Sept. 17, 1929. J. V. POOLE 1,728,362

RIBBED INNERSOLE AND METHOD OF MAKING

Filed March 19, 1929

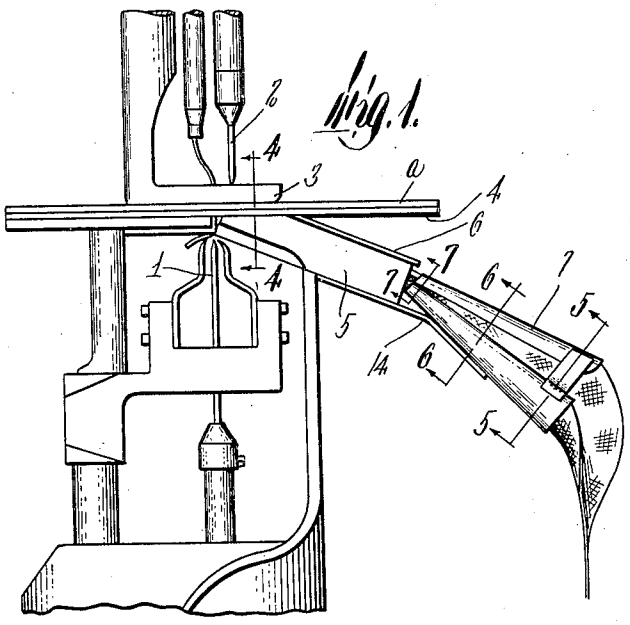

Fig. 1.

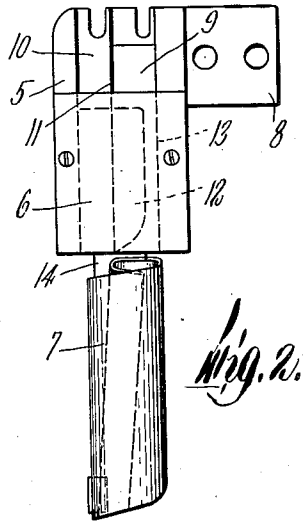

Fig. 2.

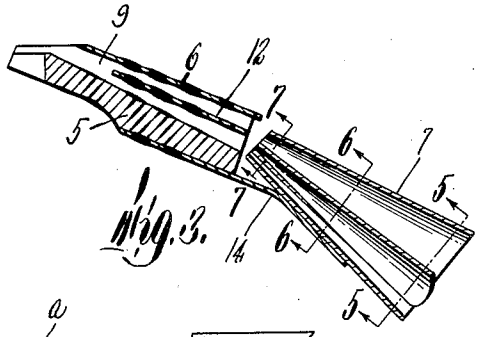

Fig. 3.

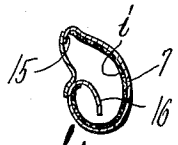

Fig. 5.

Fig. 6.

Fig. 7.

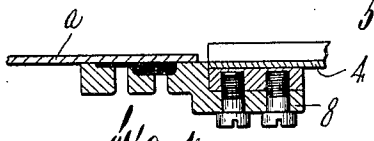

Fig. 4.

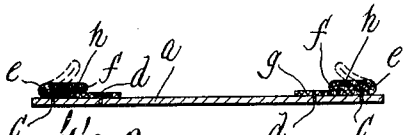

Fig. 9.

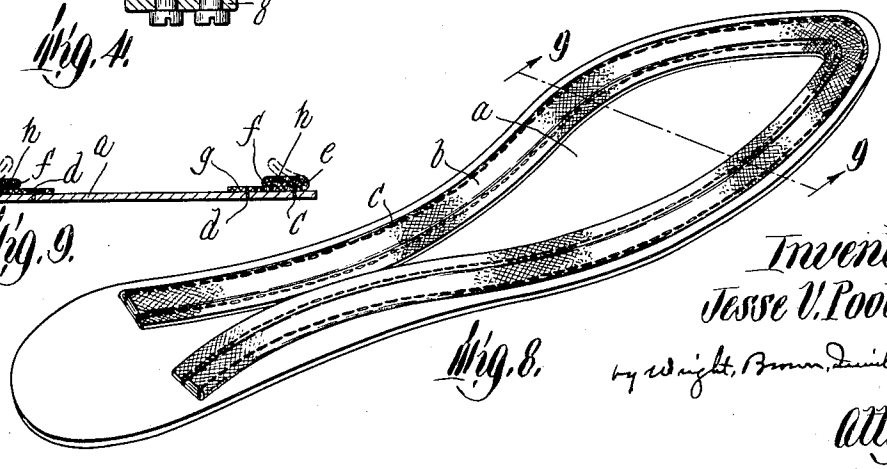

Fig. 8.

Inventor:
Jesse V. Poole,
by Wright, Brown, Quinby & May
Atty's.

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UNITED STATES PATENT OFFICE

JESSE V. POOLE, OF ABINGTON, MASSACHUSETTS, ASSIGNOR TO PURITAN MANUFACTURING COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS

RIBBED INNERSOLE AND METHOD OF MAKING

Application filed March 19, 1929. Serial No. 348,169.

This invention relates to innersoles for welt shoes, and particularly to that type of innersole in which the rib for receiving the stitches of the inseam is formed or constructed separately from the body of the sole and is attached thereto by stitches in the desired location. The object is to provide an innersole of this character with an improved rib structure which lies substantially flat on the face of the body and is sufficiently flexible to be radially raised to permit passage through it of the stitches of the inseam, and is at the same time strong enough and strongly enough secured to the body of the innersole to serve its intended functions in the operation of lasting and in the finished shoe.

The invention consists in an innersole having such a rib, in the structure and characteristics of the rib itself, and in the method of forming the rib and uniting it to the body of the innersole.

In the drawings furnished herewith for illustration of the invention,—

Fig. 1 is a front elevation of part of a sewing machine adapted for uniting the rib of my improved construction to the body of an innersole and having an accessory folder for making a rib of the desired characteristics from a flexible strip of suitable fabric;

Fig. 2 is a plan view of the folder detached from the machine;

Fig. 3 is a longitudinal section of the folder;

Fig. 4 is a cross section of the folder and of the part of the sewing machine to which it is secured taken on line 4—4 of Fig. 1;

Figs. 5, 6 and 7 are detail cross sections of the folder taken on lines 5—5, 6—6 and 7—7, respectively, of Figs. 1 and 3;

Fig. 8 is a perspective view of an innersole equipped with a rib in accordance with this invention;

Fig. 9 is a cross section of the innersole and its rib taken on line 9—9 of Fig. 8.

Like reference characters designate the same parts wherever they occur in all the figures.

The innersole comprises a body *a*, a rib *b* made from a longitudinally folded strip of cotton duck or other suitable fabric or material, secured to the body by stitched seams *c* and *d*, in a line conforming generally to the outline of the sole and at a distance inward from the edges of the sole suitable to the purposes of an article of this type.

The rib is made from an initially flat strip which, when made of textile fabric, is preferably cut diagonally of the warp and weft threads in order to give it capacity for stretching and bending without puckering when laid in a curved line. This strip is folded on two parallel longitudinal lines, producing the folds shown at *e* and *f*. The fold *f* is approximately midway between the fold *e* and one of the edges of the strip, but slightly nearer to such edge than to the fold *e*, and the zone of the strip between fold *f* and the nearer edge forms a flap which is laid inside of the fold *e*. The zone of the strip between fold *e* and the other edge forms a flange or flap *g*. The stitches *c* pass through all three of the superposed plies of the rib, namely, the sides of the fold *e* and the interposed edge flap, and through the body of the sole; while the stitches *d* pass through only the flange *g* and such body. Thus the edge flap and the breadth between the folds *f* and *e* form a two-ply rib proper (designated as a whole by the letter *h*) which is firmly united to the body at its base by the stitches *c*, and is additionally secured by the union of the body and the flange *g* by means of stitches *d*. Such rib proper is laid flatwise on the body, and normally remains so, but is readily raised by the parts of the inseaming machine when the stitches of the inseam are being sewed.

The parts of the rib directly adjacent to and within the fold *e* provide, in effect, an outer base flange for the rib, which is of narrow width, permitting the upper to be positioned close to the edge of the innersole in lasting and thus providing for a tight welt. Such flange cannot ravel out and hence will not pull away from the stitches even though these may be placed close to its outer edge.

This rib is formed and applied to the innersole body in a continuous operation with the aid of a sewing machine and a folder attached to the machine. I have illustrated in these drawings, in full detail, a suitable folder, and enough of a commercial sew-

machine to which the folder is attached to explain the manufacturing phase of the invention. The numeral 1 represents one of the needles of a plural needle chain stitch sewing machine of well known character, and 2 represents an awl cooperating with the needle to punch holes in the work and feed the work. The machine is equipped with as many needles and awls as there are seams to be sewed simultaneously. 3 represents the presser foot and 4 represents the table of the machine by which the innersole body *a* is supported while the rib is being sewed to it. A folder 5 is secured to the under side of the table in position to deliver the folded tape to the under side of the innersole body and support the said body and tape at the point where the awls perform their piercing action.

Describing the folder in detail, it comprises a body part, to which the numeral 5 is applied, a cover member 6, and a portion 7 which may be called for convenience in this specification the preliminary bender or wrapping portion. A lug 8 is formed on the side of the body 5 by which the folder is attached to the under side of the table in the desired location.

In the body portion is a longitudinal channel having a relatively deep portion 9 and a relatively shallow portion 10. A shelf or ledge 11 in the body forms the bottom of said shallow portion and the adjacent side of the deep portion of such channel. A blade or plate 12 fastened to the shelf 11, preferably flush with the upper surface thereof, projects partly across the deeper portion of the channel, leaving an open space between its outer edge and the outer wall 13 of the channel. The cover 6 forms the upper boundary of the channel. This cover overlies all the inclined part of the body and its rear end terminates at the plane of the table, the part of the body in the rear of the cover being beveled to coincide with the plane of the table.

The bending or wrapping portion 7 of the folder is in this illustration made of a piece of sheet metal curled into the desired shape and secured to the body by a brace 14, although it may be otherwise constructed to perform its essential function. In the illustrated embodiment it is provided at its entrance end with a flange 15 at one edge which provides a guide for one edges of the strip *i* out of which the rib is made, and with a curled in lip 16 at the opposite edge to form a channel receiving the opposite edge portion of the strip. Between these flanges the strip has a generally convex curvature in cross section, the parts of which having different radii of curvature merge gradually into one another, so as to bend the strip transversely. From the entrant end to the discharge end the preliminary bender has a gradually changing shape in cross section, its upper part being brought further over and relatively downward, while its bottom part is brought relatively upward and flattened, and the part adjacent to the lip 16 being gradually brought into the interior space and made flatter until it forms the fold *f* distinctly and lays the edge part of the strip adjacent to such fold between the intermediate part of the strip and the flap *g*, as indicated by Fig. 7. As the strip enters the body part 5 of the folder, the plies of the fold *f* pass into the deep part 9 of the channel beneath the plate 12, and the flap *g* passes over this plate and occupies the shallow part 10 of the channel. The walls of this channel, including the cover 6, together with the plate 12, bring the folded strip into its final form, shown in Figs. 4 and 9 and previously described, definitely locating the folds with respect to the needles of the sewing machine and determining the width of the plies or breadths which form the rib proper. Emerging from the folder, in contact with the under side of the innersole body, the folded strip is properly secured to the body. The work feeding means of the sewing machine draws the strip through the folder, causing it to be progressively and accurately folded as the work progresses.

What I claim and desire to secure by Letters Patent is:

1. An innersole comprising a body and an attached stitch receiving rib formed of a strip of fabric folded on two longitudinal lines, with its one edge portion included between the two plies of one of the folds and its other edge portion forming a flap extending beyond the other fold, and stitches passing through the first named fold and said first edge portion into the innersole body, while other stitches pass through said flap and the innersole body.

2. An innersole comprising a body and a fabric rib stitched to said body; said rib having a rib proper and base flanges, one of said base flanges being formed by a longitudinal fold of the strip and an edge portion of the strip doubled back and included within said fold.

3. An innersole comprising a body and an attached rib formed of a longitudinally folded strip of suitable material, the rib comprising a rib proper formed of an edge zone of the strip and an adjacent intermediate breadth of the strip folded together, and comprising also a base flange formed by a second fold including the said edge of the strip.

4. An innersole comprising a body and an attached stitch receiving rib; said rib being formed of a longitudinally folded strip of textile fabric having a rib proper and a base flange, said rib proper being composed of one edge portion and an adjacent breadth of the strip folded together, and the base flange being composed of the said breadth and a further breadth folded about the interposed edge of the strip, and fastening means passing

through all three plies of the base flange and through the innersole body.

5. An innersole comprising a body and an attached stitch receiving rib; said rib being formed of a longitudinally folded strip of textile fabric having a rib proper and a base flange, said rib proper being composed of one edge portion and an adjacent breadth of the strip folded together, and the base flange being composed of the said breadth and a further breadth folded about the interposed edge of the strip, and fastening means passing through all three plies of the base flange and through the innersole body, the last named breadth being also secured separately to the body.

6. The method of making a ribbed innersole which consists in progressively folding a fabric strip so as to lay one edge of the strip in the bottom of the fold between two breadths of the strip, progressively delivering the strip so folded to an innersole body, and progressively stitching the folded strip to the body through said fold and the interposed edge of the strip.

7. The method of producing a ribbed innersole which consists in progressively folding a strip of suitable material on two longitudinal lines in such fashion that the edge zone of the strip folded over on one line is further folded within the fold made on the second line, and the opposite edge of the strip extends beyond the fold laid on the first line, progressively delivering the strip so folded to the face of an innersole body, and progressively stitching the folded strip to the body by parallel seams, the stitches of one of which pass through the second named fold and those of the other pass through the edge portion of the strip outside of the first fold.

In testimony whereof I have affixed my signature.

JESSE V. POOLE.