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METHOD OF MAKING TURNED FOOTWEAR

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The invention relates to a method of making turned footwear, and more particularly to the procedure followed in stitching the upper of a shoe, slipper or other article of footwear to the sole.

In the production of turned shoes, a sole having a seam channel forming a sewing rib sometimes called an integral well, and an edge channel or feather is used. When assembling the upper and the sole by one method, the sole is tacked, flesh side outwardly, upon the last and the upper is lasted in relation to the sole prior to the stitching operation, which ordinarily is done by means of a Goodrich sewing machine.

By another method, the sole is wet and the sewing rib is turned outwardly of the edge of the sole, it being necessary, to permit this outward turning of the sole, to cut the material of the sewing rib in a manner to cause the formation of open gores when turning the rib. With this method the edge of the sole is badly distorted in an effort to flatten the entire sole, including the outspread rib, so as to permit the stitching of the edge of the upper to the rib with a sewing machine resembling the McKay machine, but lasting of the upper preparatory to the sewing operation is not required.

With this method there is not only great difficulty in accurately fitting the edge of the upper to the sole, but, following the turning of the shoe, considerable difficulty is encountered in lasting the shoe after the sole and upper have been sewed. This difficulty arises because when turning the upper, it is necessary to also turn the rib inwardly of the sole, which is an awkward operation. Subsequently, it is necessary to flatten the lower edge of the upper upon the sole by a lasting operation, and there is always liability that the free edges of the upper and the rib will be folded during this lasting operation in a manner to produce rough, irregular surfaces within the shoe or slipper at points which will result in discomfort to a wearer. The presence of the cuts or slits transversely of the rib to permit the outward turning thereof accentuates this difficulty.

With the above conditions in mind, the object of my invention is to produce turned shoes, slippers and other footwear without lasting the sole and the upper prior to stitching, and without disturbing the sewing rib of the sole beyond that lifting action necessary during the sewing operation as with the ordinary turned shoe.

By the method of the invention, the sole and the upper, during the stitching operation, are so exposed to the operator in advance of the needle and the foot that at all times during the stitching of the upper to the sole, sufficient of the rib and the lower edge of the upper are visible and readily accessible to the operator to permit accuracy in the positioning of the edge of the upper in relation to the sole during stitching with the aid of match markings for securing this accurate fitting of the parts of the shoe. As a result of this ready accessibility of both the sole and the upper as the stitching operation progresses, no trimming tolerance or allowance in the upper is required, and the edge of the upper may be so nicely fitted to the inner face or flesh side of the rib that after the shoe is turned it may be lasted without any interference from folded, bulged or puckered portions of the lower edge of the upper. Accurate fitting of the upper to the sole avoids gathering or puckering of the edge of the upper, particularly at the toe.

In the production of a shoe by the method of the invention, the edge of the upper is folded across the edge of the sole and laid against the inner face or flesh side of the sewing rib progressively as the stitching is being done. The stitches may be located closely adjacent the juncture of the rib with the sole, and it is merely required that the rib be moved slightly to broaden the channel sufficiently to permit the formation of the stitching within same. After the formation of the stitches, the rib will return to as near its original position upon the sole as the stitching will permit, carrying the edge of the upper with it.

Consequently, when lasting the slipper, shoe or other footwear, there is no tendency of the edge of the upper or of the rib to fold or crease, due in part to the substantial flatness of the rib and the edge of the upper, and in part to the continuity of the rib. In fact, during the lasting operation, as the forequarter of the last is advanced in the shoe, it will act against the lower edge of the upper and the rib in a manner to compress it against the sole so as to preclude the objectionable folding and wrinkling above referred to.

The invention consists primarily in a method of making turned footwear comprising providing a sole having a seam channel in its upper surface extending toward the sole edge to provide a sewing rib which lies flat against the body of the sole and extends continuously from at least the heel breastline at one side to the heel breastline at the other side, feeding said sole in a vertical plane with its edge presented perpendicularly to the axis of the straight needle of a vertically re-
circular sawing machine, temporarily displacing the free edge of said rib laterally away from the sole body only at the point of stitching, folding of an upper in an inverted condition across the edge of the sole and against said sewing rib during such feeding movement, turning the article right side out following the stitching of the upper to the sole, lasting the turned article, and finishing the upper and the sole while the article is on the last; and in such other novel steps and practices as are hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.

Referring to the drawing,

Fig. 1 is a view of the flesh side of a sole with the sewing rib forming seam channel formed therein:

Fig. 2 is a side view of the shoe parts during their assembly and a fragmentary part of the stitch mechanism of a sewing machine; Fig. 3 is a bottom view of an upper turned inside out; and

Fig. 4 is a section on the line 4—4 of Fig. 2.

Like numerals refer to like parts throughout the several views.

In the practice of the method of the invention, any suitable old and worn-down stitch types or mechanisms may be employed, it being necessary, however, to provide a special feeding, turning and presser foot mechanism to ensure the proper positioning of the lower edge of the upper in relation to the edge of the sole and the sewing rib. These fittings form no part of the present inventions and will be referred to only generally.

I have found, in actual practice, that by the use of a chain stitch satisfactory results can be attained, but the form of stitch is not material to the invention.

In the practice of the method of the invention, I employ an ordinary sole 10, the contour of which will vary according to whether a nailed or a sewn heel is to be used. Toward and within the edge of the sole 10, I cut the usual seam channel 11 to form a sewing rib 12, a practice commonly followed in the production of turned shoes. About the edge of the sole is the usual edge feather or channel 13. In the accompanying drawing the sole is shown as being of the type used with a nailed heel, and in which the sewing rib extends only from the heel breasted at one side to the heel breasted at the other side.

In Fig. 3 I have shown an ordinary upper 14 provided at the toe portion thereof with a match marking slot 15, and along the heel thereof with two match marking slots 16 and 17.

As shown in Figs. 1 and 2 of the drawing, the sewing rib 12 extends about the toe of the sole and throughout the length of the shank, the sole being provided with the usual heel section for permitting the nailing of the heel of the shoe to the sole.

The method is practiced with the aid of an ordinary sewing machine using a straight needle 18, and a sewing rib spreading and upper turning fitting 19 having a spreading tongue 20 and a folding arm 21. Co-operating with the fitting 19 is a presser foot 22 having a turning bevel 23. When sewing the upper 14 to the sole 10, the sole is mounted on the fitting 19 by inserting the spreading tongue 20 within the channel 11, thus spreading the sewing rib laterally as shown in Fig. 4. The match marking 16 is then registered with the end of the sewing rib at the top of the sole and the edge of the upper folded laterally over the edge of the sole of the shoe and downwardly against and in coincidence with the free edge of the sewing rib 12. The presser foot 22 is then lowered and nna is attached to the sewing machine in the usual manner.

With the actuation of the sewing machine, the sole 10 and the upper, with the edge folded in the manner shown in Fig. 2, is advanced with a step by step movement during the stitching operation, the sewing rib being held edgewise in relation to the stitching mechanism by feeding and turning mechanisms not shown.

With the advance of the sole during the stitching operation, the operator progressively folds the bottom edge of the upper across the edge of the sole and positions it approximately accurately against and in relation with the edge of the sewing rib 12. The spreading tongue 20, the folding tongue 21 and the bevel 23 of the presser foot ensure substantial accuracy in this turning movement because of the progressive turning of the bottom edge of the upper as the sewing progresses.

It will be noted that both sides of the sole are clearly visible to the operator so that the portion thereof where the upper is being fitted to the edge of the sole, and excepting as to that portion immediately adjacent the stitching mechanism, at which point the sole and the upper are mechanically controlled so as to require no attention.

As the stitching progresses, the operator is able to follow the stitching operation, and, if it be found that the edge is not of sufficient stretch of the leather in either of the shoe parts or by irregularity in the stitching, the contour of the upper is not conforming accurately to that of the sole, the operator may slightly advance (crowd) or stretch (retard) the leather of the upper so that the match marking 15 will accurately conform with a match marking 24 at the toe of the sole.

During the stitching, the shoe parts are advanced in relation to the stitching mechanism and turned so as to cause their movement in conformity with the contour of the sole, the shoe being reversed during this feeding movement so as to permit a continuous seam from adjacent the match marking 16 of the upper to adjacent the match marking 17 thereof, or for the full length of the sewing rib.

After the rib has left its operative relation to the spreader 20 it has a tendency to return to its normal, substantially parallel relation with the rest of the sole 10, so that when the upper has been completely attached to the sole throughout the length of the sewing rib, the conditions, except for a very slight spreading of the channel due to the presence of the stitches within same, and the thickness of the upper and its lining, will be substantially the same as following the formation of the seam channel 11.

After the completion of the stitching operation, the shoe, slipper or other footwear is turned in the usual manner, the sole requiring no work to be done thereon beyond the finishing operations commonly incidental to the production of turned shoes, slippers or other footwear. During this turning operation, no work is required upon the sewing rib, and consequently, the lower edge of the upper, where it joins the sole, conforms accurately with the contour of the sole and there is no deformation or distortion about the edge of the sole requiring correction. The finishing last operation is in all respects the same as with an ordinary turned shoe. The practices commonly followed in the final finishing of a
shoe are employed in producing footwear embodying the invention.

By the method of the invention the stitching is accurately located closely adjacent to the juncture of the integral rib with the sole, or close to the bottom of the seam channel 11, by reason of the edge sewing of the sole to the bottom edge of the upper. Furthermore, the edge sewing, as hereinbefore stated, permits the operator, while the stitching operation is progressing, to accurately fit the lower edge of the upper to the sole, the sole being so exposed as to permit the operator to observe the actual conditions during and immediately prior to the stitching operation.

By edge stitching in the manner described, the lasting of the sole and the upper preparatory to the stitching operation is avoided.

By such stitching of the reversed upper to the sole, the fitting of the upper to the sole may be done quickly and accurately and the stitches may be so located as to avoid irregularities in the upper about the sole. Hence, the finishing lasting operation will ensure a proper sizing of the footwear and avoid unnecessary labor in giving the desired finish to the shoe.

Throughout the specification the terms "shoe" and "slipper" are used interchangeably.

The essential characteristic of the method of the invention is the edge stitching of the upper to the integral rib of the sole.

Having described the invention, what I claim as new and desire to have protected by Letters Patent, is:—

1. The herein described method of making turned footwear comprising providing a sole having a seam channel in its upper surface extending toward the sole edge to provide a sewing rib which lies flat against the body of the sole and extends continuously from at least the heel breastline at one side to the heel breastline at the other side, feeding said sole in a vertical plane with its edge presented perpendicularly to the axis of the straight needle of a vertically reciprocatory sewing machine, temporarily displacing the free edge of said rib laterally away from the sole body only at the point of stitching, folding the bottom edge of an upper in a vertical condition across the edge of the sole and against said sewing rib during such feeding movement, turning the article right side out following the stitching of the upper to the sole, lasting the turned article, and finishing the upper and the sole while the article is on the last.

2. The herein described method of making turned footwear comprising providing a sole having a seam channel in its upper surface extending toward the sole edge to provide a sewing rib which lies flat against the body of the sole and extends continuously from at least the heel breastline at one side to the heel breastline at the other side, feeding said sole in a vertical plane with its edge presented perpendicularly to the axis of the straight needle of a vertically reciprocatory sewing machine, temporarily displacing the free edge of said rib laterally away from the sole body only at the point of stitching, folding the bottom edge of an upper in a vertical condition, said upper having match markings adapted to register with the match markings upon the sole, across the edge of the sole and against said sewing rib during such feeding movement, turning the article right side out following the stitching of the upper to the sole, lasting the turned article, and finishing the upper and the sole while the article is on the last.