

Feb. 12, 1946.

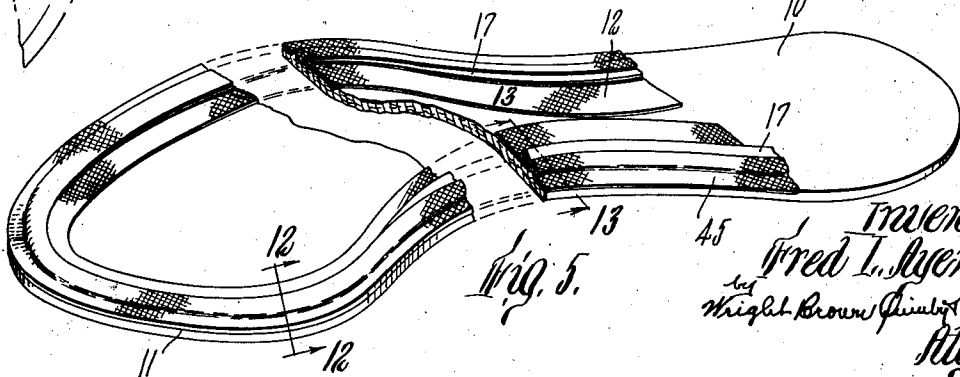
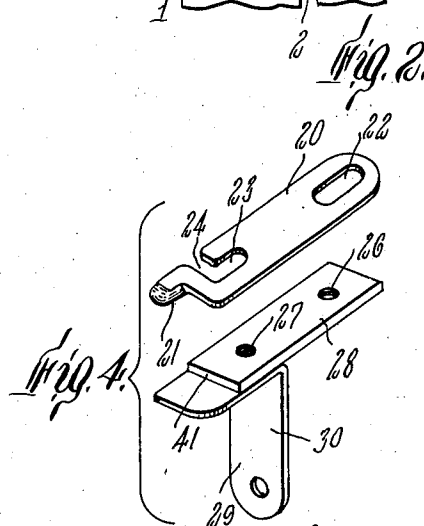
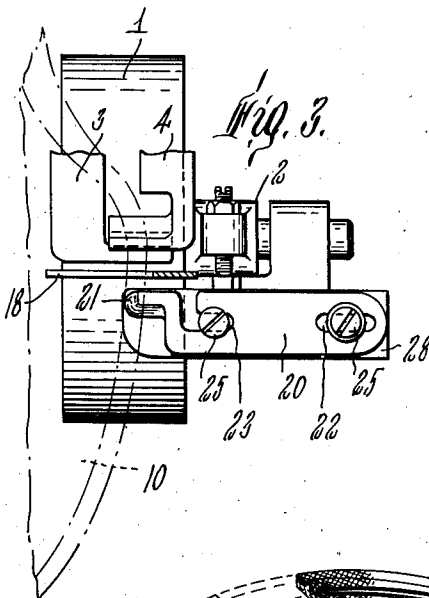
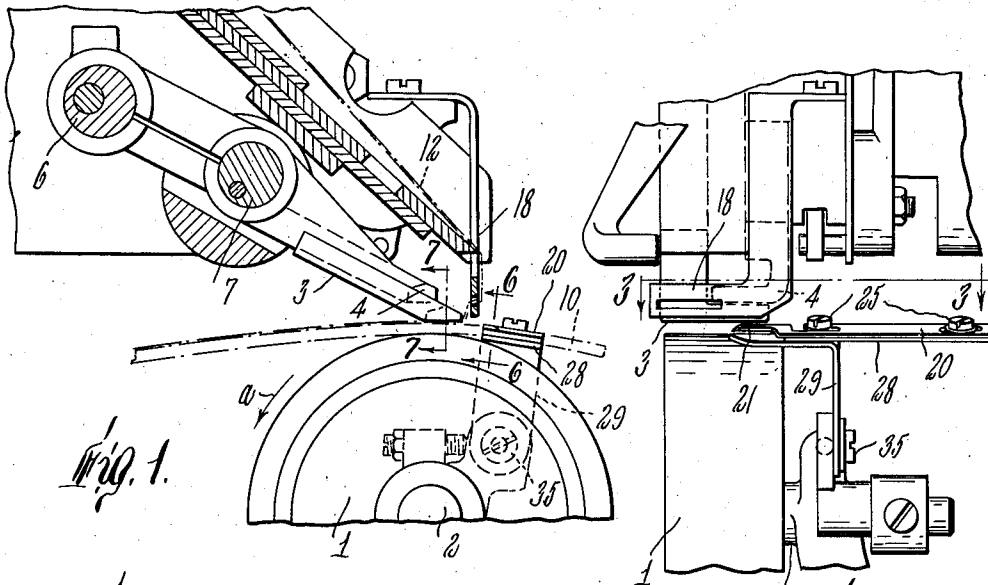
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2,394,740

METHOD OF AND MACHINE FOR MAKING INNERSOLES

Filed Oct. 28, 1943

2 Sheets-Sheet 1



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METHOD OF AND MACHINE FOR MAKING INNERSOLES

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2 Sheets-Sheet 2

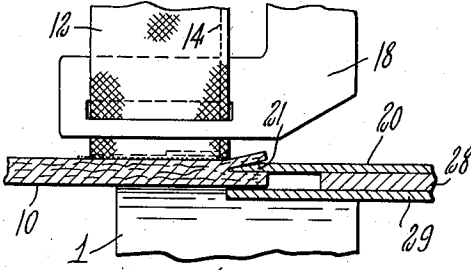


Fig. 6.

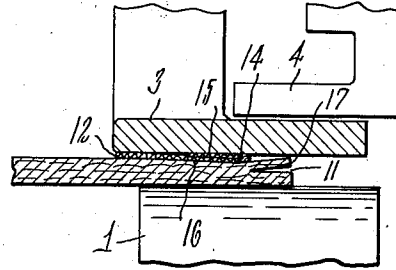


Fig. 7.

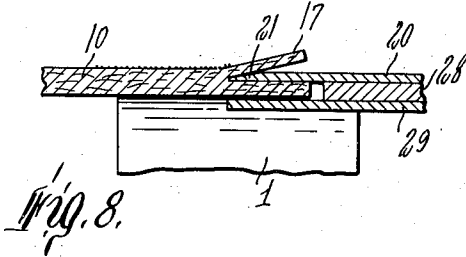


Fig. 8.

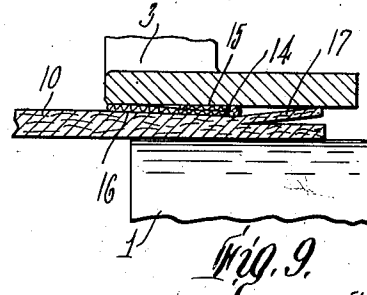


Fig. 9.

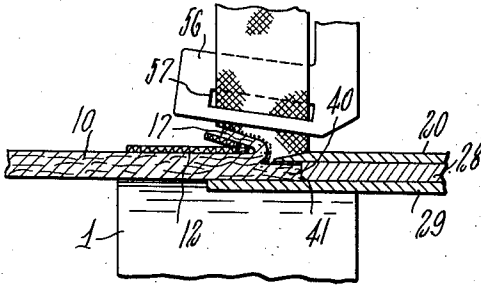


Fig. 10.

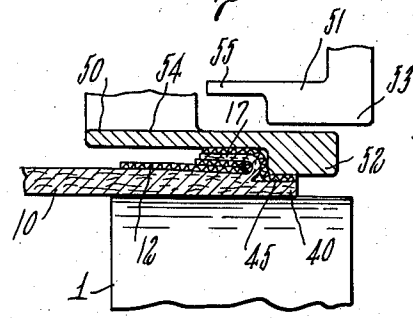


Fig. 11.

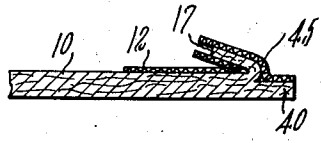


Fig. 12.

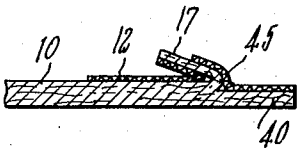


Fig. 13.

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UNITED STATES PATENT OFFICE

2,394,740

METHOD OF AND MACHINE FOR MAKING
INNER SOLES

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Application October 28, 1943, Serial No. 507,947

11 Claims. (Cl. 12—20)

This invention relates to the making of inner-soles suitable, for example, for shoes of the welt type and in which the stitch-receiving rib, at least about the forepart, is composed of a marginal lip formed by inwardly channeling the innersole blank, together with one or more strips of material, such as bias tape or other suitable sheet material to which the lip is cemented. One of these strips, folded longitudinally, is cemented to the face of the innersole blank and the lip is then turned up and inwardly and secured against this strip. In order to form such a rib it is important that the lip be secured from its root outwardly in face to face contact with the strip without spaces or gaps between them. To this end, in accordance with this invention, the strip is applied to the face of the blank at a distance from its margin gaged by the depth of the channel, and the lip is then turned up and inwardly thereover. If desired, a second strip is secured overlying the lip and the innersole feather left by the turning of the lip, the placing of this second strip being gaged by the margin of the blank.

A further object of the invention, therefore, is to provide a strip-applying machine in accordance with which the spacing of the strip inwardly from the blank margin is gaged by the depth of the outside channel, which is considerably deeper back of the break line and in the shank than forwardly of this line.

Still another object is to provide in the machine means for folding the lip inwardly and over the inner strip and for applying thereto and to the marginal feather a further reinforcing strip which is gaged by the outer edge of the innersole blank.

A further object is to provide a work gage for the machine by which, at will, gaging may be done either from the base of the outside channel or from the edge of the blank.

Another object is to provide a combined lip folding and work feeding means for the machine.

Further objects and advantages will appear from a description of an embodiment of the invention shown in the accompanying drawings in which

Figure 1 is a fragmentary view partly in side elevation and partly in vertical section of a tape-applying machine embodying the invention.

Figure 2 is a fragmentary front elevation of the same.

Figure 3 is a detail horizontal sectional view on line 3—3 of Figure 2.

Figure 4 is an exploded perspective view of an edge gage.

Figure 5 is a perspective view partly broken away of an innersole which may be made by the use of the machine.

Figures 6 and 7 are detail sectional views on lines 6—6 and 7—7, respectively, of Figure 1, but showing the work in position while the machine is operating on the forepart and applying the inner strip.

Figures 8 and 9 are views similar to Figures 6 and 7, respectively, but showing the machine operating in the shank portion of the innersole blank.

Figures 10 and 11 are views similar to Figures 6 and 7, respectively, but showing the machine conditioned to fold back the channel lip and to apply the outer reinforcing strip.

Figures 12 and 13 are detail sectional views on lines 12—12 and 13—13, respectively, of Figure 5.

For purpose of illustration, steps in the method of this invention have been shown as carried out in a machine of the general type shown in the Ridderstrom Patent No. 1,794,204, granted February 24, 1931, for Tape applying machine, and reference may be had to this patent for constructional details of this machine not specifically illustrated and described herein. In general, this machine includes a revoluble work support 1 in the form of a wheel or roller journaled on a suitable support 2 with which cooperates a pair of feeding and presser fingers 3 and 4 each having flat lower faces, as shown best in Figure 7. Each of these fingers is moved and controlled by a pair of spaced eccentrics, those for finger 3 being shown at 6 and 7, corresponding eccentrics for the two fingers being arranged on common rotary shafts and oppositely related, by the rotation of which shaft each of these fingers is given a four-motion feed and oppositely timed so that when one of them is operating on the work, the other is being retracted preparatory to a feeding stroke, the feeding strokes of the two fingers somewhat overlapping each other. The arrangement is such that an innersole blank 10, having its edge portion positioned between the support 1 and the fingers is progressively fed through the machine, the support 1 being rotated by contact with the blank in the direction of the arrow *a* of Figure 1.

The blank which is employed to form an innersole in accordance with this invention is first channeled inwardly about its margin as at 11 (see Figure 5) throughout that portion of the innersole where an in-seam-securing rib is desired, and as shown herein around the entire forepart

and shank. To the top face of this blank is first secured a reinforcing strip 12 which may well be of bias fabric which has been previously folded longitudinally and stitched together adjacent to the fold as at 14 (see Figures 7, 9, 10 and 11).

Commonly the top layer 15 of this strip will be narrower than the lower layer 16 and the lower layer 16 is cemented to the face of the innersole on the same side as the innersole lip 17 formed by the channeling operation. This folded strip 12 is guided to the face of the innersole blank by a slotted guide member 18 (see Figures 1 and 6) adjacent to the rearward limit of motion of the feed fingers 3 and 4, and the strip, or the surface of the innersole, or both, are precoated with a cement so that when the strip is brought down against the surface of the innersole blank and fed therewith through the machine, it is secured to the face of the blank.

For the purpose of this invention it is important that this strip 12 be positioned with its folded edge turned toward the margin of the blank and with this folded edge positioned inwardly from the blank margin in accordance with the depth of the outside channel, and consequently the width of the lip 17. Ordinarily the depth of this channel is greater in the shank portion of the blank than around the forepart, since it is commonly desired that the stitch-receiving rib be spaced inwardly from the margin at the shank a greater distance than around the forepart, and the depth of the channel gradually merges between the shank depth and the forepart depth in a zone rearwardly of the break line of the sole.

In order to guide the strip in accordance with the depth of this channel, means are provided for positioning the blank 10 with relation to the guide 18 in accordance with the channel depth and in accordance with this invention this is done by gaging its position by means of a gaging element 20 having a flat blade plow end 21 adapted to enter the channel and ride against the base thereof as is shown best, for example, in Figures 6 and 8, Figure 6 showing the position of this element 21 around the forepart of the shoe, and Figure 8 showing the position where the channel is deeper at the shank portion. This element 20 is shown detached in Figure 4 and is formed as a flat plate having elongated openings 22 and 23 therein, the forward opening 23 opening out through one side of the member 20 as through the slot 24. This plate 20 is adjustably secured as by a pair of screws 25 passing through the slots 22 and 23 and threaded into holes 26 and 27 of a block 28 secured to an angle bracket 29. The vertical leg 30 of this angle bracket is secured as by a screw 35 to a fixed portion of the machine, such for example, the part on which the work support 1 is journaled. The strip guide and the gage are thus in predetermined relation.

As before noted, the plow portion 21 serves as a channel gage, and when so employed the member 20 is adjusted to project a substantial distance from the inner edge of the block 28, as shown in Figures 6 and 8, so that this block 28 always clears the edge of the innersole blank. Thus when the innersole blank is presented to this gage, the lateral position thereof is determined by the depth to which the plow 21 engages within the channel and thus locates the blank widthwise so that the strip as it is progressively fed through the slotted guide 18 is brought to engage the surface of the blank at the desired distance from its margin. By this

machine the step of applying in flat condition the folded strip, which is to form one portion of the stitch-receiving rib, is performed.

In the further fabrication of the innersole in accordance with this invention, the lip 17 is progressively turned inwardly and secured to the upper layer 15 of the folded strip, and in order to provide a close engagement between these parts throughout the entire width of the lip 17, it was important to properly locate the outer folded edge of the strip 12. For this second step in the process, the plate 20 is adjusted laterally to bring it in overlying relation to the feather 40 of the innersole blank but to an extent insufficient to engage the base of the channel, but so that the inner edge 41 of the block 28 may bear against the margin of the feather as shown in Figure 10. The confronting faces of the lip 17 and the layer 15 having been suitably prepared for adhesive securement, the lip is progressively folded back into contact with the layer 15, the plow first lifting the lip and the feeding fingers completing the folding once this has been started by the operator, and at the same time, preferably, a second reinforcing fabric strip 45, which also may be of bias fabric such as tape, is progressively applied against the outer face of the in-turned lip 17 and against the top face of the feather 40 and is there secured.

In order to better engage the work and to fold the lip inwardly as it is passed through the machine for this operation, the feeding fingers 3 and 4 are preferably replaced by corresponding fingers 50 and 51, which instead of being provided with flat lower faces, are recessed, being provided with thickened portions 52 and 53, respectively, which are positioned opposite to the feather 40 and with thinner portions 54 and 55, respectively, which are positioned above the stitching rib, which comprises the inner fabric strip 12, the inwardly turned lip 17, and the outer reinforcing strip or tape 45. It is desirable that this strip 45 be placed in position gaging from the outer margin of the innersole rather than from the outer portion of the lip. Thus around the forepart of the innersole where the stitch-receiving rib is closer to the margin than in the shank, these parts may be in the position shown in Figure 12, with a relatively narrower portion of the outer reinforcing strip 45 overlying the feather 40, while in the shank portion, as shown in Figure 13, a relatively wide portion of the strip 45 overlies the feather 40 and a narrower portion overlies the stitch-receiving rib. The strip guide 56 for this operation, as shown in Figure 10, has an inclined steep receiving slot 57. This second treatment by which the lip is turned backwardly and cemented to the inner folded layer and preferably with the outer reinforcing layer 45 secured thereto, completes the formation of the innersole. The innersole per se is not claimed herein, but forms subject matter of my application for patent, Serial No. 501,911, filed September 11, 1943.

From the foregoing description of the method of this invention and a machine by which certain steps of the method may be performed, it should be evident to those skilled in the art that various changes and modifications might be made without departing from the spirit or scope of this invention.

I claim:

1. A machine of the class described, comprising means for feeding the edge portion of a sole

blank channeled inwardly about its margin, means for applying a strip of material in flat condition to one face of said blank inwardly of said margin, a gage having a blade element constructed to ride within said channel and against the base thereof, and a guide portion for said strip in predetermined relation to said gage to locate said strip spaced from said margin in accordance with the depth of said channel.

2. A machine of the class described, comprising means for feeding the edge portion of a sole blank channeled inwardly about its margin, means for applying a strip of material to one face of said blank, a gage having a portion constructed to engage within said channel at its base and a portion constructed to bear against the margin of said blank, means adjustably securing said portions together, and a strip guide carried by said machine.

3. A machine of the class described, comprising means for feeding the edge portion of a sole blank channeled inwardly about its margin, means for applying a strip of material to one face of said blank, and a gage having a portion for engagement with the edge of said blank and a gage part adjustably secured to said gage portion for engagement within said channel, said machine having a strip guide.

4. A machine of the class described, comprising a support for a sole blank channeled inwardly from its margin, a gage against which the channeled margin of said blank may be engaged, an element projecting into said channel and acting to raise the lip defined by one face of said channel, and means including said support for feeding said blank with said lip turned inwardly, said feeding means having a part pressing said lip and a part pressing the marginal feather of said blank at the opposite face of said channel.

5. A machine of the class described, comprising a support for a sole blank channeled inwardly from its margin, a gage against which the channeled margin of said blank may be engaged, an element carried by said edge gage projecting into said channel and acting to raise the lip defined by one face of said channel, and means including said support for feeding said blank with said lip turned inwardly, said feeding means having a part pressing said lip and a part extending below said lip pressing past and pressing the marginal feather of said blank at the opposite face of said channel.

6. A machine of the class described, comprising a support for a sole blank channeled inwardly from its margin, a gage against which the channeled margin of said blank may be engaged, an element projecting into said channel and acting to raise the lip defined by one face of said channel, means including said support for feeding said blank with said lip turned inwardly, said feeding means having a part pressing said lip and the marginal feather of said blank at the opposite face of said channel, and means for guiding a reinforcing strip between said part and said lip and between said part and said feather.

7. A machine of the class described, comprising

a support for a sole blank channeled inwardly from its margin, a gage against which the channeled margin of said blank may be engaged, an element projecting into said channel and acting to raise the lip defined by one face of said channel, means including said support for feeding said blank with said lip turned inwardly, said feeding means having a part pressing said lip and the marginal feather of said blank at the opposite face of said channel, means for guiding a reinforcing strip between said part and said lip and between said part and said feather, and a guide for directing a strip forming a portion of an inseam securing rib into engagement with a face of said blank in a position determined by said edge gage.

8. An innersole forming machine including a member having a part for engagement with the edge of an innersole blank channeled inwardly from said edge, and an element carried by said member and extending into said channel, said element being adjustable with respect to said member to act as a gage gaging from the base of said channel as well as to open said channel or only to open said channel.

9. The method of making an innersole, which comprises, progressively applying and securing a longitudinally folded strip with its fold line outwardly presented to one face of an innersole blank channeled inwardly about at least a portion of its margin while gaging the spacing of said fold line from the edge of the blank by the depth of the channel, and progressively turning the lip formed by the channeling operation and securing said lip inwardly folded to the outer layer of said strip.

10. The method of making an innersole, which comprises, progressively applying and securing a longitudinally folded strip with its fold line outwardly presented to one face of an innersole blank channeled inwardly about at least a portion of its margin while gaging the spacing of said fold line from the edge of the blank by the depth of the channel, progressively turning the lip formed by the channeling operation and securing said lip inwardly folded to the outer layer of said strip, and simultaneously therewith progressively securing a reinforcing layer to the exposed face of said lip and to the marginal feather of said blank outwardly of said lip.

11. The method of making an innersole, which comprises, progressively applying and securing a longitudinally folded strip with its fold line outwardly presented to one face of an innersole blank channeled inwardly about at least a portion of its margin while gaging the spacing of said fold line from the edge of the blank by the depth of the channel, progressively turning the lip formed by the channeling operation and securing said lip inwardly folded to the outer layer of said strip, and simultaneously therewith progressively securing a reinforcing layer to the exposed face of said lip and to the marginal feather of said blank outwardly of said lip while gaging the position of said layer by the margin of said blank.

FRED L. AYERS.