

July 17, 1951

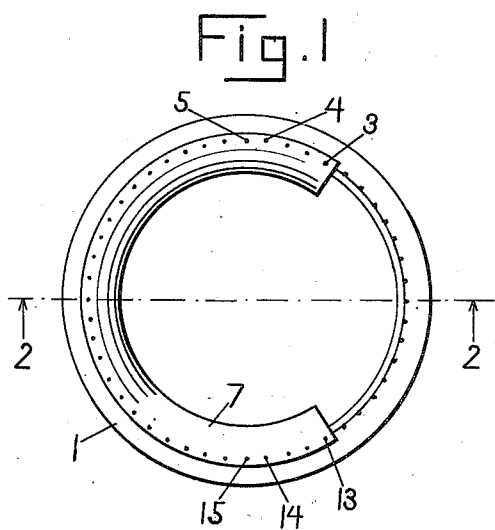
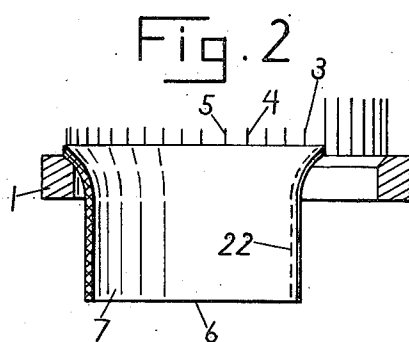
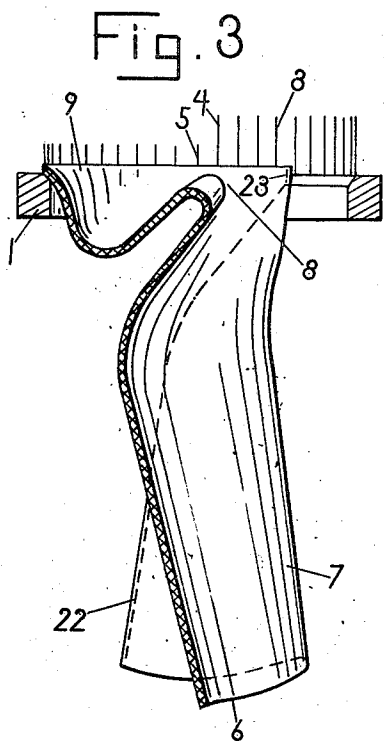
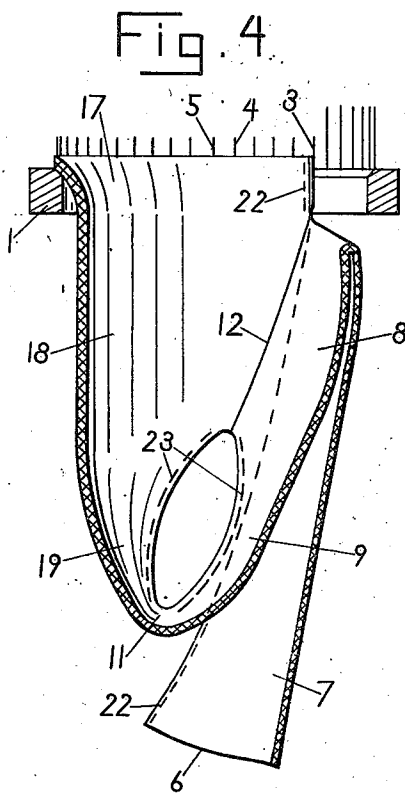
G. LACKS

2,560,580

METHOD OF KNITTING GIRDLES

Filed April 8, 1950

2 Sheets-Sheet 1



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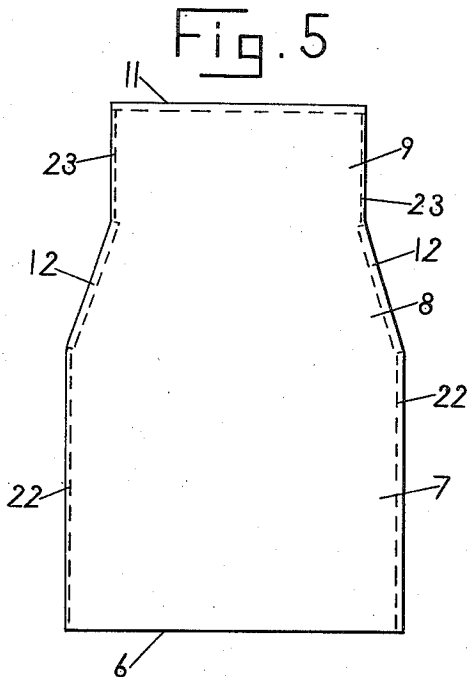
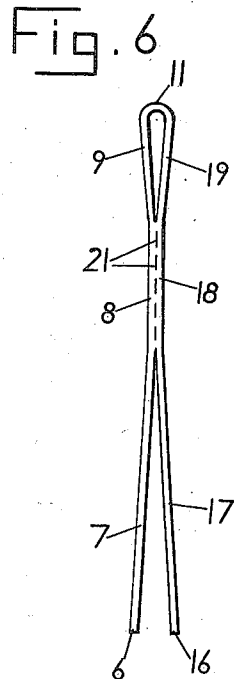
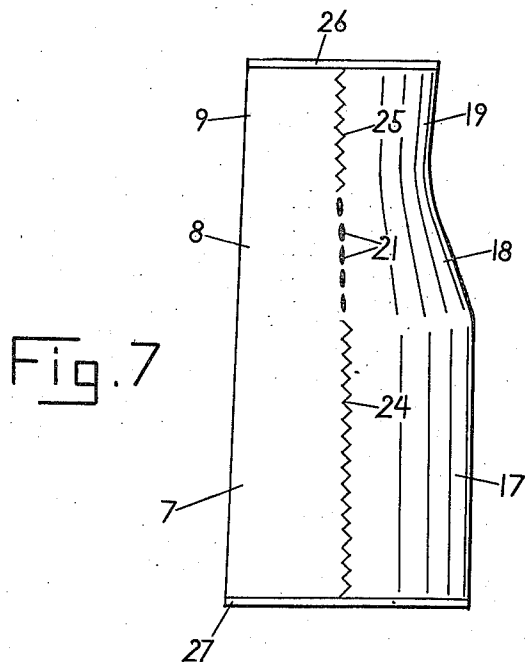
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2 Sheets-Sheet 2



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38

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UNITED STATES PATENT OFFICE

2,560,580

METHOD OF KNITTING GIRDLES

George Lacks, Larchmont, N. Y.

Application April 8, 1950, Serial No. 154,753

7 Claims. (Cl. 66—176)

1

My invention relates to knitted girdles and, more particularly, to methods for making such girdles.

Objects of my invention are to produce a girdle that has no sewed, overlapped or otherwise thickened seams, that is formed by interlocking meshes throughout its extent, that will not wrinkle and will not cause a garment tightly surrounding the girdle to wrinkle or to show projections, and that will adapt itself to the shape of the wearer's body without inconvenient pressure along seam lines.

Other objects are to make a girdle that combines high stretchability with strong resilient resistance, to vary this resistance at a median zone of the girdle, and thereby to provide a girdle that will hold the wearer's abdomen in proper shape without excessive pressure.

Further objects are to make this girdle by a quick and economic method, to knit the girdle in one continuous operation from one continuous thread or strand, to engage meshes formed during an early stage of the operation by meshes formed during a later stage, to avoid interference of knitted portions with the progress of the knitting, and to attain the latter advantage by the use of a knitting machine of a well known and available type which has knitting needles arranged in a horizontal circle.

Still other objects and advantages will appear from the following description of an exemplifying embodiment of my invention, from the appended claims and from the accompanying drawing in which:

Fig. 1 shows a top view of a circle of needles, of a needle ring and of an early stage of a girdle being made according to my invention, other parts of the knitting machine and of the thread being omitted.

Fig. 2 shows a cross-section taken along the line 2—2 in Fig. 1.

Fig. 3 shows a cross-section similar to Fig. 2, but showing the girdle in a more advanced stage of manufacture.

Fig. 4 shows a cross-section similar to Figs. 2 and 3, but showing the girdle in a still more advanced stage.

Fig. 5 shows a side view of the girdle in a further stage after the knitting has been completed, the knitted body being removed from the knitting machine and stretched into almost flat condition.

Fig. 6 shows a side view of the same body, seen from the right side in Fig. 5.

Fig. 7 shows a side view of the finished girdle in a shape in which it may appear on the body of a wearer.

2

Wherever the thickness of the knitted material appears in the drawings, it is exaggerated for the sake of clearer representation. Figs. 5 to 7 are represented on a more reduced scale than Figs. 1 to 4.

In carrying out my invention, I use a row of knitting needles, some of which are indicated by numerals 3 to 5 and 13 to 15. The number of needles may be larger than shown in the drawing. Preferably these needles are incorporated in a knitting machine of well known structure in which the needles are arranged in a horizontal circle and which guides the knitted fabric in sinking direction. The use of this type of machine has particular advantages with respect to my invention as will be pointed out later.

Girdles have been made on machines of this type by circular knitting operation. This has the disadvantage that the diameter of the girdle is determined by the circle of needles so that girdles of different widths cannot be made on the same machine. Furthermore, the circular operation makes it impossible to vary the width of one girdle sufficiently for providing the best possible shape. If, during the circular operation, needles are idled, the idled needles increase the space between the active needles. Hence the texture becomes less dense, and the density of some parts of the product is different from that of other parts.

According to my invention, the knitting operation is performed reciprocatingly over a coherent arc or part of the circle defined by the needles. This arc is made as long as the width of the girdle to be made requires whereby girdles of different width can be made on the same machine. Where the girdle to be made shall have a reduced width, needles are idled which are positioned at the end of the active arc whereby the idling of needles does not interfere with the uniform density of the product, and any desired reduction of width or curvature of the girdle can be obtained.

Further according to my invention, meshes kept engaged to needles while the latter are idled are re-engaged by the knitting thread when these needles are re-activated. This re-engagement is possible without interference of folds or parts of the partly made product because the sinking action of the used machine type always secures a down hanging position of the product while, in a flat knitting machine, such interference is apt to occur. In addition, the circular arrangement of the needles pre-shapes the curvature in which the girdle is stretched on the body of the wearer and hence provides a girdle that will stretch more readily and evenly in the desired manner.

The needles project upwardly from a ring 1 which is a part of the knitting machine, and are movable in vertical direction. Needles can be idled by throwing the same out in well known manner.

The exemplifying girdle shown in Fig. 7 is made in the following manner illustrating the invention:

During the first period of the manufacture, the needles 3 and 13 and all needles positioned in the large arc extending at the left side from 3 and 13 are active. The remaining needles positioned in the smaller arc at the right side from 3 and 13 are idle and remain idle during the entire knitting operation. Figs. 1 and 2 show a stage during this first period. The portion 7 knitted during this period extends up from a bottom line 6 and has a uniform width measured along the arc-shaped cross-section though this width appears slightly stretched at that line which is just engaged by the needles. The knitted product hangs down from the active needles.

After the portion 7 has reached the desired length, the second period starts during which needles are successively idled, starting with the needles 3 and 13, continuing with further needles which at the time they become inactive are positioned at the ends of the active arc, and ending with the idling of the needles 4 and 14. During this second period, a portion 8 is made which has a gradually diminishing or reducing width. The intervals between which needles are idled may be so chosen that the vertical edges of the portion 8 converge along any desired straight or curved lines. The last mesh engaged by each idled needle is kept in engagement with and on this needle. The knitted portion hangs down both from the active and from the idled needles whereby the fabric will form irregular folds.

The knitting continues with a third period during which the needles 5 and 15 and the needles positioned at the left side from these needles are permanently active. Thereby a portion 9 of a uniform width narrower than that of the portion 7 is made. Fig. 3 shows a stage shortly after the beginning of this third period. When the portion 9 has reached the desired length at a top line 11, the front half of the girdle is knitted. If taken out of the machine at this stage and stretched into a flat position, the product would appear like the front side in Fig. 5.

The operation comprising the described three periods is followed by a continuation comprising three periods during which the other half of the girdle is made. Each of said latter periods corresponds to one of the three periods described before, but the succession of corresponding periods in the second half of the knitting operation is reverse to that in the first half operation, first a narrow portion 19 shaped like the portion 9 being made, then a portion 18 shaped like the portion 8 and last a broader portion 17 shaped like the portion 7 and terminating in a bottom line 16. Fig. 4 shows a stage shortly after the beginning of the last period or of the making of the portion 17.

While the portion 18 is being knitted, the previously idled needles from 3 to 4 and from 13 to 14-inclusively are re-activated successively in an order reverse to that in which these needles were idled before whereby the portion 18 has a gradually increasing width. Whenever a needle is re-activated, the mesh kept on this needle is engaged by the knitting thread whereby each of the two edges of the portion 8 is connected to a

corresponding edge of the portion 18 along a line 12 (see Figs. 4 and 5).

The temporarily idled needles may be idled at intervals comprising more than one reciprocation of the knitting and may be re-activated at corresponding intervals. This results in somewhat larger meshes or "dots" 21 (see Figs. 6 and 7) appearing along the lines 12 and in a desirably increased stretchability of the girdle zone 8/18.

After the described knitting is completed, the product is removed from the knitting machine and has the shape shown in Figs. 5 and 6. Then each free lateral edge of the portion 7 is united with a corresponding edge of the portion 17 whereby these portions are formed into a circularly closed piece. The edges of the portions 9 and 19 are united in the same manner whereby also these portions form a circularly closed piece.

This connection of edges is preferably performed without sewing seams in the following manner: While the portions 7, 17, 9 and 19 are knitted, selvedged edges are formed by well known movement of the needles which are at the ends of the active row. These selvedged edges are indicated by dotted lines 22 and 23. After removal of the girdle from the knitting machine, corresponding selvedged edges are interlooped on a looping machine in well known manner. Zig-zag lines 24 and 25 in Fig. 7 indicate the inter-looping lines.

Then the product is cut along the top line 11 and now forms a tubular body of varying width. The top and the bottom of this body may be provided with hems 26 and 27 in known manner.

I desire it understood that my invention is not confined to the particular embodiment shown and described, the same being merely illustrative, and that my invention may be carried out in other ways without departing from the spirit of my invention as it is obvious that the particular embodiment shown and described is only one of the many that may be employed to attain the objects of my invention.

Having described the nature of my invention, what I claim and desire to protect by Letters Patent is:

1. A method of making girdles, said method comprising knitting reciprocatingly over a row of needles and thereby making one lateral half of a girdle from a bottom line to a top line, gradually reducing the width of said half girdle during said knitting by idling needles positioned at ends of said row successively, keeping the last mesh knitted on each idled needle in engagement with said needle, then making the other half of the girdle by continuing knitting reciprocatingly from said top line to a bottom line, gradually widening said other half girdle during said continuing knitting by re-activating said idled needles in a succession reverse to the succession in which they were idled, thereby engaging the meshes kept on said temporarily idled needles whereby parts of said two half girdles are united into a circularly closed piece, and cutting through said top line.

2. A method of making girdles, said method comprising knitting reciprocatingly over a row of needles arranged along an arc of a horizontal circle, and thereby making one lateral half of a girdle from a bottom line to a top line, gradually reducing the width of said half girdle during said knitting by idling needles positioned at ends of said row successively, keeping the last mesh knitted on each idled needle in engagement with said needle, then making the other half of the

5

girdle by continuing knitting reciprocatingly from said top line to a bottom line, gradually widening said other half girdle during said continuing knitting by re-activating said idled needles in a succession reverse to the succession in which they were idled, thereby engaging the meshes kept on said temporarily idled needles whereby parts of said two half girdles are united into a circularly closed piece, and cutting through said top line.

3. A method of making girdles, said method comprising knitting reciprocatingly over a row of needles and thereby making one lateral half of a girdle from a bottom line to a top line, gradually reducing the width of said half girdle during said knitting by idling needles positioned at ends of said row successively and at intervals comprising more than one reciprocation of the knitting, keeping the last mesh knitted on each idled needle in engagement with said needle, then making the other half of the girdle by continuing knitting reciprocatingly from said top line to a bottom line, gradually widening said other half girdle during said continuing knitting by re-activating said idled needles in a succession reverse to the succession in which they were idled and at intervals corresponding to said first mentioned intervals, thereby engaging the meshes kept on said temporarily idled needles whereby parts of said two half girdles are united into a circularly closed piece, and cutting through said top line.

4. A method of making girdles, said method comprising knitting reciprocatingly over a row of needles and thereby making one lateral half of a girdle from a bottom line to a top line, said knitting comprising three continuous periods, a first period during which a bottom portion of uniform width is knitted, a second period during which a medium portion of gradually changing width is knitted and a third period during which a top portion of uniform width is knitted, gradually reducing the width of said half girdle during the second period of said knitting by idling needles positioned at ends of said row successively, keeping the last mesh knitted on each idled needle in engagement with said needle, then making the other half of the girdle by continuing knitting reciprocatingly from said top line to a bottom line, said continuing knitting comprising three continuous periods corresponding to said first mentioned three periods in reverse order and thereby making another top, median and bottom portion, gradually widening said other half girdle during the second period of said continuing knitting by re-activating said idled needles in a succession reverse to the succession in which they were idled, thereby engaging the meshes kept on said temporarily idled needles whereby parts of said two half girdles are united into a circularly closed piece, and cutting through said top line.

5. A method of making girdles, said method comprising knitting reciprocatingly over a row of needles and thereby making one lateral half of a girdle from a bottom line to a top line, said knitting comprising three continuous periods, a first period during which a bottom portion of uniform width is knitted, a second period during which a median portion of gradually changing width is knitted and a third period during which a top portion of uniform width is knitted, gradually reducing the width of said half girdle during the second period of said knitting by idling needles positioned at ends of said row successively,

6

keeping the last mesh knitted on each idled needle in engagement with said needle, then making the other half of the girdle by continuing knitting reciprocatingly from said top line to a bottom line, said continuing knitting comprising three continuous periods corresponding to said first mentioned three periods in reverse order and thereby making another top, median and bottom portion, gradually widening said other half girdle during the second period of said continuing knitting by re-activating said idled needles in a succession reverse to the succession in which they were idled, thereby engaging the meshes kept on said temporarily idled needles whereby parts of said two half girdles are united into a circularly closed piece, making selvaged edges during the first and third periods of both knittings, interlooping the selvaged edges of one top portion with those of the other top portion and the selvaged edges of one bottom portion with those of the other bottom portion whereby also the top and bottom portions are united into circularly closed pieces, and cutting through said top line.

6. A method of making girdles, said method comprising knitting reciprocatingly over a row of needles and thereby making one lateral half of a girdle from a bottom line to a top line, gradually reducing the width of said half girdle during said knitting by idling needles positioned at ends of said row successively, keeping the last mesh knitted on each idled needle in engagement with said needle, then making the other half of the girdle by continuing knitting reciprocatingly from said top line to a bottom line, gradually widening said other half girdle during said continuing knitting by re-activating said idled needles in a succession reverse to the succession in which they were idled, thereby engaging the meshes kept on said temporarily idled needles whereby parts of said two half girdles are united into a circularly closed piece, all said knittings being made on the same knitting machine with a continuous thread, and cutting through said top line.

7. A method of making girdles, said method comprising knitting reciprocatingly over a row of needles and thereby making one lateral half of a girdle from a bottom line to a top line, gradually reducing the width of said half girdle during said knitting by idling needles positioned at ends of said row successively, keeping the last mesh knitted on each idled needle in engagement with said needle, then making the other half of the girdle by continuing knitting reciprocatingly from said top line to a bottom line, gradually widening said other half girdle during said continuing knitting by re-activating said idled needles in a succession reverse to the succession in which they were idled, thereby engaging the meshes kept on said temporarily idled needles whereby parts of said two half girdles are united into a circularly closed piece, all said knittings being made with a continuous thread on a knitting machine having needles arranged in a horizontal circle, and cutting through said top line.

GEORGE LACKS.

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

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