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(54) **CROTCH EXPANSION DEVICE FOR GARMENTS AND METHOD OF MANUFACTURE**

(57) A crotch expansion device for garments is described herein. The crotch expansion device may comprise a body having a substantially triangular shape. The body may comprise one or more of a first surface, a second surface opposite the first surface, a base edge, a first leg edge, a second leg edge, and/or other components. The first leg edge and the base edge may meet at a

first vertex. The second leg edge and the base edge may meet at a second vertex. The first leg edge and the second leg edge may meet at an apex. The apex being opposite the base edge. The first leg edge and/or the second leg edge may have a gradient with an absolute value of about 0.4 and/or other values.

Description

FIELD OF THE DISCLOSURE

[0001] This disclosure relates to garment design and manufacture, and in particular to a device to expand a crotch region of garments.

BACKGROUND

[0002] Garment design may be guided by one or more of comfort, style, ease-of-manufacture, and/or durability. Men's garment design may particularly focus on the design and construction of the crotch region in order to provide necessary comfort. However, added comfort often leads to a sacrifice in style. For example, designing a garment to provide more room in the crotch region may lead to a bulkier appearance.

SUMMARY

[0003] One or more aspects of the present disclosure relate to a crotch expansion device for garments. The device may comprise a body formed from material suitable for the intended garment, such as pants, shorts, slacks, leggings, underwear, jumpers, overalls, and/or other garments. By way of non-limiting illustration, the body may be formed from commonly used garment fabric and/or other fabric suitable for the intended purposes described and/or made apparent herein.

[0004] In some implementations, the body may have a substantially triangular shape and/or other shapes. Other shapes may include, for example, trapezoidal, square, rectangular, rhomboidal, and/or other considerations. The body may comprise one or more of a first surface, a second surface opposite the first surface, a base edge, a first leg edge, a second leg edge, a first vertex, a second vertex, an apex, and/or other components. The first leg edge and the base edge may meet at the first vertex. The second leg edge and the base edge may meet at the second vertex. The first leg edge and the second leg edge meet at the apex. The apex may be opposite the base edge. The inventor of the present disclosure has identified one or more critical dimensions and/or one or more critical relative dimensions of the device that allow the device to achieve the best results and/or improvements related to one or more comfort, style, ease-of-manufacture, and/or durability. Such dimensions may be expressed in a variety of ways. By way of non-limiting illustration, dimensions may be expressed as one or more of specific values, ranges of values, relative values, and/or in other ways. It is to be understood that the way in which the dimensions are expressed should not diminish the criticality thereof in achieving the aforementioned results and/or improvements.

[0005] In some implementations, the first leg edge and/or the second leg edge of the body may be formed to have a gradient (e.g., a slope or steepness measure)

with an absolute value of about 0.4. In some implementations, "about" in this context may mean ± 0.01 .

[0006] One or more aspects of the present disclosure relate to a garment having an expanded crotch region.

5 The garment may comprise a crotch expansion device and/or other components. The crotch expansion device may be attached to (e.g., sewn into, adhered, etc.) an inseam of the garment. The crotch expansion device may comprise a body having a substantially triangular shape
10 and/or other shapes. The body may comprise one or more of a first surface facing an exterior of the garment, a second surface opposite the first surface and facing an interior of the garment, a base edge, a first leg edge, a second leg edge, and/or other components. The base
15 edge of the body may be attached to a posterior edge of the inseam of the garment. The first leg edge of the body may be attached to an anterior edge of the inseam and disposed at a first side of the garment. The second leg edge of the body may be attached to the anterior edge of
20 the inseam and disposed at a second side of the garment. The first leg edge and the base edge meet at a first vertex. The second leg edge and the base edge meet at a second vertex. The first leg edge and the second leg edge meet at an apex. The apex may be disposed opposite the base
25 edge. The apex may be attached to the anterior edge of the inseam between the first vertex and the second vertex.

[0007] A method of manufacture of crotch expansion device for garments may comprise forming a body and/or
30 other components. The body may have a substantially triangular shape. Forming the body may comprise one or more of: forming a first surface; forming a second surface opposite the first surface; forming a base edge; forming a first leg edge, wherein the first leg edge and the base
35 edge meet at a first vertex; forming a second leg edge, wherein the second leg edge and the base edge meet at a second vertex; wherein the first leg edge and the second leg edge are formed meet at an apex, the apex being opposite the base edge; wherein the first leg edge and/or
40 the second leg edge are formed to have a gradient with an absolute value of about 0.4 and/or other values; and/or other operations.

[0008] A method of manufacture of a garment having an expanded crotch region may comprise one or more of
45 forming a crotch expansion device, attaching the crotch expansion device to an inseam of a garment, and/or other operations. In some implementations, forming the crotch expansion device may comprise forming a body having a substantially triangular shape. Forming the body may
50 comprise one or more of: forming a first surface, forming a second surface opposite the first surface, forming a base edge, forming a first leg edge to meet the base edge at a first vertex, forming a second leg edge to meet the base edge at a second vertex, and/or other operations.
55 The first leg edge and the second leg edge may be formed meet at an apex. The apex may be opposite the base edge. The first leg edge and/or the second leg edge may be formed to have a gradient with an absolute value of

about 0.4 and/or other values.

[0009] In some implementations, attaching the crotch expansion device to the inseam of the garment may comprise one or more of facing the first surface toward an exterior of the garment and/or the second surface toward an interior of the garment, attaching the base edge to a posterior edge of the inseam of the garment, attaching the first leg edge to an anterior edge of the inseam disposed at a first side of the garment, attaching the second leg edge to the anterior edge of the inseam disposed at a second side of the garment, attaching the apex to the anterior edge of the inseam between the first vertex and the second vertex, and/or other operations.

[0010] These and other features, and characteristics of the present technology, as well as the methods of operation and functions of the related elements of structure and the combination of parts and economies of manufacture, will become more apparent upon consideration of the following description and the appended claims with reference to the accompanying drawings, all of which form a part of this specification, wherein like reference numerals designate corresponding parts in the various figures. It is to be expressly understood, however, that the drawings are for the purpose of illustration and description only and are not intended as a definition of the limits of the invention. As used in the specification and in the claims, the singular form of "a", "an", and "the" include plural referents unless the context clearly dictates otherwise.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011]

FIG. 1 illustrates a perspective view of a crotch expansion device for garments, in accordance with one or more implementations.

FIG. 2 illustrates a bottom view of the crotch expansion device of FIG. 1, in accordance with one or more implementations.

FIG. 3 illustrates a top view of the crotch expansion device of FIG. 1, in accordance with one or more implementations.

FIG. 4 illustrates a side view of the crotch expansion device of FIG. 1, in accordance with one or more implementations.

FIG. 5 illustrates a front view of the crotch expansion device of FIG. 1, in accordance with one or more implementations.

FIG. 6 illustrates a view of a garment having an expanded crotch region, in accordance with one or more implementations.

FIG. 7 illustrates a view of a garment having an

expanded crotch region, in accordance with one or more implementations.

FIG. 8 illustrates a view of a garment having an expanded crotch region, in accordance with one or more implementations.

FIG. 9 illustrates a view of a crotch expansion device, in accordance with one or more implementations.

FIG. 10 illustrates a view of a seam joining two portions forming a crotch expansion device, in accordance with one or more implementations.

FIG. 11 illustrates a method of manufacture of a crotch expansion device, in accordance with one or more implementations.

FIG. 12 illustrates a method of manufacture of a garment having an expanded crotch region, in accordance with one or more implementations.

DETAILED DESCRIPTION

[0012] FIG. 1 illustrates a view of a crotch expansion device 100 for garments, in accordance with one or more implementations. The device 100 may comprise a body 102 formed from material suitable for the intended garment. By way of non-limiting illustration, the body 102 may be formed from fabric such as one or more denim, linen, corduroy, cotton, cotton blends, flannel, and/or other fabrics.

[0013] It is noted that terms such as "posterior", "anterior", "forward", "rearward", "front", "rear", "upper", "lower", "distal", "proximal", "left", and/or "right" may refer herein to the directions and/or dispositions when considering the device 100 in an as-used position as part of a garment (see, e.g., FIG. 6). The use of these terms with various components should therefore be easily understood by a person skilled in the art as related to orientation, direction, and/or disposition. Further, some directions may be specifically defined herein and/or shown in the figures.

[0014] It is further noted that some numerical values for dimensions may be expressed herein with the term "about." Those skilled in the art of garment design and/or manufacture may understand the impact of this term as it is used and/or understood within the scope of their knowledge and/or experience in the field. In some implementations, a meaning of the term "about" may be specifically described herein with respect to a given value expression. In some implementations, in lieu of and/or in addition to any specifically expressed meanings of the term "about," this term may be understood as being +/- 10% of an aforementioned value. Further, when a value is expressed with respect to a range, this may be considered inclusive of the range values.

[0015] The inventor of the present disclosure has iden-

tified one or more critical dimensions and/or one or more critical relative dimensions of the device 100 that allow the device 100 to achieve the best results and/or improvements related to comfort, style, ease-of-manufacture, and/or durability. Such dimensions may be expressed in a variety of ways. By way of non-limiting illustration, dimensions may be expressed as one or more of specific values, ranges of values, relative values, and/or in other ways. It is to be understood that the way in which the dimensions are expressed should not diminish the criticality thereof in achieving the aforementioned results and/or improvements.

[0016] In some implementations, the body 102 may have a substantially triangular shape and/or other shapes. In some implementations, a substantially triangular shape may include an isosceles triangle shape and/or other shapes. The body 102 may comprise one or more of a first surface 104, a second surface 106 (see FIG. 3) opposite the first surface 104, a base edge 108, a first leg edge 110, a second leg edge 114, a first vertex 112, a second vertex 116, an apex 118, and/or other components.

[0017] The first leg edge 110 and the base edge 108 may meet at the first vertex 112. The second leg edge 114 and the base edge 108 may meet at the second vertex 116. The first leg edge 110 and the second leg edge 114 meet at the apex 118. The apex 118 may be opposite the base edge 108. The body 102 may include a first truncated end forming the first vertex 112. The body 102 may include a second truncated end forming the second vertex 116. The term "truncated" may mean substantially non-pointed and/or having a shape other than converging at a point.

[0018] In some implementations, base edge 108 may be curved. The base edge 108 may curve toward the apex 118. The amount of curve may depend on a particular application of the device 100 and/or as needed to contour a particular garment. As such, those skilled in the art may appreciate that the amount of curve need not be expressly described herein while still understanding the scope and intent thereof. In some implementations, base edge 108 may be substantially straight.

[0019] In some implementations, in FIG. 2, the body 102 may be formed such that the first vertex 112 and the second vertex 116 span a distance "D1." In some implementations, in FIG. 2, the body 102 may be formed such that the midline of body 102 (e.g., a line from the apex 118 to the base edge 108) has a height "H1." In some implementations, the body 102 may be formed such that the first leg edge 110 and/or the second leg edge 114 of the body 102 may have a gradient (e.g., a slope or steepness measure) of a particular value. The gradient may be defined by the typical "rise over run" consideration. In this case, the gradient may be defined by an absolute value of H1 (the "rise") over $\frac{1}{2}$ D1 (the "run"), or $H1/D1/0.5$. By using the gradient as a constraint, the actual size and/or dimension of the device 100 may be adjusted (e.g., increased or decreased) as

needed to fit a certain size garment, while still adhering to this constraint.

[0020] In some implementations, the gradient of the first leg edge 110 and/or the second leg edge 114 may have an absolute value in the range of 0.2 to 1. In some implementations, the gradient may have an absolute value in the range of 0.3 to 0.5. In some implementations, the gradient may have an absolute value of about 0.4. In some implementations, "about" in this context may mean ± 0.01 . By way of non-limiting illustration, H1 may be 11 centimeters, while D1 may be 56 centimeters. Using the gradient formula above, this may return a gradient of 0.39 (rounded to the hundredth digit), e.g., about 0.4.

[0021] FIG. 2 illustrates a bottom view of the crotch expansion device 100 of FIG. 1, in accordance with one or more implementations. FIG. 2 may represent a bottom view insofar as when the device 100 is attached within a crotch region of a garment in an as-used mode, the first surface 104 may face downward (e.g., toward the ground). FIG. 3 illustrates a top view of the crotch expansion device 100 of FIG. 1, in accordance with one or more implementations. FIG. 2 may represent a top view insofar as when engaged within a garment in the as-used mode, the second surface 106 may face upward (e.g., into the interior of the garment).

[0022] Referring again to FIG. 2, in some implementations, the body 102 may be formed from multiple portions coupled together. By way of non-limiting illustration, the body 102 may be formed from a first portion 122 and a second portion 124 joined at a midline (labeled "M" in FIG. 9) of the body 102 by a joint 120, forming a central seam. The joint 120 may be finished with an overlock, a bias, and/or techniques.

[0023] The midline of the body 102 and/or the joint 120 may intersect the apex 118, and a point that is about halfway between the first vertex 112 and the second vertex 116. The first portion 122 may comprise one or more of the first leg edge 110, a first inner edge 111, the first vertex 112, about half of the base edge 108, and/or other components. The second portion 124 may comprise one or more of the second leg edge 114, a second inner edge 115 (see, e.g., FIG. 3), the second vertex 116, about half of the base edge 108, and/or other components. In some implementations, the first inner edge 111 of the first portion 122 and the second inner edge 115 of the second portion may be overlapped and attached (e.g., sewn, adhered, etc.) to form the joint 120. The overlap may be about 1 centimeter. FIG. 10 illustrates another implementation of joint 120, with the first inner edge 111 of the first portion 122 folded back on itself, and attached near the second inner edge 115 of the second portion to form the joint 120.

[0024] Referring back to FIG. 2, in some implementations, the body 102 may be formed based on a ratio of D1 to H1 (e.g., $D1:H1$) having a certain value. By using a ratio as a constraint, the actual size and/or dimension of the device 100 may be adjusted (e.g., increased or decreased) as needed to fit a certain size garment, while

still adhering to this constraint.

[0025] In some implementations, the ratio D1:H1 of the body 102 may be in the range of 2:1 to 10:1. In some implementations, the ratio D1:H1 of the body 102 may be in the range of 4:1 to 6:1. In some implementations, the ratio D1:H1 of the body 102 may be about 2:1. In some implementations, the ratio D1:H1 of the body 102 may be about 5:1. By way of non-limiting illustration, H1 may be 11 centimeters, while D1 may be 56 centimeters. Using the ratio above, this may return a ratio of 5.09:1 (rounded to the hundredth digit), e.g., about 5:1.

[0026] FIG. 9 illustrates a view of the crotch expansion device 100, in accordance with one or more implementations. In particular, FIG. 9 illustrates the first portion 122 and the second portion 124 having bias cuts. By way of non-limiting illustration, the first portion 122 and/or the second portion 124 may be cut at an angle to the straight grain, G, of the fabric. In some implementations, the angle may be measured relative to midline M and/or base edge 108. The bias cut may increase elasticity at the crotch area, reducing the tension of the pants at the area and therefore increase comfort. In some implementations, the angle may be in the range of 20 to 60 degrees. In some implementations, the angle may be in the range of 30 to 50 degrees. In some implementations, the angle may be about 45 degrees. In some implementations, the angle may be about 30 degrees.

[0027] FIG. 4 illustrates a side view of the crotch expansion device 100 of FIG. 1, in accordance with one or more implementations. FIG. 5 illustrates a front view of the crotch expansion device 100 of FIG. 1 (e.g., with apex 118 being the leading point in the view), in accordance with one or more implementations.

[0028] FIG. 6, FIG. 7, and FIG. 8 illustrate views of a garment 600 having an expanded crotch region, in accordance with one or more implementations. The garment 600 may comprise the crotch expansion device 100 as shown and described in FIGS. 1-5, and/or other components. It is noted that the use of broken lines and/or surface shading in the drawings is not intended to be limiting with respect to what is intended to be claimed and/or what is not intended claimed, but instead are simply used to visually distinguish between typical parts of a garment 600, the crotch expansion device 100, and a wearer (not labeled).

[0029] The crotch expansion device 100 may be attached to (e.g., sewn into) an inseam of the garment 600. Referring to FIG. 6, the inseam may have a posterior edge 606, an anterior edge 608, and/or other components. Traditionally, the posterior edge 606 and the anterior edge 608 may simply be engaged together to form the inseam. However, in accordance with one or more implementations described herein, the crotch expansion device 100 may be attached thereto to expand the crotch region of the garment, while still maintaining and/or improving comfort, style, ease-of-manufacture, and/or durability. The crotch expansion device 100 may act as a type of gusset that bridges between the edges of the

inseam of the garment 600.

[0030] The crotch expansion device 100 may comprise the body 102 as described herein. In an as-used mode, the first surface 104 may face an exterior of the garment 600. The second surface (not shown in FIG. 6) opposite the first surface 104 may face an interior of the garment 600. The base edge 108 may be attached to the posterior edge 606 of the inseam of the garment 600. The first leg edge 110 may be attached to the anterior edge 608 of the inseam and disposed at a first side 602 of the garment 600 (e.g., a right side at or on the right leg of the garment). The second leg edge 114 may be attached to the anterior edge 608 of the inseam and disposed at a second side 604 of the garment 600 (e.g., a left side at or on the left leg of the garment). The first leg edge 110 and the base edge 108 may meet at the first vertex 112 (which may be attached such that it is disposed within the garment 600). The second leg edge 114 and the base edge 108 may meet at the second vertex 116 (which may be attached such that it is disposed within the garment 600). The first leg edge 110 and the second leg edge 114 may meet the apex 118 (which may be attached such that it is disposed within the garment 600). The apex 118 may be disposed opposite the base edge 108 and substantially centered with the garment 600 (e.g., aligned with a centerline seam of the garment 600). The apex 118 may be attached to the anterior edge 608 of the inseam between the first vertex 112 and the second vertex 116. FIG. 8 further illustrates the bias cut in the portions of the device 100, by showing the grain direction at an angle (not shown in FIGS. 6 and 7).

[0031] FIG. 11 illustrates a method 1100 of manufacture of a crotch expansion device for garments, in accordance with one or more implementations. The operations of method 1100 presented below are intended to be illustrative. In some implementations, method 1100 may be accomplished with one or more additional operations not described, and/or without one or more of the operations discussed. Additionally, the order in which the operations of method 1100 are illustrated in FIG. 11 and described below is not intended to be limiting.

[0032] In some implementations, method 1100 may be implemented using manual and/or automated manufacturing techniques. A manual manufacturing techniques may include one or more forming techniques used by skilled artisans in garment and/or textile design and/or manufacture. A forming technique may include one or more of cutting, sewing, stamping, and/or other techniques. Other techniques known to skilled artisans in garment and/or textile design and/or manufacture are also within the scope of the present disclosure. An automated manufacturing technique may include one or more machines and/or one or more processing devices. The one or more processing devices and/or one or more machines may include one or more devices executing some or all of the operations of method 1100 in response to instructions stored electronically on an electronic storage medium. Machines may include one or more of sewing

machines, automatic stamping machines, laser cutting machines, robotics, and/or other machines suitable for the intended purposes described and/or made apparent herein. The one or more processing devices and/or machines may include one or more devices configured through hardware, firmware, and/or software to be specifically designed for execution of one or more of the operations of method 1100.

[0033] An operation 1102 may include forming a first surface of a body of crotch expansion device.

[0034] An operation 1104 may include forming a second surface opposite the first surface.

[0035] An operation 1106 may include forming a base edge.

[0036] An operation 1108 may include forming a first leg edge. The first leg edge and the base edge may meet at a first vertex.

[0037] An operation 1110 may include forming a second leg edge, wherein the second leg edge and the base edge meet at a second vertex. The first leg edge and the second leg edge may be formed to meet at an apex. The apex may be opposite the base edge. The first leg edge and/or the second leg edge may be formed to have a gradient with an absolute value of about 0.4 and/or other values.

[0038] FIG. 12 illustrates a method 1200 of manufacture of a garment having an expanded crotch region, in accordance with one or more implementations. The operations of method 1200 presented below are intended to be illustrative. In some implementations, method 1200 may be accomplished with one or more additional operations not described, and/or without one or more of the operations discussed. Additionally, the order in which the operations of method 1200 are illustrated in FIG. 12 and described below is not intended to be limiting.

[0039] In some implementations, method 1200 may be implemented using manual and/or automated manufacturing techniques. A manual manufacturing techniques may include one or more forming techniques used by skilled artisans in garment and/or textile design and/or manufacture. A forming technique may include one or more of cutting, sewing, stamping, and/or other techniques. Other techniques known to skilled artisans in garment and/or textile design and/or manufacture are also within the scope of the present disclosure. An automated manufacturing technique may include one or more machines and/or one or more processing devices. The one or more processing devices and/or one or more machines may include one or more devices executing some or all of the operations of method 1200 in response to instructions stored electronically on an electronic storage medium. Machines may include one or more of sewing machines, automatic stamping machines, laser cutting machines, robotics, and/or other machines. The one or more processing devices and/or machines may include one or more devices configured through hardware, firmware, and/or software to be specifically designed for execution of one or more of the operations of method

1200.

[0040] An operation 1202 may include forming a crotch expansion device. The crotch expansion device may be formed in accordance with method 1100 in FIG. 11 and/or other operations.

[0041] The operations 1204-1212 may include steps for attaching the crotch expansion device to an inseam of a garment.

[0042] An operation 1204 may include arranging the first surface and/or the second surface such that the first surface is facing toward an exterior of the garment and/or the second surface is facing toward an interior of the garment.

[0043] An operation 1206 may include attaching the base edge to a posterior edge of the inseam of the garment.

[0044] An operation 1208 may include attaching the first leg edge to an anterior edge of the inseam disposed at a first side of the garment.

[0045] An operation 1210 may include attaching the second leg edge to the anterior edge of the inseam disposed at a second side of the garment.

[0046] An operation 1212 may include attaching the apex to the anterior edge of the inseam between the first vertex and the second vertex.

[0047] Although the present technology has been described in detail for the purpose of illustration based on what is currently considered to be the most practical and preferred implementations, it is to be understood that such detail is solely for that purpose and that the technology is not limited to the disclosed implementations, but, on the contrary, is intended to cover modifications and equivalent arrangements that are within the spirit and scope of the appended claims. For example, it is to be understood that the present technology contemplates that, to the extent possible, one or more features of any implementation can be combined with one or more features of any other implementation.

Claims

1. A crotch expansion device for garments comprising: a body, the body having a substantially triangular shape, the body comprising:

a first surface;
a second surface opposite the first surface;
a base edge;
a first leg edge, wherein the first leg edge and the base edge meet at a first vertex;
a second leg edge, wherein the second leg edge and the base edge meet at a second vertex;
wherein the first leg edge and the second leg edge meet at an apex, the apex being opposite the base edge; and
wherein the first leg edge and/or the second leg edge has a gradient with an absolute value of

about 0.4.

2. The crotch expansion device of claim 1, wherein the body is formed from a first portion and a second portion joined at a midline of the body that intersects the apex, the first portion comprises the first leg edge, the first vertex, and half of the base edge, and the second portion comprises the second leg edge, the second vertex, and an other half of the base edge. 5
3. The crotch expansion device of claim 1, wherein a ratio of a distance spanning between the first vertex and the second vertex to a midline height of the body is about 5:1. 10
4. The crotch expansion device of claim 1, wherein the body includes a first truncated end forming the first vertex, and a second truncated end forming the second vertex. 15
5. The crotch expansion device of claim 1, wherein the base edge is curved toward the apex. 20
6. A garment having an expanded crotch region, the garment comprising: 25
 - a crotch expansion device sewn into an inseam of the garment, wherein the crotch expansion device comprises:
 - a body, the body having a substantially triangular shape, the body comprising: 30
 - a first surface facing an exterior of the garment;
 - a second surface opposite the first surface and facing an interior of the garment; 35
 - a base edge, the base edge of the body being attached to a posterior edge of the inseam of the garment;
 - a first leg edge, the first leg edge of the body being attached to an anterior edge of the inseam and disposed at a first side of the garment, wherein the first leg edge and the base edge meet at a first vertex; 40
 - a second leg edge, the second leg edge of the body being attached to the anterior edge of the inseam and disposed at a second side of the garment, wherein the second leg edge and the base edge meet at a second vertex; 45
 - wherein the first leg edge and the second leg edge meet at an apex, the apex being opposite the base edge and attached to the anterior edge of the inseam between the first vertex and the second vertex; and 50
 - wherein the first leg edge and/or the second leg edge has a gradient with an absolute value of about 0.4. 55

7. The garment of claim 6, wherein the body of the

crotch expansion device is formed from a first portion and a second portion joined at a midline of the body that intersects the apex, the first portion comprises the first leg edge, the first vertex, and half of the base edge, and the second portion comprises the second leg edge, the second vertex, and an other half of the base edge.

8. The garment of claim 6, wherein a ratio of a distance spanning between the first vertex and the second vertex to a midline height of the body of the crotch expansion device is about 5:1.
9. The garment of claim 6, wherein the body of the crotch expansion device includes a first truncated end forming the first vertex, and a second truncated end forming the second vertex.
10. The garment of claim 6, wherein the base edge of the crotch expansion device is curved toward the apex.
11. A method of manufacture of crotch expansion device for garments, the method comprising:

forming a body, the body having a substantially triangular shape, wherein the body is formed by:

- forming a first surface;
- forming a second surface opposite the first surface;
- forming a base edge;
- forming a first leg edge, wherein the first leg edge and the base edge meet at a first vertex; and
- forming a second leg edge, wherein the second leg edge and the base edge meet at a second vertex;

wherein the first leg edge and the second leg edge are formed meet at an apex, the apex being opposite the base edge; and
 wherein the first leg edge and/or the second leg edge are formed to have a gradient with an absolute value of about 0.4.

12. The method of claim 11, wherein the forming the body further comprises:

- forming a first portion;
- forming a second portion;
- joining the first portion and the second portion at a midline of the body that intersects the apex;
- wherein the first portion is formed to comprise the first leg edge, the first vertex, and half of the base edge; and
- wherein the second portion is formed to comprise the second leg edge, the second vertex, and an other half of the base edge.

13. The method of claim 11, wherein the forming the body is based on a ratio of a distance spanning between the first vertex and the second vertex to a midline height of the body, the ratio being about 5:1.

14. The method of claim 11, further comprising forming a first truncated end as the first vertex, and forming a second truncated end as the second vertex.

15. The method of claim 11, wherein the base edge is formed to curve toward the apex. 10

16. A method of manufacture of a garment having an expanded crotch region, the method comprising:

forming a crotch expansion device;
attaching the crotch expansion device to an inseam of a garment;
wherein the forming the crotch expansion device comprises:

forming a body, the body having a substantially triangular shape, wherein the body is formed by:

forming a first surface;
forming a second surface opposite the first surface;
forming a base edge;
forming a first leg edge, wherein the first leg edge and the base edge meet at a first vertex;
forming a second leg edge, wherein the second leg edge and the base edge meet at a second vertex;
wherein the first leg edge and the second leg edge are formed meet at an apex, the apex being opposite the base edge; and
wherein the first leg edge and/or the second leg edge are formed to have a gradient with an absolute value of about 0.4; and

wherein the attaching the crotch expansion device to the inseam of the garment comprises: 45

facing the first surface toward an exterior of the garment and the second surface toward an interior of the garment;
attaching the base edge to a posterior edge of the inseam of the garment;
attaching the first leg edge to an anterior edge of the inseam disposed at a first side of the garment;
attaching the second leg edge to the anterior edge of the inseam disposed at a second side of the garment; and

attaching the apex to the anterior edge of the inseam between the first vertex and the second vertex.

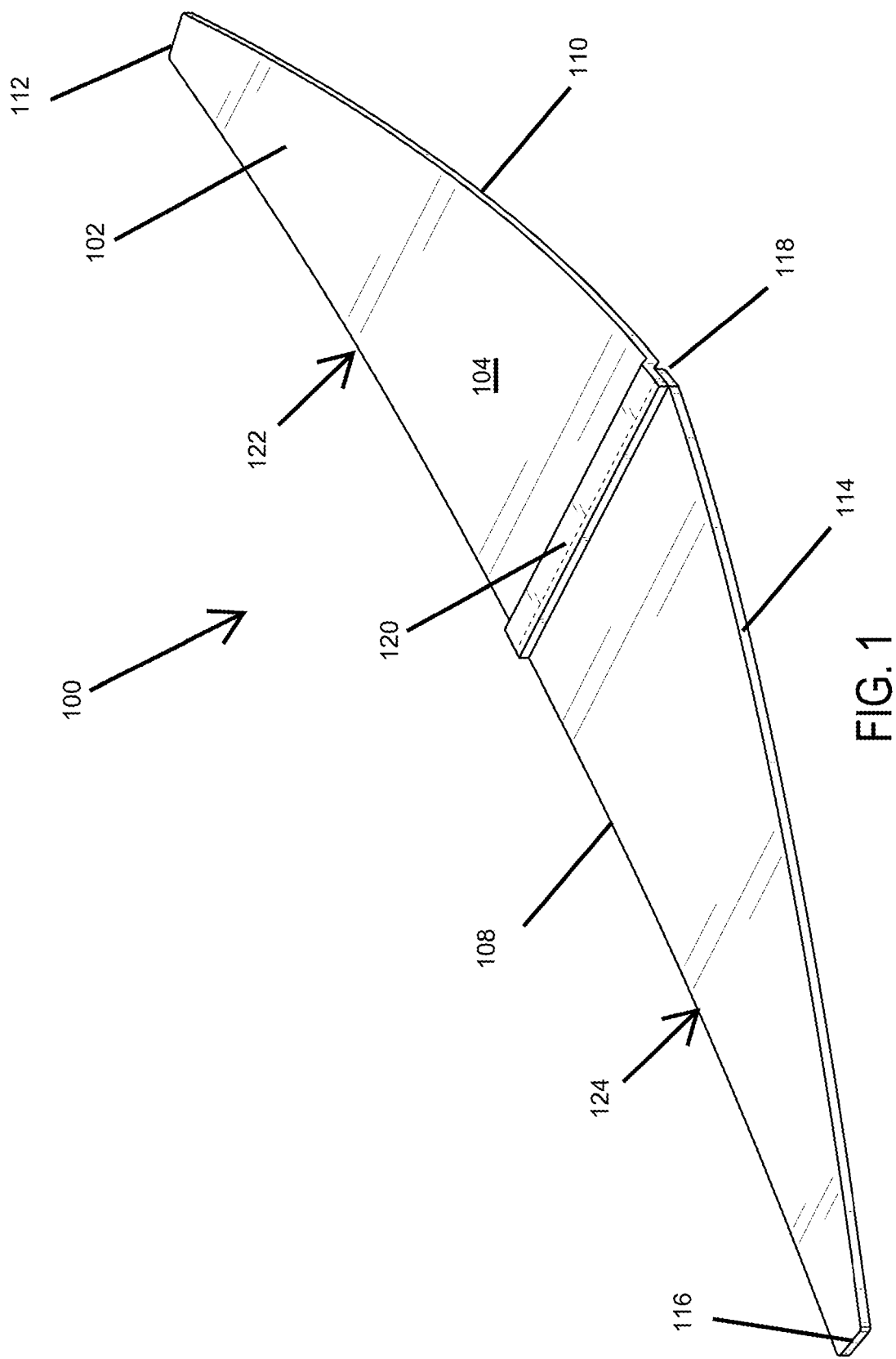
5 17. The method of claim 16, wherein the forming the body further comprises:

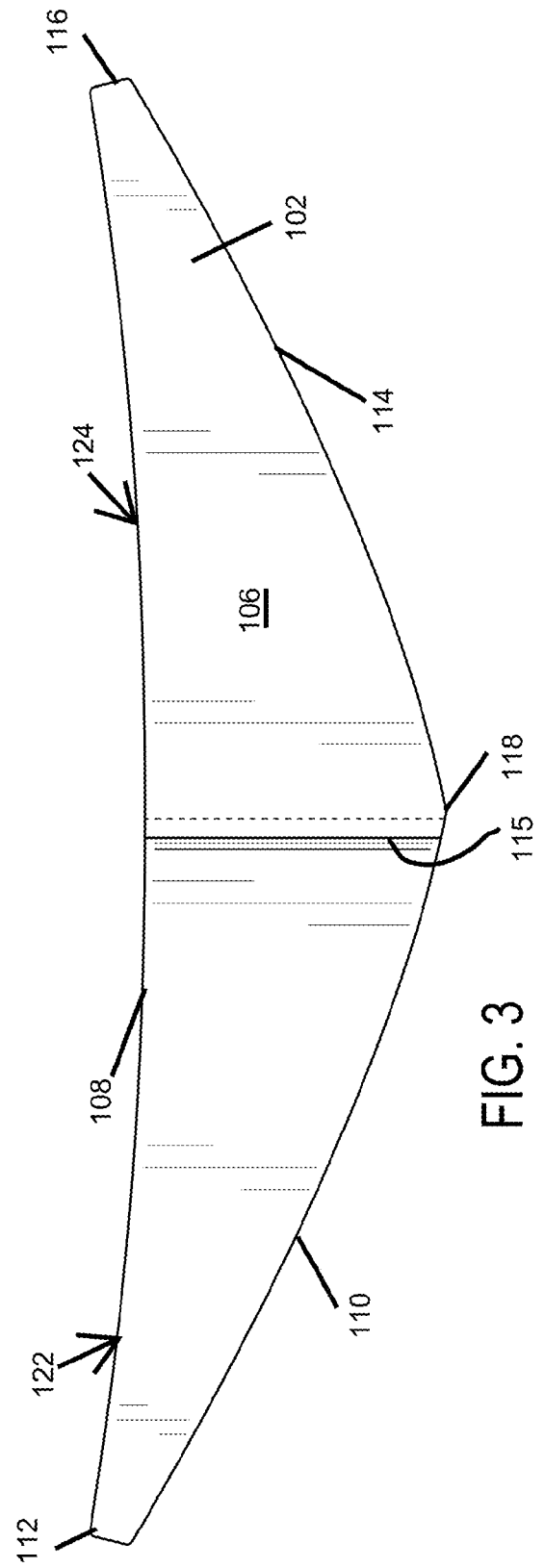
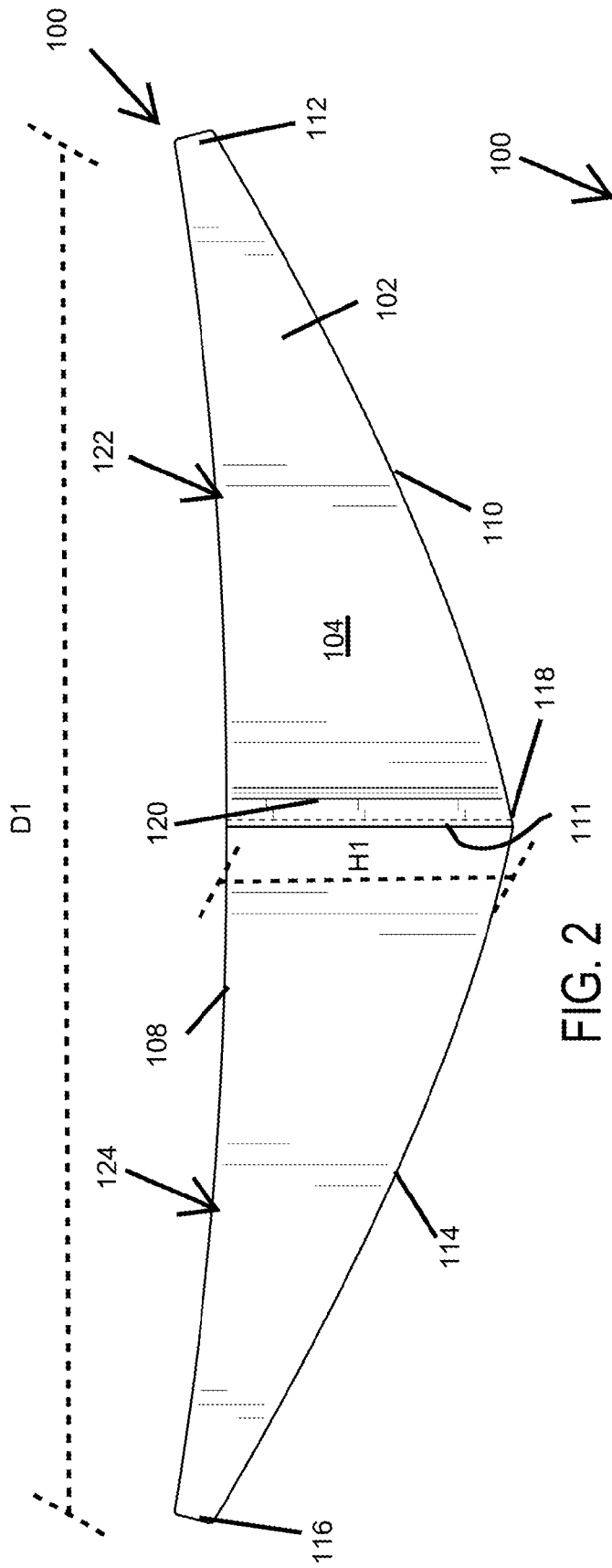
forming a first portion;
forming a second portion;
joining the first portion and the second portion at a midline of the body that intersects the apex;
wherein the first portion is formed to comprise the first leg edge, the first vertex, and half of the base edge; and
wherein the second portion is formed to comprise the second leg edge, the second vertex, and an other half of the base edge.

18. The method of claim 16, wherein the forming the body is based on a ratio of a distance spanning between the first vertex and the second vertex to a midline height of the body, the ratio being about 5:1. 20

19. The method of claim 16, further comprising forming a first truncated end as the first vertex, and forming a second truncated end as the second vertex. 25

20. The method of claim 16, wherein the base edge is formed to curve toward the apex. 30





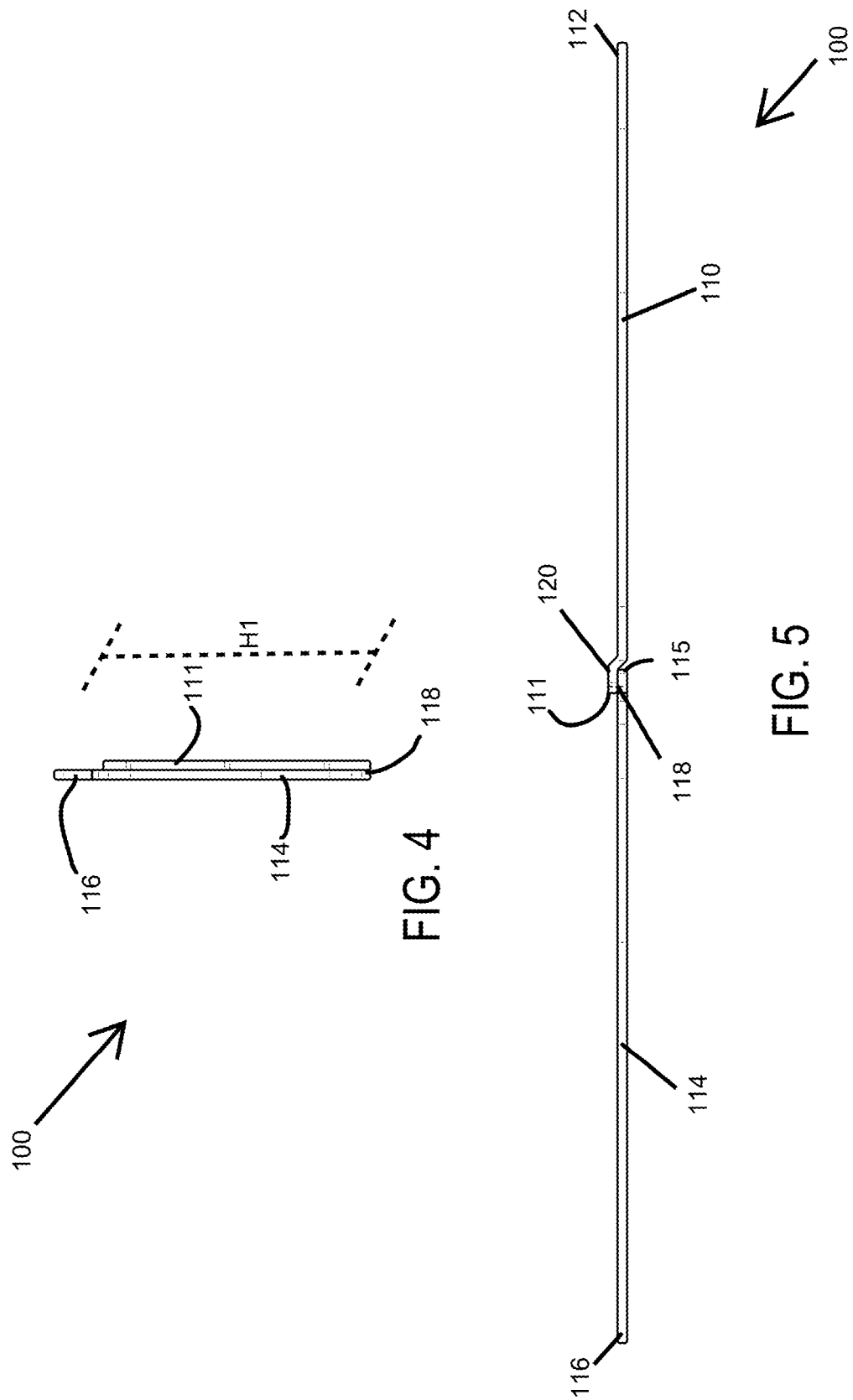


FIG. 4

FIG. 5

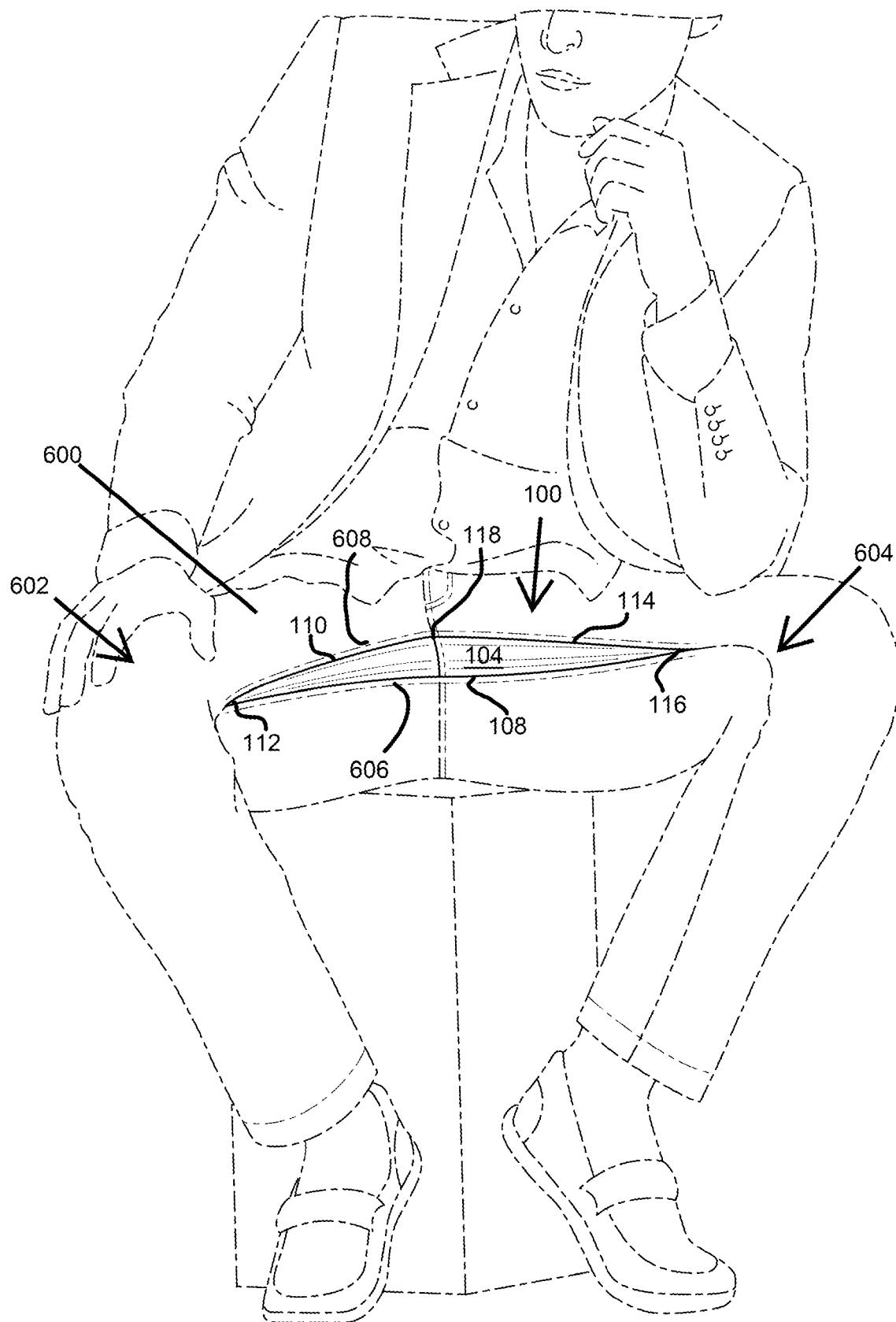


FIG. 6

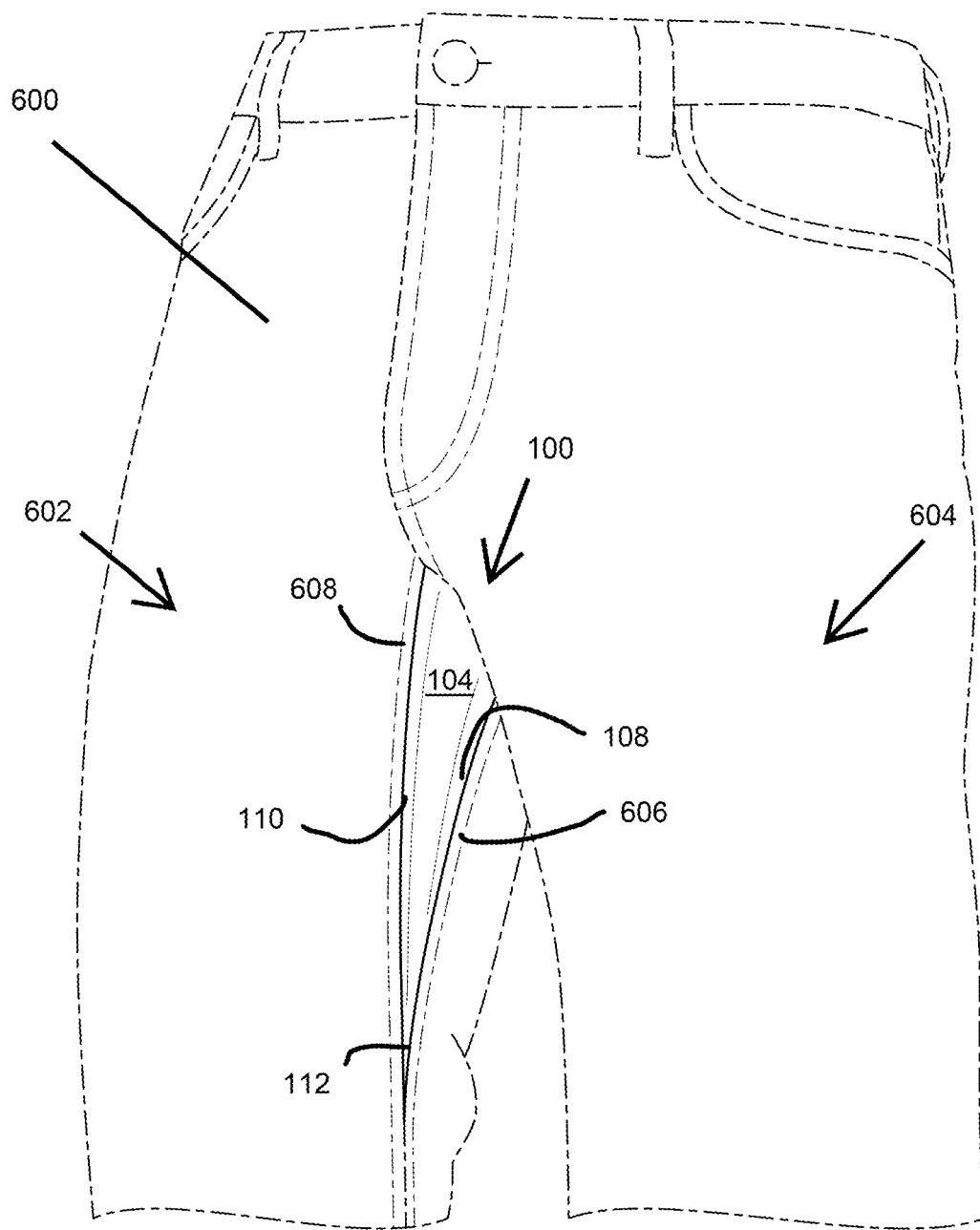


FIG. 7

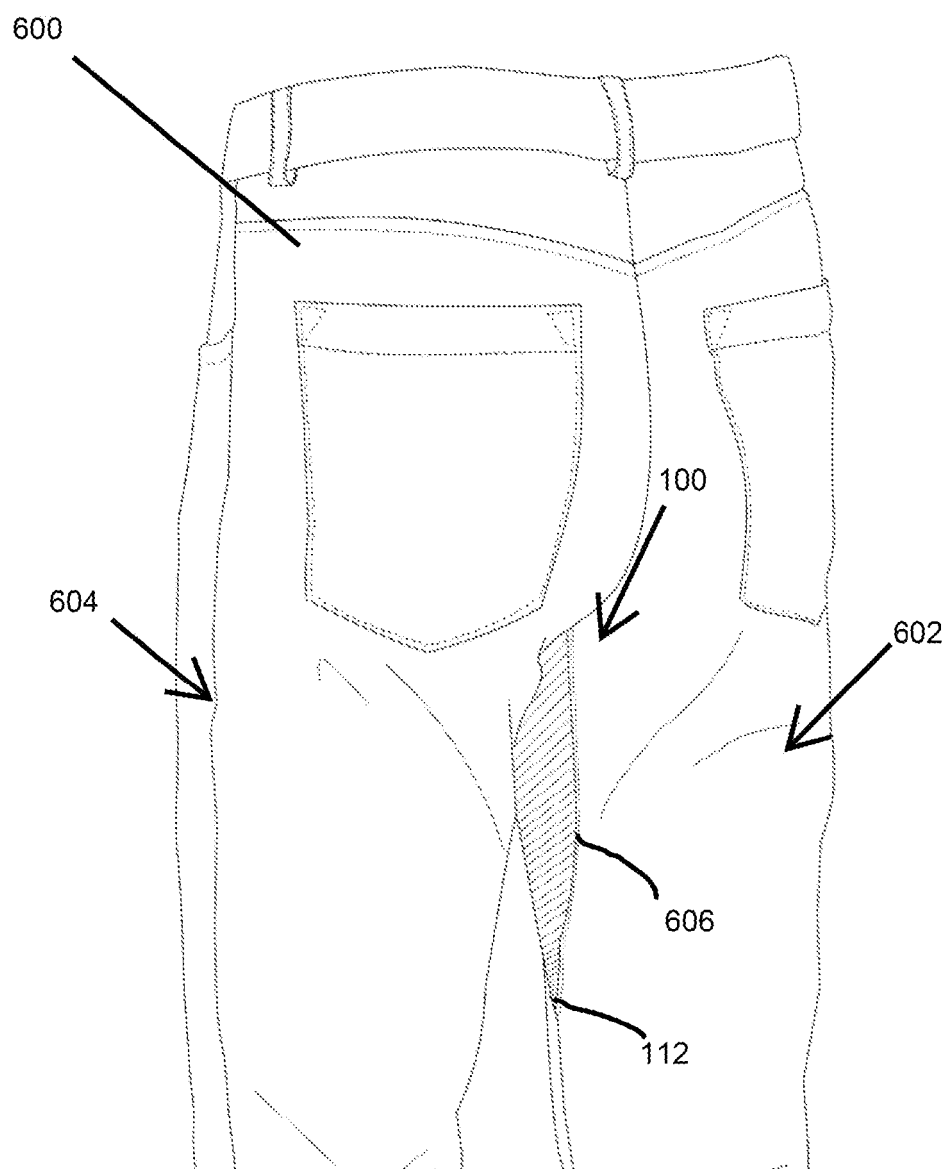


FIG. 8

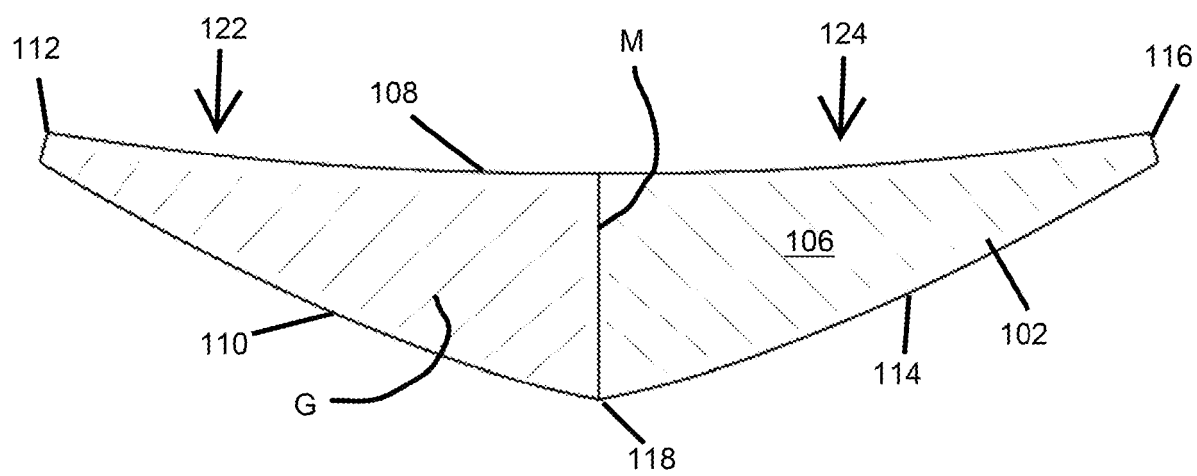


FIG. 9

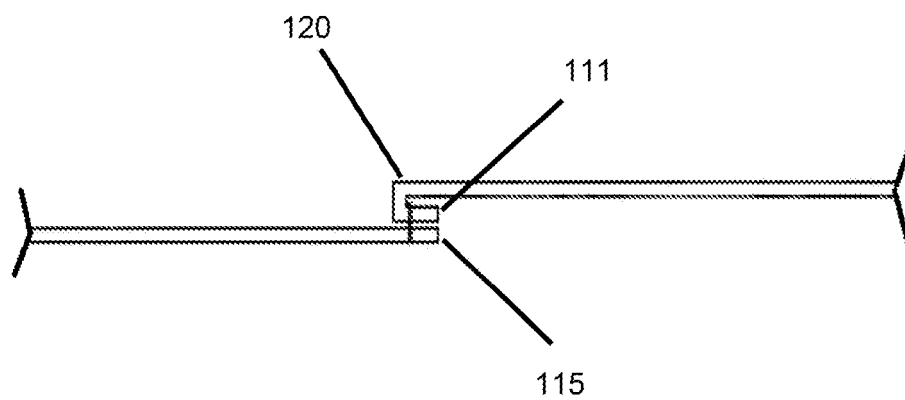


FIG. 10

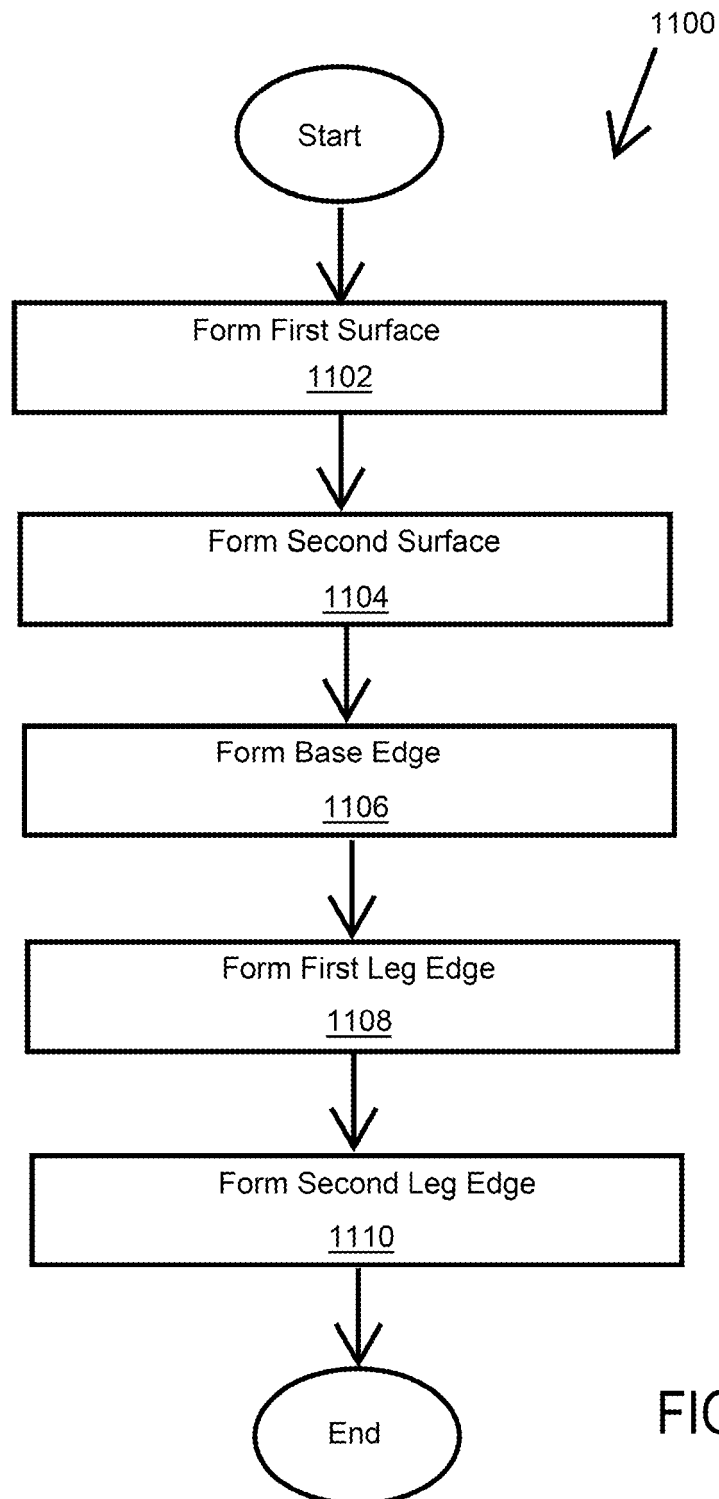


FIG. 11

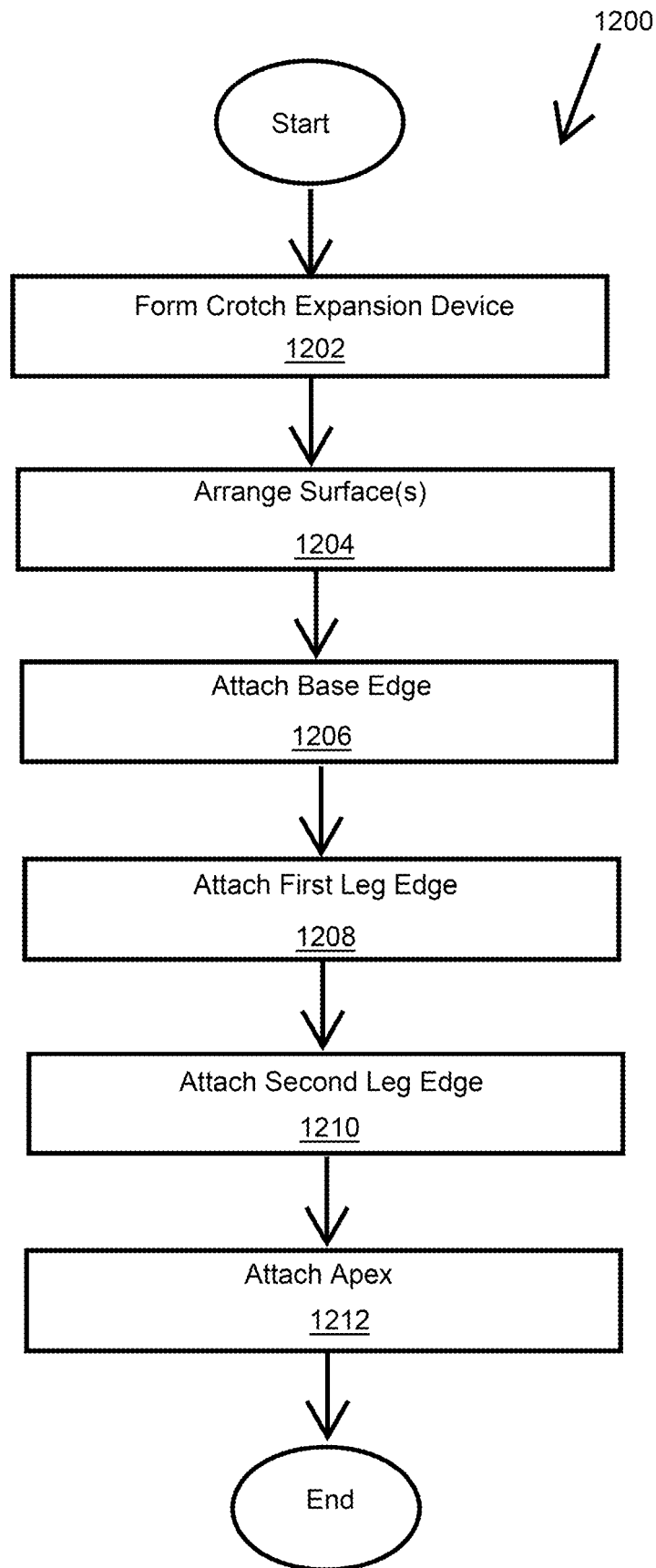


FIG. 12



EUROPEAN SEARCH REPORT

Application Number

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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		31 January 2025	Debard, Michel
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31-01-2025

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