Dec. 30, 1969 R. N. BREGENZER ET AL 3,486,507

GARMENT CROTCH CONSTRUCTION

Filed Dec. 8, 1967 2 Sheets-Sheet 1

Fig. 1

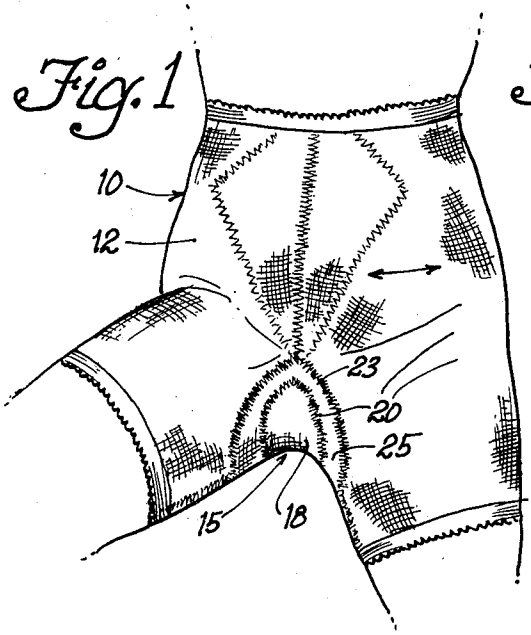
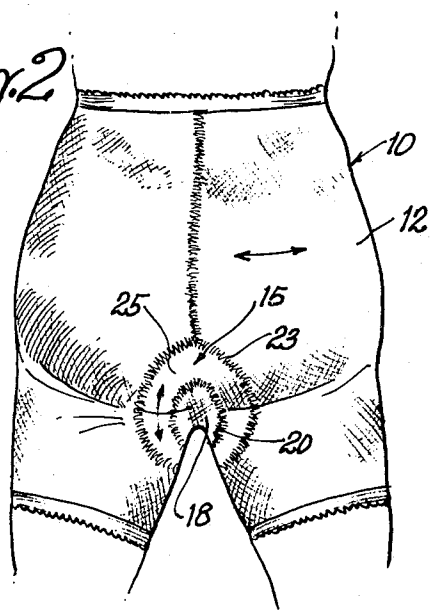


Fig. 2



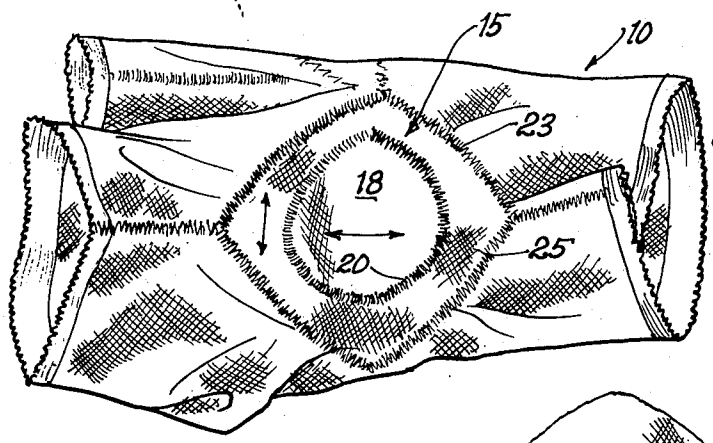


Fig. 3

Fig. 4

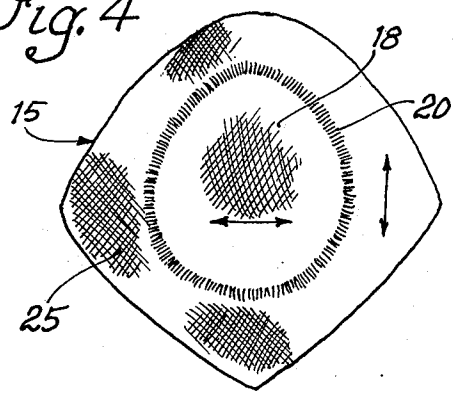
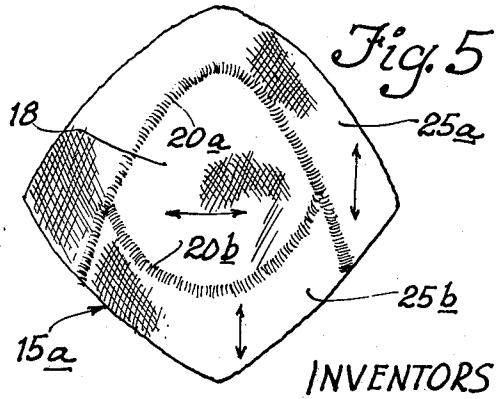


Fig. 5



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Fig. 6

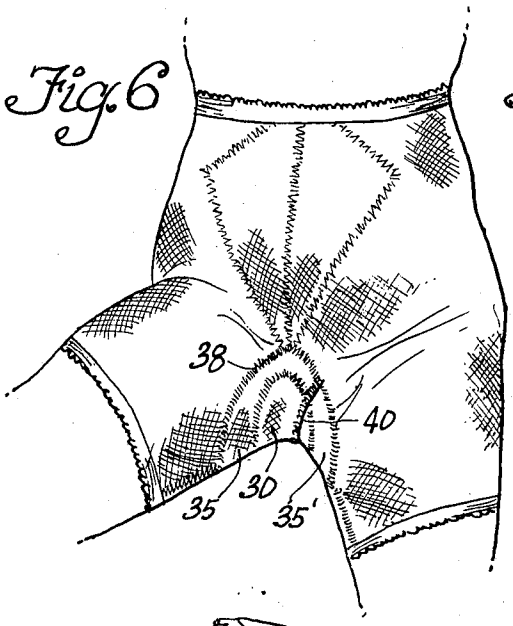


Fig. 7

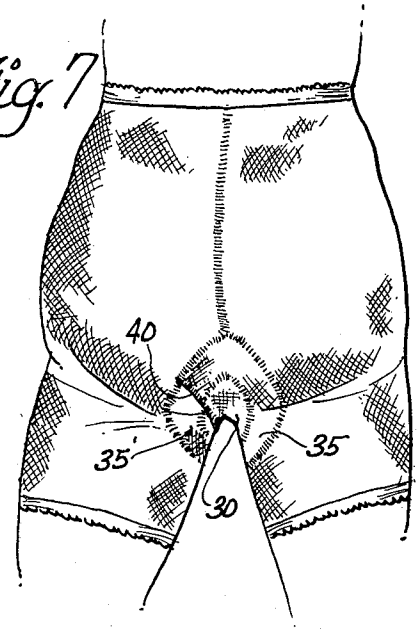


Fig. 8

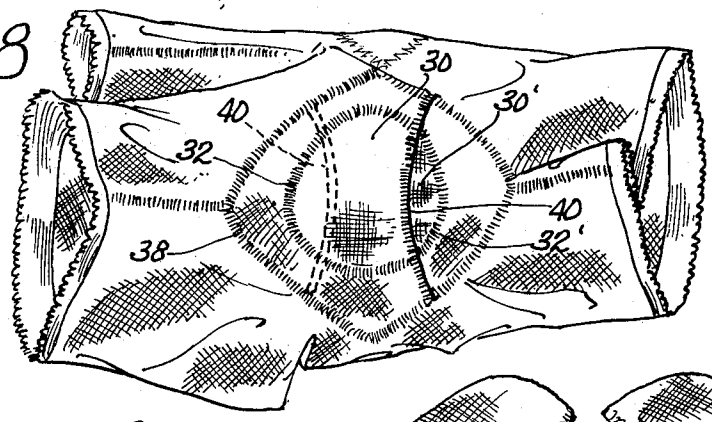


Fig. 9

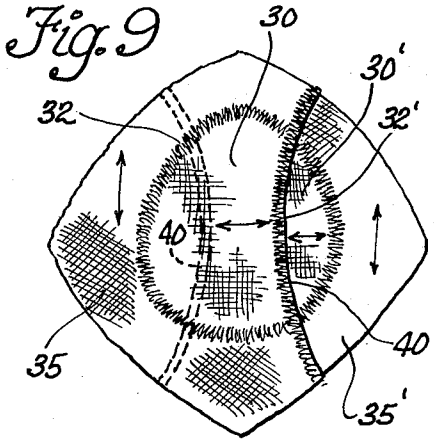
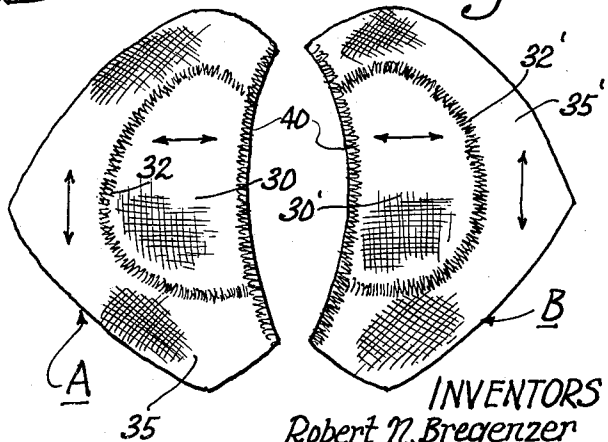


Fig. 10



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3,486,507

GARMENT CROTCH CONSTRUCTION

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Int. Cl. A41c 1/00, A41b 9/04
U.S. Cl. 128—528 8 Claims

ABSTRACT OF THE DISCLOSURE

An improved crotch construction for snug-fitting pant-type garments designed to provide increased comfort and adjustability in the garment, especially in regard to the rise dimension, eliminating or greatly reducing the usual tendency in garments of the type mentioned to "ride up" with leg movement of the wearer. The crotch construction comprises a central swatch or "island" of soft fabric, stretchable in a side-to-side direction, and an encompassing swatch or flange of a different type of fabric such as "powernet" stretchable primarily from front to rear or up-and-down.

Our invention relates to an improved crotch construction especially suitable for articles of ladies' underwear such as panty girdles and snugly fitting pant-type outer garments such as leotards, toreador pants, etc., and is designed to provide increased flexibility, with enhanced comfort to the physically active wearer and greater rise adjustability.

BACKGROUND OF INVENTION

It has long been the custom to construct a panty girdle of firm but elastic fabric, usually of two-way-stretch material, with a non-stretchable panel over the abdomen and with a crotch piece or insert of different material, usually of softer fabric, for greater comfrot in this area.

Illustrative of prior art of this character are U.S. patents to: Segal No. 1,114,540, Oct. 20, 1914; Boland No. 1,830,824, Nov. 10, 1931; Chubby No. 2,705,801, Apr. 12, 1955; Peck No. 2,908,277, Oct. 13, 1959; Cape No. 3,154,082, Oct. 27, 1964; McMurtrie, No. 3,207,162, Sept. 21, 1965.

Such previously known structures, while providing a modicum of comfort, fail in general to contribute in any degree to the overall flexibility of the garment.

SUMMARY OF THE INVENTION

A particular object of our invention is to provide, in a panty-type garment for outer or intimate wear, of otherwise essentially standard construction, an improved crotch piece which contributes to a major extent to the flexibility of the garment, in addition to providing the desired local comfort.

More particularly, our improved crotch piece provides enhanced adjustability in the rise measurements of the panty girdle, whereby a particular garment may comfortably be worn on a variety of figures having a substantial range of rise measurements.

Additionally, our improved crotch construction enhances a good overall fit, enabling the garment to remain in place on the figure despite substantial muscular involvement as in sitting, bending, climbing, running and other athletic activity such as tennis, golf, etc.

Briefly outlined, our invention contemplates a multi-element crotch portion comprising a center piece which might be called an island, formed of a relatively soft, light-weight and highly flexible textile fabric having stretchability in a side-to-side direction, said island being encompassed by a flange portion formed of a different type

of fabric, i.e., one which is stretchable primarily in a vertical or front-to-rear direction and to a lesser extent horizontally.

Said construction is simple and inexpensive to fabricate and accomplishes all the desired objectives of comfort and flexibility.

BRIEF DESCRIPTION OF DRAWINGS

It should be understood that we describe our invention as embodied in a panty girdle for purposes of illustration only, and that it is equally applicable to other types of garments as specified hereabove.

Referring now to the drawings forming part of this specification and illustrating certain preferred embodiments of our invention,

FIG. 1 is a front perspective view of a panty girdle embodying our invention, shown as worn on the human figure;

FIG. 2 is a rear perspective view of the same;

FIG. 3 is a plan view of the garment, laid out to display the crotch construction;

FIG. 4 is a detail plan view of the crotch piece embodied in the garment seen in FIGS. 1–3, inclusive;

FIG. 5 is a detail plan view of a modified form of crotch piece also embodying our invention;

FIG. 6 is the front perspective view similar to FIG. 1, showing a garment on the human figure comprising still another version of our invention, wherein the crotch piece is digitally openable;

FIG. 7 is a rear perspective view of the garment seen in FIG. 6;

FIG. 8 is a plan view of the same garment, laid out to display the crotch construction of FIGS. 6 and 7;

FIG. 9 is a detail plan view of the crotch piece seen in FIGS. 6–8, inclusive, prior to its attachment to the body portion of the garment, and

FIG. 10 is an exploded plan view of the elements seen in FIG. 9.

DETAILED DESCRIPTION

Referring first to FIGS. 1–4, inclusive, the embodiment there shown is a panty girdle **10** comprising a main body portion **12**, which may be of any suitable design, standard or otherwise, including leg portions of any desired length, our invention being applicable to garments of the so-called short leg and long leg types, and having a crotch portion indicated generally by the numeral **15**.

Body portion **12**, as is customary in garments of this character, is preferably formed of an elastic fabric of the character known as powernet, so cut that its main stretchability is side-to-side, as indicated by the arrows in FIGS. 1 and 2.

Crotch portion **15** comprises a central swatch **18** of generally circular, oval or pear shape, as seen best in FIGS. 3 and 4, the narrow end of the swatch being disposed forwardly of the body.

Swatch **18** is preferably formed of a relatively soft and highly flexible, light-weight fabric and is preferably so woven as to be stretchable at least in a side-to-side direction, as indicated by the arrows in FIGS. 3 and 4. We have found especially suitable a weave known in the trade as tricot, although doubtless other types of fabric might be employed. We do not wish to exclude a soft, lightweight and highly flexible fabric which might be elastic in two directions, although our purpose is satisfied if one way side-to-side stretchability is provided. Furthermore, while we have referred to a woven fabric, we do not wish to exclude other types of textile fabric such as knitted, netted, etc.

Swatch **18** is attached as by stitching **20** to an encompassing roughly diamond-shaped swatch or flange **25**

formed of a textile fabric of different character from switch **18**, preferably of "powernet" material similar to body portion **12** but arranged with its major stretchability lying in an up-and-down or front-to-rear direction, i.e., normal to the elasticity of the body portion **12**. (See arrows, FIG. 2.)

It will, of course, be understood that other types of textile fabric, woven, knitted, netted, etc., may be used in lieu of powernet for element **25**, the main consideration being that it be relatively strong and firm, and highly resilient, quickly returning to its original condition after being stretched. In general, we may suggest that the objects of our invention will be served if element **25** is formed of material similar to that of main body portion **12**, provided, that it has stretchability as described above.

It will be seen from FIGS. 3 and 4 that the swatch **25** is cut to have a generally diamond shaped outer contour, the main body portion **12** being fabricated to provide an opening of similar shape in the front, back and inner leg portions, whereby swatch **25** may be stitched to said main body portion as indicated by numeral **23**.

Referring now to FIG. 5, we show here a slightly modified embodiment of our invention, again with a permanently closed crotch. In this form crotch piece **15***a* has a central element or island indicated by numeral **18***a* which may be generally similar to element **18**, being approximately pear shaped, and formed of fabric similar to swatch **18**. In this case, the encompassing portion is preferably formed in two pieces, **25***a* and **25***b*, the former being of generally U shape while the latter is generally arcuate, said outer swatches **25***a* and **25***b* being attached to inner swatch **18***a* as by stitching **20***a* and **20***b*.

Elements **25***a* and **25***b* are preferably formed of material similar to that of element **25** of the first described embodiment and having similar stretchability as indicated by the arrows (FIG. 5).

The embodiment of FIG. 5 has some advantages from the standpoint of economic production, functioning in a generally similar manner to that of the first embodiment.

Turning now to FIGS. 6–10, inclusive, we show here a modification wherein the crotch is openable for sanitary purposes.

As seen best in FIGS. 8–10, inclusive, the crotch piece in this case is formed of two elements A and B. In both of said elements the inner portion **30**, **30'** respectively, corresponding to the island **18**, **18***a*, is preferably formed of a textile fabric similar to that of elements **18** and **18***a* of FIGS. 1–5, i.e., being of soft, lightweight textile fabric stretchable at least in a side-to-side direction, as indicated by the arrows in FIGS. 9 and 10. Swatches **30** and **30'** (FIG. 10) are preferably of a generally semicircular shape, the arcuate edges thereof being stitched as at **32**, **32'** to outer swatches **35**, **35'**, the latter being preferably formed of a textile fabric similar to that of elements **25**, **25***a* and **25***b*, i.e., of a substantial elestic material such as "powernet" having its major stretchability up and down, or from front to rear (see arrows FIGS. 9 and 10).

The outer edges of swatches **35'**, when assembled (FIGS. 8 and 9), roughly form a diamond shape, and are attached to an opening of similar shape provided in the main body portion of the garment as by stitching **38**, while the free edges of elements A and B are reinforced as by elastic stitching **40**.

It will be seen by reference to FIGS. 6–9 that elements A and B overlap each other to a substantial extent to provide an adequate double closure. Free edges **40** are preferably arcuate in shape to permit convenient digital manipulation.

It will be seen that we have provided a crotch construction of improved design for a snugly fitting pant type garment of underwear or outerwear which may be produced either in a permanently closed or openable form, in any case providing increased flexibility of the garment. Because of the improved crotch construction, the garment will be adaptable to a variety of figures of different rise dimensions, while providing enhanced comfort and fit. Our improved construction also insures that the garment will remain firmly in place on the figure despite extreme muscular movement such as those incidental to bending, lifting, sitting, climbing, etc.

The primarily up-and-down elasticity of the powernet flange portion of the crotch piece contributes markedly to the flexibility of the rise measurement, achieving a more adaptable garment to a variety of figures.

The flange portion of our improved crotch also provides improved control in the leg portions of the garment because the elasticity of the flange follows closely the body contours in the crotch area. As a result, riding up with resultant discomfort is minimized.

The primarily lateral elasticity of the island portion of the crotch piece also contributes to preventing riding up when the wearer exercises.

Thus, we find markedly improved comfort and fit in our peculiar crotch construction described.

Regarding the openable crotch of FIGS. 6–10, in addition to the advantages noted above, the powernet flanges **35** enhance the expansibility of the flaps **30** when spread apart, supplying a "memory" to actuate recovery of the flaps to normal position when released.

Various changes coming within the spirit of our invention will no doubt suggest themselves to those skilled in the art; hence, we do not wish to be limited to the specific embodiments shown and described or uses mentioned, which are merely exemplary, our invention being limited only by the appended claims.

We claim:

1. In a panty-type garment intended for snug fit, a main body portion and a crotch piece comprising:
- (a) a first swatch of relatively soft, flexible, lightweight textile fabric which is elastic at least in a side-to-side direction, and
- (b) a second swatch encompassing said first swatch, said second swatch being of substantially heavier textile fabric of greater resilience than said first swatch and having stretchability primarily in a front-to-rear direction, said second swatch forming a relatively narrow flange stitched to a similarly shaped opening in said body portion.

2. A combination as in claim **1**, wherein
- (a) said first swatch is a fabric of the character of tricot, and
- (b) said second swatch is a fabric of the character of powernet.

3. A combination as in claim **2**, wherein
- (a) said first swatch is generally oval shaped and
- (b) the outer contour of said second swatch is generally diamond shaped.

4. A combination as in claim **1**, wherein said second swatch comprises
- (a) a generally U-shaped part and
- (b) a separately cut arcuate part extending between the extremities of said U-shaped part, said parts being stitched together.

5. A combination as in claim **1**, wherein said crotch piece comprises a pair of generally similar partially overlapping portions, said portions having generally parallel, spaced free edges capable of digital engagement for separation of said portions to expose adjacent anatomy of the wearer.

6. In a panty-type garment intended for snug fit, a main body portion, and a crotch piece comprising
- (a) a pair of generally similar, partially overlapping portions,
- (b) each portion having a first swatch forming an inner generally semi-circular element having an arcuate edge and an approximately straight edge, and a second swatch forming an outer arcuate band encompassing and stitched to the arcuate edge of the first swatch and having straight edges continuous with those of the first swatches, said respective straight

edges being free and disposed in generally parallel spaced relation,

(c) each of said first swatches being formed of a relatively soft, flexible, lightweight textile fabric which is elastic at least in a side-to-side direction, and

(d) each of said second swatches being formed of a substantially heavier textile fabric of greater resilience than said first swatches and having primarily front-to-rear stretchability,

(e) said portions normally forming a closure for the garment and being separable, by digital engagement of said free edges, to expose adjacent anatomy of the wearer.

7. A garment as in claim 3, wherein

(a) said first swatch is a fabric of the character of tricot and

(b) said second swatch is a fabric of the nature of powernet.

8. A garment as in claim 6, wherein

(a) said first swatches are fabric of the character of tricot and

(b) said second swatches are fabric of the character of powernet.

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ADELE M. EAGER, Primary Examiner

U.S. Cl. X.R.

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