通気孔を設ける。
【選択図】　図１（ａ）



【特許請求の範囲】
【請求項1】
靴底と甲被とを有し、該甲被は前甲被部と後甲被部と舌片とを有し、該前甲被部に前方開口部を形成し、該後甲被部に後方開口部を形成した長距離用シューズにおいて、
該前甲被部と該後甲被部と該舌片の生地をラッセル編からなるメッシュ生地で形成し、
該前甲被部の外側甲部において、足の第５中足趾節関節相当部に接する部分と、該前甲被部の内側甲部において、足の第１中足趾節関節相当部に接する部分とに外補強材及び内補強材を設け、
該外補強材及び該内補強材に複数の孔を形成したことを特徴とする長距離用シューズ。
【請求項2】
前記外補強材及び前記内補強材の装着部を除く前記甲被の内側に内装を設けていない請求項１に記載の長距離用シューズ。
【請求項3】
前記甲被における、前記内外補強材、爪先補強材、及び踵補強材の各装着部、並びに前方及び後方開口部の周縁部を除く領域をラッセル編からなるメッシュ生地のみで形成したことを特徴とする請求項１乃至２のいずれか一の項に記載の長距離用シューズ。
【請求項4】
前記後甲被部の通気性を前記前甲被部の通気性より良くした請求項１乃至３のいずれか一の項に記載の長距離用シューズ。
【請求項5】
前記前甲被部のラッセル編からなるメッシュ生地の強度を前記後甲被部のラッセル編からなるメッシュ生地の強度より強くした請求項１乃至４のいずれか一の項に記載の長距離用シューズ。
【請求項6】
前記前甲被部の外側甲部における、前記前方開口部から後下方向に向って略Ｕ字形状に外切欠を形成し、前記後甲被部の内側甲片における、前記前方開口部から後下方向に向って略Ｕ字形状に内切欠を形成した請求項１乃至５のいずれか一の項に記載の長距離用シューズ。
【請求項7】
前記外切欠を前記内切欠より前側に形成した請求項６に記載の長距離用シューズ。
【請求項8】
前記外補強部材は第１外補強部と第２外補強部とで囲まれた領域内に形成され、前記内補強部材は第１内補強及び第２内補強部で囲まれた領域内に形成されるとともに、前記外補強部材及び前記内補強部材は、末広がり状の略三角形に形成された請求項１に記載の長距離用シューズ。

【発明の詳細な説明】
【技術分野】
【0001】

本願発明は軽量で通気性がよく、耐久性のある長距離用シューズに関する。
【背景技術】
【0002】
従来より運動靴の構成は、大きくアッパー部とソール部とで構成され、アッパー部は前甲被と、後甲被とから構成されており、アッパー部には通常内装（例えば、フィット感を必要とする場合はスポンジのようなクッション性を有する）を有する構成になっている。ここで、従来より運動靴には足の発汗などによる不快感が問題となっていたため、様々な対策が行われてきた。例えば、足の発汗による不快感を、アッパー部に穴を開けて通気性をよくしたものや、内装以外のアッパー部の全て、または一部をメッシュ布を用いて通気性をよくしたものが考案されていた。（例えば、特許文献１、２参照。）
【特許文献1】実用新案第２６００８８５号公報
【特許文献2】実開昭５５－１５７４０３
【発明の開示】
【発明が解決しようとする課題】
【0003】
しかしながら、長距離用シューズのような運動靴においては、出来る限り足への負担を軽減させるために、軽量で、且つマメの発生を防止するために通気性が良く、長距離の走行に耐え得る構成が必要である。殊にマラソン競技のように、４２、１９５ｋｍの距離を走行する場合には、軽量性、通気性、耐久性、更には足とのフィット性、の全ての要素が求められる。したがって、前述したように、これら長距離用の靴の甲被には、軽量性、通気性に優れたメッシュ生地等で構成されたものがあるが、メッシュ生地の伸縮性が強過ぎるため、靴の保形性を維持できない場合があり、これを抑制し補強するために、靴の内面の略全体、或は適宜箇所に裏地、補強部材等を内装していたが、いずれも長距離用のシューズとしては決して満足し得るものではなかった。
【0004】
即ち理想とする長距離用シューズとしては、最も負荷がかかり易く、足の屈曲の支点となる部分で、且つ着地時に左右の横ブレを阻止して、ランニングフォームを維持し、エネルギーロスを最小限に止めることができる、中足趾節関節相当部のみに補強部材を重点的に施し、その他の部分をメッシュ材（ラッセル生地）が有する特性を最大限に生かせるような構成を有するシューズにある。
【0005】
本願発明は係る課題に鑑み、必要最小限の領域に補強部材を装着し、通気性は勿論、軽量性、耐久性にも満足し得る長距離用シューズを提供することを目的としている。
【課題を解決するための手段】
【0006】
上記課題を解決するため、本願発明の長距離用シューズは、靴底と甲被とを有し、該甲被は前甲被部と後甲被部と舌片とを有し、該前甲被部に前方開口部を形成し、該後甲被部に後方開口部を形成した長距離用シューズにおいて、該前甲被部と該後甲被部と該舌片の生地をラッセル編からなるメッシュ生地で形成し、該前甲被部の外側甲部において、足の第５中足趾節関節相当部に接する部分と、該前甲被部の内側甲部において、足の第１中足趾節関節相当部に接する部分とに外補強材及び内補強材を設け、該外補強材及び該内補強材に複数の孔を形成したことで、軽量で通気性が良く、耐久性に優れた靴が形成される。
【0007】
また、前記外補強材及び前記内補強材の装着部を除く前記甲被の内側に内装を設けていないことで、さらに軽量にすることができる。
【0008】
また、前記甲被における、前記内外補強材、爪先補強材、及び踵補強材の各装着部、並びに前方及び後方開口部の周縁部を除く領域をラッセル編からなるメッシュ生地のみで形成することもできる。
【0009】

また、前記後甲被部の通気性を前記前甲被部の通気性より良くしたことで、通気性必要なところを効率よく通気させることができると共に、耐久性も増すことができる。

【0010】

また、前記前甲被部のラッセル編からなるメッシュ生地の強度を前記後甲被部のラッセル編からなるメッシュ生地の強度より強くしたことで、強度が必要なところは残し、それ以外のところを軽量にすることができる。

【0011】

また、前記前甲被部の外側甲部における、前記前方開口部から後下方向に向って略Ｕ字形状に外切欠を形成し、前記後甲被部の内側甲片における、前記前方開口部から後下方向に向って略Ｕ字形状に内切欠を形成したことで、前記甲被部の伸縮力による生地の変形を抑えることができる。

【0012】

また、前記外切欠を前記内切欠より前側に形成したことで、最もよく生地の変形を抑えることができる。

【0013】

また、前記外補強部材は第１外補強部と第２外補強部とで囲まれた領域内に形成され、前記内補強部材は第１内補強及び第２内補強部で囲まれた領域内に形成されるとともに、前記外補強部材及び前記内補強部材は、末広がり状の略三角形に形成することもできる。

【発明の効果】

【0014】

単に軽量で、通気性にすぐれているだけでなく、長距離用シューズをできるだけ軽量化にすると共に、必要な箇所だけに補強材を設けることで、靴の耐久性を向上させることができる。

【発明を実施するための最良の形態】

【0015】

本願発明の長距離用シューズの一実施形態を図面を参照しつつ説明する。

【0016】

図１は本願発明の長距離用シューズ左足側の図であり、（ａ）は左側面図、（ｂ）は右側面図、（ｃ）は平面図である。

【0017】

図１に示すように、長距離用シューズ１（以下「靴」という。）は、靴底２と、甲被３とから構成されており、靴底２と甲被３とは接着剤で貼り付けた構成になっている。靴底２は軽量であることが必要なため、合成樹脂等が主に使われている。また、甲被３は、全体に亘って軽量で、通気性のよいラッセル編からなるメッシュ生地を用いられており、足の発汗作用による水分を靴外に放出することができる。そして、この甲被３は主に３つの部分で構成されている。甲被３は、靴１の左側面の略中間位置に取付られた帯状の第２外補強部１０と、靴１の右側面の略中間位置に取付られた帯状の第２内補強部１１とを境目に、前甲被部４と、後甲被部５とに分けられる。そして、靴１の足を挿入する履口部１２の前側の前方開口部１３の前端部では、前方開口部１３を覆うための舌片６が、前甲被部４の内側より取付られている。この前甲被部４、後甲被部５、及び舌片６は、後述するようにそれぞれのラッセル編からなるメッシュ生地構造が異なっている。また、前甲被部４は靴１の内側の内側甲部１５と、靴１の外側の外側甲部１４とから形成されている。また、後甲被部５は靴１の内側の内側甲片１７と、靴１の外側の外側甲片１６とから形成されている。

【0018】

図２は足の骨格の図であり、（ａ）は側面図、（ｂ）は平面図である。

【0019】

図２に示すように、足の骨格は、指骨２０、中足骨２１を有する構成になっており、人が歩くまたは走るときは、指骨２０と中足骨２１の間の中足趾節関節２５を軸にして、中足骨２１が図２（ａ）の矢印Ａ方向に揺動することで、足を前に蹴り出すことができる。

この際、指骨２０に含まれる末節骨２２、中節骨２３、及び基節骨２４は、それぞれの趾節関節において、矢印Ａ方向にほとんど揺動することができないので、人が足を蹴り出す場合、足は中足趾節関節２５の近傍の変位が最も大きくなる。このことから、人が靴１を履いて歩くまたは走る状態においては、中足趾節関節２５の近傍である第１外補強部８から第２外補強部１０に至る範囲、及び第１内補強部９から第２内補強部１０に至る範囲（図１参照）が靴１に対して最も負荷が掛かる部分となる。

【0020】

図３は左足の斜視図である。

【0021】

図３に示すように、土踏まず近傍から足の甲に亘る帯状の土踏まず帯部２６、及び小指球近傍から足の甲に亘る帯状の小球帯部２７では、歩くまたは走る場合、土踏まず帯部２６と小球帯部２７とを境界に、蹴り上げる後足と着地する前足とでは、挙動が大きく異なる。よって、靴１を履いた状態で歩くまたは走ると、靴１の土踏まず帯部２６が当たる部分、及び靴１の小球帯部２７が当たる部分では、靴１に掛かる伸縮力が大きくなる。そこで、後述するように、土踏まず帯部２６及び小球帯部２７が、靴１の前部開口部１３と交差するところにそれぞれ内切欠３５及び外切欠３４（図１（ｃ）参照）を設けて、靴１の伸縮力を吸収し、靴１の耐久性を向上させることができるように構成されている。

【0022】

図４は靴１の分解図である。

【0023】

図４に示すように、靴１は主に靴底２と、前甲被部４と、後甲被部５とを有する構成になっている。前甲被部４の生地は略Ｕ字型状で形成されており、その外側甲部１４上部には伸縮力を吸収するための外切欠３４が前方開口部１３から靴１外側の後下方向に向って略Ｕ字形状に形成されている。そして、前甲被部４は第１中足趾節関節４７から第５中足趾節関節４６に至る範囲で、足の前側を覆うように形成されている。また、中足趾節関節を軸として基節骨２４と中足骨２１が揺動するので、第１中足趾節関節４７及び第５中足趾節関節４６の近傍には、末広がり状の略三角形に形成された外補強材２９及び内補強材３０が前甲被部４に取付られ、耐久性を向上させている。

【0024】

後甲被部５の生地は略帯形状で形成されており、その内側甲片１７上部には伸縮力を吸収するための内切欠３５が前方開口部１３から靴１内側の後下方向に向って略Ｕ字形状に形成されている。そして、後甲被部５は第１中足趾節関節４７から第５中足趾節関節４６に至る範囲で、足の側面及び後側を覆うように形成されている。また、靴１の耐久性を増加させ、靴１と足のフィット性を向上させるために、踵周辺には踵補強材３３が後甲被部５に取付けられている。そして、このように構成された前甲被部４と後甲被部５とを組合わせて、靴底２に取付られ、靴１の前部開口部１３を覆う鳩目部７と、第１外補強部８と、第１内補強部９と、第２外補強部１０と、第２内補強部１１と、爪先強部３７とを有する中間補強材３６が、靴１の先端及び側面を補強するように取付られている。そして、履口部１２（図１（ａ）参照）には弾性素材を有するＴ字形状の履口補強材３２が靴１の内面から設けられており、靴を履くときや脱ぐときに足と接触して後甲被部５が破損しないように形成されている。また、靴１は出来る限り軽量にするために、後述する網目組織の拡大部４４を複数設けられている。よって、後甲被部５は前甲被部４に比べて軽くなるように形成されている。

【0025】

次に図５を用いてラッセル編からなるメッシュ生地と、外補強材及び内補強材との構成を説明する。

【0026】

図５はラッセル編からなるメッシュ生地の拡大図であり、（ａ）は外補強材または内補強材における斜視図、（ｂ）は外補強材または内補強材における断面図、（ｃ）は後甲被部５における斜視図である。

【0027】
図５に示すように、靴１のラッセル編からなるメッシュ生地は表面繊維３８と、表面と裏面を連結する連結繊維３９と、裏面繊維４０とを有する構成になっている。図５（ａ）に示すように、表面繊維３８は略六角形状に編まれており、表通気孔４２を有する構成になっている。また、裏面繊維４０は網目形状に編まれて、表面繊維３８と裏面繊維４０とを連結繊維３９で複数箇所連結することで通気性及び耐久性を向上することができるように構成されている。また、図５（ｂ）に示すように、裏面繊維４０の紙面下方（靴１の内側）に外補強材２９または内補強材３０を取付けることで、耐久性をさらに向上させることができる。この外補強材２９または内補強材３０には複数の孔４５が形成されており、外補強材２９または内補強材３０によって通気性が悪くなることを防止することができる。一方、通気性及び耐久性を主目的として形成された前甲被部４に比べて、後甲被部５は通気性及び軽量化を主目的として形成されているので、図５（ｃ）に示すように、裏面繊維４０にさらに網目組織の拡大部４４を可能な限り複数個設けられている。また、前甲被部４は後甲被部５に比べ靴１の構成上耐久性を必要とするため、裏面繊維４０の網目部４３は後甲被部５に比べ前甲被部４の網目部４３は間隔が狭くなるように形成されており、走るまたは歩くときの前甲被部４に加わる伸縮力に耐えることができるように構成されている。そして、前記甲被における、前記内外補強材、爪先補強材、及び踵補強材の各装着部、並びに前方及び後方開口部の周縁部を除く領域をラッセル編からなるメッシュ生地のみで形成することもできる。

【0028】
上記のような構成により形成された靴１は、単に軽量で通気性にすぐれているだけでなく、ラッセル編のメッシュ生地の伸縮特性が活かされ、靴着用者の足とのフィット性が好適に維持される。また、補強材が中足趾節関節相当部のみに重点的に内装されていることにより、ランニングにおいて足の屈曲の支点となる部分で、最も負荷がかかり、着地時に左右の横ブレが生じ易い部分が補強されることとなり、ランニングフォームを崩すことなく、エネルギーロスを最小限に止めることができる理想的な長距離用専用のシューズを構成することができる。

【産業上の利用可能性】

【0029】
マラソンシューズ等の長距離を走るための靴に用いることができる。

【図面の簡単な説明】

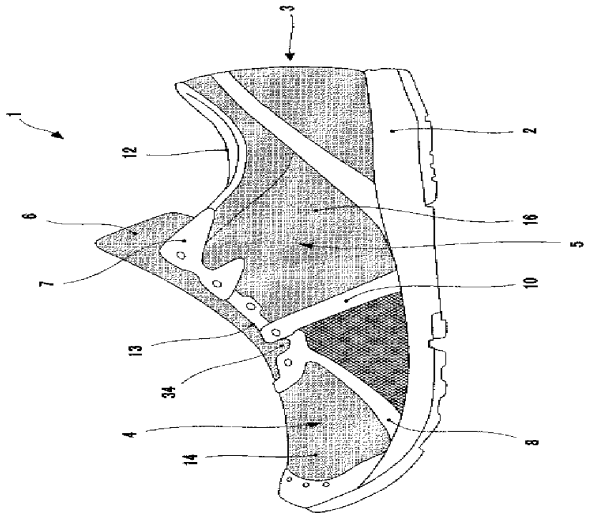
【0030】
【図1(a)】本願発明の長距離用シューズ左足側の図であり、左側面図である。
【図1(b)】本願発明の長距離用シューズ左足側の図であり、右側面図である。
【図1(c)】本願発明の長距離用シューズ左足側の図であり、平面図である。
【図2】骨格の図であり、（ａ）は側面図、（ｂ）は平面図である。
【図3】左足の斜視図である。
【図4】本願発明の長距離用シューズ左足側の分解図である。
【図5】本願発明の長距離用シューズのラッセル編からなるメッシュ生地の拡大図であり、（ａ）は外補強材または内補強材における斜視図、（ｂ）は外補強材または内補強材における断面図、（ｃ）は後甲被部５における斜視図である。

【符号の説明】

【0031】
１　長距離用シューズ
２　靴底
３　甲被
４　前甲被部（ラッセル編からなるメッシュ生地）
５　後甲被部（ラッセル編からなるメッシュ生地）
６　舌片（ラッセル編からなるメッシュ生地）
７　鳩目部

８　第１外補強部
９　第１内補強部
１０　第２外補強部
１１　第２内補強部
１４　外側甲部
１５　内側甲部
１６　外側甲片
１７　内側甲片
２９　外補強材
３０　内補強材
３４　外切欠
３５　内切欠
３７　爪先補強材
４３　網目部
４４　網目組織の拡大部
４６　第５中足趾節関節
４７　第１中足趾節関節

【図1(a)】




【図1(b)】

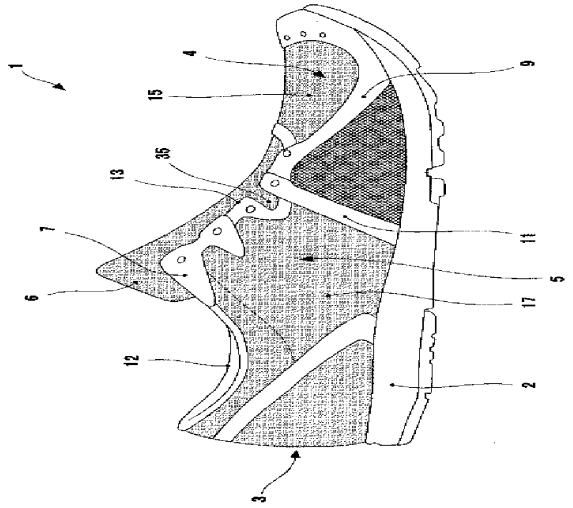
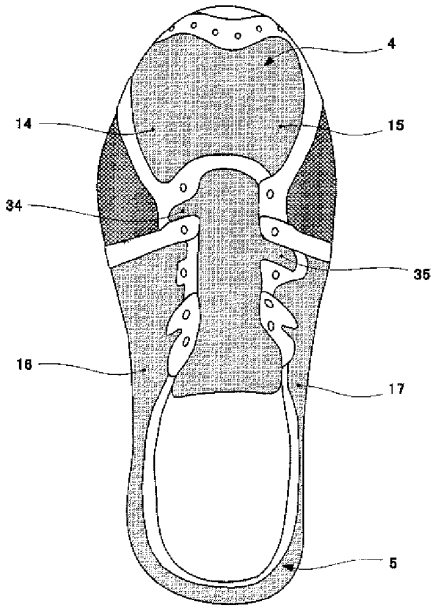
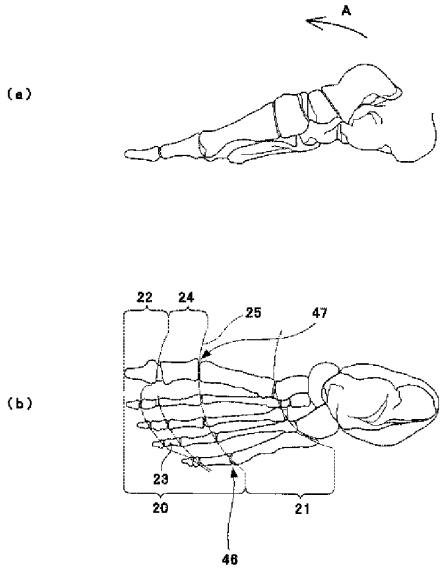



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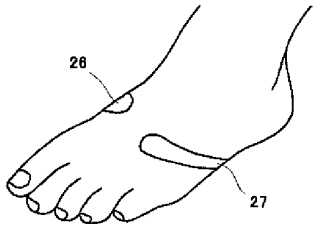
【図1(c)】


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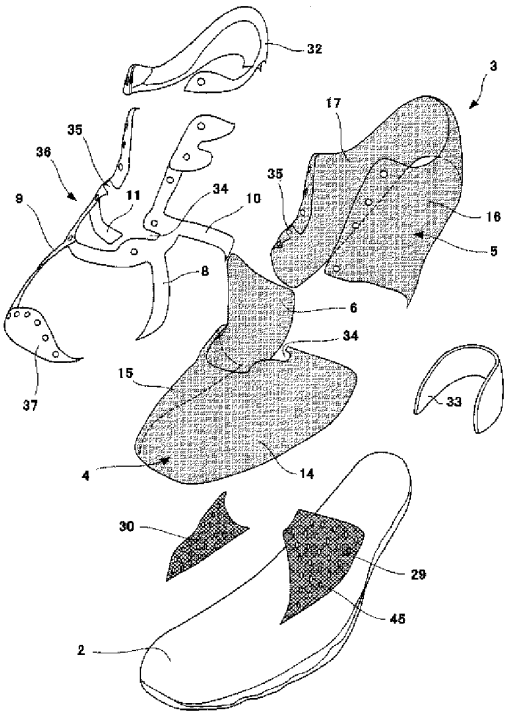
【図2】


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(a)
(b)
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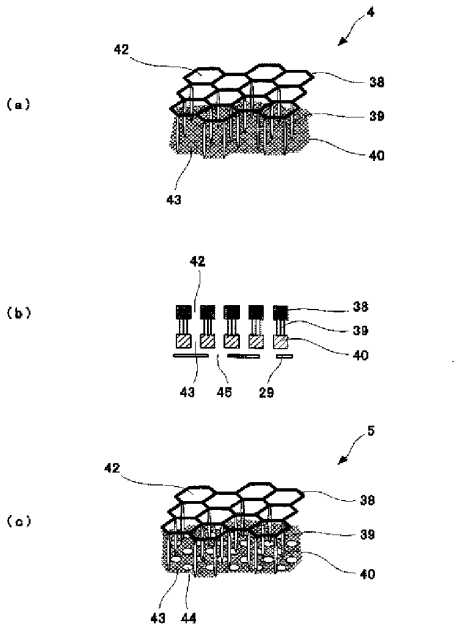
【図3】


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【図4】


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【図5】



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## Method for producing space fabric and space fabric

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