Sept. 8, 1953 J. R. MILBERG 2,651,048

GARMENT STRUCTURE WITH CROTCH

Filed Nov. 22, 1952

Fig. 1

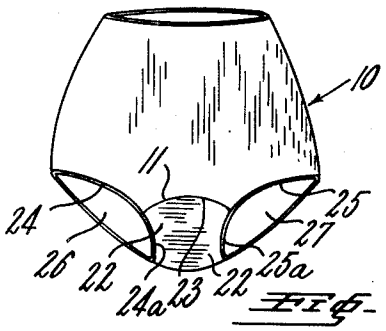


Fig. 2

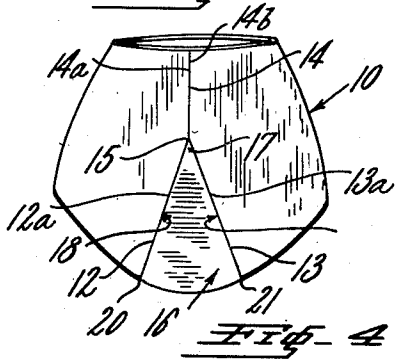


Fig. 3

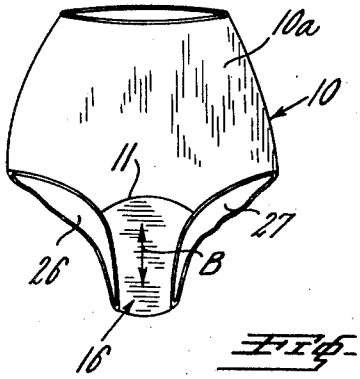


Fig. 4

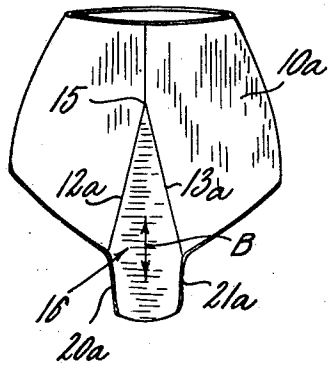


Fig. 5

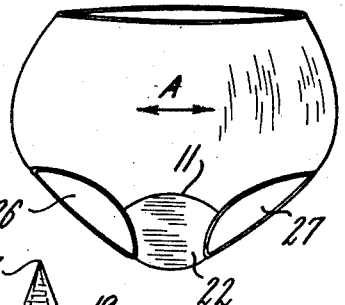
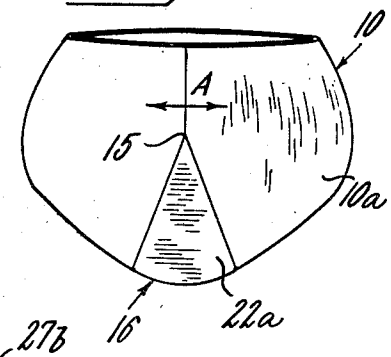


Fig. 6



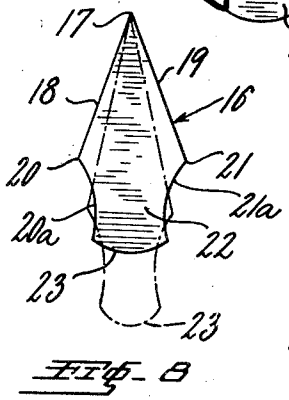


Fig. 8

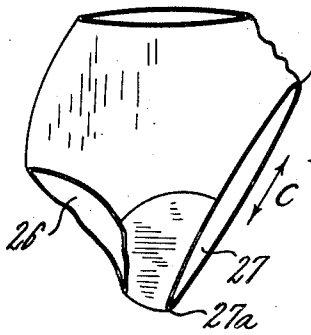


Fig. 7

INVENTOR.
JACQUES RANDOLPH MILBERG
BY Leon M. Strauss
AGT.

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GARMENT STRUCTURE WITH CROTCH

Jacques Randolph Milberg, East Rockaway, N. Y.

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1 Claim. (Cl. 2—224)

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This invention relates to garment structures and, more particularly, to undergarments such as panties, girdles, bathing suits, and similar wearing apparel in which the crotch thereof is arranged and shaped to contribute to a simplified and improved garment structure.

This garment may be made from any suitable stretchable material, whether elastic or not.

It is an object of the present invention to provide means affording a comfortable fit for an undergarment or similar wearing apparel which permits maximum freedom of movement and conforms at all times to the contour of the human body on which said garment is worn.

It is another object of the present invention to provide means contributing to the exertion of a uniform pressure around the legs of the human body on which said garment is worn, notwithstanding the fact that the garment is subjected to stretching in the longitudinal direction and in the transverse direction of the garment, either successively or simultaneously.

It is a further object of the present invention to provide means conducive to the elimination of seams conventionally extending alongside the garment of the aforesaid type, whereby a stronger and longer lasting garment is obtained.

It is still a further object of the present invention to provide means rendering the possibility of substantially immobilizing the crotch of a garment of the aforesaid type when the garment is subjected to stretching in a transverse direction of the latter.

It is yet a further object of the present invention to provide means facilitating a longitudinal stretching of the crotch without the necessity of stretching the remainder of the garment in the same direction.

It is yet another object of the present invention to provide means affording transverse stretching of an undergarment without exerting any pressure on the crotch of the garment, while uniform pressure is exerted around the legs of the wearer, to thereby effectively prevent riding up or binding of the garment on the body of the wearer.

These and other objects and features will become apparent from the following detailed description, reference being had to the accompanying drawing.

In the drawing:

Fig. 1 is a front view of a garment constructed according to the invention;

Fig. 2 is a rear view of the garment of Fig. 1;

Fig. 3 is a front view of the garment showing the crotch stretched along the direction of the arrows;

Fig. 4 is a rear view of the garment of Fig. 3;

Fig. 5 is a portion of the garment showing the stretched sides of the garment;

Fig. 6 is a rear view of the garment of Fig. 5;

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Fig. 7 is a front view of the garment showing one of the sides and one portion of the crotch thereof in stretched position; and

Fig. 8 is a plan view of the crotch element of the garment of Fig. 1 in unstretched (shown in full lines) and stretched (shown in dotted lines) positions.

Referring now more particularly to the drawing, there is shown in Figs. 1 and 2 the front and rear views, respectively, of a garment embodying the invention. As may be realized from Fig. 2, garment 10 is made from one piece of material, such as nylon, cotton or silk fabric, jersey and like material. Such garment is shown in the form of a panty to be worn especially by children and ladies, and may be manufactured through mass production methods.

As a particular advantage of the structure of this garment is to be considered the fact that it is entirely devoid of side seams, and the body consists of a single piece of material having the front seam 11 and the upwardly converging lower side seams 12 and 13 extending into the rearward or central seam 14 at the juncture 15. This juncture 15 or lower end of joined upper side edges 14a, 14b is located approximately one-half to one-third of the vertical length or height of the garment, as can be seen from Figs. 2, 4 and 6.

Seams 11, 12 and 13 connect crotch element or insert 16 to the garment. This crotch element 16 has a pointed end 17 from which the side walls or edges 18, 19 diverge and terminate into corners 20, 21 from which the crotch element extends into the front piece 22 thereof, which terminates into an arcuate-shaped or convex edge 23 coinciding with seam 11, as may be visualized from Figs. 1, 3 and 5. Crotch element 16 may be stretched in lengthwise direction thereof, as indicated in dot-and-dash lines in Fig. 8, whereby the arcuate edge 23 assumes a position as indicated by numeral 23a.

As may be gathered from the aforesaid description, the body portion 10a of the garment has the upper side edges 14a, 14b joined along rear seam 14, the downwardly directed edges 12a, 13a which are joined to the edges 18 and 19 of the crotch element 16 at seams 12 and 13 and the respective upwardly convergent leg encircling portions or edges 24, 25 forming the leg openings 26, 27 along which at 24a, 25a are joined the edges 20a and 21a of the front piece 22 of the crotch element 16.

Let it be assumed that the body portion 10a is made from a material, such as nylon jersey, adapted to be stretched only in the direction of arrows A (Figs. 5 and 6), then it will readily be seen that neither the front crotch piece 22 nor the rear piece 22a of the crotch element 16 are displaced or shifted to any substantial extent.

Figs. 3 and 4 indicate that the material of the body portion 10*a* is substantially non-stretchable in a direction perpendicular to that indicated by arrows A. In a similar way, crotch element 16 is also substantially non-stretchable in the direction of arrows A, but only in the direction of arrows B (Figs. 3 and 4).

The aforesaid structure results in a garment whose respective leg openings 26, 27 may be independently stretched or lengthened in the direction of arrows C to a position indicated by numerals 27*a*, 27*b* (Fig. 7), 27*b* indicating the upper end of the leg encircling portion 25.

The aforesaid disclosure as regards the body portion 10*a* and crotch element 16 will make it immediately clear that a substantially rectangular-shaped piece of material can be readily cut.

The cutting of this piece of material will occur substantially without any waste, because each cutting operation provides two body portions and two crotch pieces therebetween. This particular cutting operation results in marked labor and material savings.

As illustrated in Figs. 3 and 4, crotch element 16, when stretched in lengthwise direction (arrows B), will contribute to larger leg openings 26, 27 (compared to leg openings in Figs. 1 and 5), whereby the stretched portions are located only at the side edges 20*a*, 21*a* of crotch element 16, which is clearly indicated in Fig. 4. This stretching occurs without pull on the upper part of the garment which does not pull, bind or ride downwardly, as is the case in conventional garments of similar type.

A further advantage is attained in that the seams of the body portion 10*a* which are reduced in number (in comparison with known garments of this type), are substantially not subjected to stresses so that the life of the garment is considerably increased and repairs are substantially avoided. The garment withstands repeated washings and laundering without causing the rupture and opening of seams which are no longer located at the sides of the garment, where stretching in transverse direction of the garment occurs and the largest stresses are concentrated.

Furthermore, regardless of the direction in which the garment is stretched, when it is worn the pressure exerted around the legs of the user is uniform as a result of the positioning of the seams joining the bodice to the crotch element and the relative stretching thus provided between the bodice and the crotch element. In addition, transverse stretching of he body portion 10*a* will not result in the exerting of any substantial pressure on the crotch element, so that the position of the crotch element as well as its stretchability are substantially not affected by the stretching of the body portion 10*a*.

It follows from the above description that a garment having leg openings has been constructed which consists of a body portion 10*a* provided with substantially centrally-located joined upper side edges 14*a*, 14*b*, downwardly diverging lower side edges 12*a*, 13*a* extending from said joined edges at the lower end thereof at 15, curved side edges 24*a*, 25*a* having lower ends, said curved side edges 24*a*, 25*a* forming a part of a respective leg opening 26, 27 and extending from said downwardly diverging edges 12*a*, 13*a*, an intermediate edge at 11 joining said curved side edges 24*a*, 25*a* at said lower ends, and a crotch element 16 including a front piece 22 joined to said downwardly diverging edges, and further including a rear piece 22*a* provided with side edges forming

the remainder of said leg openings and joined to said intermediate edge at 11 of said garment at the front of the latter.

If the body portion 10*a* and the crotch element 16 are made from a material such as nylon, which is relatively not stretchable, then it will readily be seen that a certain amount of stretching will still be permitted due to the angle provided between upwardly directed edges 12*a*, 13*a*. In addition, upon stretching of the garment either in the direction of arrows A (Figs. 5 and 6), or the direction of arrows B (Figs. 3 and 4), the stresses existing at edges 12*a* and 13*a* will be resolved into components substantially perpendicular and parallel to said edges so that the seams will not readily rupture and open. Thus, the life and comfort afforded the garment (in comparison with known garments of this type) is considerably improved. The stretching of the garment in desired directions may be pre-controlled in accordance with the features of the invention as hereinabove disclosed.

Thus, briefly the garment has an upper waist encircling portion and lower legs embracing portions. A central rear seam extends from said waist encircling portion downwardly and terminates in a lower end located approximately within the upper half of the vertical length of the garment. On opposite side of said central rear seam are cut along upwardly convergent lines the lower legs embracing portions, the upper ends of which terminate at a level below that of said lower end of said central rear seam. These upper ends of said legs embracing portions are positioned in the lower half of the garment. A crotch insert is cut with its rear portion complementary to linear diverging side edges and stitched thereto at the rear of the garment and extends from the latter to the front of the garment and terminates thereat in a convexly shaped front edge stitched to a correspondingly shaped convex front edge of the body portion to thereby complement said legs embracing portions. The front edge is located at a level lower than the upper ends of said legs embracing portions.

Although one embodiment of the invention has been described and shown in the drawing, it should be noted that the invention may be realized in modified form and adaptations of the arrangements herein disclosed may be made, as may readily occur to persons skilled in the art, without constituting a departure from the spirit and scope of the invention as defined in the objects and in the appended claim.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent, is:

An undergarment having an upper waist encircling portion and lower leg embracing portions; comprising a body portion formed from a single panel of material having upper side edges joined to form a substantially vertically extending seam centrally located with respect to the rear of said undergarment, said rear seam extending from said waist encircling portion downwardly and terminating in a lower end located approximately within the upper half of the vertical length of said body portion, downwardly diverging linear lower side edges extending from said lower end of said rear seam, said lower portions of said undergarment on opposite sides of said central rear seam being cut along upwardly convergent lines the upper ends of which terminate at a level below said lower end of said rear seam and defining said leg embracing portions,

said upper ends of said leg embracing portions being positioned in the lower half of the body portion, and a crotch insert having its rear portion complementary to said linear diverging side edges and stitched thereto, said crotch insert extending from the rear of said body portion to the front of said body portion and terminating at the front in a convexly shaped front edge stitched to a correspondingly shaped concave front edge of said body portion to thereby complement said legs embracing portions, said front edge being located at a level lower than said upper ends of said legs embracing portions, the material of said crotch insert being stretchable in a direction extending from said lower rear seam end toward said convexly shaped front edge of said insert, the material of said body portion being stretchable in a direction transversely of the direction of stretchability of said insert, whereby said undergarment presents a free from binding effect on the wearer.

JACQUES RANDOLPH MILBERG.

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