Aug. 22, 1950 W. W. ARTZT 2,519,534

WEARING APPAREL

Filed July 8, 1949

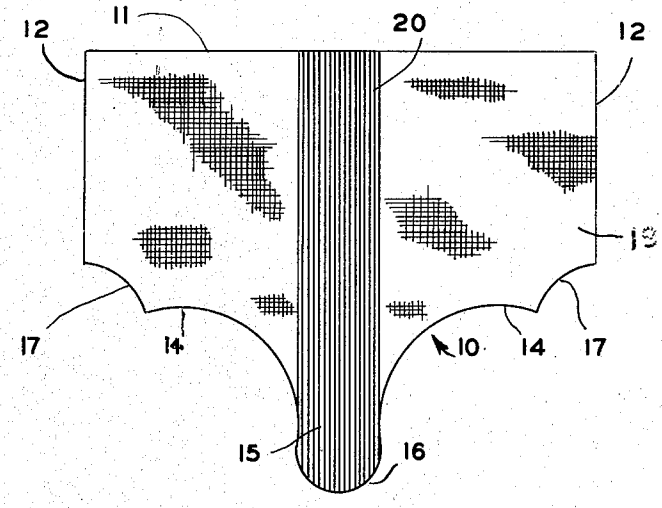


FIG.-1-

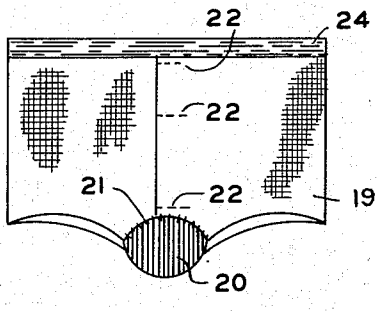


FIG.-2-

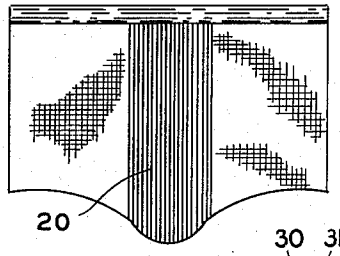


FIG.-3-

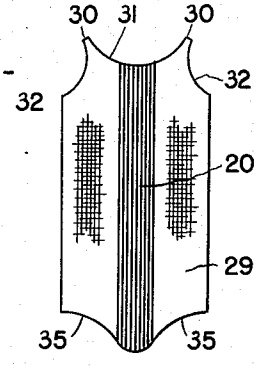


FIG.-6-

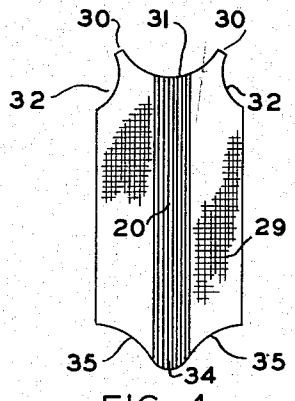


FIG.-4-

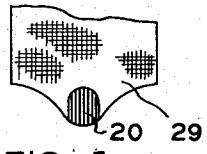


FIG.-5-

INVENTOR.

WILLIAM W. ARTZT

BY

Jack Montgomery

ATTORNEY

Patented Aug. 22, 1950 2,519,534

UNITED STATES PATENT OFFICE

2,519,534

WEARING APPAREL

William W. Artzt, New Rochelle, N. Y., assignor to Lisle Mills, Inc., Allentown, Pa., a corporation of Pennsylvania

Application July 8, 1949, Serial No. 103,557

11 Claims. (Cl. 66—175)

1

The present invention relates to wearing apparel, particularly to improved knitted undergarments.

The primary object of the present invention is to provide machine knitted form fitting undergarments, such as underdrawers or shorts and combination shirt and drawer garments, which afford maximum comfort to the wearer in the seat, crotch and back areas and yet retain their shape after repeated use and laundering thereof.

Another object resides in the provision of garments of the character indicated which, when worn, will readily and automatically conform to the various parts of the body of the wearer.

Another object is to provide such garments which are constructed of an integrally continuously knitted piece of fabric.

Another object is to provide such garments in a simple and economical manner.

Other and further objects of the invention will be manifest from the following description and the accompanying drawing.

In accordance with the invention, the foregoing objects are accomplished by providing a garment of the character indicated which is constructed of a knitted fabric comprising a one-piece integral body portion or form including a crotch portion or flap, wherein either the front or back or both have a longitudinal zone contiguous with and including the crotch portion which is of a knit more yieldable laterally than adjacent portions and the remainder of the body portion, the zone preferably being plait-knitted and adapted to retain its shape when relaxed and the remainder of the garment being of a conventional plain or jersey knit.

In the drawing:

Fig. 1 is a plan view of a flat-knitted form for undergarments or shorts embodying the present invention;

Fig. 2 is a plan view of the front of a garment constructed from the form shown in Fig. 1;

Fig. 3 is a plan view of the back of the garment shown in Fig. 2;

Fig. 4 is a plan view of the back of a circularly-knitted combination shirt and drawer garment embodying the present invention;

Fig. 5 is a fragmentary plan view of the lower front portion of the garment shown in Fig. 4; and

Fig. 6 is a plan view of the front of a circularly-knitted combination shirt and drawer garment showing a modification of the garment of Figs. 4 and 5.

2

Referring to the drawing in detail, and more particularly to Fig. 1 thereof, there is shown a one-piece integral flat knitted form or body 10 for constructing underdrawers, shorts or the like. The form is shaped to comprise a top edge 11 to provide a trunk opening, side edges 12 adapted to be joined together at the front of the garment to provide a fly, bottom edges 14 to provide leg openings, a flap 15 having a rounded lower edge 16 and depending from the bottom edges at the middle of the form to provide a crotch portion, and a rounded edge 17 between adjacent side and bottom edges for joining the lower edge 16 of the flap.

The form has a zone 20 at the middle thereof, preferably of the same width as the flap and in alignment therewith, which extends from the top edge 11 to the lower edge 16 and includes the entire flap. This zone is of a knit which is more yieldable laterally than adjacent portions and the remainder of the form. To accomplish this, the zone is plait-knitted in a manner to stretch readily to afford maximum comfort to the wearer in the back, seat and crotch areas, which zone will readily conform to the parts of the body of the wearer, while being worn, and will return to its original shape after repeated washings. The remainder of the form is of a conventional knit which provides a form-fitting garment.

More particularly, the zone 20 may be of an accordion knit such as illustrated and described in United States Letters Patent No. 2,201,980, wherein a self-pleating machine knitted, double-rib fabric has fewer wales on the inside surface at the fold line than at the outside surface of the fold line. For example, the fabric may have one or more wales missing on one surface at every sixth, eighth or tenth wale position and have two adjacent wales missing in the other surface at every fifth and sixth, seventh and eighth, or ninth and tenth wale position, respectively, with the missing wales on one surface being generally equi-distantly staggered in relation to the missing wales of the other surface. The thread forming the fabric is sufficiently tight in relation to the gauge and thickness of the thread to cause the fabric to fold itself in accordion fashion along the lines of the missing wales.

Such a knit permits localized stretch at any point or area within the zone 20 permitting greater comfort to the wearer of the garment than is provided by conventional garments of

this character. This is highly desirable, particularly in the crotch area.

The double-rib knitted portion 20 of the form 10 may be provided on a double-needle machine, that is, a machine having two juxtaposed sets or rows of needles. In making the form, a flat knitting machine may be utilized wherein certain needles are arranged to form the jersey or plain knit portion 19 and other needles are arranged to form the plait or double-rib portion 20. The latter is effected by removing some of the needles from one or both sets in this zone of the machine and feeding the thread or yarn alternately to needles in the two different sets or rows of needles.

In the double-rib fabric zone 20, made on such a machine, the thread forming each course forms a loop alternately on opposite sides of the fabric over a suitable width and then for either two or three stitches only on one face of the fabric and then again on both faces for the same width and then again only on the opposite face for either two or three stitches.

The double-rib fabric zone 20 is produced by removing or rendering ineffective and inoperative one or two needles at regular intervals in each of the two rows or sets of needles in the corresponding zone of the machine, but with the spaces of the removed needles of one row being staggered in relation to the spaces of the removed needles of the other row, and then knitting each thread over all the remaining needles with sufficient tension so as to cause the fabric to fold by itself around the point where one or the two needles are missing.

The garment form 10 may also be knitted on any other type of double-needles row machine, wherein in a zone of the machine the same thread may be fed alternately to the needles of one row and then to the needle of the other row, and so on across the length of the needle bar. For example, a generally tubular form may be produced on a circular knitting machine and then cut at portions to provide the final shape of the form 10. Circular type machines may be used advantageously because of their faster production.

Such circular double-needle row machines are exemplified by machines made by the Wildman Manufacturing Company of Morristown, Pennsylvania, wherein both rows of needles are arranged in a continuous uninterrupted circle and in which one row of needles is arranged generally vertical, such needles being generally referred to as the cylinder needles, while the other row of needles is arranged generally radially and more or less at right angles to the cylinder needles, the needles of this row being generally referred to as the dial needles. The circular double needle row machines may be either of the type in which the needle banks rotate in relation to non-rotating cams and in relation to non-rotating thread carriers or they may be of the type in which the needle banks do not rotate and instead the actuating cams rotate along with the thread carriers or thread guides. Any of such machines may be readily arranged to knit the double-rib or plait-stitch at certain zones and a plain or jersey knit at other zone, and thereby produce a fabric of two types of knit adapted to be converted into the form 10.

In Figs. 2 and 3, drawers or shorts constructed from the form 10 are shown, wherein the edges 16 and 17 are stitched at 21 and the side edges 12 are stitched at 22 to provide a fly opening, and an elastic waist band 24 is sewn to the top edge 11. If desired, binding of any desired type may be provided at the edges 12, and closure means secured in such binding.

In Figs. 4 and 5, there is shown a circularly knitted one-piece combination shirt and drawer garment comprising a body 29, shoulder straps 30 providing a neck opening 31 and arm openings 32, and a crotch portion 34 providing leg openings 35. A double-rib knitted zone 20 extends from the middle of the neck opening through and including the crotch portion to the other side of the garment as shown in Fig. 5. It will be appreciated that this zone could be provided on both the front and back of the garment so that the front is substantially identical with the back, shown in Fig. 4. In other words, the back of such garment would be as shown in Fig. 4 and the front thereof would be as shown in Fig. 6.

The zone 20 (Fig. 4) is of similar knit as described in connection with the zone 20 of Figs. 1 to 3, and the remainder of the garment is of a conventional plain or jersey knit.

The garment is adapted to be produced by a circular knitting machine as previously described herein. Such a machine provides a tubular form from which the garment may be made, without cutting open the form, as illustrated in Fig. 1. By knitting the form more or less to predetermined diameters on machines of corresponding diameters, it is only necessary to cut the top and bottom thereof to conform to the necessary shape of the garment to fit the various body portions such as arms, legs, neck, etc.

From the foregoing description, it will be seen that the present invention provides improved undergarments which afford maximum comfort to the wearer, retain their shape, permit laundering without effecting their shape, and which can be manufactured in a simple and economical manner. It will also be appreciated that the garments illustrated herein could be formed with sleeve or leg portions, if desired.

While I have illustrated and described preferred embodiments of my invention, it is to be understood that I do not wish to be limited to those precise embodiments, as obviously various modifications and changes may be made therein without departing from the spirit and scope of my invention.

What I claim is:

1. An undergarment formed of a knitted fabric comprising an integral body portion having front and back sides, one of said sides having a longitudinal zone of a knit more yieldable laterally than adjacent portions and the remainder of said body portion and including a crotch portion of the same knit as said zone and being joined with the other side of said body portion.

2. An undergarment formed of a knitted fabric comprising an integral body portion having leg openings therein and a crotch portion between said openings contiguous with one side of said body portion and joined with the other side of said body portion, said first mentioned side having a longitudinal zone of a knit more yieldable laterally than adjacent portions and the remainder of said body portion and said crotch portion being of the same knit as said zone and a continuation thereof.

3. An undergarment formed of a knitted fab-

ric comprising an integral body portion having front and back sides, said back side having a longitudinal zone at the middle thereof of a knit more yieldable laterally than adjacent portions and the remainder of said body portion, and a crotch portion of the same knit as said zone and being a continuation thereof and being joined with said front side.

4. An undergarment formed of a knitted fabric comprising an integrally knitted one-piece body having front and back sides, leg openings and a crotch portion, said body being formed with a continuous zone of a knit more yieldable laterally than the remainder of said body, said zone including the middle of said back side and said crotch portion.

5. An undergarment formed of a knitted fabric comprising an integrally knitted one-piece body having front and back sides, trunk and leg openings and a crotch portion contiguous with said back side and joined with said front side, said body being formed with a continuous zone of a knit more yieldable laterally than the remainder of said body extending from said trunk opening at the middle of said back side to the junction of said crotch portion and said front side.

6. An undergarment according to claim 5, wherein said zone is plait-knitted and adapted to retain its shape when relaxed and the remainder of the garment is of a conventional knit.

7. An undergarment formed of a knitted fabric comprising a circularly knitted one-piece body having front and back sides, neck, arm and leg openings and a crotch portion contiguous with said back side and said front side, said body being formed with a continuous zone of a knit more yieldable laterally than the remainder of said body extending from said neck opening at the middle of said back side to the lower end of said front side and including said crotch portion.

8. An undergarment according to claim 7 wherein said zone is plait-knitted and adapted to retain its shape when relaxed and the remainder of the garment is of a conventional knit.

9. A continuously knitted one-piece form of a shape to provide undergarments having a depending flap at the middle providing the crotch portion, said form being characterized in that the flap and a middle zone above and in alignment with the flap is of a knit more yieldable laterally than the remainder of said form.

10. A circularly knitted one-piece tubular undergarment having a back and front provided with neck and arm openings at one end and leg openings and an intermediate crotch portion at the other end, said garment having a zone extending from the middle of said neck opening at said back through said crotch portion to said front, said zone being of a knit more yieldable laterally than the remainder of said garment.

11. A circularly, integrally, continuously knitted one-piece tubular undergarment having a back and front provided with neck and arm openings at one end and leg openings and an intermediate crotch portion at the other end, said garment having a zone extending from the middle of said neck opening at said back through said crotch portion to the middle of said neck opening at said front, said zone being of a knit more yieldable laterally than the remainder of said garment.

WILLIAM W. ARTZT.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,074,119	Boysen et al.	Mar. 16, 1937
2,165,077	Spordick	July 4, 1939
2,201,980	Artzt et al.	May 28, 1940
2,220,277	Ralston	Nov. 5, 1940

FOREIGN PATENTS

Number	Country	Date
516,496	Great Britain	Jan. 3, 1940