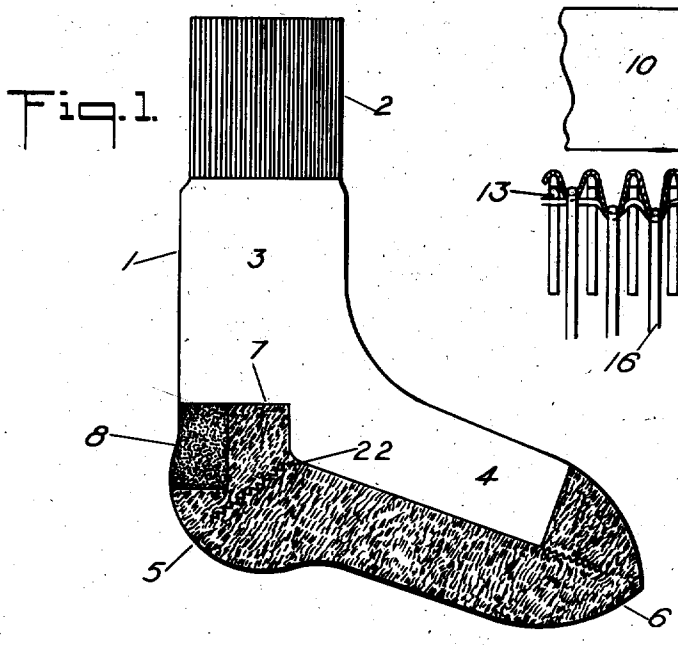
May 8, 1945. A. E. PAGE 2,375,683

TERRY REINFORCEMENT AND METHOD OF MAKING THE SAME

Filed Feb. 17, 1944

Fig. 1.



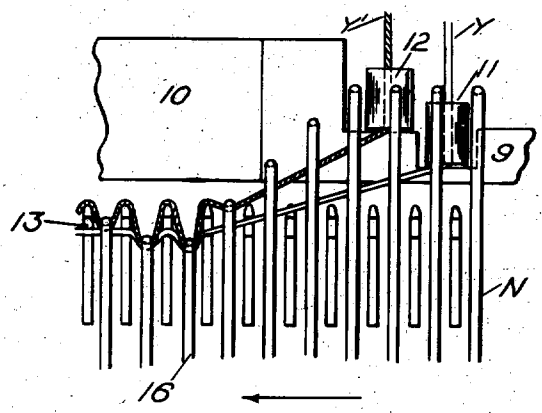


Fig. 3

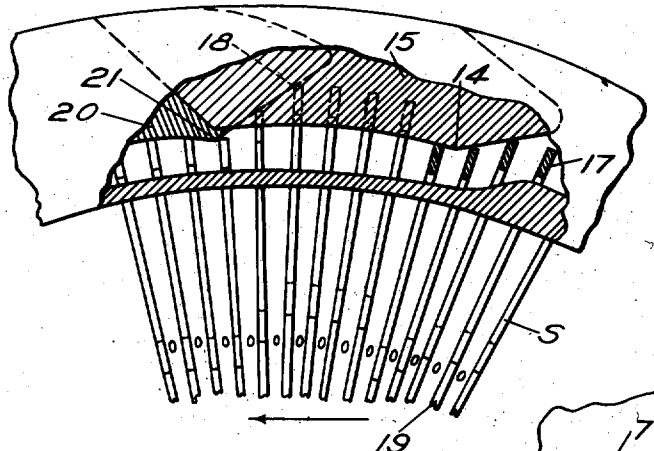
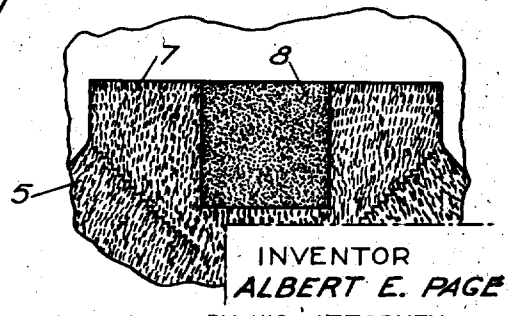


Fig. 4.

Fig. 2.



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UNITED STATES PATENT OFFICE

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TERRY REINFORCEMENT AND METHOD OF MAKING THE SAME

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Application February 17, 1944, Serial No. 522,779

6 Claims. (Cl. 66—182)

This invention is directed to stockings and methods of knitting the same and more especially to stockings having reinforced areas as in the high splice and other parts.

The invention particularly concerns the knitting of an extra reinforcement in the high splice area. An extra reinforcement at the bottom of a heel and at the toe is disclosed in the patent to Mirsky 1,496,724, dated June 3, 1924. However, the method of knitting disclosed by Mirsky involves the feeding of a third thread at the heel and toe portions. If extended into the high splice, that method would involve undesirable complications incidental to the feeding of a third thread. Furthermore the performance of applicant's reinforced high splice, although having only two threads, is superior to a three thread high splice.

One object of the present invention is to provide a method of eliminating the use of a third thread and at the same time providing extra yarn to reinforce a high splice at the point of greatest wear.

A further object of the invention is to provide a reinforced portion of the high splice having within said portion an area of terry loops substantially less in width than the area of the normal high splice, in order not to crowd the foot in the shoe.

Other objects will be apparent from the following description and drawing which form a part of the specification.

In the drawing—

Fig. 1 is a view of a stocking to which the present invention has been applied;

Fig. 2 is a fragmentary view of stocking fabric showing the terry reinforcement extending throughout the length of the high splice and into the upper part of the heel;

Fig. 3 is a fragmentary view in elevation, taken from the inside of a needle cylinder capable of forming the novel high splice and showing the feeding of two yarns to the needles and the nebs of sinkers between the body and terry yarns;

Fig. 4 is a fragmentary plan view of a portion of a sinker cap showing the first projection of sinkers to cause their nebs to pass between the body and terry yarns and also the subsequent knocking-over projection of the sinkers, the needles and sinkers being shown more closely spaced in Fig. 4 than in Fig. 3.

In the drawing a stocking, indicated generally by the numeral 1, is provided with any form of top 2, leg 3, foot 4, heel 5 and toe 6. At the back of the leg of the stocking is provided a so-called reinforcing high splice 7. Extending less than one half the width of the high splice is an extra reinforced area 8. In the drawing the extra reinforcement 8 is shown as extending longitudinally throughout the high splice and into the heel, although the said extra reinforcement may if desired stop short of the heel. The present invention is concerned solely with this special reinforced area 8 within the high splice and heel and the method of knitting it. The remaining portions of the stocking may be of any desired construction.

Figure 1 shows a stocking having the high splice area 7 knitted of two yarns Y and Y', the intermediate area 8 of said high spliced area including terry loops made from one of said yarns, and the sides of the high spliced area 7 having plain loops in both yarns.

The usual high spliced reinforcement which extends a few wales beyond the heel gore on each side of the stocking, serves to strengthen the heel gore at the points on opposite sides of the stocking, indicated by the numeral 22, where eyelets are formed in the body thread. The reinforcing yarn of the high splice and double sole yarn serve to fill in the said eyelets, thereby strengthening the heel gore. If the reinforcing thread were formed into terry loops throughout the high splice, i. e., in the area 7 as well as in the area 8, the elongated terry loops would stand out from the fabric and would not effectively serve to close the eyelets at 22. Furthermore, to terry the area 7 would add unnecessary bulk or fullness to the stocking adjacent to the heel, especially apparent when worn with snugly fitting shoes.

The terry reinforced area 8 not only serves as an additional reinforcement over and above the usual high spliced area, but provides a cushion, thus protecting the heel of the wearer from the chafing normally resulting from walking in low shoes. The extra reinforcing, as well as the cushioning effect, just mentioned, flows from the elongated terry loops in the area 8 which provide a greater proportion of the reinforcing yarn Y' in the area 8 than in an area of the same size in the reinforced non-terry sides 7 of the high splice. The terry loops by their cushioning effect also lessen the abrasive, wearing action of low shoes against the relatively non-yielding usual high splice.

In the drawings the portion of the terry loop re-inforced area 8 within the high splice, as well as the portion thereof in the heel 5, is shown as rectangular. However, the invention is not limited to a rectangular shape.

In the improved article, the terry reinforced intermediate area 8, and also the sides 7 of the high splice and of the heel 5, are formed of two yarns, one yarn Y being the so-called body yarn and the other yarn Y' being what may be termed a reinforcing yarn. It should be understood that either the thread or yarn identified as a body yarn or the thread or yarn identified as the reinforcing yarn, or both said body and reinforcing yarns, may, as is customary, actually be composed of two or more threads fed together.

To knit the high splice, a number of courses are knit, in each of which regular loops are first formed in both yarns in a predetermined number of wales to form one side 7 of the high splice, then terry loops are formed in one yarn Y' while regular loops are formed in the body yarn Y in intermediate wales to form the high splice part of the area 8, and then regular loops are made in both yarns in a number of wales equal to the first named predetermined number, to form the other side of the high splice 7.

Similarly in forming the heel, one course or more is knit having regular loops in both yarns in a plurality of wales to form the side of the heel 5, then terry loops are formed in one yarn Y' and regular loops in the other yarn Y in intermediate wales to form the heel portion of area 8, and then regular loops are formed in both yarns in the same number of wales as in the first named plurality. For uniformity, it is usually desirable that the number of wales in which both yarns are knit in regular stitches in the area 7 on each side be the same in any given course. If the shape of the high splice is not to be rectangular, or if the outline of the intermediate area 8 is not to be rectangular, the number of wales in which the two yars are knit in regular stitches, may be varied from course to course, or the number of wales in which one yarn is terried may be varied, or both may be varied from course to course.

The novel terry heel and high splice reinforcement may be knit by hand or on any suitable machine. When a machine having a rotary needle cylinder is used, the following method may be used:

During the knitting of the high splice 7, the needles rotate in the direction of the arrows, Figs. 3 and 4, whereas when knitting the heel 5 of the stocking, the needles reciprocate in the usual manner, alternately moving in the direction of the arrows in Figs. 3 and 4 and then in the opposite direction. The needles, which may be latch needles N of the conventional type, when knitting the high splice 7 move past a throat plate 9 contained in a latch ring 10, Fig. 3, and move in a knitting wave in part indicated in said figure. Consequently, the sinkers S are advanced as indicated in Fig. 4.

To effect the knitting of the stocking of Fig. 1, and especially the high spliced portion thereof, two yarns are fed to the needles, one yarn Y being the so-called body yarn and the yarn Y' being what may be termed a reinforcing yarn, which, while knitted throughout the high spliced area 7, is terried, i. e. formed into elongated or terry loops, in the intermediate area 8 only. The yarn Y is fed to the needles through a yarn guide 11, while the yarn Y' is fed to the needles through a yarn guide 12, as shown in Fig. 3. The yarn Y is fed low to the needles, its guide 11 resting in a recess in the throat plate, while the yarn Y' is fed at a higher angle with respect to the needles, its guide 12 resting on a ledge of the throat plate positioned above the aforementioned recess therein. As a consequence of the different angular feeding of the yarns Y and Y' to the needles, said yarns are substantially separated vertically, as shown in Fig. 3. As a consequence of the vertical separation of the yarns Y and Y', the nebs 13 of selected ones of the sinkers which are advanced by the point 14 of the movable cam 15, as indicated in Fig. 4, come between the yarns Y and Y', as shown in Fig. 3, and just prior to the movement of the needles to the stitch drawing point indicated by the needle 16, Fig. 3. Consequently when the needles draw loops of the yarns Y and Y' through previous course loops, the loops of the yarn Y', being drawn over the relatively high edges of the sinker nebs 13, are elongated to form what is commonly referred to as terry loops. To effect the knitting of the terry reinforced area 8 the sinkers companion to the needles that knit the said area 8 are provided with relatively long butts 17, the remaining sinkers having shorter butts 18. As a consequence of the difference in length of the butts 17 and 18, the sinker cap cam 15 when advanced to the position shown in Fig. 4 will engage only the butts 17, the butts 18 passing beneath the cam. As hereinbefore stated, the needles that knit the high spliced area 7, exclusive of area 8, knit both yarns Y and Y', said needles drawing both yarns over the edges 19 of the sinkers, forwardly of the nebs 13, whereas the needles that knit area 8 draw the terry yarn Y' over the tops of the sinker nebs 13 to form the elongated or terry loops.

The butts 17 and 18, i. e., the butts of all the sinkers, are later in the knitting cycle, engaged by the sinker cam 20, the point 21 thereof causing the sinkers to knock the previously drawn stitches over the tops of the needles in the usual manner, the needles in advance of the needle 16, rising slightly as shown in Fig. 3 to relieve the stitches as usual. To effect the knitting of that portion of the area 8 which may extend into the heel 5 of the stocking, the sinkers are advanced early by the cam 15 in the counterclockwise reciprocations of the needles, and by a similar cam, or other means, during clockwise reciprocations of the needles.

As shown in Fig. 4, the point 14 of the movable cam 15, when advanced to the position of Fig. 4, does not advance the sinkers so far inwardly, i. e., toward the axis of the needle cylinder, as they are later advanced by the point 21 of the knocking-over cam 20. This relation is essential, otherwise the body yarn Y would be knitted very loosely, and, furthermore, it would be difficult or impossible to effect a knocking-over of the stitches by the point 21 of the cam 20.

The high splice yarn Y' in the illustrative example, is shown as being fed to the high splice needles only, which include the terry needles. To govern the feeding of the yarn Y' to some only of the needles, the yarn guide 12 may be moved to and from the feeding position of Fig. 3 during each revolution of the needles when knitting the high splice, or, the said guide may remain in the position of Fig. 3, the high splice needles only being raised to the position of Fig. 3. The instep needles move at a lower level to engage only the yarn Y in their hooks.

The yarn Y is, preferably knitted throughout the leg 3 and foot 4, including the circular courses comprising the reinforced areas 7 and 8.

Although specific descriptive terms have been

used in the foregoing description, it is not the intention to limit the invention otherwise than as defined by the appended claims.

I claim:

1. A stocking having a high splice and heel area knitted of two yarns, the sides of said area having plain loops in both yarns, and the intermediate portion only of said area having terry loops in one of said yarns.

2. A stocking having a high spliced area knitted of two yarns, an intermediate portion only of the said high spliced area including terry loops in one of said yarns.

3. A stocking having a heel knitted of two yarns, one of said yarns being knitted into terry loops to form a rectangular reinforced area in the heel of less width than said heel.

4. A method of knitting a reinforced area in a stocking high splice and heel having two yarns, including first forming regular loops in both yarns in a plurality of side wales, then forming terry loops in one yarn and regular loops of the other in intermediate wales only, and then forming regular loops in both yarns in a plurality of side wales, said succession of wales being repeated in a plurality of courses.

5. The method of knitting a stocking having a high spliced area consisting of a body yarn and a splicing yarn, the splicing yarn being formed into terry loops in the intermediate portion only of said high spliced area and knitted into regular loops in outside portions.

6. The method of knitting a stocking having a high spliced area consisting of a body yarn and a splicing yarn, the splicing yarn being formed into terry loops in the intermediate portion only of said high spliced area and knitted into regular loops in outside portions, said intermediate portion comprising not more than one half the width of the high spliced area.

ALBERT E. PAGE.

CERTIFICATE OF CORRECTION.

Patent No. 2,375,683. May 8, 1945.

ALBERT E. PAGE.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, first column, line 38, for "yars" read --yarns--; line 59, for "Consequently" read --Concomitantly--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 31st day of July, A. D. 1945.

Leslie Frazer

(Seal) Acting Commissioner of Patents.

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