Feb. 6, 1962 J. H. WYSS ET AL 3,019,446

UNDERGARMENT

Filed April 22, 1959 2 Sheets-Sheet 1

Fig. 1.

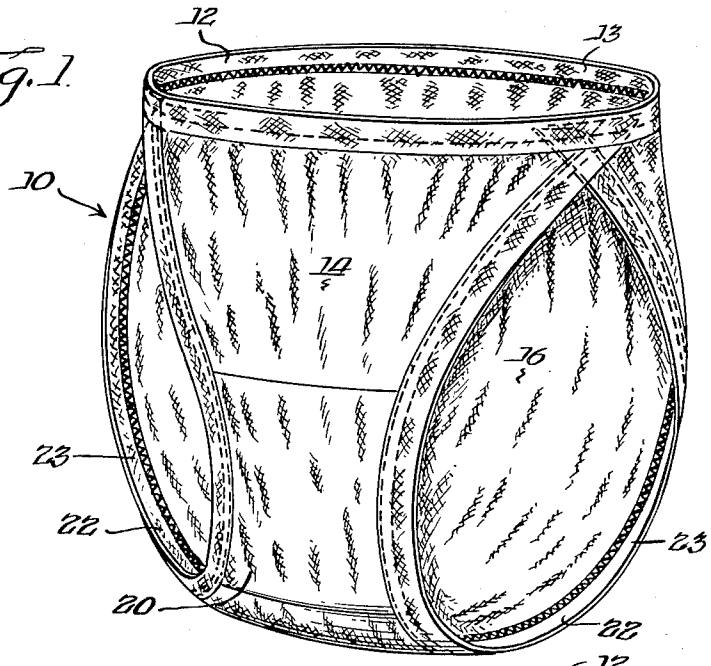
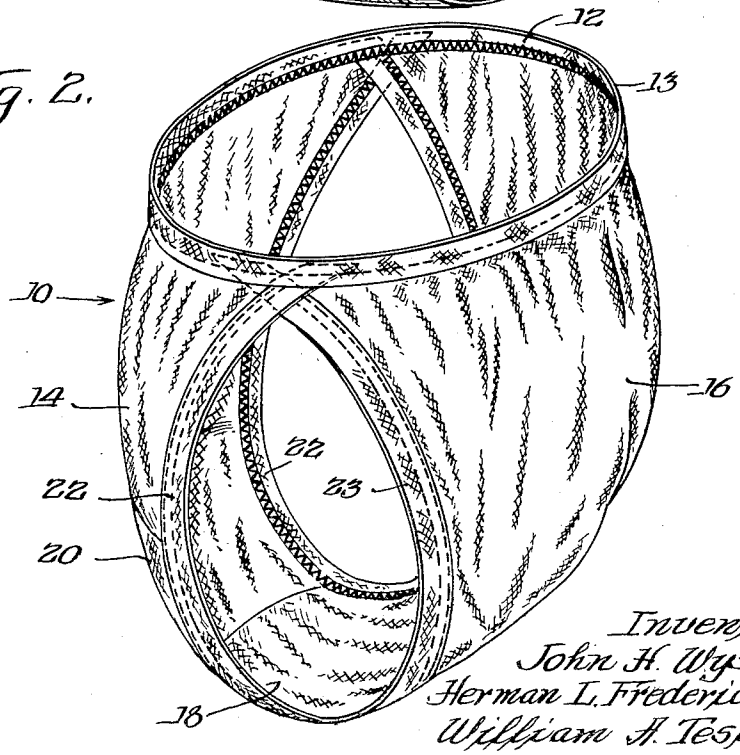



Fig. 2.




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Fig. 3.

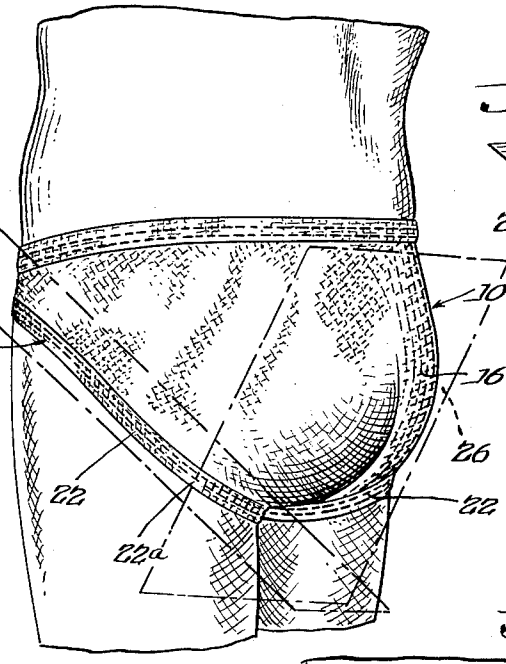



Fig. 3a

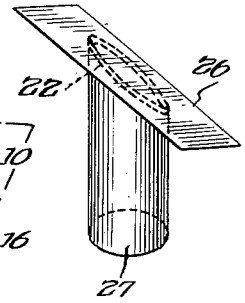



Fig. 4a

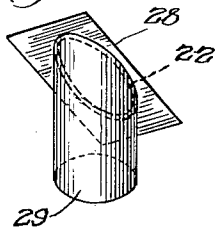



Fig. 4.

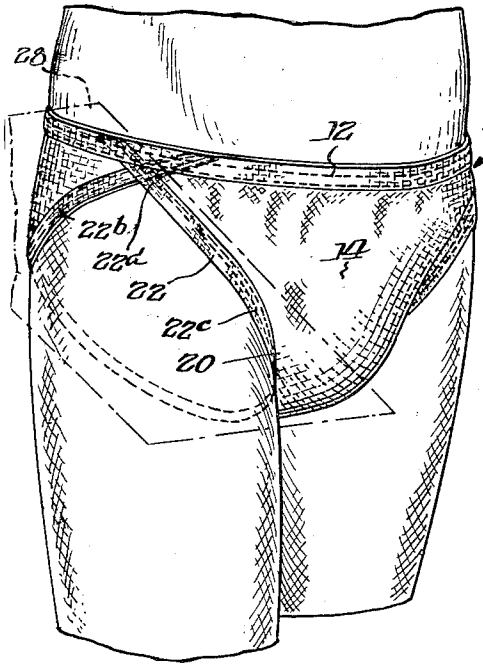
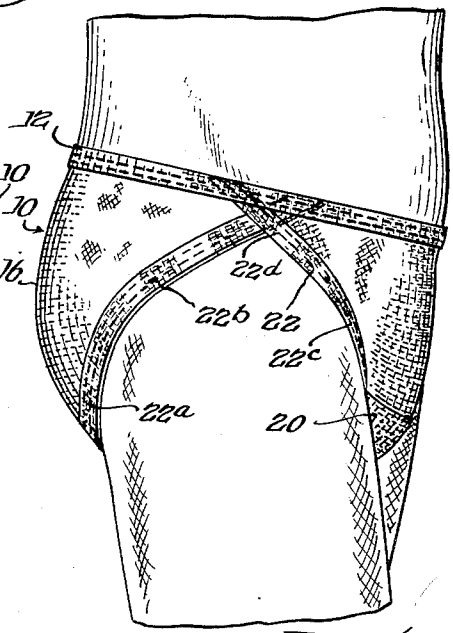



Fig. 5.




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3,019,446

# UNDERGARMENT

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1 Claim. (Cl. 2—224)

This invention pertains to men's undergarments and in particular to the type commonly called "briefs." It is a continuation-in-part of the application for United States Letters Patent Serial No. 740,674, now abandoned, entitled Undergarment, filed June 9, 1958.

With the advent of stretchable synthetic fabrics the development of new basic concepts was made possible in the construction of garments. For example, the stretchable synthetic fabrics have led to the development of the stretch hose. These hose have the characteristics of being able to accommodate a large range of sizes due to the stretchable properties of the material from which they are constructed. By eliminating the necessity of having hose of each size and half-size significant manufacturing and marketing advantages are realized by both the manufacturer and the distributor.

Because of the success in the hosiery field of the stretchable synthetic fabrics, attempts have been made to introduce them in the construction of other types of garments. However, certain problems have prevented the immediate success of these fabrics in the construction of garments other than hose.

In particular, it has been proposed that the stretch fabrics be used in the construction of men's undergarments of the type commonly called "briefs." By briefs it is meant drawers which are essentially form-fitting and which have the salient feature of providing support for the male parts. However, it has been found that when briefs are constructed of the stretchable fabrics along conventional and heretofore known designs, they have the tendency to become bunched or gathered in the crotch of the wearer and consequently become uncomfortable. For these reasons among others a brief has been invented which has a foremost feature and object of providing a brief which is essentially form-fitting and in which the tendency to become bunched or otherwise gathered in the crotch of the wearer is substantially eliminated.

Another important feature and object of this invention resides in the provision of a brief which has the salient feature of providing support for the wearer.

Another object of the invention is to provide a brief which is stretchable throughout a major portion of its construction so that an individual garment can accommodate a range of sizes rather than a single size.

Another object of the invention is to provide a brief which is especially suited to be constructed of a stretchable synthetic fabric and is designed to be essentially form-fitting.

These and other objects of the invention will be apparent upon reading of the specification with reference to the following drawings:

In the drawings—

FIGURE 1 is a ¾ front view in perspective of the undergarment embodying the invention.

FIGURE 2 is a side view in perspective similar to FIGURE 1.

FIGURE 3 is a ¾ rear view in elevation of the undergarment embodying the invention mounted on a human figure.

FIGURE 3*a* is a diagrammatic illustration of the intersecting plane shown in FIGURE 3, intersecting a cylindrical form representing the thigh of the wearer.

FIGURE 4 is a ¾ front view similar to FIGURE 3.

FIGURE 4*a* is a diagrammatic illustration of the intersecting plane shown in FIGURE 4, intersecting a cylindrical form representing the thigh of the wearer.



FIGURE 5 is a side view in elevation similar to that shown in FIGURES 3 and 4.

Although the material used in the construction of the garment embodying the invention will be described in terms of stretchable fabric, it is contemplated that other types of fabrics may be used. By stretchable fabric it is meant one that has the characteristic of being substantially stretchable in at least one or more directions. One fabric that has been found particularly suitable for the subject garment has stretch characteristics of 300 percent in the cross drection and 100 percent in the longitudinal direction. Such fabric is composed of a yarn consisting at least partially of a polyamide material and sold under the trademark Helanca by the Dupont Company. However, other synthetic fabric fibers such as polyester fibers commonly sold by the Dupont Company under the trademark Dacron and acrylic fibers sold under the trademark Orlon have gained importance in this area.

As was stated previously, there are two major considerations in the design of this garment that must be met if the garment is to provide comfort for the wearer. Firstly, the garment must not bunch in the crotch of the wearer or otherwise become displaced from the portions of the body upon which it ordinarily rests. It has been found that attempts to design a garment along the lines used for those constructed of ordinary fabrics in which there is little or no stretch cannot meet this requirement for reasons that will be seen later on. In particular due to the natural resiliency of these stretchable fabrics, the garment will tend as the result of the movements of the wearer to slide over the buttocks so as to become bunched in the crotch when conventional designs are use. Accordingly it was necessary to invent a design which minimizes any such tendency if stretch fabrics are to be utilized in the manufacture of briefs.

A second consideration which is of vital importance is to provide sufficient support for the parts of the wearer. Due to the resiliency and stretch characteristics of the fabric, ordinary designs commonly used heretofore do not provide the needed support. For this reason it was again necessary to invent a brief having a construction which provides sufficient support for the wearer as well as eliminates any tendency to become bunched or otherwise distorted from its usual position.

Referring now to FIGURE 1, there is shown an undergarment generally denoted by the numeral 10, which hereinafter will be called a brief. The brief is provided with a band 12 which is adapted to circumscribe and engage the thighs of the wearer as best shown in FIGURES 3, 4, and 5. As shown in these drawings, particularly in FIGURE 5, it can be seen that the rear portion of the band 12 rides considerably higher on the wearer than the front portion. As a matter of fact, the rear portion of the band 12 may coincide or be immediately adjacent to the waist of the wearer, whereas the front portion lies along the upper groin area substantially below the waistline and the hips.

The band 12 may be constructed in its preferred embodiment in a conventional fashion of a suitable strip 13 of material folded on itself to form an enclosure (not shown). An elastic member (not shown) extends through the enclosure and causes the band to conform to the body of the wearer.

A front body portion or section 14 is secured to the band by any suitable stitching as shown in the drawings. Preferably the lower edges of the strip 13 are folded inwardly on themselves and sewn together along with the front body portion so as to form a seam of five thicknesses of material.

A rear body portion or section **16** is sewn to the band **12** in the same manner as the front body portion **14**.

Intermediate the front body portion **14** and the rear body portion **16** is a relatively narrow band of material which serves as the crotch portion or section **18**, as shown in the drawings. The crotch portion **18** in one preferred form is merely an integral extension of the front and back portions **14** and **16**.

A reinforcement member **20** is sewn to and partially overlies the front body and crotch portions **14** and **18**, as shown in FIGURES 1 and 2. The reinforcement member in its upper extremity lies in the front body portion **14** and in its lower extremity lies in the crotch portion **18**. This reinforcement member provides additional support to the wearer over that resulting from a single thickness of the material. In its preferred form the reinforcement section **20** is constructed of the same stretchable fabric used in the construction of the brief.

It should be pointed out that in this particular brief the fabric is orientated so that it has approximately 100 percent stretch in the vertical direction and 300 percent stretch in the horizontal direction. It is possible, however, that other stretch relationships may be used in the construction of the garment.

Extending around the outer edges of the front and rear body portions and the crotch portion are the legbands **22**. The legbands **22** may be constructed in a conventional fashion of a strip of material **23** folded on itself to form an enclosure (not shown). An elastic member (not shown) extends through the enclosure and is substantially hidden from view. The marginal portions of the front and rear body portions **14** and **16** and the crotch portion **18** extend into the enclosure and are sewn to the legbands **22**. As a result of this construction, the legbands **22** are elastic so as to permit insertion of the legs of the wearer without any undue discomfort.

As can be seen from the drawings, the upper ends of the legbands **22** are sewn directly to the band **12**. Thus, any forces tending to distort the fabric will be brought directly to bear upon the legbands **22** and in turn the band **12**. The band **12** and the legbands **22** naturally provide greater resistance to stretching than does a single thickness of material. Accordingly this arrangement makes it possible to provide the desired support to the wearer without any discomfort resulting from being too tight. The resistance to stretch, of course, may be varied by the use of different types of elastic so as to provide the desired support.

As shown in the drawing, the garment is constructed so that the lower portions **22***a* of each of the legbands **22** follow the base of the buttocks at their juncture with the thighs, so that the rear body portion **16** substantially covers the same. The lower portions **22***a* further tightly conform to the contour of the rear and rear-side portion of the respective thigh. It will be noticed that the line defining the base of each of the buttocks along which the lower portions **22***a* lie reaches its lowest point at the rear of the thigh and gradually slopes upwardly as it extends to the outward side. Such a line will normally lie in a single sloping plane **26** shown by the dotted lines in FIGURE 3. It can be further seen that the garment is constructed so that the upper portions **22***b* of each legband **22** also lie in the sloping plane **26**. Thus, in the direction of the sloping plane **26**, the upper portions **22***b* are straightline projections of the respective lower portions **22***a*.

The intersection of the sloping plane **26** of the thigh of the wearer can be more clearly seen by referring to the idealized construction shown in FIGURE 3*a*. In this illustration the plane **26** is shown intersecting a cylindrical member **27** with the cylinder being positioned so as to correspond with a side view of the thigh with the right and left edges of the cylinder **27** representing the rear and front portions of the thigh respectively. From the drawing it can be seen that the plane intersects the rear portion of the thigh and slopes upwardly until it intersects the front portion of the thigh. The slope of the plane is determined by that necessary to intersect an imaginary line corresponding to the juncture between the buttocks and the thigh and which would extend along the right hand side of the cylinder **27**.

For purposes of reference, the practice heretofore has been to extend the upper portions in a generally vertical direction or at least at a much steeper slope than the natural plane shown in FIGURE 3. While this type of garment is suitable for ordinary fabrics which have little or no stretch, it does permit the undesirable bunching when stretchable fabrics are used.

One possible explanation for the desirable results obtained from the garment embodying the invention will now be described. When the wearer bends at the waist, the rear body portion will be stretched, thus tending to force the legbands, particularly the lower portions **22***a*, to be displaced upwardly and slide over the buttocks. The bending, however, will also stretch the upper portions **22***b* which in turn will stretch the lower portions **22***a*. Since the upper portions **22***b* lie in the same plane as the lower portions **22***a*, the stresses imparted by the former will be in a substantially longitudinal direction to the latter, so that there is no tendency to displace the latter upwardly along the surface of the buttocks. As a matter of fact, such stretching along the natural plane described hereinbefore will cause the lower portions **22***a* to embrace the body even more tightly and actually provide resistance to displacement. This additional resistance appears to overcome the forces induced by the stretching of the rear body portion.

It can be seen that the forward portions **22***b* may extend at a lower or even slightly greater slope than the aforementioned plane and still obtain the beneficial results of this invention. This principle of the invention may be broadly characterized as extending the portion **22***b* sufficiently forward of the portion **22***a* so that stretching of the legband will not lead to upward displacement of the latter.

Referring now to FIGURES 4 and 5, there is best shown the positioning of the legbands **22** associated with the front body portion **14**. It will be noted that the junctures of the groin area with the thighs lie respectively in the planes **28**, one of which is indicated by the dotted lines shown in FIGURE 4. The garment is constructed so that substantially all of the portions **22***c* of the legbands **22** associated with the front body portion **14** lie along the aforementioned juncture between the groin area and the thighs. The portions **22***d* extend rearwardly of the portions **22***c* at a slope not greater than the plane **28**. As the result of this arrangement, any stretching of the portions **22***c* and **22***d* will not tend to cause inward displacement which would permit bunching.

The intersection of the plane **28** with the thigh of the wearer can best be seen by referring to FIGURE 4*a*. In this illustration the cylinder **29** is positioned so as to correspond to a ¾ front view of the thigh. The plane **28** slopes downwardly in a direction extending from the front to the rear of the cylinder **29** so that the highest point of the intersection is at the outside portion of the thigh and the lowest point is at the inside portion of the thigh adjacent the crotch area. The slope of the plane is determined by that necessary to intersect any imaginary line corresponding to the juncture between the thigh and the groin area and which would extend along the right hand side of the cylinder **29**.

The unique construction of each legband with respect to the front body portion may be broadly described as extending the portions **22***d* sufficiently rearwardly of portions **22***c* so that stretching of the legband will not lead to inward displacement of the latter.

As shown in FIGURE 5, the upper portions **22***b* and **22***d* of each legband will normally cross slightly below the band **12** when the garment is designed along the concepts previously described. This crossing, however, is dependent upon the physiological characteristics of the wearer for which the garment is designed.

While the legbands **22** are shown as being cut with the ends sewn to the band **12**, other constructions are possible. For instance, the bands **22** may be uncut and connected to the band **12** in any manner suitable to follow the concepts described previously regarding their position on the wearer.

In its preferred form and by actual practice it has been found that the subject garment can be designed for the greatest percentage of wearers in any particular size group by limiting the range for any garment to three sizes, such as 28–32, 30–34, 32–36, etc. This range is primarily limited by the rear body portion in order to eliminate bunching.

It will be further noted that the garment may be constructed of separate body portions or of an integral piece of material, except for the reinforcement member **20** and bands **12** and **22** respectively. As a result of the latter arrangement a single blank can be cut out of the fabric and then sewn to the band **12** and the legbands **22**.

It can now be seen this type of design provides an economical garment which is extremely effective as a brief. Furthermore, it can be seen that by constructing this garment according to the principles of the invention, it is possible to provide an individual garment which is suitable for a range of sizes and which retains all of the comfort of the ordinary sized garments.

Although a preferred embodiment of the invention has been described, it is to be understood that this is merely by way of example and in no manner to be construed as a limitation. It is contemplated that certain modifications may be made within the scope of the claim without departing from the spirit of the invention.

What is claimed is:

A nether garment comprising a front body section adapted to extend from below the hips to cover the lower part of the abdomen, a rear body section adapted to extend from below the waist, a crotch section connecting said front and rear body sections, an elastic band secured to the upper ends of said front and rear body sections and adapted to surround the body of the wearer below the waist and a pair of leg bands secured along first, second and third portions thereof to the marginal portions of said front, rear and crotch sections, respectively, to form a pair of leg openings, said first portion of each leg band being attached at its upper end to said elastic band at a point adjacent the midpoint of the side and arranged and constructed so that said first portion is adapted to assume a position in which a part thereof lies along the juncture between the groin and the thigh and the remainder thereof extends sufficiently rearwardly therefrom so that stretching of said leg band resists inward displacement of said part, said second portion of each leg band being attached at its upper end to said elastic band at a point forward of the midpoint of the side and arranged and constructed so that said second portion is adapted to assume a position in which a part thereof lies along the juncture between the respective thigh and buttock, and the remainder extends sufficiently forwardly therefrom so that stretching of said leg band will resist upward displacement of said last named part.



**References Cited** in the file of this patent

UNITED STATES PATENTS

| | | |
|---|---|---|
| 2,310,367 | Harwood | Feb. 9, 1943 |
| 2,313,595 | Snyder | Mar. 9, 1943 |
| 2,833,134 | Gift | May 6, 1958 |