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**Watts et al.**

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(54) **DOUBLE-SIDED FASTENERS**

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***B44C 3/12*** (2006.01)
***B32B 7/08*** (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC ................. ***A44B 11/02*** (2013.01); ***A41F 9/025*** (2013.01); ***A44B 18/0084*** (2013.01); *A41F 9/002* (2013.01);
(Continued)

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CPC . Y10T 24/27; Y10T 24/2708; Y10T 24/4764; Y10T 156/1008; Y10T 156/1011; Y10T 156/1013; Y10T 156/1015; Y10T 156/1051; Y10T 156/1084; Y10T 428/24017; A61F 13/62; A61F 13/622; A61F 13/00987; B29C 65/00; B29C 65/02; B29C 65/18; B29C 65/606; B29C 66/1122; B29C 66/114; B29C 66/20; B29C 66/3032; B29C 66/431; A44B 18/00; A44B 18/0069; A44B 18/0084; B29L 2031/729
USPC ............. 156/60, 63, 66, 72, 91, 92, 196, 199, 156/200, 201, 202, 203, 204, 216, 217, 227, 156/290, 291, 304.1, 304.6, 304.7, 308.2, 156/308.4, 309.6; 24/298, 302, 197, 31 V, 24/442, 306, 444, 265 R, 265 A, 265 AL; 493/394
See application file for complete search history.

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*Primary Examiner* — Philip Tucker
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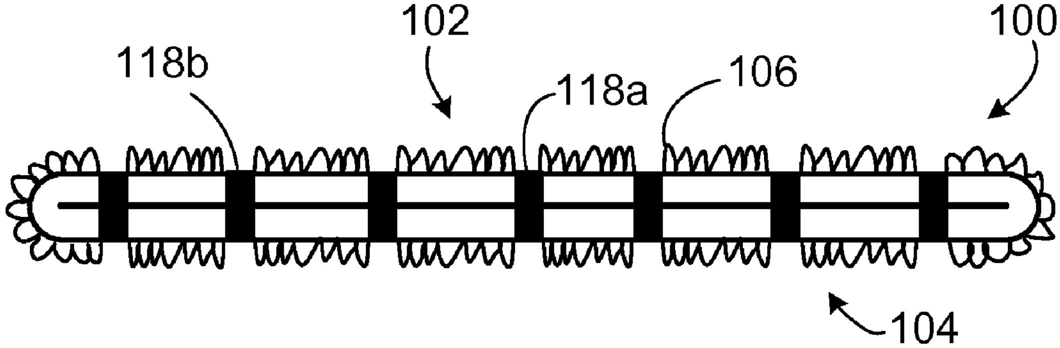
(57) **ABSTRACT**

A method for forming a double-sided loop strap includes: receiving a continuous longitudinal strip of loop material including a strip-form base bearing a field of upstanding loops on a fastening side of the strip bounded by opposite longitudinal edges, folding each of the longitudinal edges away from the fastening side, such that the base overlaps itself, and securing the folded edges in place by permanently bonding together overlapped areas of the base to form the double-sided loop strap.

**7 Claims, 13 Drawing Sheets**



(51) **Int. Cl.**

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|---|---|
| ***B31F 1/00*** | (2006.01) |
| ***A61F 13/15*** | (2006.01) |
| ***B29C 65/00*** | (2006.01) |
| ***B32B 37/00*** | (2006.01) |
| ***C08J 5/00*** | (2006.01) |
| ***A44B 1/04*** | (2006.01) |
| ***A44B 11/25*** | (2006.01) |
| ***A44B 15/00*** | (2006.01) |
| ***A44B 17/00*** | (2006.01) |
| ***A44B 18/00*** | (2006.01) |
| ***A44B 11/02*** | (2006.01) |
| ***A41F 9/02*** | (2006.01) |
| *B29C 65/18* | (2006.01) |
| *B29C 65/60* | (2006.01) |
| *A41F 9/00* | (2006.01) |

(52) **U.S. Cl.**

CPC ............... *B29C 65/18* (2013.01); *B29C 65/606* (2013.01); *B29C 66/20* (2013.01); *B29C 66/3032* (2013.01); *B29C 66/431* (2013.01); *Y10T 24/318* (2015.01); *Y10T 24/4764* (2015.01)

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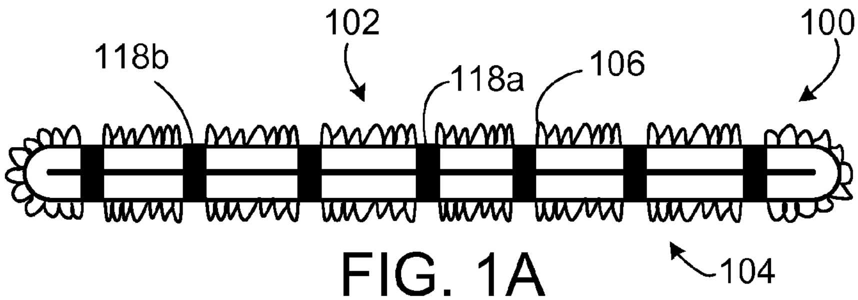


FIG. 1A

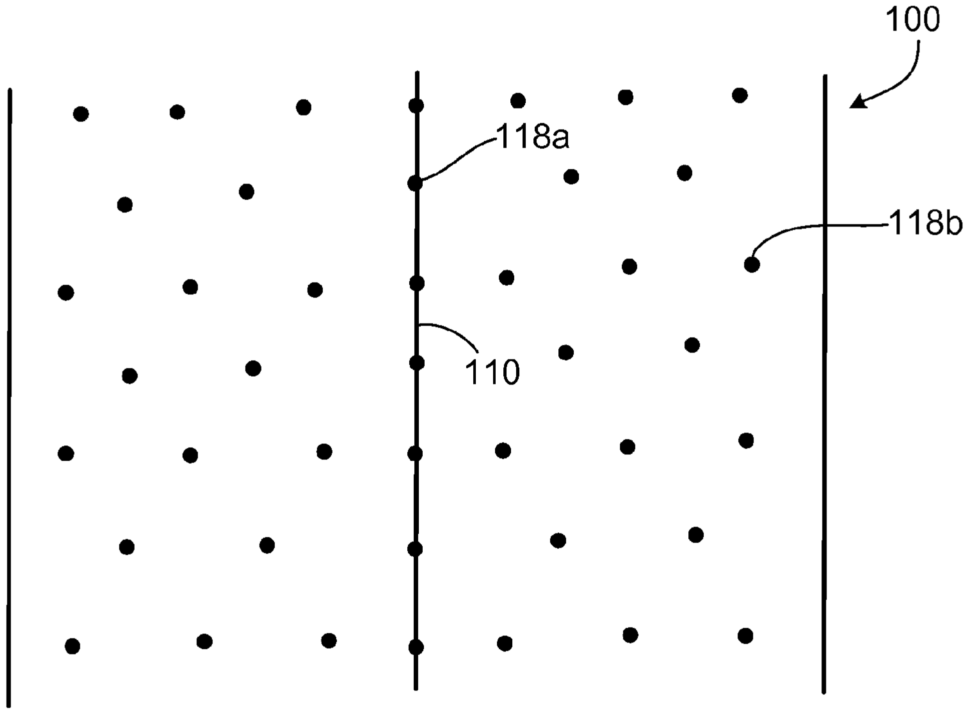


FIG. 1B

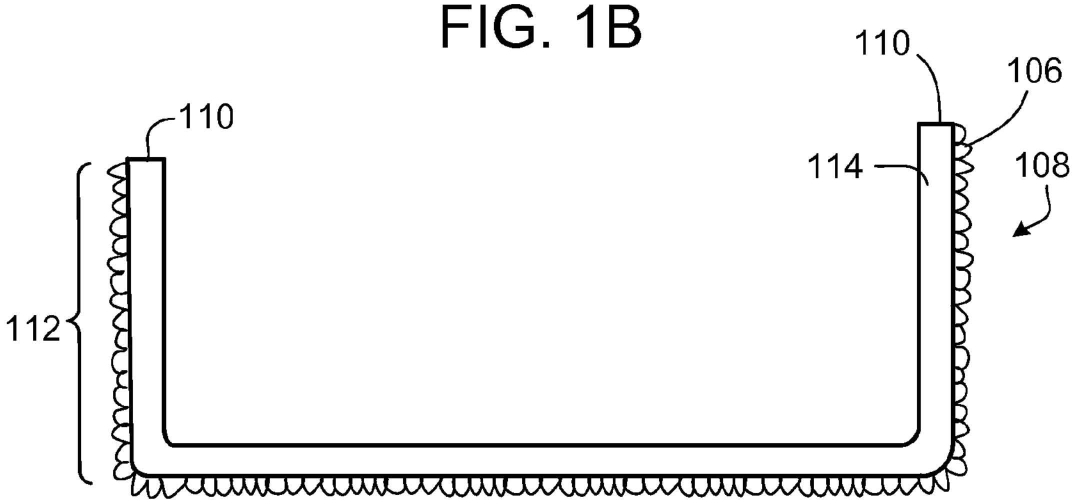


FIG. 1C

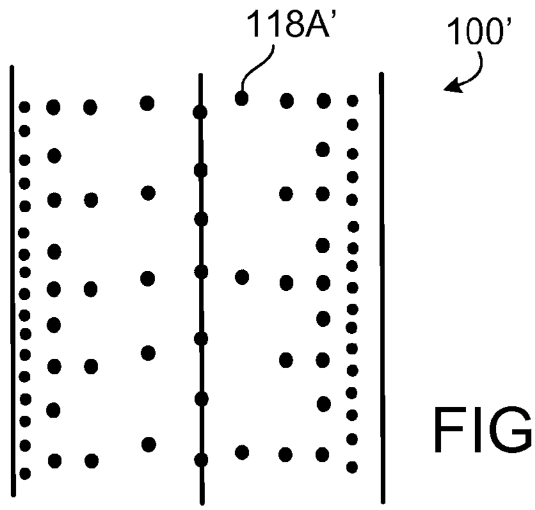


FIG. 2A

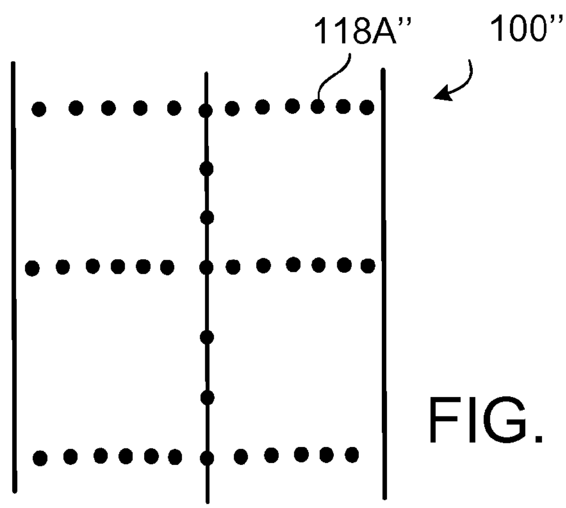


FIG. 2B

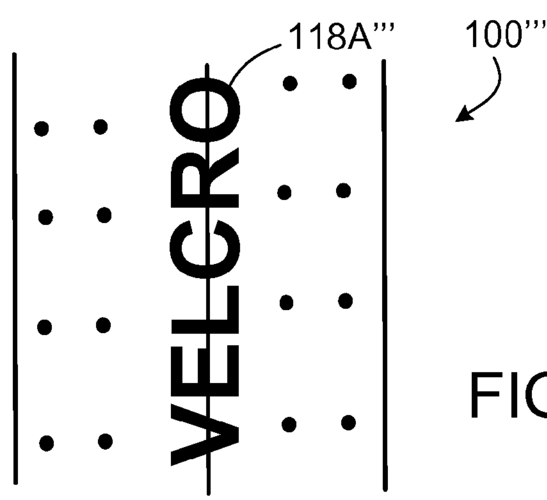


FIG. 3

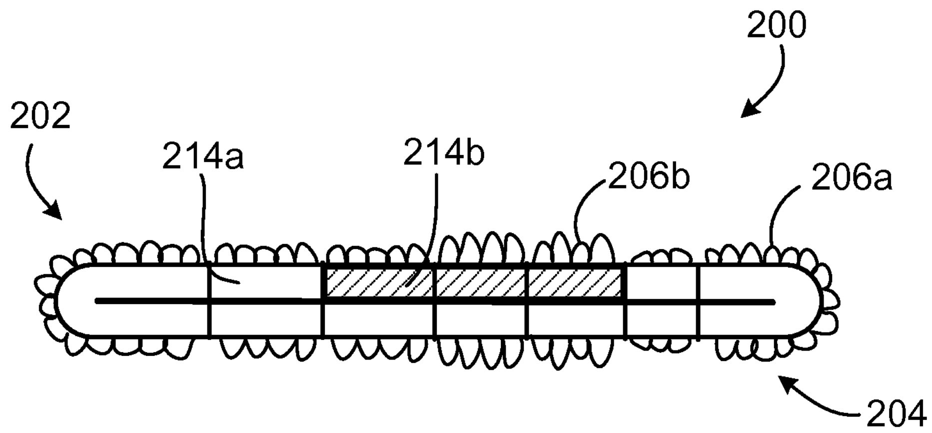
200
202
214a
214b
206b
206a
204

FIG. 4A

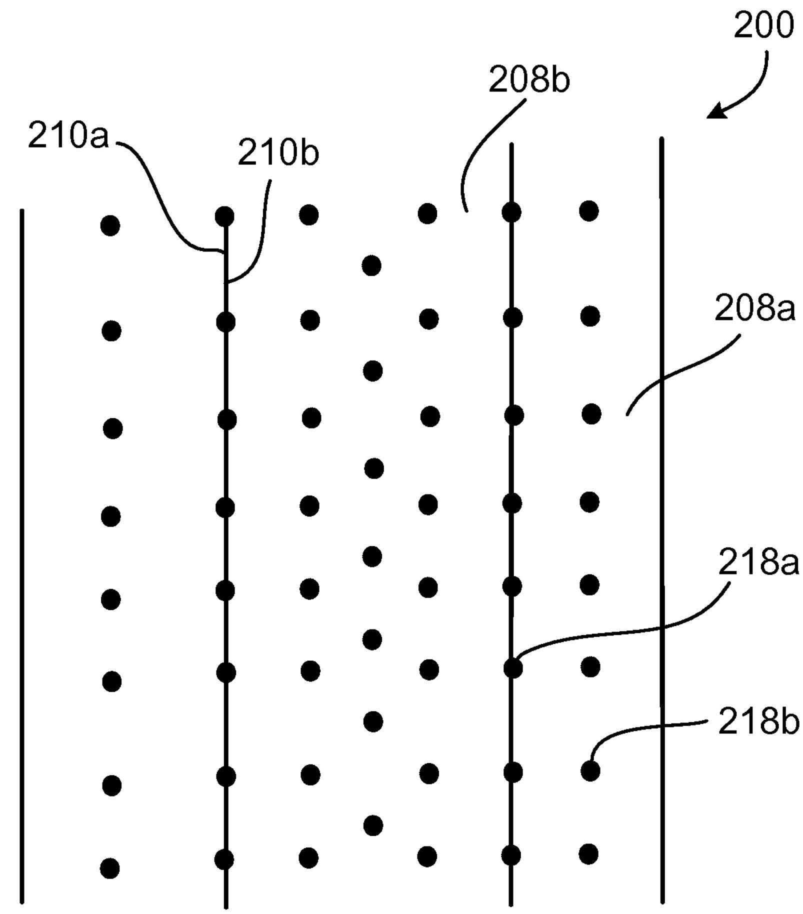
200
208b
210a
210b
208a
218a
218b

FIG. 4B

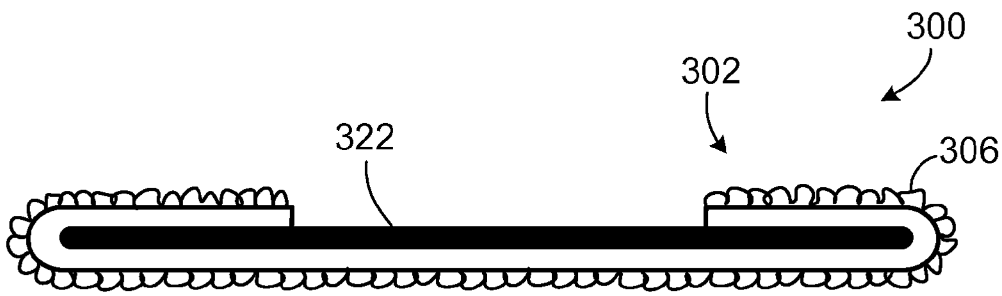


FIG. 5A

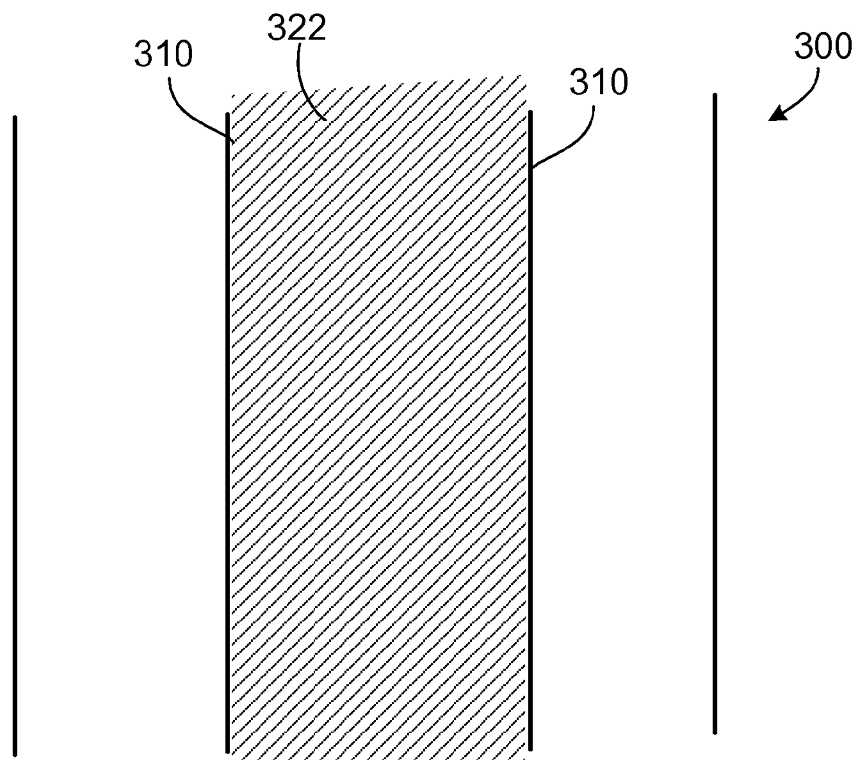


FIG. 5B

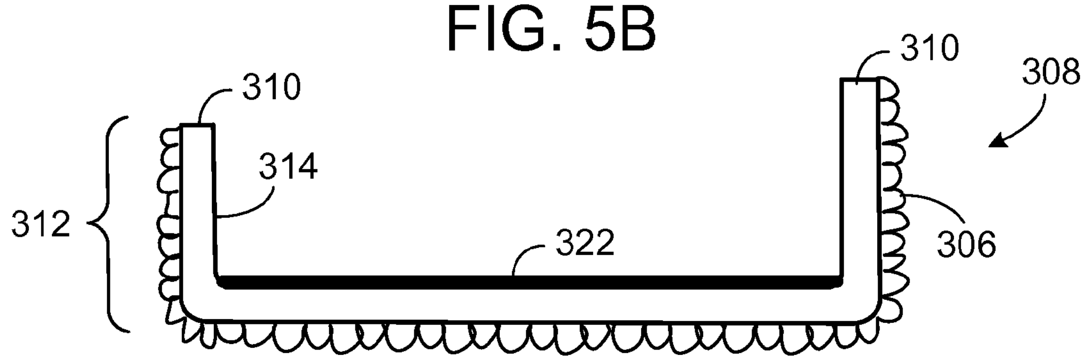


FIG. 5C

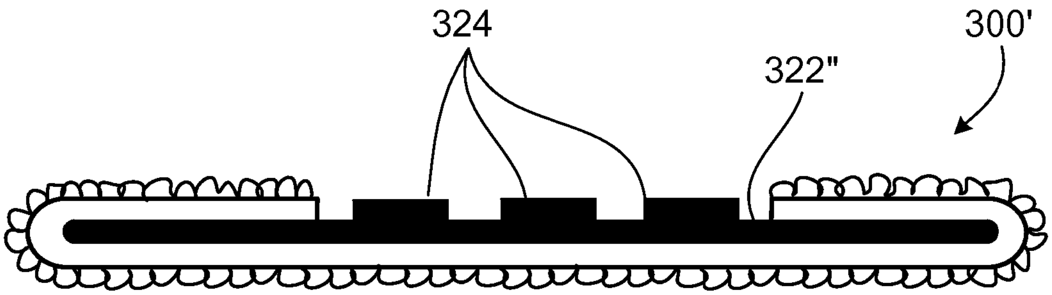


FIG. 6A

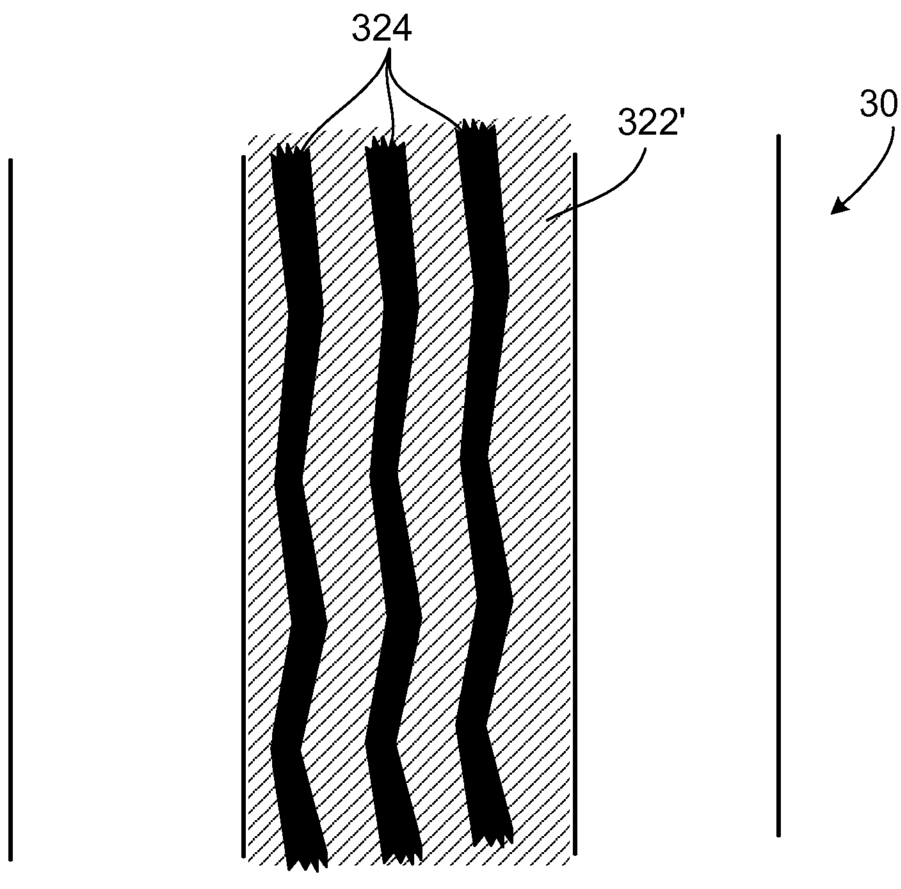


FIG. 6B

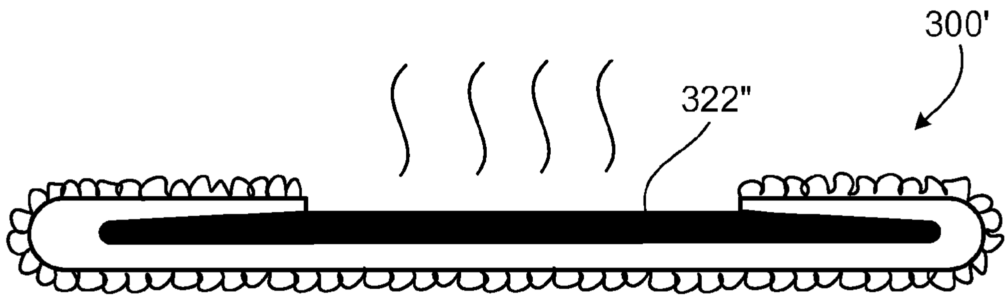


FIG. 7A

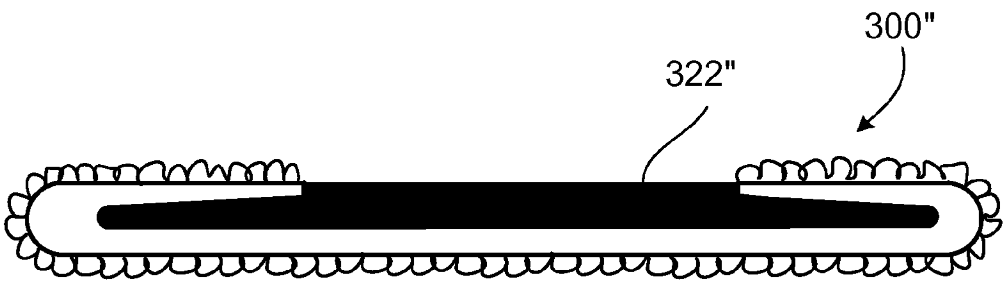


FIG. 7B

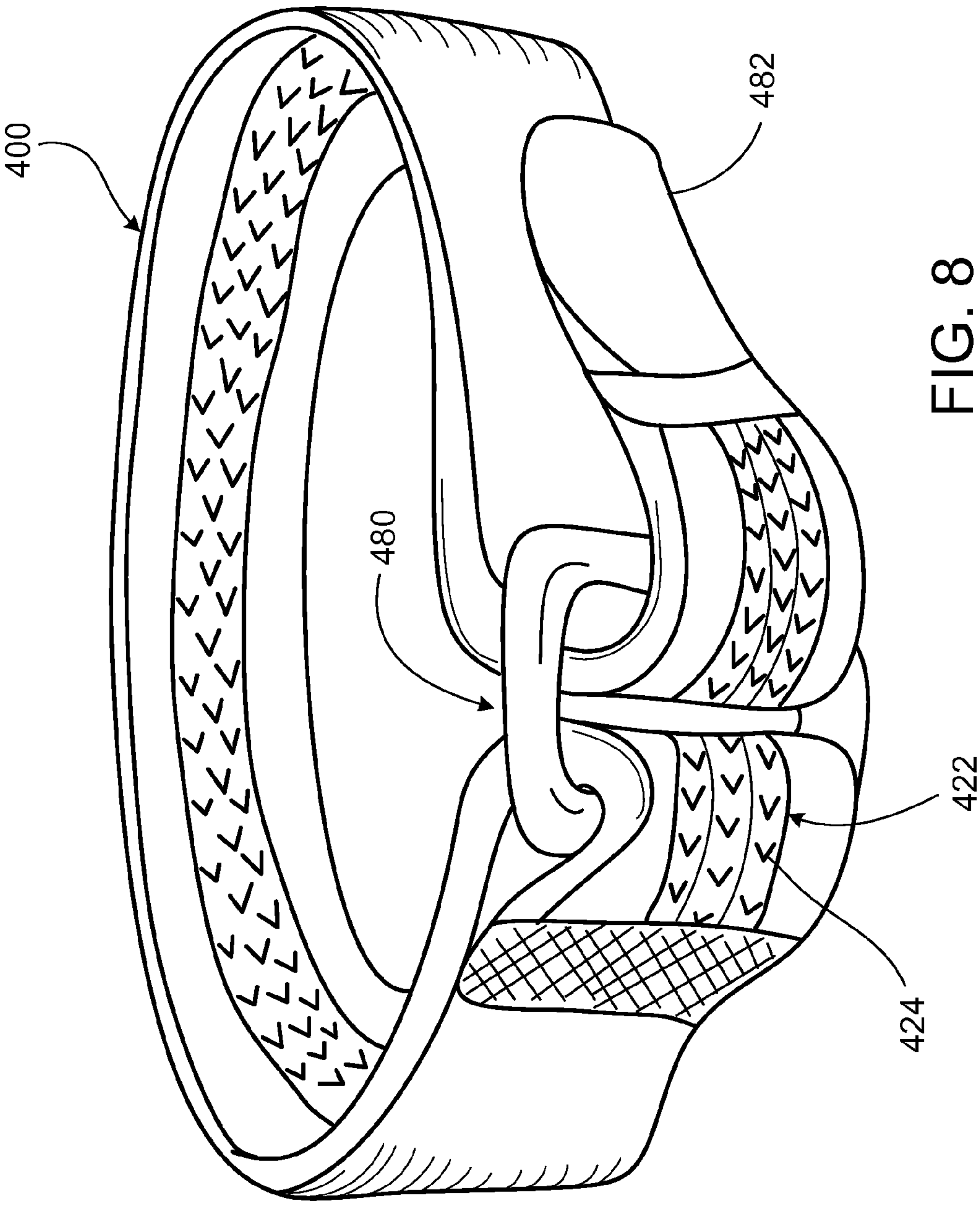


FIG. 8

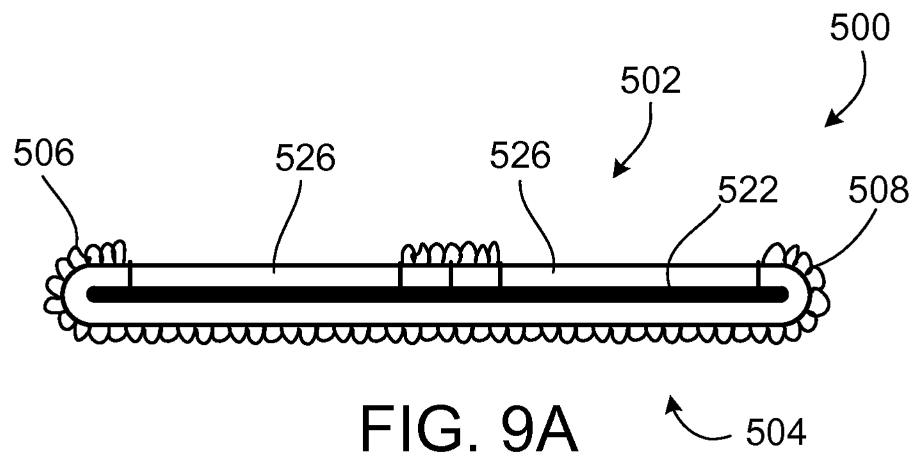


FIG. 9A

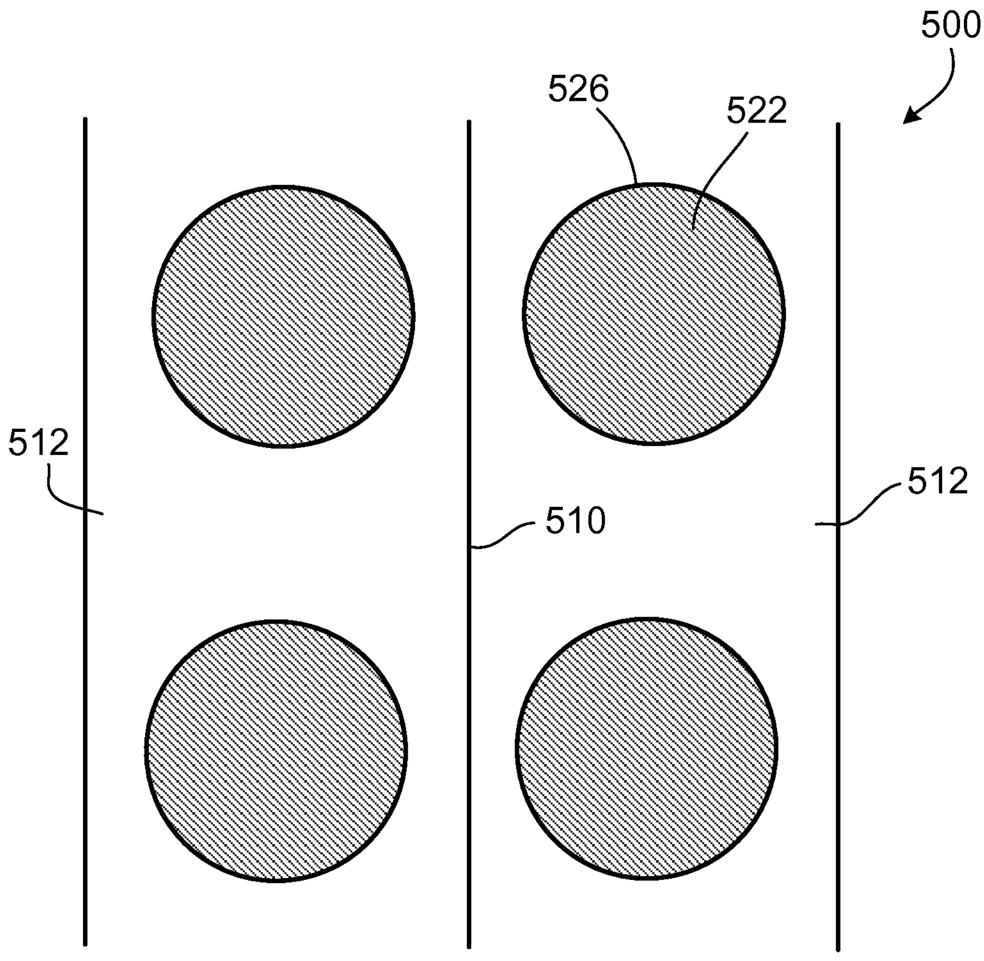


FIG. 9B

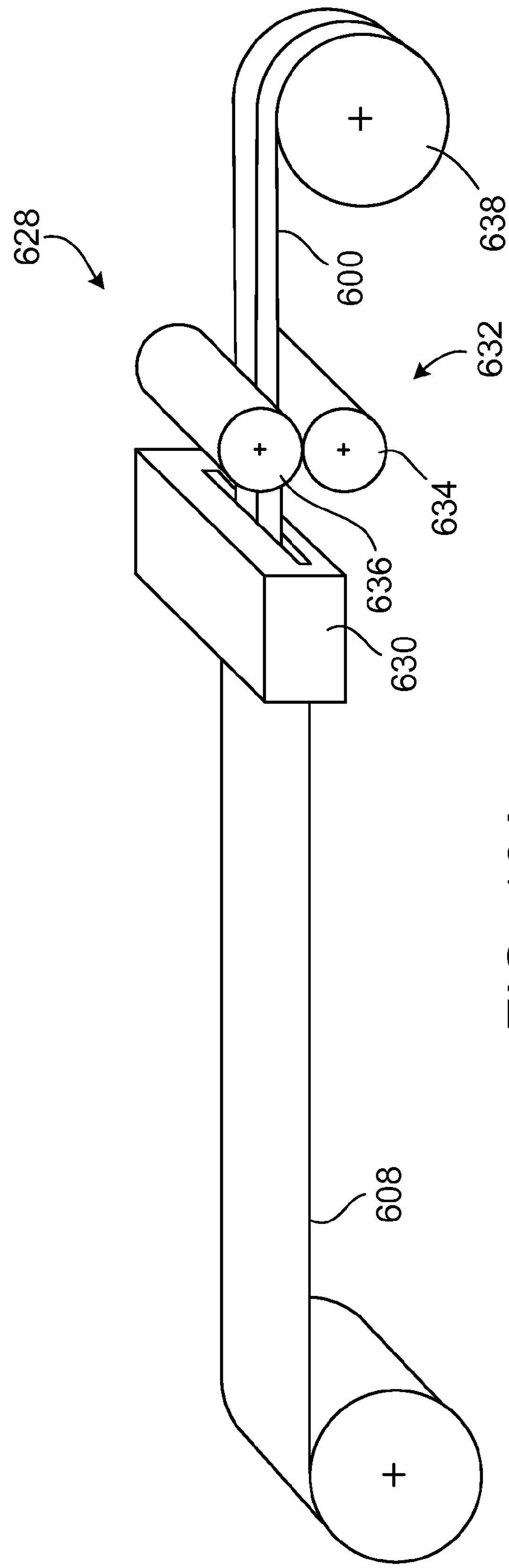


FIG. 10A

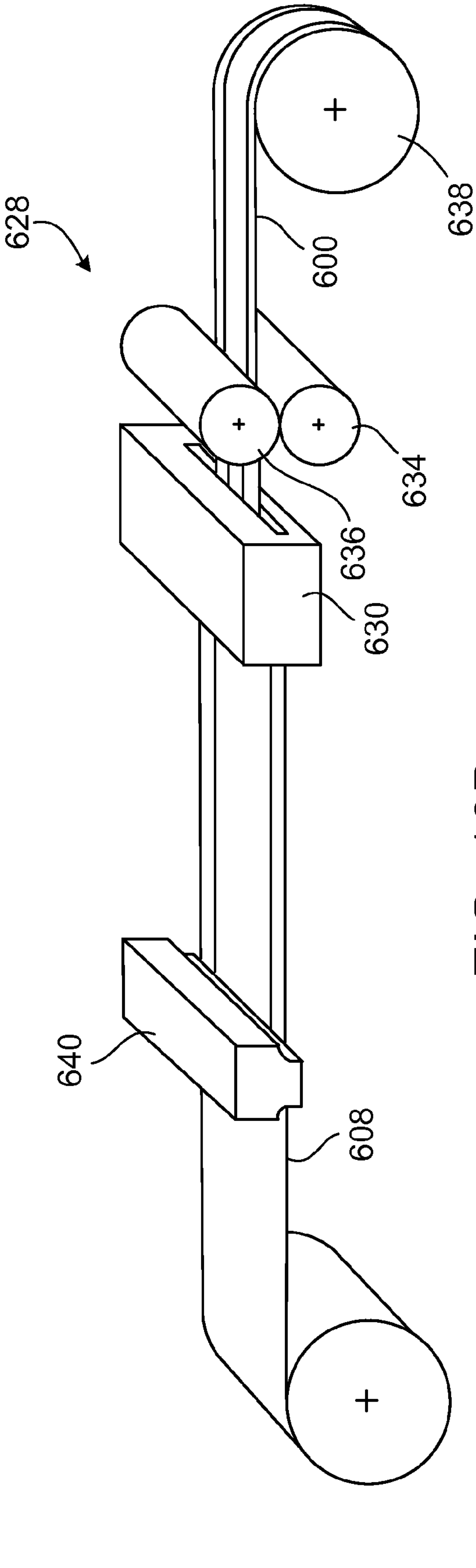


FIG. 10B

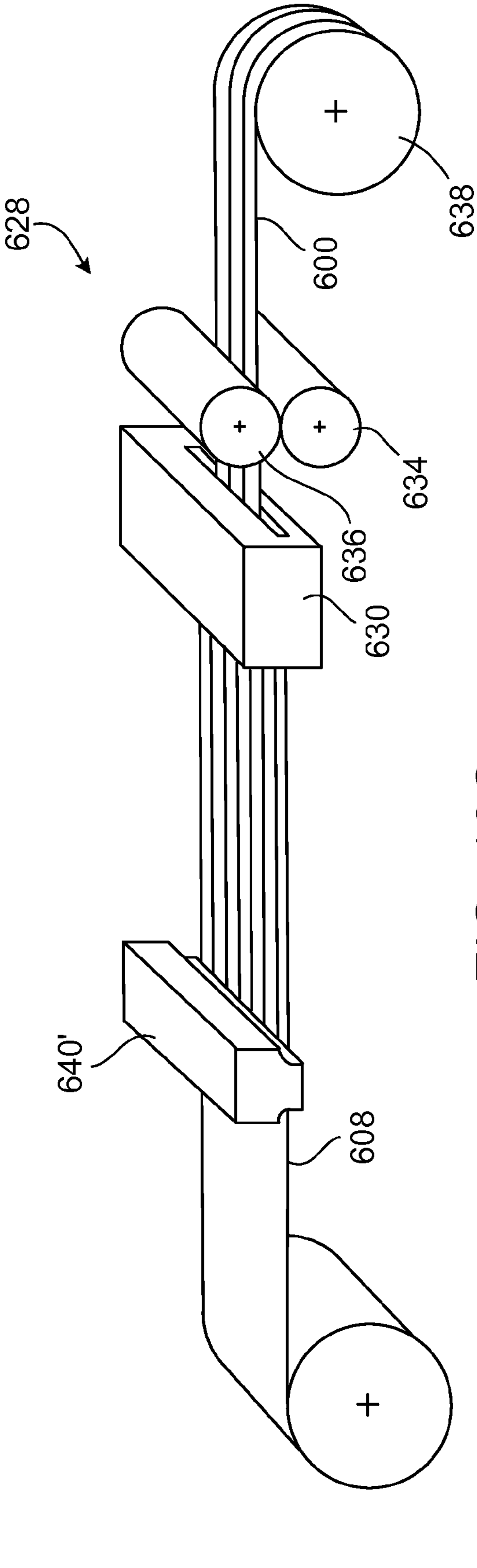


FIG. 10C

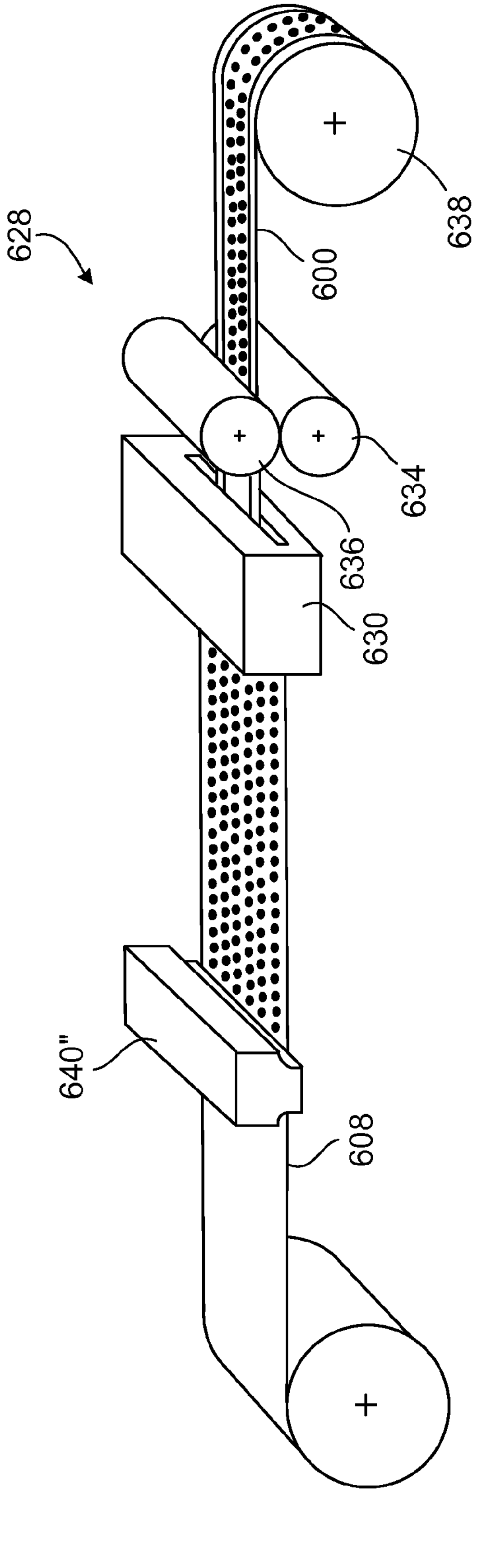


FIG. 10D

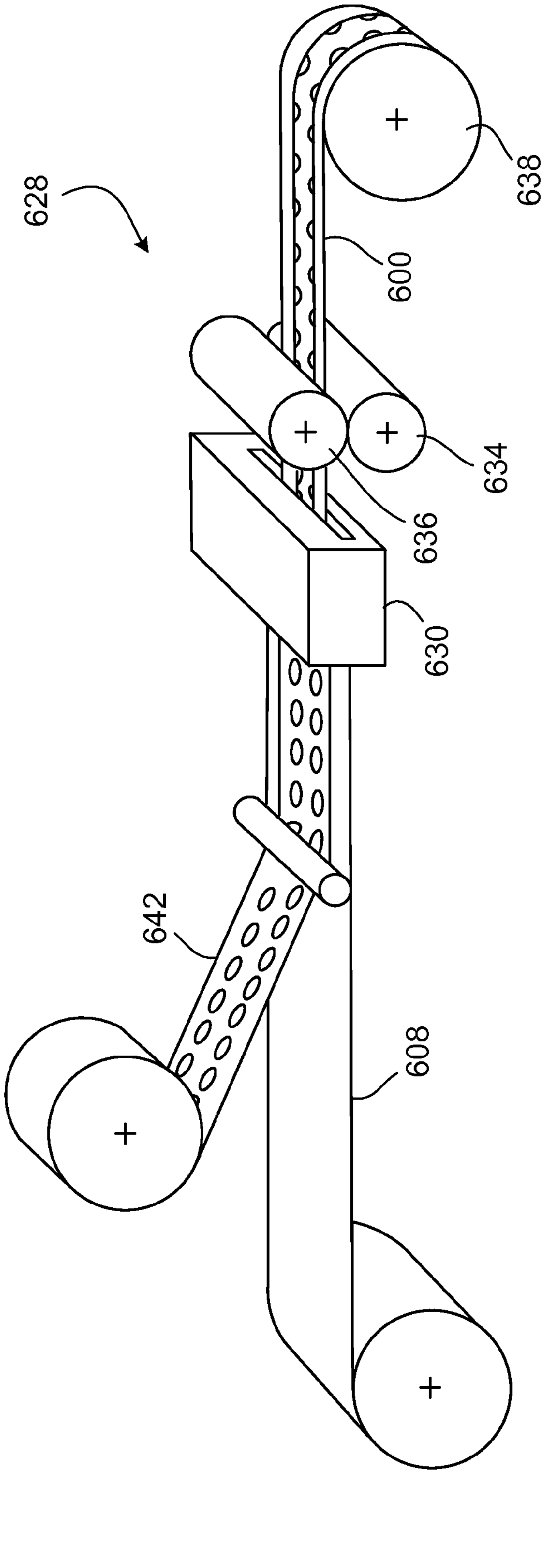


FIG. 10E

# DOUBLE-SIDED FASTENERS

## TECHNICAL FIELD

This invention relates to double-sided loop straps, such as used in touch fastener products.

## BACKGROUND

Double-sided fabrics are widely used in a variety of markets including, for example, the medical, apparel and sports markets. For applications in which a double-sided fabric is to engage with touch fasteners, either side may be constructed to be hook engageable. Such products are useful in medical and sports markets for applications such as straps, which may support medical devices on a patient, or in braces that may be wrapped around body parts, such as elbows or knees as support. In some applications, these double-sided, hook compatible straps are intended for skin contact, and must therefore be comfortable to the touch and breathable (i.e., air permeable) to some degree.

## SUMMARY

One aspect of the invention features a method for forming a double-sided loop strap, including: receiving a continuous longitudinal strip of loop material including a strip-form base bearing a field of upstanding loops on a fastening side of the strip bounded by opposite longitudinal edges, folding each of the longitudinal edges away from the fastening side, such that the base overlaps itself, and securing the folded edges in place by permanently bonding together overlapped areas of the base to form the double-sided loop strap. The bonding forms discrete bonded regions of the base surrounded by unbonded area, the bonded regions including a row of the bonded regions extending along and overlapping at least one of the folded edges, and a pattern of bonded regions surrounded by engageable loops on either side of the strap.

In some examples, folding each of the longitudinal edges includes folding the edges sufficiently inward to meet on one side of the strap. In some implementations, the row of bonded regions forms a seam along the longitudinal edges.

In some applications, the bonded regions of the row of bonded regions are shaped to form visually recognizable graphics.

In some cases, a density of the pattern of bonded regions varies widthwise and/or lengthwise along the strap.

In some embodiments, the density of the pattern of bonded regions gradually increases from the center area of the strap in an outboard direction.

In some examples, permanently bonding includes heat staking overlapped areas of the base.

Another aspect of the invention features a double-sided loop strap, including: a first side including a first loop-bearing surface, and a second side opposite the first side, the second side including a second loop-bearing surface and an adjacent grip area covered by a grip material forming an exposed grip surface, where the exposed grip surface is recessed below the second loop-bearing surface.

In some examples, the grip area includes a longitudinally continuous lane bounded on both sides by loop material.

In some cases, the grip surface features protrusions of the grip material.

In some applications, the first loop-bearing surface is of a loop material forming one broad side of the strap opposite the grip surface, and the second loop-bearing surface is of a loop



material having a longitudinal edge adjacent to the grip surface and secured by the grip material.

In some embodiments, the grip area has a lateral extent of between 10 and 90 percent of an overall width of the strap.

In some examples, the first loop-bearing surface is of a loop material forming one broad side of the strap opposite the grip surface, and the second loop-bearing surface is of a loop material having an edge bounding a hole through the loop-bearing surface.

In some implementations, the grip material has a dynamic coefficient of frication that is greater than about 0.3.

Yet another aspect of the invention features a double-sided loop strap, including: a first side including a first loop-bearing surface, and a second side opposite the first side, the second side including a second loop-bearing surface and an adjacent grip area covered by a grip material forming an exposed grip surface, where the exposed grip surface is bounded by an edge of the second loop-bearing surface.

In some examples, the edge is a continuous longitudinal edge of the second loop-bearing surface.

In some applications, the edge bounds a hole through the second loop-bearing surface.

In some cases, the grip material extends underneath and bonds the edge.

In some implementations, the grip surface is recessed below the second loop-bearing surface.

In some embodiments, the grip material includes a foaming agent.

In some examples, a portion the grip surface is at least level with the second loop-bearing surface.

The details of one or more embodiments of the invention are set forth in the accompanying drawings and the description below. Other features, objects, and advantages of the invention will be apparent from the description and drawings, and from the claims.

## DESCRIPTION OF DRAWINGS

FIG. **1**A is cross-sectional view of a double-sided loop strap.

FIG. **1**B is a top view of the double-sided loop strap of FIG. **1**A.

FIG. **1**C is a cross-sectional view of a strip of loop material with folded edges.

FIG. **2**A is a top view of a first example double-sided loop strap featuring an irregular pattern of discrete bonded regions.

FIG. **2**B is a top view of a second example double-sided loop strap featuring an irregular pattern of discrete bonded regions.

FIG. **3** is a top view of a double-sided loop strap featuring discrete bonded regions shaped as visually recognizable graphics.

FIG. **4**A is a cross-sectional view of a composite double-sided loop strap.

FIG. **4**B is a top view of the composite double-sided loop strap of FIG. **4**A.

FIG. **5**A is a cross-sectional view of a double-sided loop strap featuring a non-slip surface.

FIG. **5**B is a top view of the double-sided loop strap of FIG. **5**A.

FIG. **5**C is a cross-sectional view of a strip of loop material with folded edges carrying a deposit of resinous grip material.

FIG. **6**A is a cross-sectional view of a double-sided loop strap featuring a non-slip surface with upstanding treads.

FIG. **6**B is a top view of the double-sided loop strap of FIG. **6**A.

FIGS. **7**A and **7**B are cross-sectional views of a double-sided loop strap featuring a non-slip surface formed from a resinous, foam activated grip material.

FIG. **8** is a perspective view of an adjustable cinch strap featuring a double-sided loop strap providing a non-slip surface.

FIG. **9**A is a cross-sectional view of a double-sided loop strap featuring multiple discrete non-slip surfaces.

FIG. **9**B is a top view of the double-sided loop strap of FIG. **9**A.

FIG. **10**A is a schematic representation of a first method and apparatus for making a double-sided loop strap.

FIGS. **10**B-**10**E are schematic representations of a second method and apparatus for making a double-sided loop strap featuring a non-slip surface.

Like reference symbols in the various drawings indicate like elements.

## DETAILED DESCRIPTION

FIGS. **1**A and **1**B show an example double-sided loop strap **100** having a front side **104** and a back side **102**, each of which features a field of upstanding, hook compatible loops **106**. Note that the convention of "front" and "back" is used herein for discussion purposes only, and is not intended to carry any significant meaning that would affect the scope of the present disclosure. In this example, loop strap **100** is a multi-layer construction fashioned from a preform elongated strip of loop material **108** defining a pair of free longitudinal edges **110** (see FIG. **1**C). Edges **110** are folded over to form two inwardly facing arms **112** meeting edge-to-edge near a center area of the strip. As shown, strip **108** features a flexible base **114** bearing a field of upstanding loops **106** on one side. In particular, the loops extend from an outward surface of the base which is bounded by the free longitudinal edges.

The structure and physical properties of strip **108** may vary in different implementations. For example, the strip can have a woven loop structure (e.g., having napped or un-napped loops), a knitted loop structure and/or a non-woven loop structure. The materials used to manufacture strip **108** may also vary. For example, nylon, polyester, polypropylene, and/or aramid fibers can be used to manufacture the preform loop strip. Though not exhaustive, the foregoing examples illustrate the numerous different types of hook compatible fabrics that can be used in conjunction with the present technique. In general, the structure and material of the strip are selected based on an intended application of the product.

Referring back to FIGS. **1**A and **1**B, arms **112** are held in place against an inboard portion of flexible base **114** by an array of discrete bonded regions **118**. As shown, each of the bonded regions is surrounded by an unbonded area of loop material. Bonded regions **118** can be formed, for example, using a heat staking process (e.g., ultrasonic heat staking) to fuse the folded, overlapping layers of loop material together at various discrete points. In this particular example, a single patterned band or row of bonded regions **118***a* extends along and overlaps the two longitudinal edges **110** to form a seam that holds strip **108** in a folded, two-layer configuration. An additional pattern of bonded regions **118***b* extends broadly over the other portions of the folded strip **108** to secure arms **112** firmly in place against flexible base **114**. Using patterned arrays of discrete bonded regions to secure the preform strip in a folded configuration can be advantageous in many different applications. In particular, this type of construction may provide more flexibility than a similar strap, for example, where adhesives or a sewn seam are used to secure the folded outboard portions of the strip in place. Moreover, the present technique offers a substantial amount of air permeability so that the strap is "breathable" when in contact with a user's skin.

The outlining footprint of the bonded regions can vary between different implementations of the double-sided loop strap, so as to provide structurally different products. For example, the size of the bonded regions may differ from one application to the next. With other factors being equal, larger bonded regions will provide the strap more structural stability and bond strength than will smaller bonded regions. However, the stability and strength provided by the larger bonded regions comes at the cost of reduced flexibility, air permeability, and closure performance (e.g., shear, tensile, and peel strength). In particular, the reduction in closure performance is a result of the reduced loop material available for hook engagement, as the loops are pressed down and fused in the bonded regions. Similarly, the pattern density of the bonded regions can be a significant variable between different implementations. In particular, a denser pattern of bonded regions will tend to provide more dimensional stability and bond strength, while offering less flexibility, air permeability and closure performance. Generally, the above-described physical properties will vary according to a ratio comparing the total area of bonded regions to the total unbonded area of the strap. That is, structural stability and bond strength will increase when the total area of the bonded regions increases relative to the total unbonded area. On the other hand, flexibility, air permeability, and closure performance will increase when the total unbonded area increases relative to the total area of the bonded regions. Of course, various other properties of the loop strap may also be affected by the configuration of the bonded regions.

Referring again to FIGS. **1**A and **1**B, bonded regions **118***b* are provided in a precise geometrically regular pattern of uniform density, which provides substantially consistent and isotropic physical properties across strap **100**. In some examples, however, the pattern of bonded regions is purposefully irregular to provide different physical properties around specific areas of strap **100**, and/or to provide some directionality to these physical properties.

FIG. **2**A shows an example where bonded regions **118***b*' are established in an irregular pattern. In particular, the pattern density of the bonded regions gradually increases from the center area of the strap in the direction of the outboard folds. In this embodiment, strap **100'** would be stronger and stiffer at the outboard areas and more flexible and breathable near the center. Additionally, peel strength would be greater near the center of the strap than around the outboard areas, because there is more loop material available for hook engagement. FIG. **2**B shows an example where bonded regions **118***b*" are established in another irregular pattern, where the distance between the bonded regions is smaller in the widthwise direction of the strap than in the lengthwise direction. In this case, strap **100"** would be more flexible in the lengthwise direction and more rigid in the widthwise direction.

As noted above, the row of bonded regions **118***a* overlaps edges **110** to form a seam along the back side **102** of strap **100**. In the previous examples, bonded regions **118***a* are generally circular and distributed at a constant interval along longitudinal edges **110**. FIG. **3** shows an example where bonded regions **118***a*''' are provided in different types of shapes, so as to form a visually distinguishable graphic. In this embodiment of strap **100'''**, bonded regions **118***a*''' are shaped as individual letters "V", "E", "L", "C", "R", and "O". Numerous types of shapes can be used to form graphic images such as for logos, brand names, and the like. FIG. **3** also provides an example where the bonded regions near the center area of the strap cover a greater area than the bonded regions near the outboard folds. This type of configuration would provide more bond strength and rigidity near the seam, the part of the strap offering the least structural integrity.

FIGS. **4**A and **4**B show another embodiment of a double-sided loop strap **200**. Strap **200** is similar to strap **100** described above. For example, strap **200** is a two-layered construction presenting hook compatible loops **206** on both a front side **204** and a back side **202** of the strap. In this example, strap **200** is a composite structure fashioned from two separate preform strips of loop material **208***a* and **208***b*, each of which includes a flexible base **214***a,b* bearing a field of upstanding loops **206***a,b* extending from an outward surface bounded by free longitudinal edges **210***a,b*. The strips are similar, but provide different types of loops, with loops **206***a* being presenting less loft than loops **206***b*. As shown, longitudinal edges **210***a* of strip **208***a* are folded over flexible base **214***a* to meet the respective edges **210***b* of strip **208***b*. Two similar sets of discrete bonded regions **218***a* are provided to secure the respective edges **210***a* and **210***b* in place against an inboard portion of flexible base **214***a*. As shown, each set of bonded regions **218***a* provides a row of regions extending along and overlapping the respective edges **210***a* and **210***b*. Similar to the previous examples, a pattern of bonded regions **218***b* extends broadly over other portions of strips **208***a* and **208***b* to secure the strips in a tightly bound construction.

FIGS. **5**A and **5**B show yet another double-sided loop strap **300** having a front side **304** and a back side **302**, each of which presents a field of upstanding, hook compatible loops **306** facing outward therefrom. Similar to the previous examples, loop strap **300** is a two-layer construction fashioned from a preform elongated strip of loop material **308** with free longitudinal edges **310** folded over to form two inwardly facing arms **312**. In particular, strip **308** includes a flexible base **314** bearing a field of upstanding loops **306** extending from an outward surface bounded by longitudinal edges **310**.

In this example, a thin layer of resinous grip material **322** is deposited on an inboard portion of flexible base **314**, on the back side of the base opposite loops **306** (see FIG. **5**C). Longitudinal edges **310** are folded over the outer portions of the layer of grip material **322**, such that outer portions of the layer of grip material are sandwiched between the two layers of loop material, while the center portion remains exposed between edges **310**. As shown, the exposed surface of the grip material is recessed relative to the neighboring loop-bearing surface and bounded by the longitudinal edges. In various implementations, the exposed grip surface can have a lateral extent of between 10 and 90 percent of the overall width of the strap. In general, the loop strap will exhibit more gripping ability when a greater amount of the grip surface is exposed. The additional grip would come at a cost of closure performance, as less loop material is provided for engagement. Various implementations and applications may necessitate different configurations of the strap with regards to the grip surface. For example, a strap designed for use on luggage may require nearly the entire surface to be grip material, and does not require breathability for comfort to the user. A strap utilized to secure a knee brace may need very little grip material in order to provide adequate security to the user, and will allow for more air movement through the strap, to enhance the user's comfort.

In this embodiment, the folded longitudinal edges can be secured in place using an appropriate adhesive, sewing or by heat staking, as discussed above. In some examples, the grip material itself serves as an adhesive, such that the folded edges are held in place against the base solely by adhesion from the grip material.

Grip material **322** can have any appropriate composition so as to provide a substantially non-slip surface. By "non-slip" surface, we refer to any surface designed to inhibit or prevent a smooth slipping or sliding motion by providing adequate surface friction. The grip material can provide a relatively high coefficient of friction (e.g., a dynamic coefficient of friction greater than about 0.3), and may be generally "soft" or "skin friendly" to the touch. For example, soft elastomers (e.g., styrenic block copolymers, such as styrene-isoprene-styrene, styrene isoprene/butadiene styrene, and styrene-butadiene-styrene), rubbers (e.g. flouroelastomers) or silicones can be used. Other suitable compositions can also be used. For example, various plastics with modified lower molecular weight constituents and thermoplastic elastomers (e.g., modified polypropylene or modified polyethylene) can serve as a grip material. In some examples, the grip material is particularly well designed for skin contact, featuring a tack free, non-allergenic, and non-irritant composition.

FIGS. **6**A and **6**B show an additional example of loop strap **300'** where the layer of grip material **322'** provides a pattern of molded, upstanding treads **324** that provide additional surface friction for mitigating slip. In this example, the grip material includes three undulating treads extending lengthwise down the strip. Of course, other appropriate configurations are also contemplated. For example, more or less treads can be provided; the treads can extend widthwise across the strip (as opposed to lengthwise, see FIG. **8**); the treads can be substantially straight (as opposed to undulating); and/or the height and thickness of the treads can vary.

FIGS. **7**A and **7**B show yet another example of loop strap **300"** where the deposited grip material **322"** includes a foaming agent (e.g., a heat activated foaming agent). In these examples, the loop strap is generally constructed as described above with reference to FIGS. **5**A-**5**C. After construction, the foaming agent is activated to expand the layer of grip material **322"**, raising the exposed non-slip surface to be level with the neighboring loop material. In some examples, the non-slip surface is raised above the loop material.

FIG. **8** shows an example implementation of a double-sided loop strap **400** featuring an exposed non-slip surface having upstanding slip inhibiting treads **424** formed of an appropriate grip material **422**. In this case, the loop strap **400** is used in conjunction with a buckle **480** to form an adjustable cinch strap, such as may be used to support a medical or sports device on a user. The cinch strap is formed by threading a free-end **482** of loop strap **400** through buckle **480**, wrapping the loop strap around an object, re-threading the free-end back through the buckle, and folding the strap back on itself. In this example, free-end **482** provides a patch of loop compatible fasteners (e.g., hooks) to engage the loop material on either side of the grip material **422**, thus securing the strap in place.

As discussed above, the non-slip surface can be level or above the surrounding loop material. In this case, the upstanding treads **424** can be designed to engage one another when the strap is folded back on itself, impeding the ability of the strap to easily release back through the buckle, essentially creating a one-way cinch strap. If the grip connection between both elements is designed with appropriate strength for the application, the uni-directionality, coupled with the presence of the buckle, could even hold the strap in place, without the above mentioned loop compatible fasteners on the free-end of the strap. In some examples, the non-slip surface is recessed relative to the surrounding loop material. This configuration would render the loop strap more comfortable when pressed against a user's skin and provide less interference with the buckle of the cinch strap. Either of these above described configurations may prove useful in various applications.

FIGS. **9**A and **9**B show another example loop strap **500** having a front side **504** and a back side **502**, each of which presents a field of upstanding, hook compatible loops **506**. In particular, loop strap **500** is a two-layer construction fashioned from a preform elongated strip of loop material **508** including a flexible base bearing a field of loops **506** and defining free longitudinal edges **510**, which are folded over to form two inwardly facing arms **512**. Each of arms **512** defines a patterned set of discrete apertures **526** that extend entirely through the flexible base.

Similar to the previous examples, a thin layer of grip material **522** is deposited on an inboard portion of the flexible base. However, in this case, longitudinal edges **510** are completely folded over the layer of grip material **522** to meet near a center portion of strip **508**, such that the layer of grip material is entirely sandwiched between the two layers of loop material. As shown, apertures **526** are aligned with the grip material **522** so as to leave various portions of the grip material surface exposed. The exposed surface of the grip material is recessed relative to the neighboring loop-bearing surface and bounded by the edges of the apertures.

Several of the foregoing examples (shown in FIGS. **5**A-**9**B) provide double-sided loop straps that offer a substantially non-slip surface of grip material bounded by folded portions of a preform strip of loop material. The folded portions of the loop material effectively hide the edges of the deposited resinous grip material, which may be unsightly and rough because it can be difficult to produce a uniform resin edge.

FIG. **10**A shows an example apparatus **628** which is suitable for manufacturing a double-sided loop strap **600**, such as described above. Apparatus **628** receives a preform strip of loop material **608** provided in the form of an elongated flexible substrate carrying a field of upstanding loops on one side. Preform strip **608** is fed to a folding device **630** that folds the longitudinal edges of strip **608** inward to overlap an inboard portion of the flexible base. The folded, two-layer strip is introduced to a heat staking machine **632** that creates the prescribed patterns of bonded regions by fusing the two layers of material together at various discrete points. The resulting double-sided loop strap **600** is then spooled onto a final product roll **638**.

The folding device and heat staking machine can be selected from a wide variety of conventional equipment. In the present example, heat staking machine **632** includes a patterned roller **634** having individual projections extending from its outer surface, and a horn **636** for facilitating the ultrasonic vibration with the folded strip **608** against the patterned roller.

FIGS. **10**B-**10**E show how apparatus **628** can be adapted for forming a non-slip surface on the double sided loop strap by depositing grip material on a back side of the preform strip of loop material prior to folding. In FIG. **10**B, a resin applicator **640** is positioned upstream of folding device **630**. Resin applicator **640** extrudes a solid layer of grip material onto the back of the loop surface prior to folding. The rollers **634**, **636** after the folding station can either be used to simply seal the folded product utilizing the grip material as the bonding agent or could be ultrasonic welders to bond the fold in place (as described above). In FIG. **10**C, resin applicator **640'** extrudes multiple strands of grip material onto the back of the loop surface prior to folding. In FIG. **10**D, a resin applicator **640"** is designed to extrude dots of grip material onto the back of the loop surface prior to folding. In FIG. **10**E, a roll of film based grip material **642** is placed on the back of the loop surface prior to folding. In this example, the film of grip material includes an array of openings to improve breathability of the double-sided loop strap. The grip material, however, can also be a solid film or a film that includes micro perforations.

While a number of examples have been described for illustration purposes, the foregoing description is not intended to limit the scope of the invention, which is defined by the scope of the appended claims. There are and will be other examples and modifications within the scope of the following claims. For example, modifications could include punching holes in the loop strip to further improve flexibility and breathability of the double-sided loop strap.

What is claimed is:

**1**. A method for forming a double-sided loop strap, the method comprising:

receiving a continuous longitudinal strip of loop material comprising a strip-form base bearing a field of upstanding loops on a fastening side of the strip bounded by opposite longitudinal edges;

folding each of the longitudinal edges away from the fastening side, such that the base overlaps itself; and

securing the folded edges in place by permanently bonding together overlapped areas of the base to form the double-sided loop strap,

wherein the bonding forms discrete bonded regions of the base surrounded by unbonded area, the bonded regions including a row of the bonded regions extending along and overlapping at least one of the folded edges, and a pattern of bonded regions surrounded by engageable loops on either side of the strap.

**2**. The method of claim **1**, wherein folding each of the longitudinal edges comprises folding the edges sufficiently inward to meet on one side of the strap.

**3**. The method of claim **1**, wherein the row of bonded regions forms a seam along the longitudinal edges.

**4**. The method of claim **1**, wherein the bonded regions of the row of bonded regions are shaped to form visually recognizable graphics.

**5**. The method of claim **1**, wherein a density of the pattern of bonded regions varies widthwise and/or lengthwise along the strap.

**6**. The method of claim **5**, wherein the density of the pattern of bonded regions gradually increases from a center area of the strap in an outboard direction.

**7**. The method of claim **1**, wherein permanently bonding comprises heat staking overlapped areas of the base.

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