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G. E. RUTLEDGE

3,026,697

UNDERGARMENT

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Fig. 1

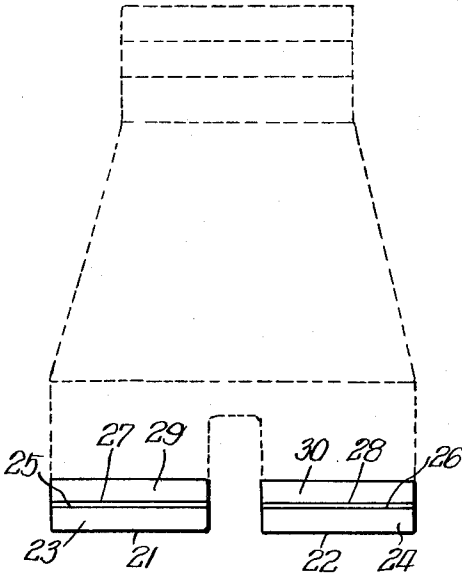


Fig. 2

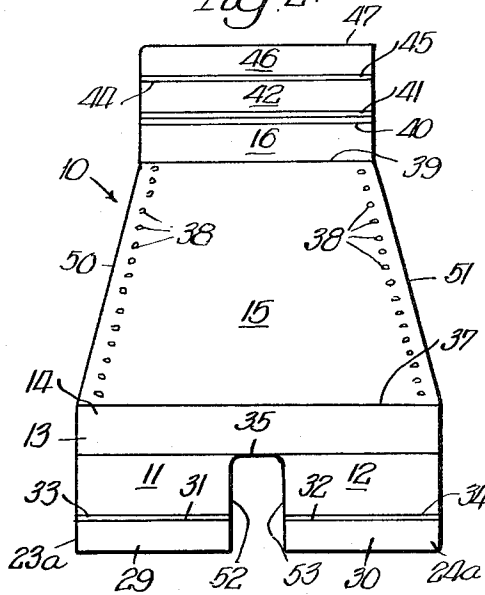


Fig. 3

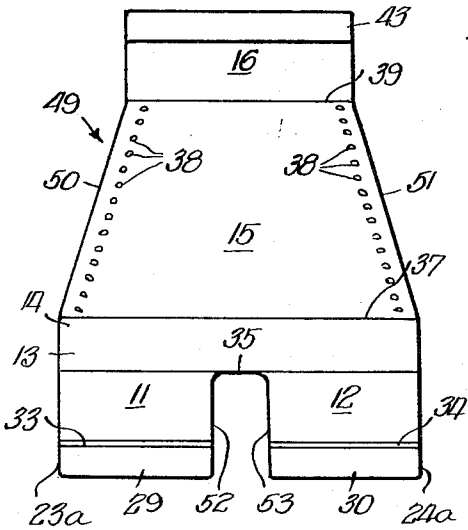


Fig. 4

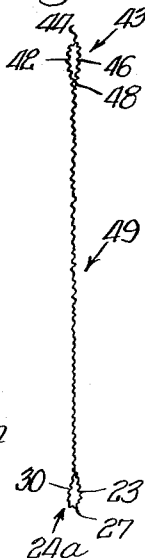
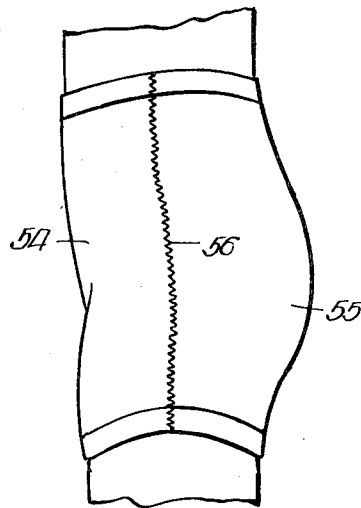


Fig. 5



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3,026,697

UNDERGARMENT

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This invention relates, generally, to elastic undergarments and it has particular relation to body molding garments for women. This application is a continuation-in-part of application Serial No. 689,105, filed October 9, 1957, now abandoned, and of application Serial No. 706,831, filed January 2, 1958, now abandoned.

Among the objects of this invention are: To provide for knitting one or more panels for forming an elastic undergarment, such as a body molding undergarment, in a new and improved manner; to provide a turned hem or tubular welt along the lower edge of the garment arranged in such manner that it does not interfere in any way with the stride of the wearer and eliminates the necessity of sewing a band on the lower end of the garment or superimposing a band thereon; to provide for using various types of yarn, such as natural yarn, synthetic yarns and textured yarns alone or in combination to provide desired characteristics; to employ among the yarns an elasticized or rubber yarn, either covered or uncovered, and to employ the elongation thereof for contributing to the control exercised by the garment in those locations where tensions of the yarn can be used for equalizing the control; to provide for knitting a panty panel from the bottom to the top; to form tubular welts along the upper and lower edges of the panel; to knit the courses along the upper and lower edges of the panel in final form in such manner that the adjacent portions can be doubled over without bunching along the edges; and to knit the panel in one continuous operation from the formation of the tubular welts at the lower ends of the leg portions, through the balance of the leg portions, the lower body portion and narrowing of the intermediate body portion to the upper body portion.

Other objects of this invention will, in part, be obvious and in part appear hereinafter.

This invention is disclosed in the embodiment thereof shown in the accompanying drawings and it comprises the features of construction and method of formation which will be exemplified in the construction and method hereinafter set forth and the scope of the application of which will be indicated in the appended claims.

For a more complete understanding of the nature and scope of this invention reference can be had to the following detailed description, taken together with the accompanying drawings, in which:

FIGURE 1 is a view, showing by broken lines, the outline of the knitted panel made in accordance with this invention and by full lines the portion thereof that is formed initially and provides tubular welts along the bottoms of the leg portions;

FIGURE 2 is a plan view of the finished knitted panel as it comes from the knitting machine;

FIGURE 3 is a plan view of the knitted panel having a tubular welt formed along the top and ready to be seamed to a complementary panel to form the undergarment;

FIGURE 4 is a view, in side elevation, of the panel shown in FIGURE 3 with the tubular welts at the upper and lower ends being illustrated in somewhat exaggerated manner in order to show the construction;

FIGURE 5 is a view, in side elevation, of the completed garment and showing its application to a female body.

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Referring first to FIGURE 2 of the drawings, it will be observed that the reference character 10 designates, generally, a panty panel which has been completed by the knitting operation and before any further manufacturing steps have been performed on it. The panty panel 10 includes leg portions 11 and 12 which are commonly joined to a lower body portion 13 which merges into a slightly higher lower body portion 14. The intermediate body portion 15 is shown as being knit above the lower body portion 14 and is narrowed, as will be described hereinafter, to result in upper body portion 16 which continues for the same width throughout its extent.

FIGURE 1 illustrates the initial steps involved in forming the panty panel 10. The knitting operation is begun simultaneously along the lower edges 21 and 22 of the leg portions 11 and 12. It is accomplished by a knitting machine which is provided with three carriers and two yarn guides for each leg portion. It will be understood that the three carriers and two yarn guides for each leg portion 11 and 12 feed the yarn into the respective needles for these leg portions. In accordance with known practice a welt bar is inserted in the knitting machine and a number of courses are run beginning at the lower edges 21 and 22 to form the insides 23 and 24 of tubular welts 23a and 24a along the lower edges of the leg portions 11 and 12. The two yarns employed for forming the insides 23 and 24 include plain material such as natural yarn or synthetic yarn and an elasticized yarn. The elasticized yarn can be omitted in those courses where its action is not required.

The knitting continues until courses 25 and 26 are formed in which the elasticized yarn is omitted. Then courses 27 and 28 are run each containing a picot stitch design. In order to knit the courses 27 and 28 a picot bar is automatically actuated to pick up every other stitch from its needle and move it over to the adjoining needle. This forms a picot or lace design for this particular course. Then the knitting operation is resumed to form simultaneously the outsides 29 and 30 of the welts 23a and 24a.

After a number of courses have been run to form the outsides 29 and 30 of the tubular welts 23a and 24a corresponding to the number of courses that are run to form the insides 23 and 24, a welt bar is inserted between the sinkers and dividers and the needle bar is laid back into grooves which are provided in the design of the hooks in the welt bar. At this point the insides 23 and 24 and the outsides 29 and 30 are pulled down over the needle which is embedded in the grooves and thereby the fabric is freed from the hook and is now impaled on the needle along with the originally formed loops and then is cast off on the next course to accomplish what is known as welt turning. Lower edges 21 and 22 are thereby secured at 31 and 32 to the upper edges of the outsides 29 and 30 of the welts 23a and 24a.

Then the knitting operation continues with the two yarns simultaneously for the leg portions 11 and 12 above the tubular welts 23a and 24a for a limited number of courses. Then courses 33 and 34 are knit containing the picot stitch design and thereafter the knitting continues with both yarns to complete the leg portions 11 and 12. When the top of the leg portions 11 and 12 is reached, as indicated at 35 in FIGURE 2, the three carriers and two yarn guides, previously used to knit one of the leg portions 11 or 12, are lifted automatically out of action and the three carriers and two yarn guides, previously used for knitting the other leg, are allowed to operate entirely across the knitting head to commonly knit the lower body portion 13 with the two yarns which may be of the same character as the yarns used for knitting the leg portions 11 and 12. For performing

the knitting and narrowing operations described herein a knitting machine is used having four decking arms.

As the knitting operation continues and the lower body portion 14 is knit using the same yarns as used for the leg portions 11 and 12, it is desirable to reduce the width of the panel in order to conform to the shape of the female body. Accordingly, without changing any yarn, a narrowing machine goes into action and a predetermined number of narrowings, as indicated at 38, are formed a predetermined number of courses apart. The narrowing action continues throughout the intermediate body portion 15.

As illustrated in FIGURE 2 the narrowing operation ceases and the knitting operation continues for the balance of the upper body portion 16. It will be observed that the narrowing action begins at the course 37 along the lower end of the intermediate portion 15 and continues to the course 39 where the narrowing ceases.

The knitting operation continues to produce the lower part of the upper body portion 16 and a course 40 is knit containing the picot stitch design. The same yarns are employed for knitting the upper body portion 16 that are employed for knitting the intermediate body portion 15.

After the course 40 containing the picot stitch design is knit, the knitting continues for a number of courses and then there are several courses 41 knit where the elasticized yarn is omitted. Then the elasticized yarn is again used to form the outside 42 of a tubular welt 43, FIGURE 4, that is provided along the upper end of the panel in a manner to be described presently. Along the upper edge of the outside 42 a course 44 is knit containing the picot stitch design and adjacent thereto a number of courses 45 are knit in which the elasticized yarn is omitted. Then the knitting operation continues employing the yarns including the elasticized yarn to form the inside 46 of the tubular welt 43. The knitting operation continues until the upper edge 47 of the upper body portion 16 is formed. The knitting operation then is completed.

It is pointed out that the courses 27 and 28, containing the picot stitch design and the adjacent courses 25 and 26 where the elasticized yarn is omitted in the formation of the tubular welts 23a and 24a along the lower ends of the leg portions 11 and 12, are employed in order to facilitate the doubling of the insides 23 and 24 over the outsides 29 and 30 to form the tubular welts 23a and 24a without there being any bunching along the lowermost edges. It is for a similar reason that the course 44, containing the picot stitch design and the courses 45 where the elasticized yarn is omitted, are provided. If desired, the picot stitch design at 27, 28, 40 and 44 can be formed in each instance by two courses (over and back) from which the elasticized yarn is omitted, the elasticized yarn otherwise being used together with the non-elastic yarn.

Next, as illustrated in FIGURE 4, the inside 46 is doubled back over the outside 42 and the edge 47 is seamed, as indicated at 48, to the outside 42 along the courses 41 where the elasticized yarn is omitted and just above the course 40 containing the picot stitch design.

In FIGURE 3 the completed panty panel is indicated, generally, at 49. It will be understood that selvages 50 and 51 are provided along the sides from top to bottom and that selvages 52 and 53 are provided along the inner sides of the leg portions 11 and 12.

The steps employed for knitting the panty panel 10 and forming the completed panty panel 49 are employed for making different sizes of completed garments. Also different sizes of completed panels 49 are employed in order to be assembled into the completed garment. For example, as shown in FIGURE 5, the completed garment is formed by a front panty panel 54 and a back panty panel 55, the latter being complementary to the former and being slightly longer in order to aid the sitting

posture. It will be understood that the front and back panels 54 and 55 are seamed together along the selvages, for example the selvages 50, 51, 52 and 53, to form the completed garment. The outside seam joining the front and back panty panels 54 and 55 along one side is indicated at 56.

It has been pointed out that the panty panel 10 can be knit from various yarns. For example, various kinds of continuous filament yarn, either crimped or uncrimped, can be employed. The elasticized yarn that is used may be either a natural or a synthetic rubber yarn and it may be covered by one or more textile threads. The yarn may be of the continuous filament type such as silk. Also thermo plastic synthetic fibers, such as rayon, nylon and Orlon, can be employed.

Since certain further changes can be made in the foregoing constructions and methods and different embodiments of the invention can be made without departing from the spirit and scope thereof, it will be understood that all matter shown in the accompanying drawings and described hereinbefore shall be interpreted as illustrative and not in a limiting sense.

What is claimed as new is:

1. A panel for a body molding garment comprising knitted fabric having a body portion and depending leg portions, said leg portions having continuously knit tubular welts along their lower ends and at their upper ends being continuously knit with the lower end of said body portion, the sides of said body portion converging from its lower end, a front portion of an upper tubular welt knit continuously with the upper end of said body portion, a back portion of said upper tubular welt knit continuously along one edge with said front portion of said upper tubular welt and overlying the same, means securing the opposite edge of said back portion of said upper tubular welt to said upper end of said body portion; and selvages along the ends of said welts, the sides of said body portion, and the sides of said leg portions.

2. A body molding garment comprising front and back panels, each panel being of knitted fabric having a body portion and depending leg portions, said leg portions having continuously knit tubular welts along their lower ends and at their upper ends being continuously knit with the lower end of said body portion, the sides of said body portion converging from its lower end, a front portion of an upper tubular welt knit continuously with the upper end of said body portion, a back portion of said upper tubular welt knit continuously along one edge with said front portion of said upper tubular welt and overlying the same, means securing the opposite edge of said back portion of said upper tubular welt to said upper end of said body portion; and selvages along the ends of said welts, the sides of said body portion, and the sides of said leg portions; and means securing said front and back panels together along the juxtaposed ends of the respective welts, sides of said body portions, and sides of the respective leg portions.

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