

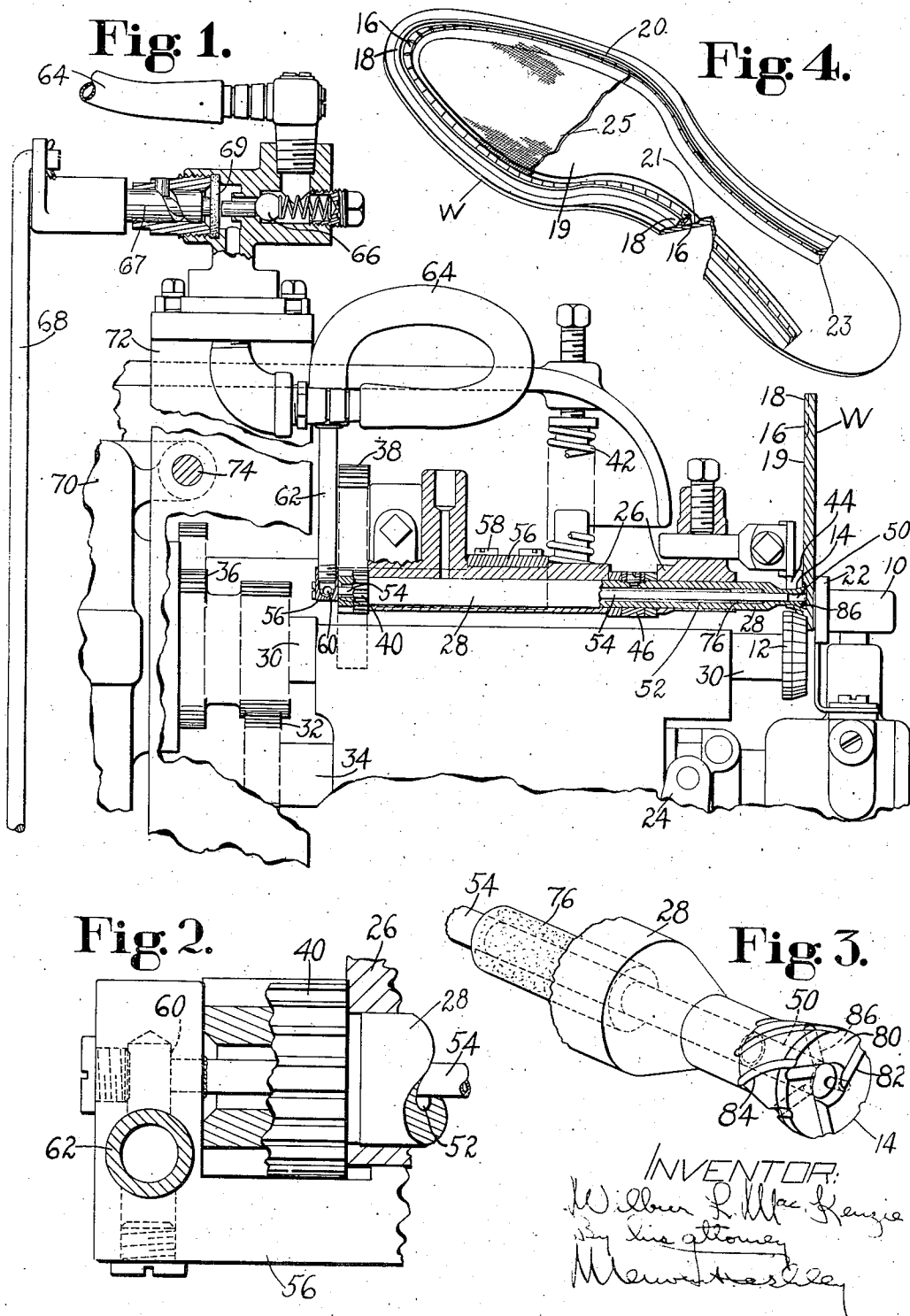
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MACHINE FOR TREATING INSOLES

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MACHINE FOR TREATING INSOLES

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This invention relates to machines for treating insoles for use with shoes, and more particularly to machines employed in the manufacture of ribbed insoles of the type commonly known as Economy insoles.

In the manufacture of Economy insoles, which commonly are provided with inner and outer channels forming two lips adapted to be turned up and cemented together to constitute a single rib, it has been customary to apply a narrow band of cement around the margin of the flat insole to the flesh sides of the lips which are to be stuck together to form the rib. A piece of canvas has then been secured to the mid-portion of the insole and to the inner side of the rib to reinforce it and to provide a stitch-receiving material in the inner channel. The attachment of this canvas has usually been effected by means of a coating of cement applied to the canvas alone. The margins of this piece of canvas are pressed into the bed of the inner channel adjacent to the inner side of the rib, after which the reinforced insole is commonly passed through a machine, known as a "reinforcing machine," which presses the canvas even more firmly into contact with the rib at the base of the channel and also trims off superfluous portions of the canvas at the top of the rib. The cement used for attaching the canvas, having been applied to only one of the two adhering surfaces, has been of a heavy, viscous type and sometimes was thermoplastic, so that it required heating.

In order to enable the use of the lighter, less viscous types of cement and particularly of the material commonly known as latex, it has been proposed to coat both the insole and the canvas before bringing them together. To this end a coating of latex is applied to the whole of one surface, commonly the flesh side, of the insole thus providing a coating for the inner surfaces of the lips which are to constitute the rib and also for the mid-portion of the insole. It will be observed, however, that when the rib is formed by raising the inner and outer lips, called the "channel lip" and the "edge lip" respectively, there is no coating of cement upon the inner face of the channel lip and upon the adjacent channel bed from which this lip was raised.

Accordingly, an important object of the invention is to provide an improved machine for coating the lip and the adjacent channel bed of an insole which is to be reinforced with canvas.

Insoles of the type under consideration are regularly treated by machines having rolls engaging the rib of the insole, and one of these rolls

is positioned to engage the channel lip and the adjacent channel bed. A machine of this type is illustrated in Letters Patent of the United States No. 1,726,800, granted September 3, 1929 upon the application of F. E. Bertrand. Accordingly, another object of the invention is to modify this machine so that a coating of cement may be applied to the face of the channel lip and to the adjacent channel bed during its treatment by a machine of this type and preferably during the operation known as lip setting in which, commonly, two lips channeled from the insole are brought into contact and pressed together to form a rib.

It will be understood that cement may be applied to the flesh surface of the mid-portion of the insole before the rib is formed by means of a machine having an applying roll which will coat the whole of one surface of the insole. This will supply the cement needed for joining the two lips which constitute the rib and will leave only the inner surface of the channel lip and the surface of the adjacent channel bed to be coated. In accordance, therefore, with an important feature of the invention, improved means are provided for supplying cement to the surface of the inner of the two rolls of a lip-setting machine for transfer therefrom to the side surface of the lip and to the channel bed. Preferably and as illustrated, this coating material is supplied through an axial passage in the roll opening at the surface thereof and connected to grooves in both the peripheral and end surfaces of this roll.

After the insole has been passed through this lip-setting machine, a piece of canvas freshly coated with latex is attached to the mid-portion of the sole and formed into contact with the inner side of the rib either manually or by passing it through a reinforcing machine of similar construction to the one described in the above-mentioned patent. A complete forming of the canvas into the inner channel of the insole is permitted by the slippery nature of the freshly applied latex on the canvas.

These and other features of the invention will be best understood from a consideration of the following description taken in connection with the accompanying drawing, in which

Fig. 1 is a view of a portion of a lip-setting machine of the type illustrated in the above-mentioned patent and which has been provided with a coating mechanism;

Fig. 2 is a detail view, on a larger scale, showing a support for the inner end of the tube through which coating material is delivered to

an axial passage in the channel roll of the machine;

Fig. 3 is an angular view, on a similar scale, of the coating-applying roll; and

Fig. 4 is an angular view of an Economy insole which has been treated by this machine and to a portion of which the reinforcing canvas has been applied.

A machine of the type illustrated in the above-mentioned Letters Patent No. 1,726,800 comprises driven work-engaging rolls, including a presser roll 10 acting against the grain surface of an insole W held in a vertical plane, a frusto-conical feed roll 12 resting in the outer channel, and a smaller frusto-conical channel roll 14 resting in the inner channel 21 thereof, the rolls 12 and 14 coacting to raise the channel lip 16 into engagement with the edge lip 18, thereby to form a rib 20 through the base of which the reinforcing canvas to be applied will pass the stitches by means of which the upper and the welt are secured to the insole in a Goodyear welt shoe. A guard 22 is perforated to admit the presser roll, and this roll may be moved bodily to the right by means of a bell-crank lever 24 actuated by a treadle (not shown) when a piece of work is to be inserted in the machine. This movement of the bell-crank 24 also operates through an arrangement described in the patent to lift the channel roll 14 by tilting a bearing block 26 in which the shaft 28 of this roll is journaled. The arrangement is such that this block 26 is tilted about an axis (not shown) which is parallel to the axis of the shaft 28 and beyond it, as seen in Fig. 1.

Rotation of the rolls in unison is desired and, to this end, a shaft 30 carrying the feed roll 12 is driven. To this shaft there is connected by gears 32 a shaft 34 mechanically connected to and arranged to drive the presser roll 10. Another driving connection, including gears 36, 38 leading to a pinion 40 on the hollow shaft 28 of the channel roll 14, provides a drive for the latter roll as it is held resiliently in engagement with the work by a spring 42. A plough 44 for lifting the channel lip 16 of the insole W is adjustably supported upon the bearing block 26, and axial movement of the shaft with respect to the bearing is prevented by a collar 46. Another similar plough for the edge lip 18 does not appear in this drawing.

To supply latex to the surfaces of the channel roll 14, the latter is provided with an axial bore 50 (Fig. 3) communicating with an enlarged bore 52 (Figs. 1 and 2) which extends throughout the remainder of the shaft 28 and to the left end of the pinion 40. Extending lengthwise of the shaft 28 is a tube 54 fitting the bore 50 of the roll at one end and supported at the other end in a block 56 which is attached to the bearing block 26 by means of screws 58 (Fig. 1). The end of the tube 54 is fastened to the block and communicates with a passage 60 therein to which latex may be delivered by means of a pipe 62 connected to a source of supply (not shown) through flexible tubing 64 and an interposed ball valve 66 arranged to be opened upon depression of a rod 68 to turn a screw plunger 67 which acts upon the ball through a diaphragm 69. The rod 68 may be actuated by any suitable means, such as a treadle (not shown). This valve 66 is supported on the frame 70 of the machine by means of an upright bracket 72 attached to the frame by a bolt 74. It will be noted that the tube 54 extends through the passage of the shaft 28 to

a point closely adjacent to the apertured roll 14 and that, as a consequence, the cement such as latex is unaffected by the rotary action of the shaft, it being subjected to that action only within the axial length of the roll itself. Leakage of the cement from the passage 50 back into the enlarged passage 52 is prevented by a packing 76 of a material such as "Koroseal," unaffected by latex, and this packing is positioned close to the roll 14 with only a short end of the tubing 54 in close contact with the inside of the shaft 28.

The channel-bed-engaging end 80 of the channel roll is provided with grooves 82 communicating with the passage 50 and extending substantially tangentially to said passage out to the outer circumference of the roll. Similarly, the conical periphery of the roll is provided with spiral grooves 84, and opening into some of these grooves are substantially radial passages 86 leading from the axial passage 50.

By reason of the firm pressure of the insole against the end of the channel roll 14 the quantity of latex supplied to the channel bed 21 will be restricted chiefly to that which passes out through the grooves 82. Consequently, a back pressure is set up inside of this roll 14, which causes the latex to be forced out through the passages 86 into the grooves 84 for application to the inner face 23 of the channel lip 16 and hence of the rib 20.

In the use of the machine, an insole W, which has been channeled to provide channel and edge lips 16, 18, and the whole of the fresh surface 19 of which has been coated with latex, is presented in the usual manner so that the ploughs, one of which is shown at 44, lift up the lips 16 and 18 and bring them into contact with each other between the feed roll 12 and the channel roll 14. During the passage of the work through this machine the rib 20 will be formed by the adhesion of the previously coated surfaces of the lips, and, at the same time, latex will be applied through the channel roll 14 to the channel bed 21 and the inner surface 23 of the channel lip 16. The mid-portion of the flesh surface 19 will have been previously coated, as above mentioned, and it is immaterial whether or not these coats of latex are allowed to dry. Presumably, the ordinary course of procedure in a shoe factory will permit them to become tacky before a piece of reinforcing canvas 25 is applied to the mid-portion and the inside of the rib 20. This canvas has, shortly prior to its application to the insole, been passed through a cement-applying machine (not shown), which will coat one surface of the canvas with latex. Having thus been freshly coated, enough slippage will be permitted between the insole and the canvas to permit the latter to be readily formed into the channel bed 21 and against the inside surface 23 of the rib 20. Commonly, a preliminary forming will be effected manually, after which the insole may be passed through the so-called reinforcing machine, such as is illustrated in Fig. 6 of the Bertrand patent above mentioned, thereby firmly pressing the canvas into the corner adjacent to the bottom of the rib 20 and trimming off any surplus material at the level of the top of the rib.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a machine for treating an insole having a rib, coacting rolls engaging opposite sides of the rib of the insole, a presser roll engaging a

surface of the insole opposite to that having a rib to hold the work in engagement with said rib-engaging rolls, one of said rib-engaging rolls being apertured to deliver cement to the rib, and means for delivering cement through the roll to said aperture.

2. In a machine for treating insoles channeled to provide a lip, a frusto-conical lip-setting roll constructed and arranged to engage an inner surface of the lip with the base of the roll positioned closely adjacent to the bed of the channel from which the lip was removed, an axial passage through said roll, means for driving the roll, and means for supplying cement through said passage.

3. In a machine for treating insoles having inner and outer lips formed by cutting inner and outer channels, a lip-engaging roll adapted to be positioned in the inner channel with its periphery in contact with the inner surface of the inner lip, said roll being provided with an axial passage communicating with said periphery, and means for supplying coating material through said axial passage.

4. In a machine for treating insoles channeled to provide a lip, a plurality of coating rolls adapted to engage an insole, one of said rolls being constructed and arranged to turn up said previously formed lip to form a rib on the insole, said roll being provided with a passage ending in a surface of said roll, and means for delivering cement through said passage to coat the adjacent surfaces of said channel.

5. In a machine for treating insoles channeled to provide an edge lip and a channel lip, a frusto-conical roll the periphery of which engages the inner surface of the channel lip and the end of

which engages the channel bed adjacent thereto, one coating roll pressing the two lips together and holding the channel lip against the periphery of said first roll, another coating roll pressing the insole against the end of the first roll, said first roll having an axial passage terminating in the end of the roll, the end of the first roll having a groove communicating with said axial passage and the periphery of said roll having a groove connected to said passage by an opening, and means for supplying cement to said axial passage for application to the channel bed through said end groove and to the channel lip through said peripheral groove.

6. In a machine for setting the lips of economy insoles, a frusto-conical lip-setting roll for engagement with the inner side of a lip, the base and periphery of said roll being provided with grooves, a passage through the roll terminating in said grooves, and means for supplying cement through said passage to coat the adjacent surfaces of the channel opened by the lip-setting roll.

7. In a lip-setting machine for economy insoles, an apertured roll for engagement in the inner channel of the insole, a driven shaft on which said roll is mounted, said roll and said shaft being provided with an axial passage, a support, a tube extending from said support through said passage to a point closely adjacent to said apertured roll, a packing between said tube and said passage near the end of the tube, and means for supplying cement to said tube support for delivery through the tube to the aperture of the roll.

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