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(54) Title: BELLY COVERING GARMENT

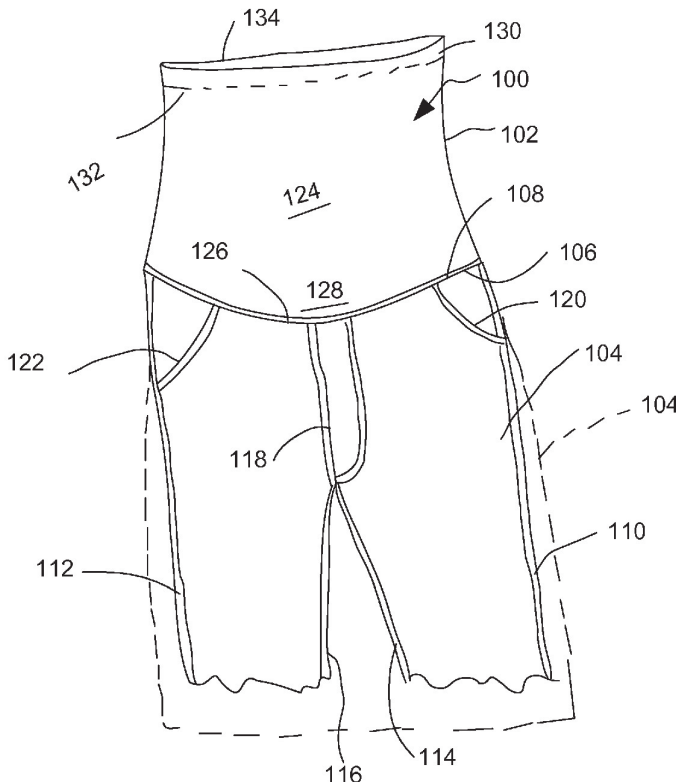


FIG. 1

(57) Abstract: The present invention relates to a garment having a belly panel, wherein the belly panel is expansible to cover and fit over a growing abdomen, and the garment having a garment lower portion with a torso encircling circumference, wherein the torso encircling circumference recedes downward to make way for expansion of the belly panel. The garment can be worn during different stages of pregnancy and different stages of postpartum body changes.

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BELLY COVERING GARMENT

FIELD OF THE INVENTION

[0001] The present invention relates to a garment worn during different stages of pregnancy and different stages of postpartum body changes.
5

BACKGROUND OF THE INVENTION

[0002] Garments intended to cover a wearer's body below the abdomen or belly during various stages of pregnancy have been manufactured as knits or woven fabrics. Some of the knits or woven fabric garments are constructed with an elastic belt or waist band which
10 caused discomfort when tightened about the body. Some of the garments have stretchable fabric panels sewn into place with sewn seams. Such garments cause discomfort due to the presence of the sewn seams, urged by elastic stretching of the panels pressing against the torso. Moreover, women have complained that such garments are difficult to keep in place, as they gradually slip downward while they are being worn.

15 [0003] Denim jeans or trousers have been recycled by removing the waistband at the front of the jeans and replacing the same with an elastic band that cradles a growing abdomen. Alternatively, denim jeans or trousers are manufactured without a waistband at the front so that a separate band can be attached at the front.

[0004] Accordingly, a need exists for a garment that covers and fits a growing
20 abdomen during different stages of pregnancy. Such a garment is required to stay up, and desirably would fit comfortably while being worn. Moreover, such a garment would stay up when worn over different body types.

SUMMARY OF THE INVENTION

[0005] A garment includes a garment upper portion having a belly panel, wherein the
25 belly panel is expansible to cover and fit over a growing abdomen; and a garment lower portion having a torso encircling circumference, wherein the torso encircling circumference recedes downward to make way for expansion of the belly panel.

[0006] An embodiment of the garment has a belly panel that is contractible elastically to cover a shrinking abdomen. An embodiment comprises an elastic fabric that is contractible elastically to cover an abdomen during different stages of post partum body changes.

5 [0007] An embodiment of the garment has an expansible tubular upper portion of the garment that is seamless to fit comfortably while being worn.

[0008] An embodiment of the garment upper portion having the belly panel is foldable toward the garment lower portion to comprise a folded band.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] Fig. 1 is a front view of a garment according to the present invention.

10 [0010] Fig. 1A is a view similar to Fig. 1, and discloses a body panel covering a growing abdomen.

[0011] Fig. 2 is a view of a backside portion of the garment disclosed by Fig. 1.

[0012] Fig. 3 is view of a front portion of another embodiment of a garment.

[0013] Fig. 4 is view of a backside portion of another embodiment of a garment.

15 [0014] Fig. 5 is a view of a backside portion of yet another embodiment of a garment.

[0015] Fig. 6 is front view of a portion of another embodiment of a garment.

[0016] Fig. 7 is front view of a portion of yet another embodiment of a garment.

DETAILED DESCRIPTION OF THE INVENTION

[0017] Fig. 1 discloses a garment 100 for encircling a lower torso portion of a wearer
20 of the garment 100. The garment 100 comprises a garment upper portion 102 and a garment lower portion 104. A lower end perimeter 106 of the garment upper portion 102 is attached to a corresponding upper end perimeter 108 of the garment lower portion 104. The garment lower portion 104 comprises, for example, a pair of trousers, such as, denim jeans.

25 Alternatively, the garment lower portion 104 comprises a skirt depicted in Fig. 1 in phantom outline.

[0018] With reference to Figs. 1 and 2, each leg of the pair of trousers is constructed with sewn seams. Outer side seams 110, 112 extend continuously from top to bottom of the trousers, or garment lower portion 104. Further, each leg is constructed with inner side seams 114, 116 joining a front center seam 118 of the trousers and a back side, curved center seam
30 200, Fig. 2, of the trousers. For example, the front center seam 106 defines a sewn “zipper less” fly front. The back side of the trousers, Fig. 2, is sewn with a back side perimeter seam 202 extending horizontally across the back side of the trousers from the outer side seams 110,

112 to the back side center seam 200. If pockets are desired, the legs of the trousers are constructed, for example, with a front pockets 120, 122 and back pockets 204, 206.

[0019] Fig. 2 discloses an embodiment of the trousers, or garment lower portion 104, having a partial waistband 208 joining and extending from the side seams 110, 112 of the trousers and extending across a back side of the trousers or garment lower portion 104. The waistband 208 is sewn onto the perimeter seam 202 on the back side. The waistband 208 tapers toward the side seams 110, 112 and widens across the back side, and has a center seam 210 to shape the waistband 208 with a curvature above a wearer's pelvis, and for torso coverage especially when sitting or bending.

[0020] In Fig. 1, the garment upper portion 102 has a belly panel 124 to provide an abdomen covering area. The belly panel 124 is expansible, for example, when made of a stretchable fabric, to cover and fit over a growing abdomen during different stages of pregnancy, Fig. 1A. The belly panel 124 has a bottom portion 128 that projects downward with a parabolic shape, especially when covering a growing abdomen, Fig. 1A. The perimeter 108 of the garment lower portion 104 provides a first torso encircling circumference 126 that recedes downward with a parabolic shape adjacent to and below the bottom portion 128 of the belly panel 124 to make way for expansion of the belly panel 124 when covering a growing abdomen during various stages of pregnancy. The parabolic shape includes a shallow curvature, or, alternatively includes a more pronounced curvature. The belly panel 124 extends at least partially under the abdomen of the garment wearer to meet and join the bottom portion 128 of the belly panel 124 with the parabolic receding circumference 126 of the garment lower portion 104.

[0021] According to an embodiment of the invention, at least the belly panel 124 comprises a stretchable fabric that is woven or knitted with elastic, stretchable strands. The stretchable fabric is expansible by stretching elastically to cover and fit over the growing abdomen, Fig. 1A. Further, the stretchable fabric is contractible elastically to cover a shrinking abdomen during different stages of post partum body changes. The belly panel 124 also has foreseeable alternative functions, for example, to cover an abdomen during different stages of torso weight gains and losses, or to fit over respective torsos of different body types.

[0022] In Figs. 1 and 2, the garment upper portion has a top tubular perimeter hem 130 made by folding over a top edge margin of the stretchable fabric, and either tubular knitting or sewing the folded fabric to the inside surface of the fabric, and to create a top perimeter knitted hem stitch 132 as disclosed in Fig. 1. The perimeter of the garment upper portion 102 has a torso encircling circumference 134 to hold the garment 100 up and in place

over the torso. Advantageously, the entire garment 100 is held up and in place. An embodiment of the garment upper portion 102 comprises stretchable fabric to adjust the girth of the second torso encircling circumference 134 in conformance with different body types. According to an embodiment of the invention, the torso encircling circumference 134 extends
5 along the upper end of the belly panel 124. In Fig. 1A, the belly panel 124 extends at least somewhat above the maximum girth of the abdomen, even during a later stage of pregnancy, such that the belly panel 124 positions the torso encircling circumference 134 at least somewhat above the location of maximum girth to resist slipping down over the abdomen.

[0023] An embodiment of the garment upper portion 102 comprises a tubular
10 structure to encircle a torso of a wearer of the garment 100. The tubular structure comprises a stretchable fabric woven or knitted with elastic, stretchable strands. The belly panel 124 comprises a portion of the stretchable fabric. The tubular structure is adaptable to cover and fit different body types by being elastically expansible and contractible. Different body types have different muscle mass distributions and spinal columns of different curvatures, which
15 make the tubular structure conform to the different body types by expanding and contracting in different locations and amounts when worn by the different body types. The tubular structure is elastically expansible to widen the tubular girth at selected locations and amounts where needed to fit a body type, and is elastically contractible to narrow the tubular girth at selected locations and amounts where needed to fit the body type.

[0024] In Figs. 1 and 2, the tubular structure is shaped and formed as a one-sheet
20 hyperboloid cylinder to fit a body type having a tapered torso that tapers approximately from shoulder to waist. The perimeter profile of the one-sheet hyperboloid cylinder has hyperbolic shaped sides. Alternatively, the tubular structure is shaped and formed as a straight-sided cylinder, for example, as disclosed in Fig. 6. The perimeter profile of the straight sided
25 cylinder has substantially straight sides.

[0025] Preferably, the stretchable fabric is woven or knitted to form a continuous, seamless tubular structure, such that the garment 100 is comfortable to wear due to the absence of seams that would tend to press against the torso.

[0026] Fig. 3 discloses an alternative embodiment in which the garment upper portion
30 102 is provided with belly cradling support in the form of a series of sewn stitches or knitted tension at 300, 302, 304, 306, 308, 310, 312, and 314 in the belly panel 124. The knitted tension or stitches extend along multiple stitch paths grouped in an elliptical pattern that curves so as to cradle a curved growing abdomen, Fig. 1A, during various stages of pregnancy.

[0027] Fig. 4 discloses an alternative embodiment in which the backside of the garment upper portion 102 is provided with spinal column and back support for a wearer of the garment, in the form of a series of sewn supporting stitches or knitted tension at 400, 402, 404, 406, 408, 410, 412, 414, 416, 418 in the fabric, wherein the supporting knitted tension or stitches stiffen the fabric at the backside of the garment upper portion 102 to provide spinal and back support of the wearer of the garment 100. For example, the series of supporting stitches are arranged along multiple stitch paths grouped in a hyperbolic pattern or other curved pattern along an axis extending substantially vertically along a spinal supporting section of the fabric. Fig. 5 discloses an alternative pattern of supporting stitches 500, 502, 504, 506, 508, 510, 512, 514 in the fabric, wherein the supporting stitches are arranged along multiple stitch paths. For example, the stitch paths are shown as being grouped in a truncated, v-shaped pattern.

[0028] Fig. 6 discloses the garment upper portion 102 comprising a fabric woven or knitted to form a tubular structure, wherein the fabric of the tubular structure is doubled back on itself downward from the top circumference 134 thereof to form a double-layer tubular structure 600 that extends downward at least for a portion of the garment upper portion 102. The layers of the double-layer tubular structure 600 are sewn together with a tubular perimeter drop stitch 602. The layers are further sewn with a top, tubular perimeter hem stitch 132 as described in Fig. 1. In an alternative embodiment disclosed by Fig. 6, the fabric is doubled back over an inner tubular layer of stretchable fabric 604, shown in phantom outline by and between the stitches 132, 602, that is flatly layered and sewn in between the two tubular layers of the double layer fabric. The three tubular layers are sewn together with the top, tubular perimeter drop stitch 602 and the top, tubular perimeter hem stitch 132 as described in Fig. 1. The inner layer 604 of stretchable fabric provides the belly panel 124 with the capability for resilient expansion. In another embodiment, the double layer fabric comprises a stretch fabric woven or knitted with elastically stretchable and contractible yarns, providing the belly panel with the capability for resilient expansion.

[0029] Fig. 7 discloses that the garment 100 of Fig. 6 is convertible to comprise a bottom garment without a top, the garment upper portion 102 is foldable toward the garment lower portion 104 to provide a folded band 700 on the garment lower portion 104, which is to be worn solely as a garment bottom 104 having the folded band 700, and having no top. Each of the other embodiments of the garment 100 is similarly convertible by adding the stretchable fabric 604 to the upper garment portion 102 of the other embodiment of the garment 100, and folding the garment upper portion 102 toward the garment lower portion

104 to provide a folded band 700 on the garment lower portion 104 of the other embodiment of the garment 100.

[0030] This description of the exemplary embodiments is intended to be read in connection with the accompanying drawings, which are to be considered part of the entire written description. In the description, relative terms such as "lower," "upper," "horizontal," "vertical," "above," "below," "up," "down," "top" and "bottom" as well as derivatives thereof (e.g., "horizontally," "downwardly," "upwardly," etc.) should be construed to refer to the orientation as then described or as shown in the drawing under discussion. These relative terms are for convenience of description and do not require that the apparatus be constructed or operated in a particular orientation. Terms concerning attachments, coupling and the like, such as "connected" and "interconnected," refer to a relationship wherein structures are secured or attached to one another either directly or indirectly through intervening structures, as well as both movable or rigid attachments or relationships, unless expressly described otherwise.

[0031] Although the invention has been described in terms of exemplary embodiments, it is not limited thereto. Rather, the appended claims should be construed broadly, to include other variants and embodiments of the invention, which may be made by those skilled in the art without departing from the scope and range of equivalents of the invention.

CLAIMS:

1. A garment, comprising:

5 a garment upper portion having a belly panel, wherein the belly panel is expansible to cover and fit over a growing abdomen; and

a garment lower portion having a torso encircling circumference, wherein the torso encircling circumference recedes downward to make way for expansion of the belly panel.

10 2. The garment of claim 1 wherein the belly panel is contractible elastically to cover a shrinking abdomen.

3. The garment of claim 1 wherein the garment upper portion is an expansible tubular upper portion that is seamless to fit comfortably while being worn.

15 4. The garment of claim 1, wherein the garment upper portion having the belly panel is foldable toward the garment lower portion to comprise a folded band.

5. The garment of claim 1 wherein the belly panel is woven or knitted with elastic, stretchable strands.

20 6. The garment of claim 1, wherein a top edge margin of the garment upper portion is folded over and sewn or knitted to an inside of the fabric.

7. The garment of claim 1 wherein the garment upper portion is a double layer tubular structure.

8. The garment of claim 1 wherein the garment upper portion has a further torso encircling circumference to hold the garment up and in place over the torso.

25 9. The garment of claim 1, wherein the garment lower portion has a partial waistband extending from side seams of the garment lower portion and extending across a back side of the garment lower portion.

10. The garment of claim 1, further comprising a series of belly cradling stitches or knitted tension in the belly panel to cradle a growing abdomen during various stages of pregnancy.

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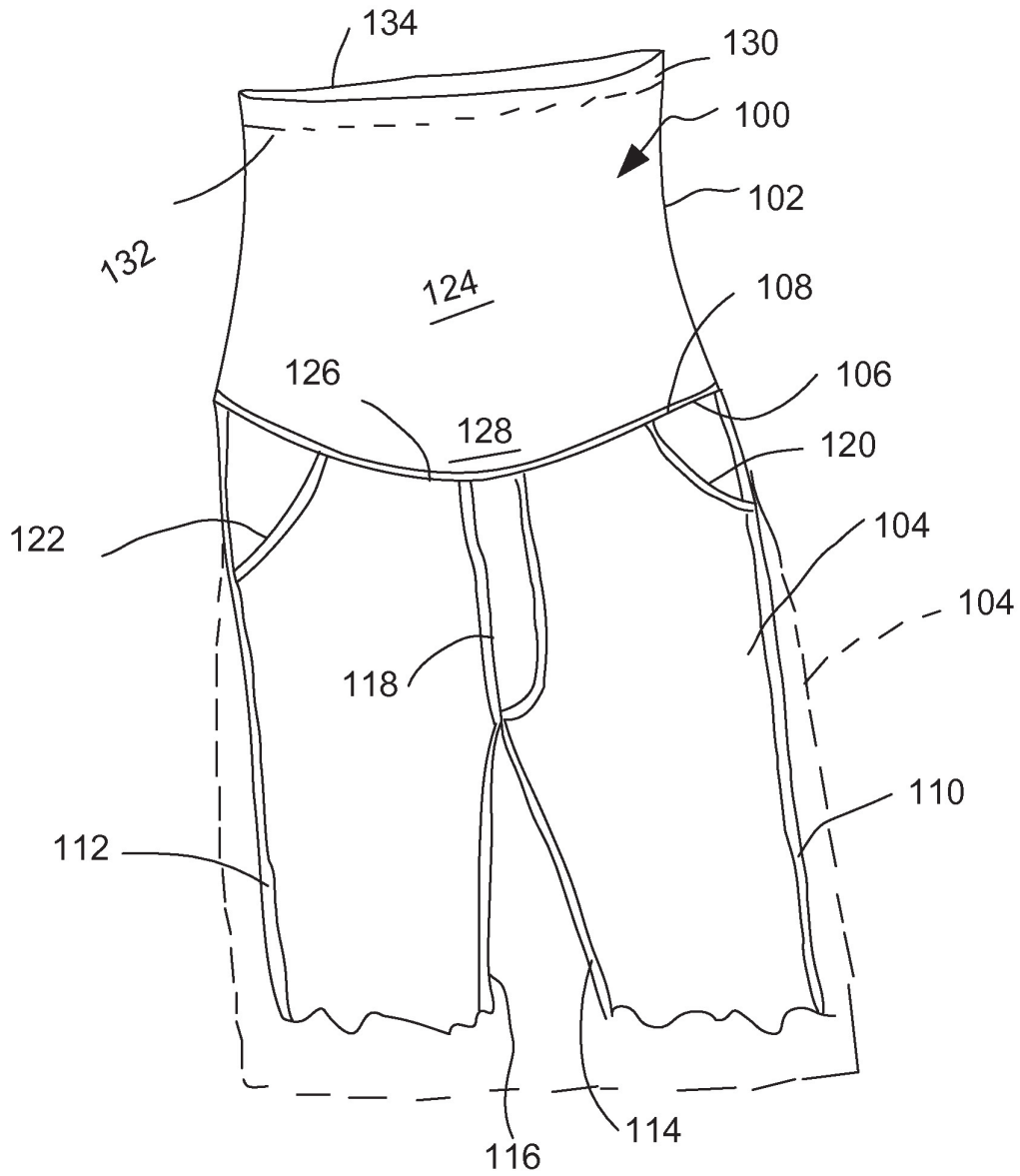


FIG. 1

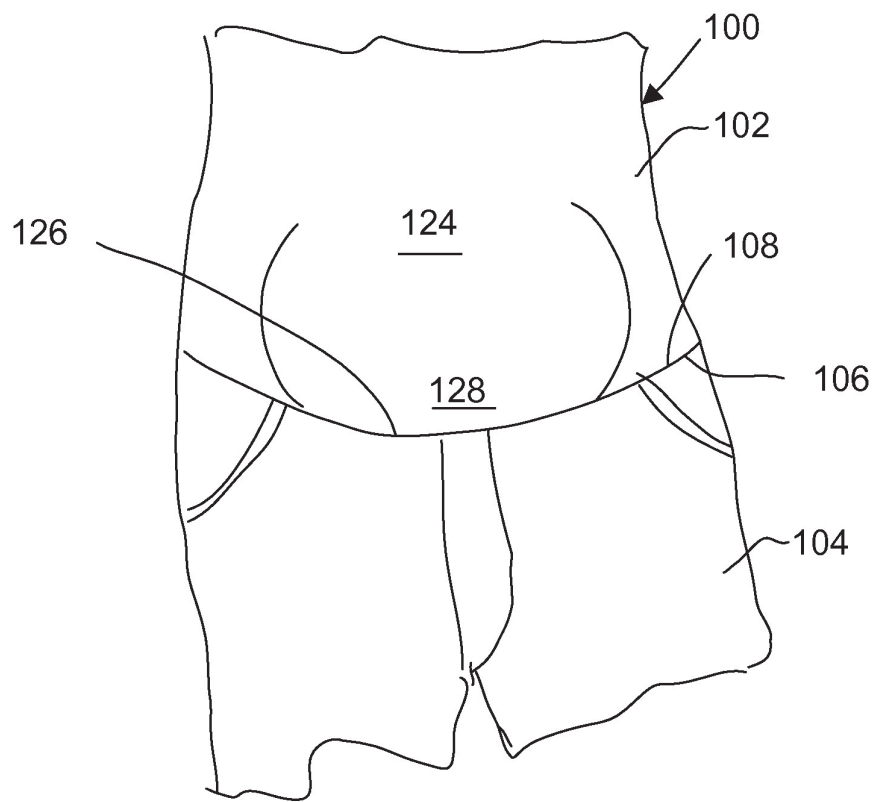


FIG. 1A

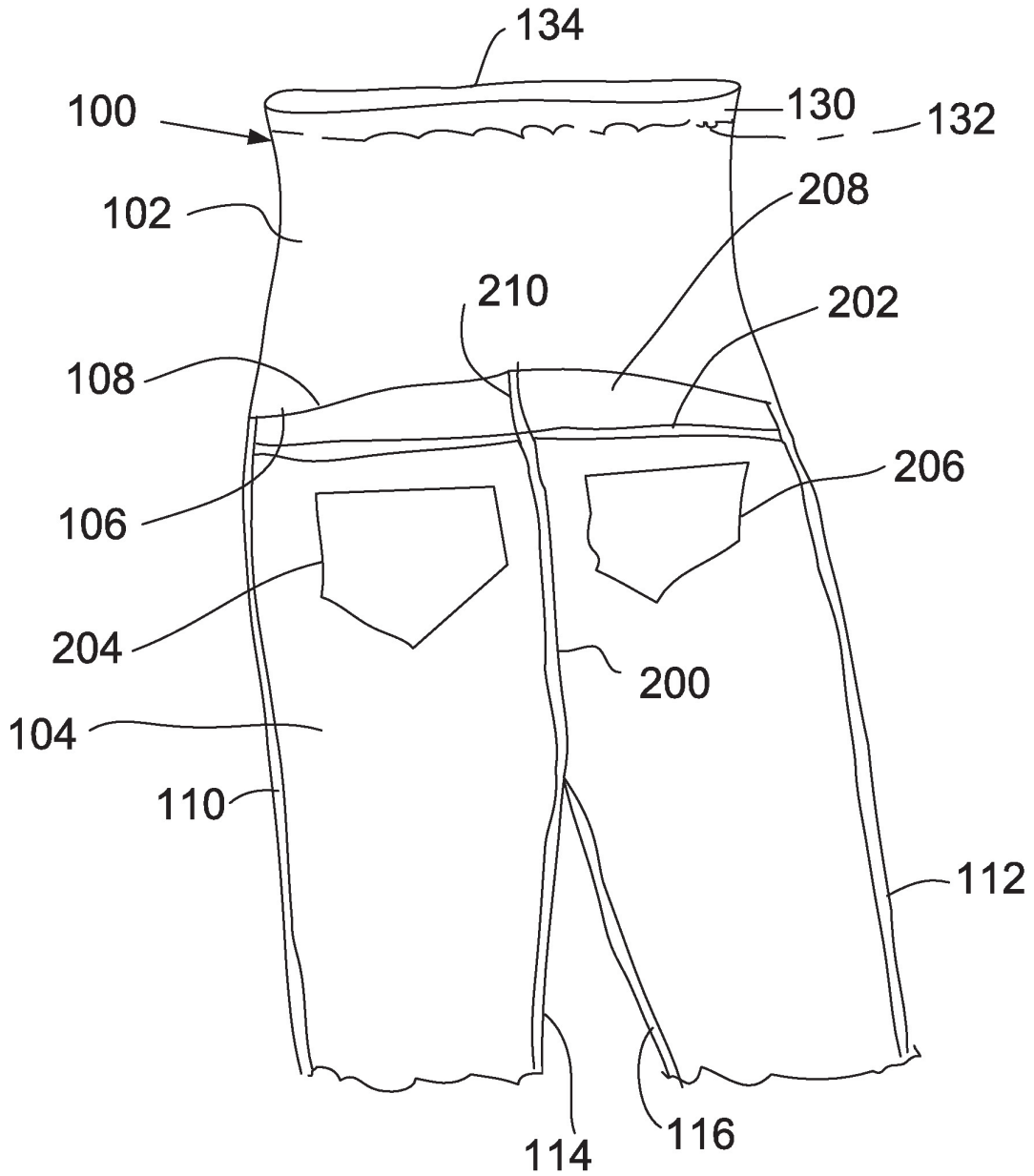


FIG. 2

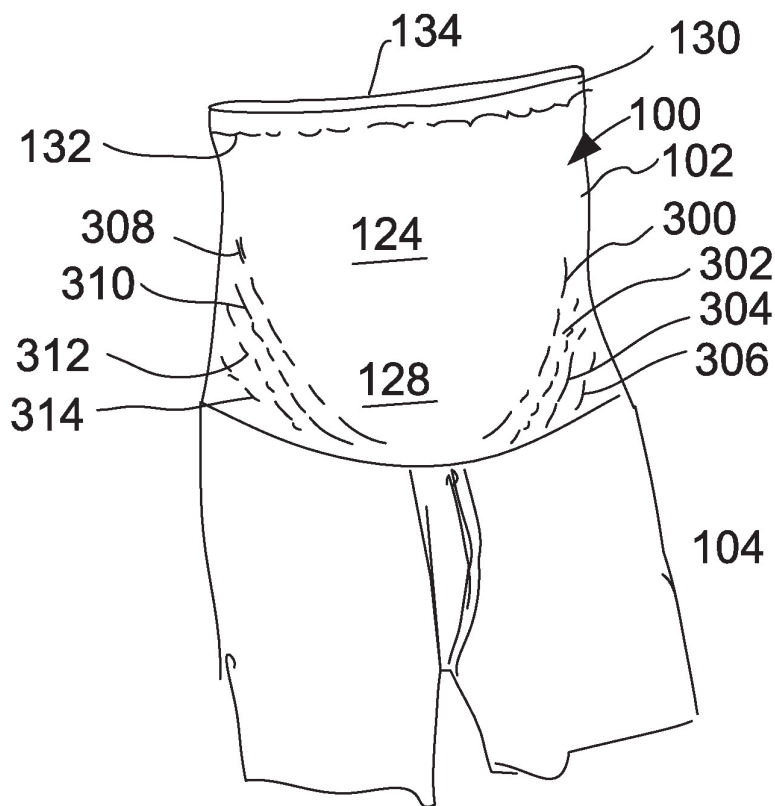


FIG. 3

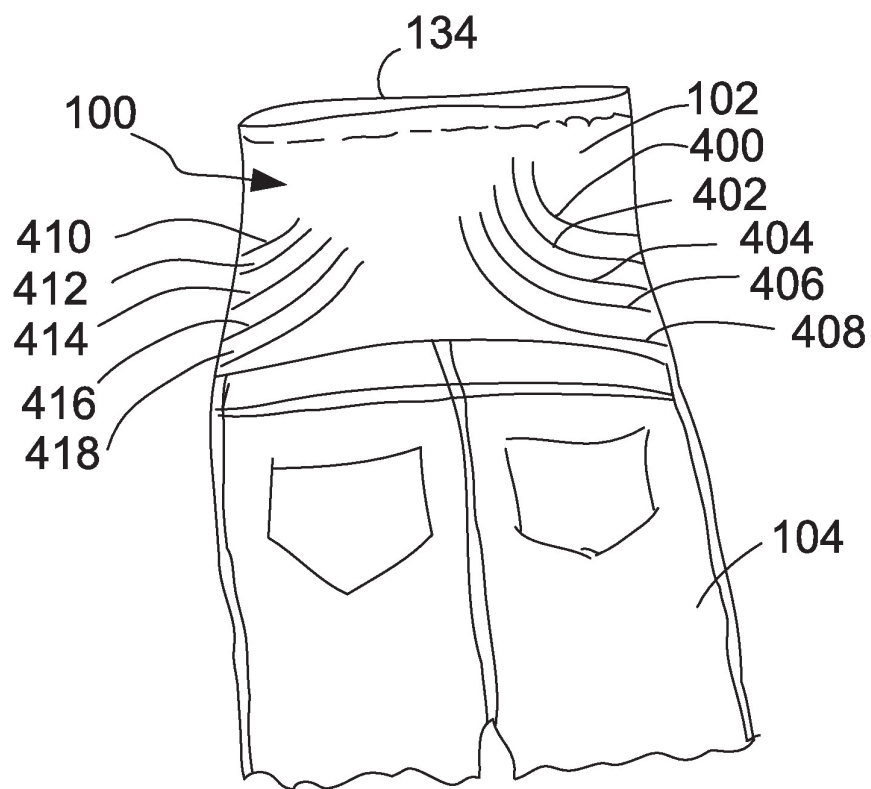


FIG. 4

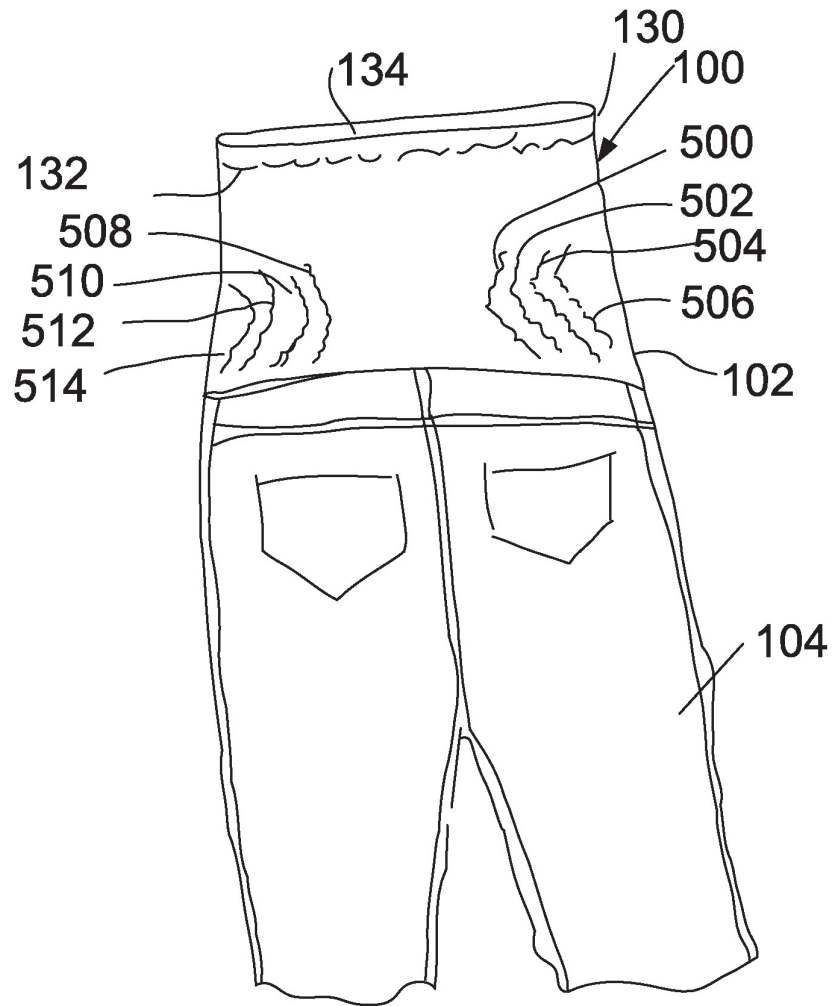


FIG. 5

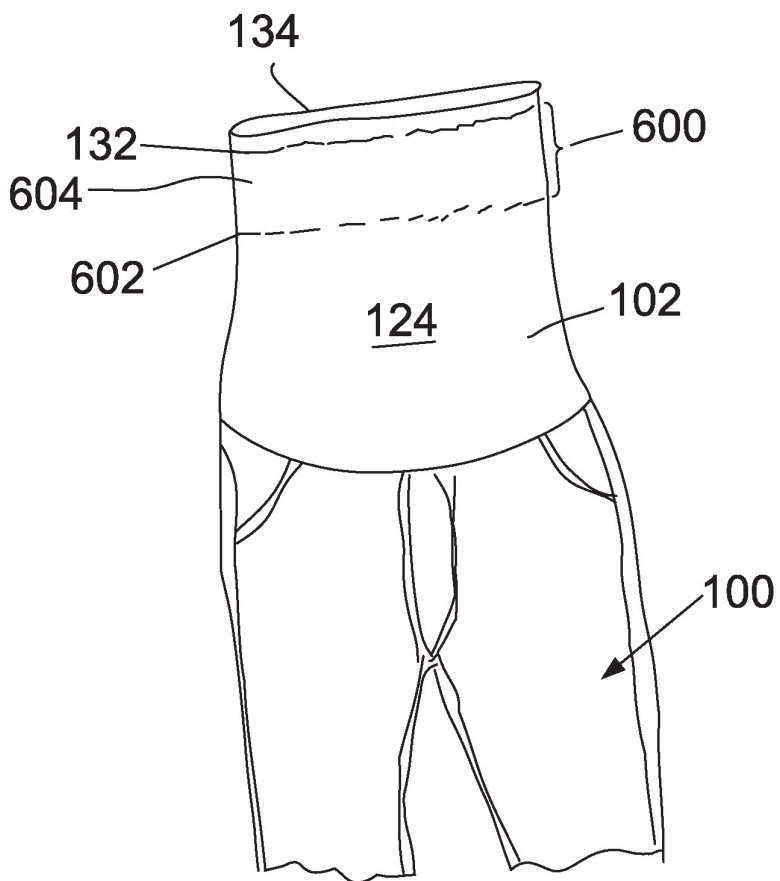


FIG. 6

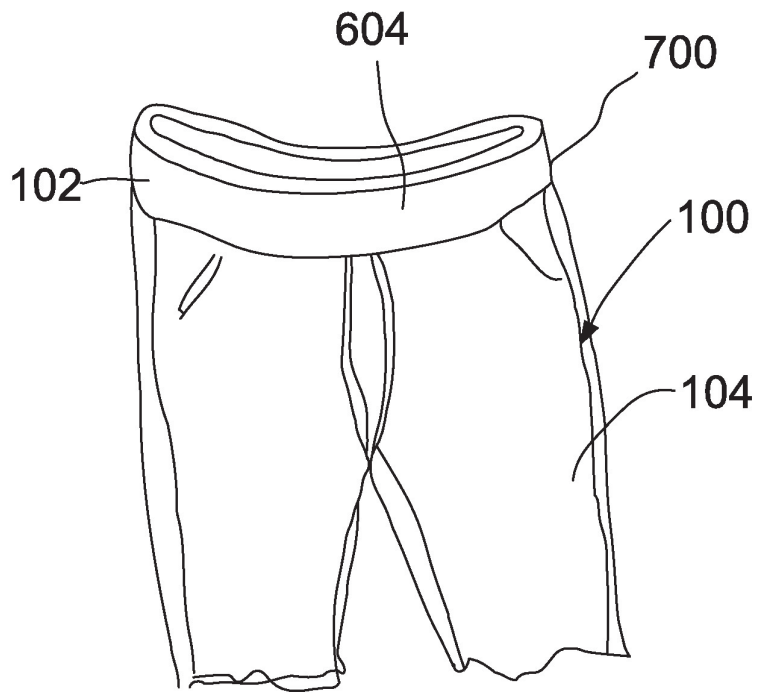


FIG. 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2008/061739

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - A41D 1/20 (2008.04) USPC - 2/221 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(8) - A41C 1/10; A41D 1/20 (2008.04) USPC - 2/69, 76, 220, 221, 227, 228, 236, 237, 239, 240, 309, 311; 450/95, 116, 118, 123, 130, 131, 132, 155, 309 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) PatBase		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y Y Y Y Y A	US 4,506,390 A (STERN) 26 March 1985 (26.03.1985) entire document US 2004/0210987 A1 (CARNEY) 28 October 2004 (28.10.2004) entire document US 2006/0010571 A1 (OAKLEY) 19 January 2006 (19.01.2006) entire document US 6,311,333 B1 (BATRA) 06 November 2001 (06.11.2001) entire document US 3,045,678 A (GEIMER) 24 July 1962 (24.07.1962) entire document US 4,280,229 A (STEIN) 28 July 1981 (28.07.1981) entire document	1, 2, 4-6, 8 ----- 3, 7, 9, 10 3 7 9 10 1-10
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>		
* 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 06 August 2008		Date of mailing of the international search report 18 AUG 2008
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774