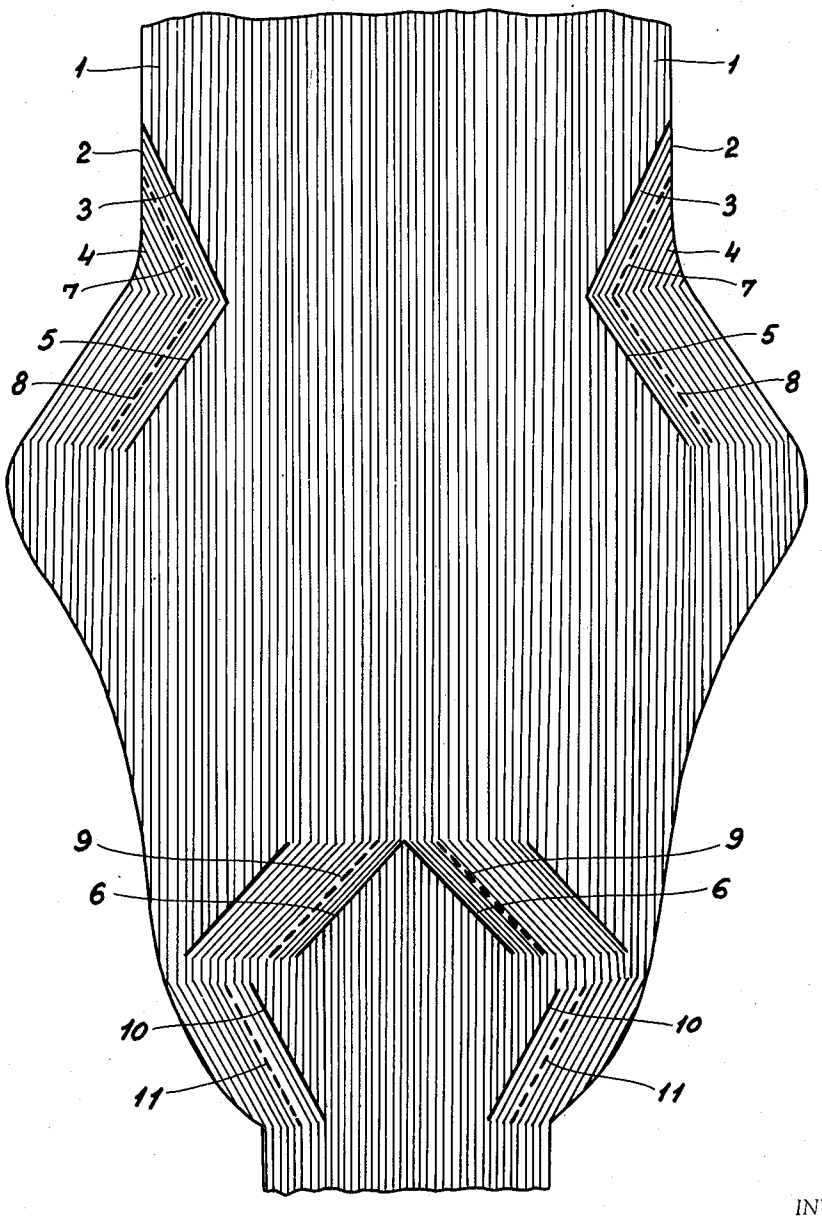
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KNITTING OF STOCKINGS

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KNITTING OF STOCKINGS

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1 Claim. (Cl. 66—89)

This invention has to do with the knitting of stockings and more particularly it is an object to carry out the knitting of a flat stocking blank in such a manner that the danger of premature destruction of the final stocking owing to ravelling stitches is reduced.

It has been found that next to the toe, the heel portion of a stocking, and particularly the zone near the upper end of the heel rounding is one of the most delicate spots of a stocking where systematic injury to the stitches of the stocking is likely to occur and from which ravelling wales may then propagate in the full length of the stocking so that repair will be difficult if at all possible.

It is therefore an object of the invention to take such measures in the production of the stocking that the danger of the ravelling stitches running along the stocking starting from the delicate heel portion of the stocking is substantially reduced.

To achieve this, according to the invention, when the knitting of a flat stocking blank has proceeded to a point at some distance above the point where the heel portion is to commence, the transfer needles or points of the knitting machine are caused to perform a series of progressive inward transfer movements, starting from the firm selvages of the blank, without at the same time changing the path of the yarn carrier or yarn carriers. Preferably the transfer amounts to one transfer needle spacing for each successive course knitted. By causing the transfer needles and the yarn carriers to operate as described, wales will be formed running obliquely inwards and downwards from the firm selvages of the stocking blank.

Consequently, when the stocking blank is sewn together to form the final stocking, the wales of the stocking in the said zone immediately above the heel portion will run at an angle towards the seam of the stocking, and ravelling wales originated in the heel portion or at the particularly delicate zone at the upper end thereof can only proceed along the relatively short distance to the seam, so that a repair can be made within a restricted area and with a minimum of trouble and expenses.

In a preferred embodiment of the invention, the successive inward transfer movements are performed by means of a transfer apparatus, in which a needle has been removed in a position such that the empty transfer needle seat comes into position above the stocking blank only after a number of the said progressive inward transfer movements have been performed, whereby, in the narrowing in the toe portion of the stocking two inclined rows of interlocking stitches will be produced which in the finished stocking will form a ravel trap at the bottom foot portion.

In this manner, without additional operations, the danger of ravelling in the said bottom foot portion is also reduced.

The invention will now be described in further detail with reference to the accompanying drawing which diagrammatically shows the foot portion of a stocking blank produced in a full fashioned straight bar machine by the method according to the invention.

In the drawing, 1 is the shaft of a stocking which is knit in the usual manner. Immediately above the heel rounding a series of inward transfer movements, one needle spacing at a time, are performed, starting from the firm selvages 2 of the stocking whereby a narrowing line 3 is produced. However, the path of the yarn carriers and so the width over which the yarns are carried is not changed while the said inward transfer movements are carried out. Consequently the width of the stocking blank is not changed, but the direction of the wales is changed so that the wales will take a course at an angle inwards and downwards. It is to be understood that the whole row of transfer needles is moved progressively in the inward direction, the innermost transfer needle first engaging the toe blank at the edge thereof and then progressing along the line 3. Moreover, it will be seen that the row of transfer needles is wide enough to cover the whole width of the zone between the line 3 and the firm selvage of the blank.

The zone in which the inclined wales are present, forming the lowermost zone of the stocking shaft immediately above the point where the heel rounding is to commence, is denoted by the reference character 4 in the drawing. Following the series of transfer movements by which the narrowing line 3 is produced, a series of outward transfer movements is performed to produce the heel rounding in the usual manner whereby the widening line 5 is produced. The knitting of the stocking is now continued as usual to form the foot and toe portions. In the example shown, the stocking is terminated by a loop toe, but of course the termination could be made in the form of a loopless toe as well. As usual, one or two reinforcing yarns may be introduced in the heel and sole portion to form a reinforcement. To simplify the illustration, this is not shown in the drawing.

In the particular stocking blank shown in the drawing, a V-shaped ravel trap 6 has been produced in the manner described in my co-pending application No. 272,842. Since this has no particular relation to the present invention, no detailed description of the ravel trap or the method of its formation will be given.

Owing to the inclined wales in the zone 4, possible ravelling wales in the heel zone will proceed to the firm selvages only, which in the finished stocking are sewn together to form the seam. At this point, the ravelling wales are stopped and a repair within a very restricted area is therefore possible.

In the particular embodiment of the invention illustrated, the transfer apparatus by means of which the inward transfer movements in the zone 4 as well as the subsequent transfer movements are performed is modified by removing one transfer needle at some distance from the innermost needle forming the narrowing line 3. The empty transfer needle seat will move into position above the stocking blank some time after the inward transfer movements above the heel rounding has been started and in this manner a series of holes 7 is formed parallel to the narrowing line 3. Similarly, a series of holes 8 parallel to the widening line 5, and a series of holes 9 parallel to the ravel trap 6 are formed. All these series of holes are of no particular significance. Finally, however, a series of holes 11 will be formed parallel to the narrowing line 10 in the toe portion of the stocking, these holes forming interlocking stitches effective as a ravel trap at the bottom side or sole of the toe upon sewing together of the toe blank to form the stocking. As will be seen, no extra operation is required to form this ravel trap, and the series of holes which are incidentally formed in the other zones of the stocking, are of no harm, but may serve as a decoration.

I claim:

In a flat knitting of a stocking blank, the steps of performing, in a zone immediately above the point at which the heel portion is to commence, a plurality of progressive inward transfers starting from the firm selvages of the blank, the first transfer comprising one wale only immediately adjacent each firm selvage of the blank, and the succeeding transfers comprising an increasing number of wales from each firm selvage inwards, keeping the width over which the yarn is carried constant while all of these inward transfers are being effected, and then

performing a plurality of progressive outward transfers of all the wales included in the last one of said inward transfers, while at the same time correspondingly increasing the width over which the yarn is carried, to form the heel widening of the blank.

References Cited in the file of this patent

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