

[54] **DISPOSABLE PANTY WITH IMPROVED CROTCH CONSTRUCTION**

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[51] Int. Cl. **A61f 13/16**

[58] Field of Search 2/224 A, 224, 238, 225, 226, 2/243, 243.1, 243.2, 243.3; 128/284, 288, 291, 290

[56] **References Cited**

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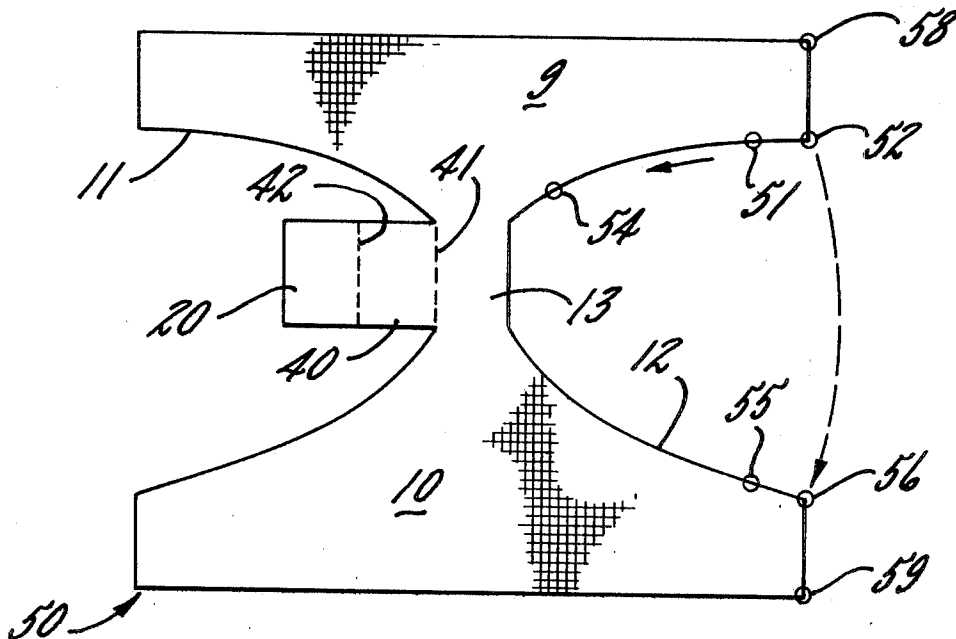
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[57] **ABSTRACT**

A disposable panty has an improved crotch construction in which two auxiliary layers, of the same material as the panty, are disposed over the crotch area. The panty is made from a single sheet of material, all portions cut as a contiguous blank.

5 Claims, 4 Drawing Figures



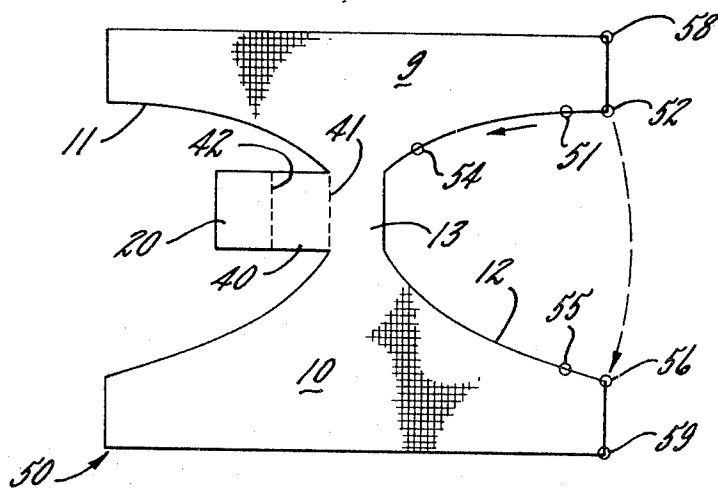


FIG. 1.

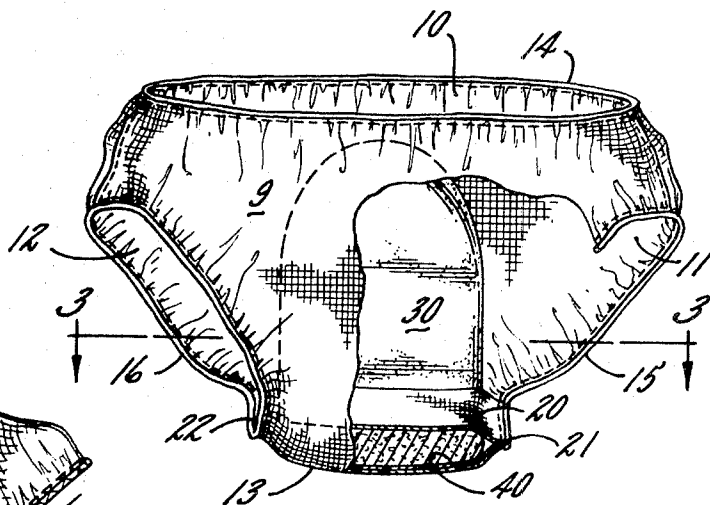


FIG. 2.

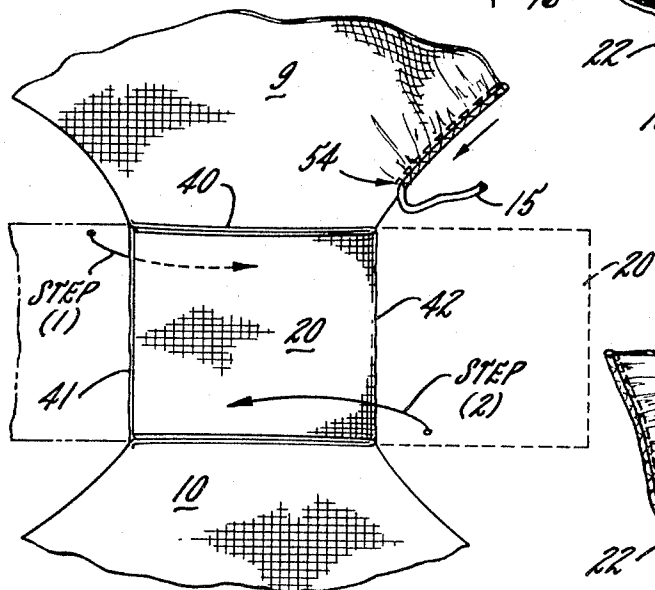


FIG. 3.

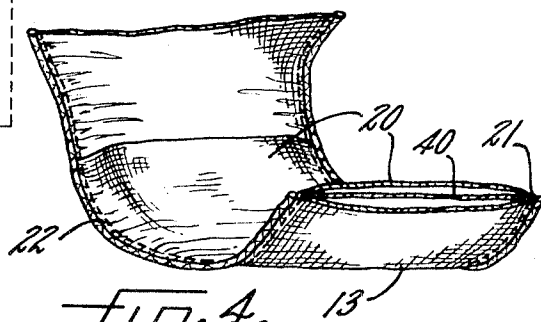


FIG. 4.

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DISPOSABLE PANTY WITH IMPROVED CROTCH CONSTRUCTION

CROSS-REFERENCE TO RELATED APPLICATIONS

Charlotte I. Richard application Ser. No. 790,397 filed Jan. 10, 1969, Charlotte I. Richard application Ser. No. 831,119 filed June 6, 1969, now abandoned, and Marion A. McCurry application Ser. No. 825,156 filed May 16, 1969.

BACKGROUND AND OBJECTS

The present invention relates generally to disposable panties. More particularly, it concerns the provision of a disposable panty, and method of making the same, wherein all fabric portions are formed from a single sheet of fabric material as a contiguous blank.

A primary object of the present invention is to provide a disposable panty of improved construction, wherein all fabric portions of the panty are cut as a contiguous blank from a single sheet of fabric material. An associated object is to provide such panty, and method of making the same, which lends itself to high-volume low-cost fabrication.

Another object of the invention is to provide a disposable panty utilizing to full advantage the inherently advantageous properties of nonwoven fabric, both to afford economies in manufacture and advantageous in use.

Other and more particular objects, aims, and advantages of the invention will be apparent from the following detailed description taken in connection with the accompanying drawings.

BRIEF DESCRIPTION OF DRAWING

FIG. 1 is a blank of fabric material used in manufacturing the disposable panty of the invention;

FIG. 2 is a front elevation of a disposable panty embodying the present invention, with a fragment of the front portion thereof removed to reveal the internal structure;

FIG. 3 is a section taken along lines 3—3 in FIG. 2; and

FIG. 4 is a fragmentary perspective of the crotch construction of the panty of FIGS. 1 through 3.

DETAILED DESCRIPTION

While the invention is susceptible of various modifications and alternative forms, certain specific embodiments thereof have been shown by way of example in the drawings which will be described in detail herein. It should be understood, however, that it is not intended to limit the invention to the particular forms disclosed but, on the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention.

Turning now to the drawings and particularly FIG. 2, there is shown a disposable panty having a front body portion 9, a rear body portion 10, and a crotch area 13, the three being interconnected to define a pair of leg openings, viz, left leg opening 11 and right leg opening 12. To permit a single panty size to fit different sized users, an elastic band 14 is sewed around the waist of the panty, and a pair of elastic bands 15 and 16 are sewed around the left and right leg openings 11 and 12, respectively.

The panty may be made of any suitable disposable material, but one particularly preferred fabric material comprises a nonwoven crossed thread fabric having an open mesh construction, with an applique of fine cotton fibers adhesively bonded to at least one side thereof. The nonwoven fabric comprises a set of spaced warp thread which extend in the machine direction, and a set of spaced fill threads which extend across the warp threads in the transverse direction. Thus, the two sets of threads are disposed in face-to-face relation to each other, and are adhesively bonded together where the threads of one set cross the threads of the other set. The threads are typically made of nylon, rayon or the like. The cotton appliques are formed by depositing fine fibers on the crossed thread fabric in a random manner, such as by air form-

ing or the like. The thickness of the applique may be varied to provide the composite material with the desired softness, bulk, feel, and other characteristics.

In keeping with an important aspect of the present invention, two auxiliary layers of the material constituting the fabric of the disposable panty are positioned and retained in the inside crotch area of the panty. The auxiliary layers are secured to the crotch area of the panty defining a part of the leg opening, so that the auxiliary layers cooperate with the crotch area to form a pocket or receptacle for a sanitary napkin. Thus, in the illustrative embodiment, and as shown in FIGS. 2 and 4, a top auxiliary layer 20 is disposed over the crotch area near the wearer, and a medial auxiliary layer 40 is disposed intermediate the contiguous crotch area 13 and the top auxiliary layer 20. As indicated, the edges 21 and 22 of the auxiliary layers and the crotch area are sewed together at the leg openings 11 and 12, although the details of this construction are best deferred until FIGS. 1 and 3 are described in detail.

By including a top auxiliary layer 20 and a medial auxiliary layer 40 between the wearer and the contiguous crotch area 13, and by sewing the crotch edges 21 and 22 while leaving the remaining edges of the auxiliary layers unsecured, two pockets or receptacles are provided for a sanitary napkin 30 (FIG. 2).

An advantageous feature of the present construction is that a sanitary napkin 30 (FIG. 2) may be securely inserted between the top auxiliary layer 20 and the medial auxiliary layer 40, and yet by reason of the porous fabric material constituting the panty, the napkin 30 is still accessible to menstrual fluids. When the top auxiliary layer 20 becomes soiled, the top auxiliary layer 20 may be discarded along with the napkin and a second sanitary napkin inserted between the medial auxiliary layer 40 and the contiguous crotch area 13. It will be understood that the thread used to sew the plastic band and the edges of the auxiliary layers 20 and 40 to the panty is considerably stronger than the material comprising the auxiliary layers 20 and 40, so that either or both of these auxiliary layers can be easily torn or cut along the seam lines without weakening or breaking the seams.

A highly advantageous feature of the invention is that the panty is manufactured from a single sheet of material. As shown in FIG. 1, additively the blank 50 includes the contiguous front body portion 9, the rear body portion 10, and the connecting crotch portion 13. A rectangular flap extends laterally from one side of the crotch portion 13, advantageously for a distance of twice the thickness of the crotch portion 13. This tab contains the fabric material for the medial auxiliary layer 40 and the top auxiliary layer 20 (FIGS. 2 and 4).

To manufacture the panty of the present invention, a blank 50 is cut in the general shape of that shown in FIG. 1. The width of the body portions 9 and 10 may additively equal the circumference of the panty or, for some panty constructions, may exceed the circumference to provide an overlap zone so as to permit an even broader diversity of sizes to be accommodated by a single garment.

Thus, in the blank 50 of FIG. 1, the width of the body portions 9 and 10 is about 2 inches larger than half the diameter of the final panty, and the body portions between the waist and the leg openings 11, 12 (FIG. 2) are left unsecured.

After the blanks 50 are cut either by machine or by hand, the sewing and folding process begins. Sewing is commenced at a point 51 about 2 inches beyond the corner 52 of the front body portion 9. White sewing the edge, an elastic band 15 (FIG. 3) is simultaneously and concurrently secured to the seam. The seam continues from the point 51 to a point 54.

At this stage the tab comprising the top auxiliary layer 20 and the medial auxiliary layer 40 is folded into a Z-shape, with the edge of the crotch portion opposite the tab being adjacent to the fold line 42, that is, the intersection between the top auxiliary layer 20 and the medial auxiliary layer 40. The free end of the tab, that is, the end of the top auxiliary layer 20 remote from the crotch area 13, is placed adjacent the intersection or fold line 41, that is, the edge of the crotch area con-

necting the medial auxiliary portion 40. The successive folds at fold line 41 and then at fold line 42 are best shown in FIG. 3, with the respective folds indicated as "Step (1)" and "Step (2)."

After folding of the auxiliary layers, sewing is continued from the point 54 (FIG. 1) to the point 55, about 2 inches prior to the corner 56. The point 52 is then brought under the bulk of material to the front of the sewing machine and placed about 1 inch beyond the corner 56. This accordingly provides an overlap of about 1 inch between the point 52 and the point 56. Sewing is continued to a distance of about 1 inch beyond the point 51, and the thread and elastic cut off.

The same sewing procedure is then repeated with respect to the left leg opening 11, except of course that it is no longer necessary to manipulate the auxiliary layers 20 and 40.

Next, the elastic or strip rubber is sewn to the waist by holding the partly fabricated panty inside out, which automatically permits the panty to be finished right side out. Thus, the corners 58 and 59 are overlapped just as were the corners 52 and 56, and sewing is continued along one edge of the waist until the next overlap as before. As a result, a finished garment is provided that is readily and economically manufactured, and which has advantageous features heretofore found only in more expensive panties.

Thus it is apparent that there has been provided according to the invention a structure and method that fully satisfy the aims, objects, and advantages set forth earlier.

I claim as my invention:

1. A disposable panty comprising a contiguous front body portion, rear body portion, and connecting crotch portion, said body portions forming a pair of leg openings on either side of said crotch portion, and top and medial auxiliary

crotch layers successively contiguous to one side of said crotch portion and each layer having a width equal to about the width of said crotch portion, the free end of said top auxiliary layer being secured to the edge of the crotch area connecting said medial auxiliary layer, and the opposite edge of the crotch area being secured to the intersection of said top and medial auxiliary layers so as to provide two open-ended sanitary napkin receiving receptacles.

2. Panty of claim 1 including an elastic band sewed around each of said leg openings.

3. A method of producing a disposable panty which comprises cutting from a single sheet of material a contiguous front body portion, rear body portion, connecting crotch portion, and top and medial auxiliary portions having a width equal to about the width of said crotch portion being successively contiguous to one side of said crotch portion and extending transversely therefrom, folding said auxiliary portions into top and medial auxiliary layers so that the free end of said top auxiliary layer is adjacent the edge of the crotch area connecting said medial auxiliary portion, and the opposite edge of the crotch portion is adjacent the intersection of said top and said medial auxiliary layers, and securing said front and said rear body portions and said adjacent edges of said crotch area and said auxiliary layers so as to provide two open-ended sanitary napkin receiving receptacles.

4. Method of claim 3 wherein said adjacent edges of said crotch area and said auxiliary layers are secured prior to securing said front and said rear body portions.

5. Method of claim 4 wherein said securing includes sewing elastic bands concurrently with said securing.

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