May 1, 1928. 1,667,936

B. JORGENSEN

MACHINE FOR SHAPING UPPERS

Filed July 10, 1922 5 Sheets-Sheet 1

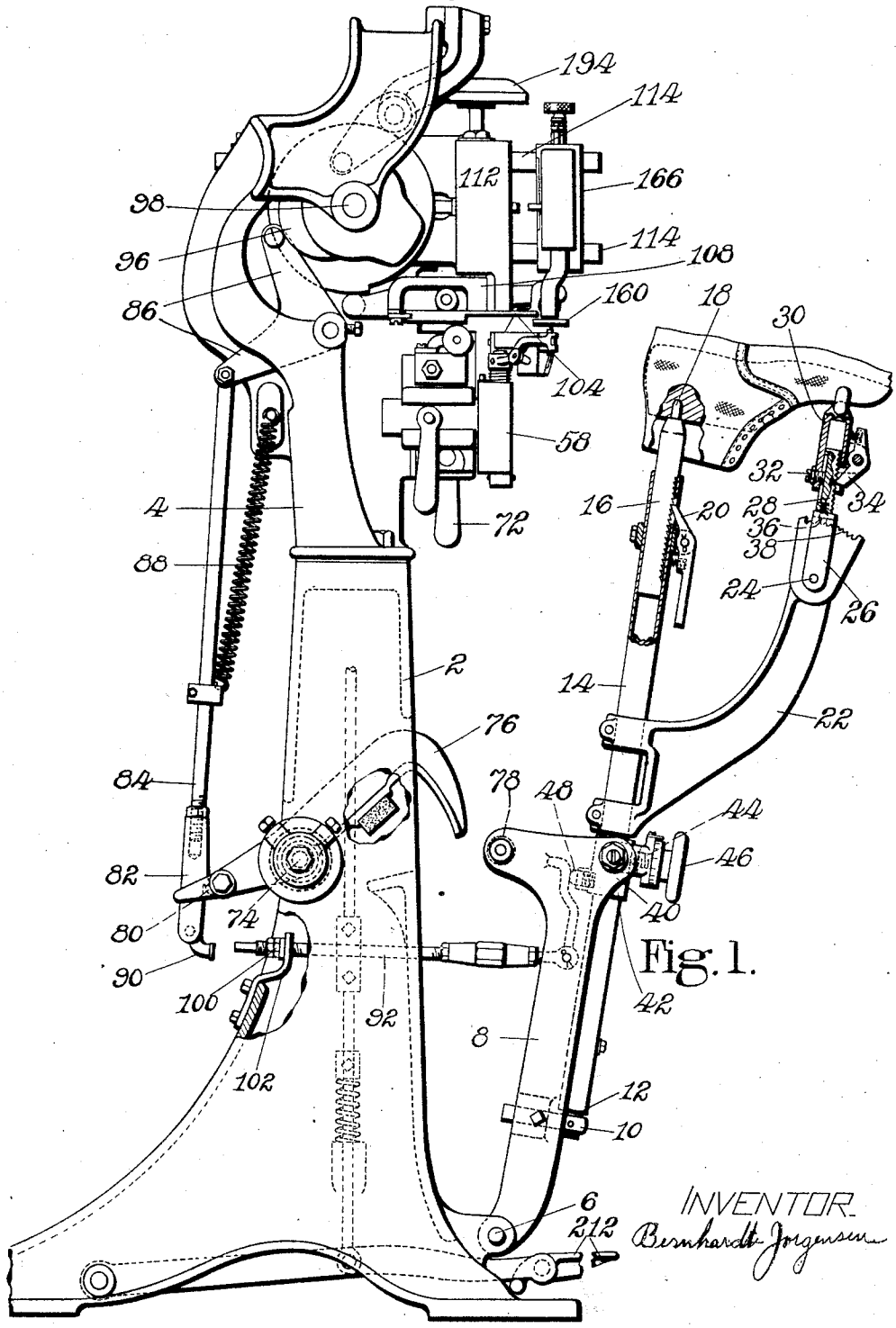


Fig. 1.

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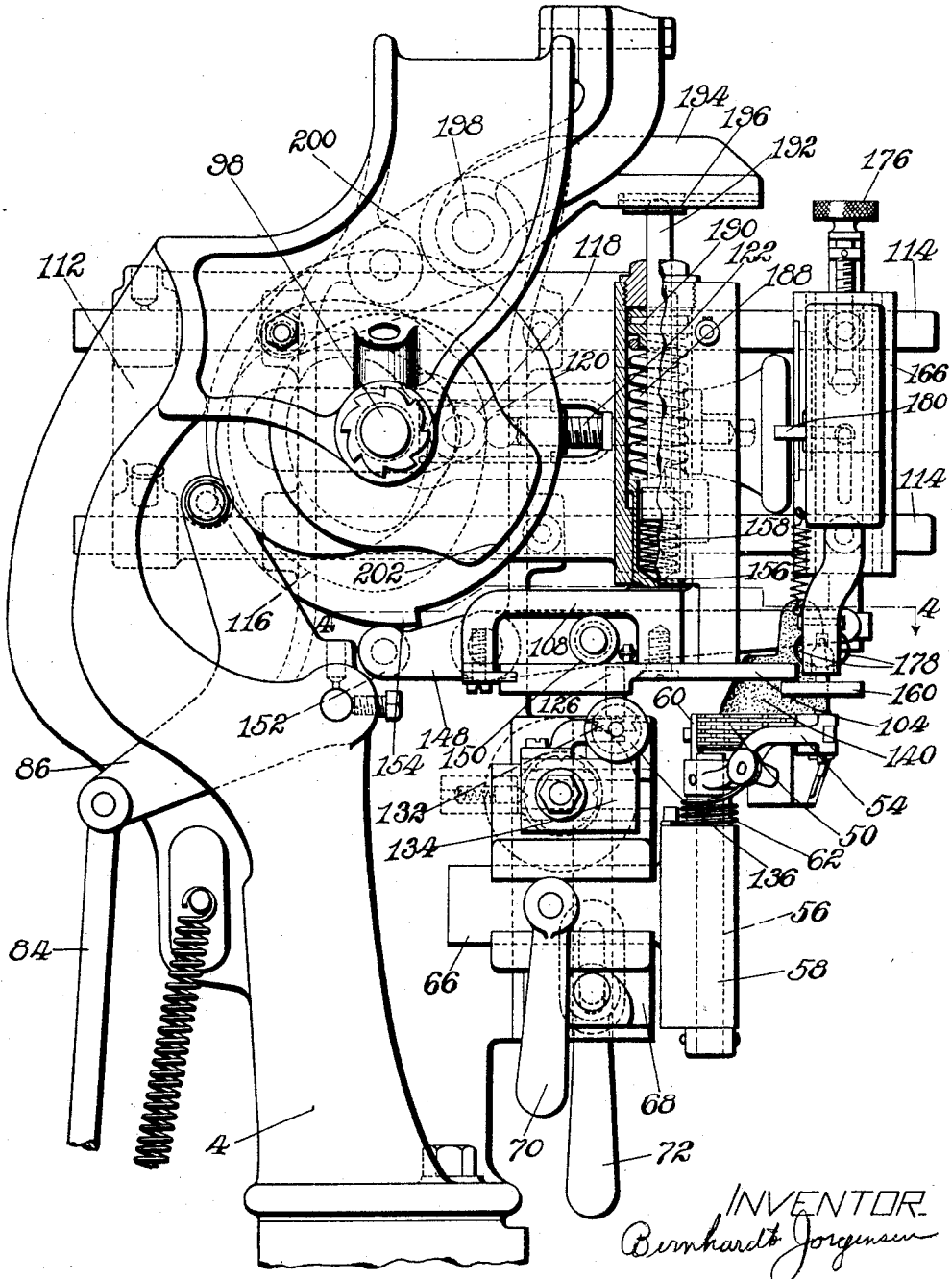


Fig. 2.

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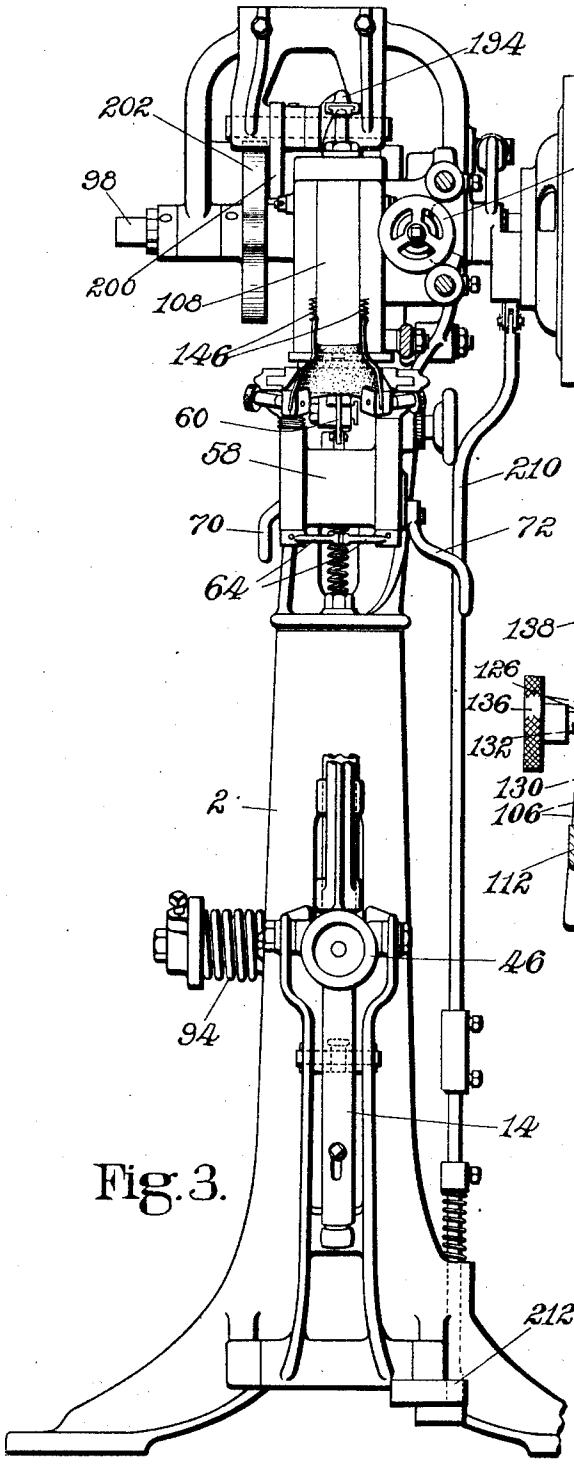


Fig. 3.

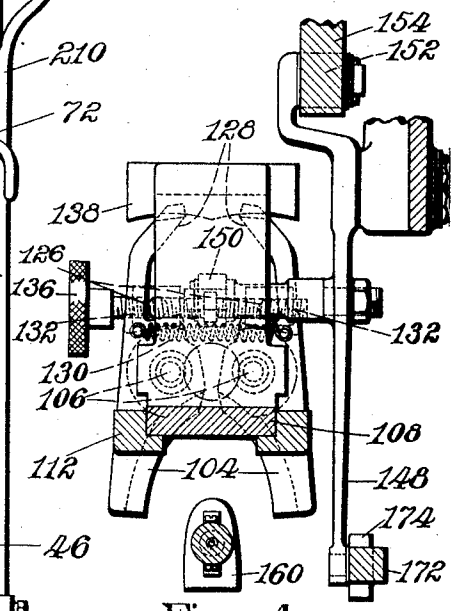


Fig. 4.

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MACHINE FOR SHAPING UPPERS

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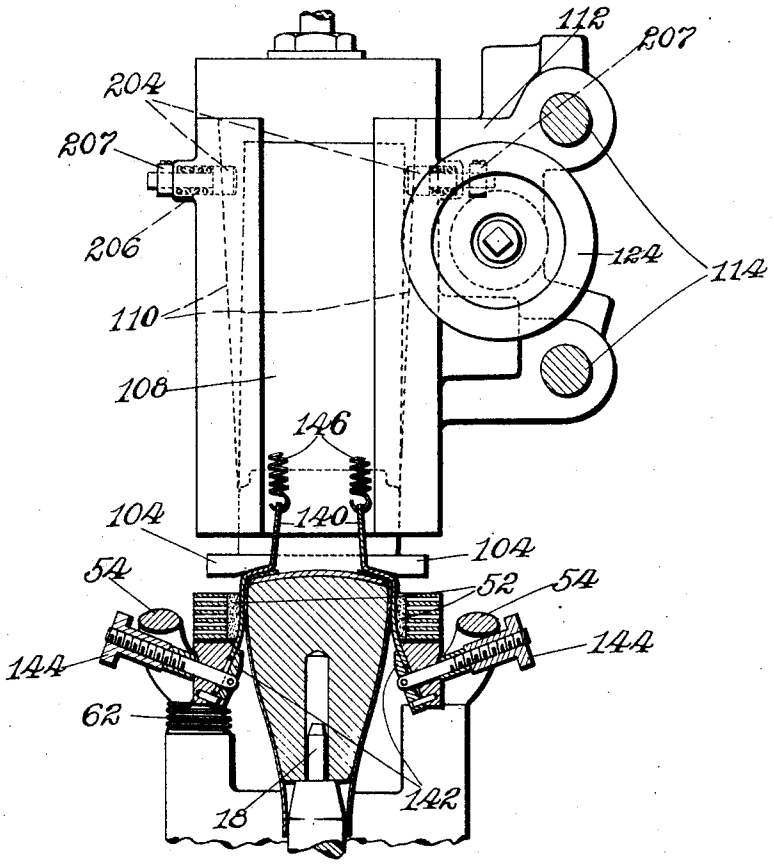


Fig. 5.

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B. JORGENSEN

MACHINE FOR SHAPING UPPERS

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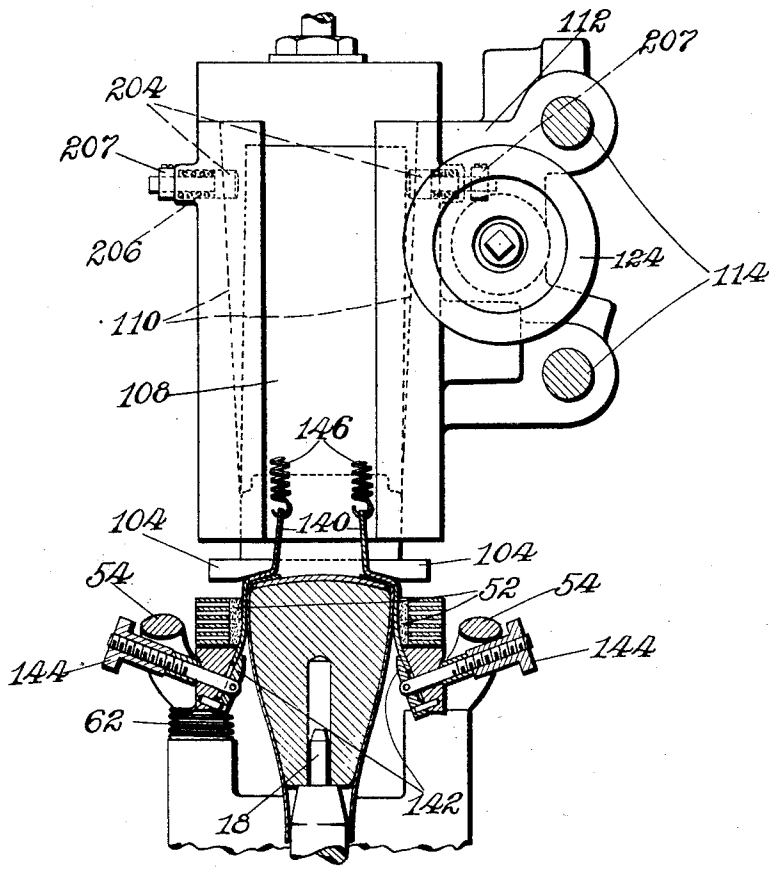


Fig. 5.

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Patented May 1, 1928. 1,667,936

UNITED STATES PATENT OFFICE.

BERNHARDT JORGENSEN, OF BEVERLY, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE FOR SHAPING UPPERS.

Application filed July 10, 1922. Serial No. 573,801.

This invention relates to machines for use in the manufacture of boots and shoes and more particularly, in many of its important aspects, to machines for shaping the upper materials over a form or last. The invention is herein illustrated in its application to the lasting of the heel end portion of a type of shoe in which the upper in the lasting operation is fastened to the insole by adhesion, but it will be recognized that in many of its novel features the invention is not limited to the manufacture of that particular type of shoe nor to the lasting of the heel ends of shoes.

Shoes in which the upper is fastened to the insole by adhesion, of which tennis shoes or sneakers are well known examples, are commonly made with an insole of rubber composition which is comparativey soft and flexible and upon which the margin of the upper, usually coated with cement, is pressed to fasten the upper in lasted position. In the development of machinery for lasting this type of shoe, in place of the hand labor employed heretofore, special precautions have been necessary to avoid displacement of the insole in laying the margin of the upper inwardly over its bottom face and to avoid premature adherence of the margin of the upper to the insole. It has accordingly been proposed to utilize overlaying means operating in a plane affording ample clearance between it and the insole in the operation of bending or laying the margin of the upper inwardly. To insure the proper relation between the overlaying means and the shoe in operating upon different shoes, the present invention provides, as an important feature, novel means for determining by engagement with the shoe the relation between the overlaying means and the plane of the shoe bottom. In its embodiment of this feature in combination with heel embracing wipers, the machine herein shown has a gaging device which by engagement with the bottom of the shoe limits preliminary positioning movement of the wipers heightwise of the shoe and determines the plane of operation of the wipers substantially throughout their overlaying movement. It is a further advantageous characteristic of the construction shown that the gaging device is arranged to serve as a holddown relatively to which the wipers are advanced lengthwise of the shoe, to assist in preventing displacement of the insole by the action of the wipers.

In combination with means for engaging the shoe to determine the relation between overlaying means and the plane of the shoe bottom, in an organization having means for effecting relative movement of the overlaying means and the shoe to press the margin of the upper upon the insole, the invention provides, as a further important feature, means for rendering the shoe engaging means inoperative to prevent such relative pressing movement. For the purpose in view the machine herein shown has controlling mechanism which is automatically operative to release the wipers from the gaging device in time relation to their inward movement, thus freeing the wipers for downward movement to press the margin of the upper into adhering relation to the insole.

A further feature of the invention consists in a novel construction and arrangement of wiper controlling means permitting the wipers to adjust themselves to the shoe in response to resistance of the shoe materials, the construction illustrated comprising spring plungers arranged to act on opposite sides of the wiper holder in directions substantially parallel to the plane of the wipers to centralize the wipers normally in respect to tipping movement laterally of the shoe while permitting them to tip in one direction or the other to equalize the pressure on opposite sides of the heel end of the insole.

In accordance with a further feature the invention provides a novel organization of end embracing wipers and a flexible apron to transmit the pressure of the wipers to the shoe materials, the construction shown comprising an apron arranged in novel relation to a heel embracing band and wipers, toward which the shoe is movable to position it for the heel end lasting operation, and including novel supporting and controlling means for the apron.

The above and other features of the invention, including a novel construction of shoe end clamping mechanism, and various details of construction and combinations of

parts, will now be more particularly described by reference to the accompanying drawings and pointed out in the claims.

In the drawings:

Fig. 1 is a view in side elevation of a machine embodying the invention, parts of the structure being broken away;

Fig. 2 is a view similar to Fig. 1 of the head portion of the machine on a larger scale, with parts broken away;

Fig. 3 is a view of the machine in front elevation with a portion of the jack and the wiper positioning means broken away;

Fig. 4 is a section on the line 4—4 of Fig. 2 with the flexible apron omitted;

Fig. 5 is a front elevation, with parts in section, showing the wipers, the heel band and the jack in operative relation to a shoe;

Fig. 6 is a view partly in front elevation and partly in section of a portion of the means for positioning the wipers relatively to the shoe, and

Fig. 7 is a plan view of the parts illustrated in Fig. 6.

The machine comprises a base 2 on which is mounted a head casting 4 which supports the wipers, the heel band, and their operating and controlling mechanisms. Pivoted at 6 on the base 2 is a shoe support or jack comprising a standard 8 provided with an eye-bar 10 for supporting loosely the lower end of a rod 12 on which is mounted for vertical adjustment a tubular member 14. Mounted for vertical adjustment in the upper end of the member 14 is a bar 16 provided with a pin 18 to engage in the spindle hole of a last and having ratchet teeth arranged to be engaged by a spring pressed pawl 20 on the member 14 to hold the heel pin in adjusted position. Clamped to the member 14 is a toe rest standard 22, and pivotally mounted at 24 on this standard is a toe rest holder 26 provided with an upwardly extending shank portion 28 on which is slidably mounted a toe rest member 30. The member 30 carries a pin 32 which enters a groove in the shank 28 to prevent the member from turning, and also carries a spring pressed pawl 34 for engagement with ratchet teeth on the shank 28 to hold the member in adjusted position. The holder 26 carries a detent 36 for engagement with teeth 38 on the standard 22 to hold the toe rest in any position to which it may be adjusted by turning it about its axis 24. The heel pin and the toe rest may thus be adjusted upwardly or downwardly, each independently of the other, to position any style or size of shoe in the correct relation to the wipers, and the toe rest may also be adjusted to accommodate it to different lengths of shoes.

The tubular member 14 extends upwardly between spaced ears 40 on the standard 8 and has secured thereon a collar 42 engaged on its front face by the inner end of a screw 44 which is threaded in a bracket secured to the ears 40 and is operated by a hand wheel 46 to swing the member 14 and the parts which are carried thereby rearwardly toward the heel band, or to permit them to be swung forwardly by the action of a spring plunger 48 which is carried by the collar 42 and engages a part of the standard 8. Since the standard 8 is locked invariably in the same operative position, as more fully explained hereinafter, this adjustment serves to determine the lengthwise position of the shoe in operative relation to both the heel band and the wipers. This jack affords convenient and readily adjustable means for presenting the shoe in proper relation to the operating instrumentalities, but it will be recognized that in many of its novel aspects the invention is not dependent upon the use of the particular jack illustrated.

The band for embracing the heel end of the shoe may conveniently comprise a series of links 50 provided with a facing 52 of leather or other suitable material, as common in devices of this character, the front ends of the band being pivotally supported on arms 54 which are fast on vertical rock shafts 56 mounted in bearings in a holder 58. At its rear end the band is supported on a link 60 which is pivoted on the holder 58 so that it may swing forwardly or rearwardly as the band is opened or closed. A torsion spring 62 on one of the shafts 56 tends to swing the arms 54 outwardly away from each other and thus to maintain the band initially in open position to receive the shoe, the swinging movements of the arms being controlled by intermeshing gear sectors 64 (Fig. 3) which are fast on the lower ends of the rock shafts 56 and constrain the arms to swing inwardly or outwardly together. As the shoe is carried rearwardly by the jack its heel end engages the intermediate portion of the band and by its pressure thereon pulls the arms 54 inwardly toward the sides of the shoe until the band is wrapped tightly about the heel end of the shoe and engages the opposite sides of the heel portion with adequate clamping pressure. As means for varying this pressure, without affecting the position of the shoe relatively to the wipers determined by adjustment of the screw 44 as hereinbefore described, the heel band holder 58 has a rearward extension 66 which is slidable horizontally in a guideway formed in a support 68 and is held in adjusted position by a clamping device 70. To position the heel band in proper relation to the heel seat the support 68 is vertically adjustable on the head 4 and is held in adjusted position by a clamping device 72.

The jack is intended to be swung rearwardly about its pivot 6 by the operator, to carry the shoe into the heel band and to

apply the band to the shoe as above described, and the machine is provided with means which is operative in response to such rearward movement of the jack to lock the jack in operative position. For this purpose there is mounted in bearings in the base 2 a transverse rock shaft 74 upon which is secured a locking member or lever 76 having a hook shaped front end to engage a pin or roll 78 on the jack standard 8. On its rear end the lever 76 has a tooth 80 arranged to be engaged by a latch 82 on the lower end of a rod 84 for holding the lever initially in idle position. The rod 84 is pivoted at its upper end to one arm of a bell-crank level 86 and is connected to a spring 88 which tends to pull the rod upwardly and also to hold it forwardly in position for the latch 82 to engage the tooth 80. On the lower end of the latch is a finger 90 in position to be engaged by the rear end of a rod 92 which is pivotally connected at its front end to the jack standard 8. When the jack is moved rearwardly by the operator the rod 92 pushes the latch 82 out of engagement with the tooth 80 as soon as the roll 78 is in position to be locked by the lever 76, and the lever is then swung into locking position by a torsion spring 94. The bell-crank 86 is controlled by a cam 96 mounted on a cam shaft 98 through which operative movements are imparted to the lasting instrumentalities as hereinafter described, and in the course of the cycle of operations the cam permits the spring 88 to raise the rod 84 until its latch 82 again connects with the lever 76. Near the end of the cycle the cam imparts downward movement to the latch and swings the lever to its idle position to release the jack. Adjustably mounted on the rod 92 is a nut 100 arranged to engage a plate 102 to limit the forward movement of the jack.

For laying the margin of the upper over the heel end of the insole the machine is provided with heel embracing wipers 104 which are mounted to swing about spaced pivot studs 106 (Fig. 4) on a wiper holder 108, the wiper holder being mounted for vertical movement in a guideway 110 (Fig. 5) formed in a wiper carrier 112 which is provided at its front and rear ends with ears slidably mounted on horizontal rods 114 fast on the head 4. Forward and backward movements are imparted to the carrier 112 by a path cam 116 which engages a roll 118 on the carrier. The roll 118 is mounted on a block 120 which is adjustable by means of a screw 122 and a hand wheel 124 on the carrier 112 to vary the limit of forward movement of the wipers. As the wipers are advanced by the wiper carrier they are closed inwardly at the sides of the heel end of the shoe by pins 126 in engagement with inwardly inclined surfaces 128 formed on rearward extensions of the wipers. A spring 130 connecting the rearward extensions of the wipers holds them against the pins and opens the wipers upon backward movement of the carrier. The pins 126 are carried by blocks 132 which are movable laterally of the shoe in guideways formed in a supporting block 134, the blocks 132 being adjustable toward and from each other by means of a right and left screw 136 to vary the limit of closing movement of the wipers and the distance between them before they begin to close. The block 134 which carries the blocks 132 is adjustable lengthwise of the shoe to vary the time in the forward movement of the wipers when they begin to close. The rearward extensions of the wipers are slotted to embrace the edge of a plate 138 fast on the wiper holder 108 to assist in steadying the wipers in their action upon the shoe materials.

In the construction shown the wipers do not operate in direct engagement with the upper materials, but through a flexible apron 140, which may be made of leather or rubber or other suitable material and is arranged to embrace the heel end of the shoe inside of the heel band and to extend upward across the edges of the wipers. The apron is secured to the band by clamps 142 which are tightened by nuts 144, and at its upper end it is connected to springs 146 which hold it up across the edges of the wipers while permitting it to yield in response to inward pressure of the wipers. By the use of the flexible apron the margin of the upper is gathered uniformly about the end of the shoe and is drawn tightly inward over the edge of the insole without the necessity of operating the wipers as close to the plane of the insole as would be required if the wipers directly engaged the upper materials, and in this way also further assurance is afforded that the insole will not be wrinkled or displaced by the pressure of the wipers.

To insure that the wipers shall be advanced and closed in the desired relation to the plane of the shoe bottom in operating on different shoes, the machine is provided with means for determining by engagement with each shoe the height of the wipers relatively to the plane of the insole. As hereinbefore explained, the wiper holder 108 is vertically movable in guideways 110 in the wiper carrier 112, and the wiper holder is initially positioned at a higher elevation than in the operative movement of the wipers by means of a lever 148 which carries a roll 150 positioned beneath a rearwardly extending portion of the wiper holder and has on its rear end a roll 152 controlled by a cam 154 on the cam shaft 98. Immediately upon the starting of the machine the lever 148 is released by the cam 154, and the wiper holder with the wipers is then moved downwardly by its own weight assisted by a plunger 156

and a light spring 158 on the carrier 112. The limit of such downward movement of the wipers is determined by a holddown foot 160 which is moved downwardly by the lever 148 until it engages the bottom face of the heel end of the insole, the holddown determining by such engagement the limit of movement of the lever and the wiper holder. By reference to Figs. 6 and 7 it will be seen that the holddown foot 160 is carried by a rod 162 which is mounted in a vertical guideway formed in a slide 164, the latter being mounted for vertical movement in a bracket 166 secured to the stationary rods 114. The rod 162 is normally held from vertical movement in the slide 164 by a pin 168 which is pressed by a spring 170 into a hole formed in the side of the rod. Movable vertically with the slide 164 is a bar 172 the lower end of which is notched to receive a block 174 (Fig. 4) pivoted on the front end of the lever 148. It will thus be seen that when the lever 148 is released so that its front end is swung downward it carries with it the bar 172 and the slide 164 and that the holddown foot 160 limits such movement by engagement with the shoe, thereby determining the height of the wipers in their advancing and closing movements. In order to vary or adjust the height of the wipers the slide 164 may be vertically adjusted relatively to the bar 172 by a screw 176 which is threaded in the slide and engages flanges on the upper end of the bar. By reference to Figs. 2 and 6 it will be seen that the holddown foot has an upwardly extending shank portion with a spherical end mounted in a socket in the lower end of the rod 162 and held in the socket by opposite leaf springs 178, so that the member 160 may tip as required to seat it squarely upon the insole.

After the wipers have been advanced and closed in the plane determined as above described to lay the margin of the upper over the insole, or have arrived approximately at the end of their advancing and closing movements, they are depressed by further downward movement of the wiper holder 108 to press the margin of the upper firmly into adhering relation to the insole. In order to permit such further downward movement of the wiper holder the machine has automatic means for breaking the positive connection between the lever 148 and the holddown. For this purpose the slide 164 has pivoted thereon an arm 180 (Fig. 7) provided with a finger 182 which engages in a recess in the side of the pin 168. The wiper carrier 112 near the end of its forward movement engages the arm 180 and operates it to withdraw the pin 168 from the hole in the rod 162. This renders the holddown ineffective to prevent further downward movement of the wipers, since the holddown is then controlled simply by a light spring 184 provided for returning it subsequently to its initial position in the slide 164. When the pin 168 is withdrawn to release the rod 162 it serves by engagement in a slot 186 in the rod to prevent the rod from turning. When the wiper holder is thus released, further downward movement is imparted to it through a comparatively heavy spring 188 which bears on the upper end of the plunger 156 and is compressed by a collar 190 which bears on the upper end of the spring and is fast on a rod 192. Downward movement is imparted to the rod 192 by a lever 194 provided with a slideway for a block 196 in which the upper end of the rod is seated. The lever 194 is fast on a rock shaft 198 which carries an arm 200 provided with a roll engaged by an operating cam 202 on the cam shaft. Near the end of the cycle the lever 148 is returned by the cam 154, thus lifting the wipers and the holddown, and upon release of the lever arm 180 the pin 168 snaps back into position to lock the holddown again to the slide 164.

By reference to Fig. 4 it will be seen that the holddown foot 160 is shaped similarly to the heel end of the insole, although smaller than the insole to afford room for the operation of the wipers, and the foot thus assists in holding the insole firmly upon the heel seat face of the last and in preventing its displacement as the wipers are moved forwardly and inwardly toward the foot.

In order that the downward pressure applied by the wipers may be substantially equalized at the opposite sides of the insole, to press all portions of the margin of the upper firmly into adhering relation to the insole, the wiper holder 108 is mounted to rock laterally of the shoe in the carrier 112. It will be seen by reference to Fig. 5 that for this purpose the opposite side portions of the guideway 110 are inclined outwardly from their lower ends, and engaging opposite sides of the upwardly extending portion of the wiper holder 108 are plungers 204 which are mounted in the carrier 112 and are pressed inwardly in directions substantially parallel to the plane of the wipers by springs 206. The wiper holder and the wipers may thus be rocked laterally to one side or the other in response to resistance of the shoe materials, the plungers 204 being arranged to maintain the holder normally in a centralized position determined by collars 207 secured to the plungers and engaging the sides of the carrier 112.

The cam shaft 98 is driven by a belt pulley 208 through a suitable one revolution clutch which, as illustrated, may be a clutch constructed as shown in United States Letters Patent No. 1,026,067, granted on May 14, 1912, upon an application of Orrell Ashton. In view of the disclosure in that patent, the clutch need not be described herein in detail. The clutch is controlled by a

clutch rod 210 to which movement is imparted to start the machine by a treadle 212.

In the use of the machine the operator mounts the last with its upper upon the shoe support, and after positioning the heel end portion of the upper with its margin projecting the proper distance above the heel seat face of the last, swings the shoe support rearwardly to carry the shoe into the heel band, the latter being wrapped about the heel end of the shoe by the pressure of the shoe against it. In response to such rearward movement of the shoe support the lever 76 is released and locks the support against return forward movement. The operator then places an insole upon the bottom of the last in proper lengthwise position determined by pressing it back against the upstanding margin of the heel end of the upper. He then depresses the treadle and starts the machine. Immediately upon the starting of the machine the lever 148 is released by its cam, and the wipers 104 and the holddown foot 160 are moved downward to positions determined by engagement of the holddown with the bottom face of the insole. The wipers are then advanced and closed and act through the flexible apron 140 to gather the margin of the upper about the heel end of the last and to lay it inwardly over the insole, the holddown foot 160 assisting by its downward pressure in preventing displacement of the insole by the action of the wipers. Near the end of the advancing and closing movements of the wipers the wiper carrier engages the arm 180 and breaks the operative connection between the holddown foot and the wiper holder. The lever 194 is then operated by its cam to force the wiper holder downward and through the comparatively heavy spring 188 to press the margin of the upper firmly into adhering relation to the insole, the wiper holder tipping laterally of the shoe as may be required to equalize the pressure at opposite sides of the shoe bottom. Following these operations, the parts of the machine are returned to their starting positions, the shoe support being released by its locking means to permit it to swing forwardly into convenient position for the operator to remove the shoe.

The novel means for locking the shoe support in operative relation to the means which operates on the shoe, and novel features of the shoe support, are not claimed herein, but in a divisional application, Serial No. 121,421, filed on July 9, 1926.

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

1. In a machine of the class described, the combination with shoe positioning means, of overlaying means movable inwardly over the bottom of the shoe to lay the margin of the upper over the insole, a gaging device arranged to determine by engagement with the bottom of the shoe the position of said overlaying means relatively to the plane of the insole in laying the upper inwardly over the insole, and means for moving said gaging device and overlaying means together to positions determined by engagement of said device with the bottom of the shoe prior to the inward movement of the overlaying means.

2. In a machine of the class described, the combination with shoe positioning means, of overlaying means movable inwardly over the bottom of the shoe to lay the margin of the upper over the insole, a gaging device arranged to determine by engagement with the bottom of the shoe the position of said overlaying means relatively to the plane of the insole in laying the upper inwardly over the insole, and means for moving said gaging device heightwise of the shoe to gaging position and for moving the overlaying means in the same direction as the gaging device to the position determined by said device prior to the overlaying operation on the shoe.

3. In a machine of the class described, the combination with shoe positioning means, of overlaying means movable inwardly over the bottom of the shoe to lay the margin of the upper over the insole and mounted also for positioning movement heightwise of the shoe, and a gaging device arranged to be moved heightwise of the shoe with said overlaying means to determine by engagement with the bottom of the shoe the position of the overlaying means relatively to the plane of the insole in the inward movement of said means over the shoe, said gaging device being constructed and arranged to position the overlaying means prior to its inward movement and substantially throughout said movement for operation in a plane spaced from the bottom face of that portion of the insole over which said means moves inwardly.

4. In a machine of the class described, the combination with shoe positioning means, of overlaying means movable inwardly over the bottom of the shoe to lay the margin of the upper over the insole and mounted also for positioning movement heightwise of the shoe, a gaging device mounted independently of said overlaying means for movement heightwise of the shoe and arranged to engage the bottom of the shoe and to determine by such engagement the position of the overlaying means relatively to the plane of the shoe bottom, and controlling mechanism to cause said gaging device and overlaying means to move together heightwise of the shoe to positions determined by the engagement of said device with the shoe.

5. In a machine of the class described, the

combination with shoe positioning means, of end embracing wipers mounted for movement inwardly about an end of the shoe to lay the margin of the upper over the insole and mounted also for positioning movement heightwise of the shoe, and a gaging device arranged to be moved heightwise of the shoe with said wipers into position to engage the insole for positioning the wipers relatively to the plane of the insole prior to their inward movement, said gaging device being arranged to determine by engagement with the insole the plane of operation of said wipers in their inward movement over the shoe.

6. In a machine of the class described, the combination with means for positioning a shoe bottom upward, of end embracing wipers movable inwardly about an end of the shoe to lay the margin of the upper over the insole and mounted also for positioning movement heightwise of the shoe, a gaging device movable heightwise of the shoe and arranged to engage the insole and by such engagement to position the wipers relatively to the plane of the insole, and means for moving said wipers and gaging device downwardly together until said device engages the insole, said gaging device being arranged to determine the plane of operation of the wipers as they move inwardly over the shoe.

7. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers mounted for inward movement about an end of the shoe to lay the margin of the upper over the insole, controlling means automatically operative to effect a positioning movement of said wipers heightwise of the shoe prior to their inward movement, and a device movable with the wipers into engagement with the bottom of the insole to determine the limit of such positioning movement, said device being arranged to maintain the wipers in the plane thus determined as they are moved inwardly over the shoe.

8. In a machine of the class described, the combination with means for positioning a shoe bottom upward, of end embracing wipers movable inwardly about an end of the shoe to lay the margin of the upper over the insole, cam controlled means automatically operative to impart a downward positioning movement to the wipers, and a gaging member movable downwardly with the wipers into engagement with the bottom face of the insole to limit said positioning movement, said gaging member being arranged to determine the plane of operation of the wipers in their inward movement over the shoe.

9. In a machine of the class described, the combination with means for positioning a shoe bottom upward, of end embracing wipers movable inwardly about an end of the shoe to lay the margin of the upper over the insole, means for effecting a downward positioning movement of the wipers, and a gaging device arranged to engage the bottom of the shoe to limit said downward movement of the wipers and to determine the plane of operation of the wipers as they are moved inwardly over the shoe.

10. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers and a wiper support mounted for advancing movement lengthwise of the shoe and for positioning movement heightwise of the shoe, a gaging member mounted independently of said wiper support for movement heightwise of the shoe into engagement with the bottom face of the insole and arranged to determine by such engagement the plane of operation of the wipers in their inward movement over the shoe, and means for moving said gaging member and wiper support together to positions determined by engagement of said member with the insole.

11. In a machine of the class described, the combination with means for positioning a shoe bottom upward, of end embracing wipers and a wiper support mounted for advancing movement lengthwise of the shoe and for positioning movement heightwise of the shoe, a gaging member mounted independently of said wiper support for movement heightwise of the shoe into engagement with the bottom face of the insole to position the wipers relatively to the plane of the insole in their inward movement over the shoe, and means for moving said gaging member downward into engagement with the insole and for moving said wiper support also downward to the position determined by said member.

12. In a machine of the class described, the combination with means for positioning a shoe bottom upward, of end embracing wipers and a wiper support mounted for advancing movement lengthwise of the shoe and for positioning movement heightwise of the shoe, a member for controlling the positioning movement of the wiper support, a cam for releasing said member to permit the wiper support to move downwardly, and a device mounted independently of the wiper support for positioning said controlling member by engagement with the bottom of the insole to determine the limit of such downward movement.

13. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers movable inwardly about an end of the shoe to lay the margin of the upper over the insole and mounted also for positioning movement heightwise of the shoe, a controlling lever, means connected to an intermediate portion of said lever for controlling the positioning movement of the wipers, and a device acting

on an end portion of the lever to determine by engagement with the insole the position of the wipers heightwise of the shoe.

14. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers movable inwardly about an end of the shoe to lay the margin of the upper over the insole and mounted also for positioning movement heightwise of the shoe, a member for controlling said positioning movement of the wipers, and a device guided independently of said controlling member and wipers for movement heightwise of the shoe and connected to said controlling member to limit by engagement with the bottom of the shoe the positioning movement of the wipers.

15. In a machine of the class described, the combination with means for positioning a shoe bottom upward, of end embracing wipers and a wiper support mounted for operative movement lengthwise of the shoe and for positioning movement heightwise of the shoe, a cam controlled lever for upholding the wiper support and for releasing it to permit its downward movement, and an insole engaging member mounted independently of the wiper support for movement heightwise of the shoe and arranged to control said lever to determine the height of the wipers.

16. In a machine of the class described, the combination with shoe positioning means, of overlaying means movable inwardly over the bottom of the shoe to lay the margin of the upper over the insole and mounted also for positioning movement heightwise of the shoe, a gaging device arranged to be moved heightwise of the shoe with said overlaying means into engagement with the bottom face of the insole to determine the position of said overlaying means relatively to the plane of the insole, and means for maintaining said gaging device substantially stationary in the inward movement of said overlaying means to serve as a holddown for the insole.

17. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers mounted for advancing and closing movements about an end of the shoe and for positioning movement heightwise of the shoe, an insole engaging holddown relatively to which the wipers are advanced lengthwise of the shoe, and means controlled by said holddown for determining the position of the wipers prior to their operation on the shoe and in their inward movement over the shoe.

18. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers and a wiper support mounted for operative movement lengthwise of the shoe and for positioning movement heightwise of the shoe, a gaging member mounted independently of said wiper support for movement heightwise of the shoe and arranged to engage the bottom face of the insole to position the wipers heightwise of the shoe and to serve as a holddown for the insole, and means for maintaining said gaging member in operative engagement with the insole during the inward movement of the wipers.

19. In a machine of the class described, the combination with means for positioning a shoe bottom upward, of end embracing wipers and a holddown movable downwardly together in operating on each shoe to positions determined by engagement of the holddown with the bottom of the shoe, and means for imparting to the wipers advancing and closing movements over the shoe relatively to the holddown while the holddown remains in engagement with the bottom of the shoe.

20. In a machine of the class described, the combination with shoe positioning means, of heel embracing wipers for wiping the margin of the upper about the heel end of the shoe inwardly over the insole, a holddown having an edge contour curved similarly to the rear end of the insole for engaging the insole on its heel seat face, and means controlled by said holddown for positioning the wipers heightwise of the shoe and for preventing them from moving toward the plane of the heel seat as they are moved inwardly over the bottom of the shoe.

21. In a machine of the class described, the combination with a shoe support, of overlaying means movable inwardly over the bottom of the shoe to lay the margin of the upper over the insole and mounted also for positioning movement heightwise of the shoe, a device for engaging the bottom of the shoe to limit said positioning movement and to determine the position of said overlaying means relatively to the plane of the insole in the inward movement of said means over the shoe, means for effecting relative movement of said shoe support and overlaying means heightwise of the shoe to press the margin of the upper upon the insole, and means for rendering said shoe engaging device inoperative to prevent such relative pressing movement.

22. In a machine of the class described, the combination with a shoe support, of end embracing wipers for laying the margin of the upper about an end of the shoe inwardly over the insole, said wipers being mounted for positioning movement heightwise of the shoe, a device for engaging the bottom of the shoe to position said wipers heightwise of the shoe, means for effecting relative movement of said shoe support and wipers heightwise of the shoe to press the margin of the upper upon the insole, and means for releasing the wipers from control of said shoe engaging device to render said device

inoperative to prevent such relative movement.

23. In a machine of the class described, the combination with a shoe support, of end embracing wipers for laying the margin of the upper about an end of the shoe inwardly over the insole, a device for engaging the bottom of the shoe to determine the position of said wipers relatively to the plane of the insole, means for moving said wipers and shoe engaging device together to positions determined by engagement of said device with the shoe, means for releasing the wipers from control of said shoe engaging device, and means for thereafter moving the wipers heightwise of the shoe independently of said shoe engaging device to press the margin of the upper upon the insole.

24. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers mounted for inward movement over the bottom of the shoe and also for movement heightwise of the shoe, a device for controlling said wipers arranged to engage the bottom of the shoe to position the wipers relatively to the plane of the shoe bottom and to prevent their movement toward said plane, and means for rendering said controlling device inoperative to prevent said last named movement of the wipers after they have been moved inwardly over the bottom of the shoe.

25. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers mounted for movement to lay the margin of the upper inwardly about an end of the shoe and also for movement heightwise of the shoe, a device for controlling said wipers arranged to engage the bottom of the shoe to determine the plane of their overlaying movement and to prevent their movement toward the plane of the shoe bottom, and means automatically operative in time relation to the overlaying movement of the wipers to render said controlling device inoperative to prevent their movement toward the plane of the shoe bottom.

26. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers for laying the margin of the upper inwardly about an end of the shoe, said wipers being mounted for movement heightwise of the shoe, controlling means for said wipers comprising a member for engaging the bottom of the shoe and a controlling member connected to said shoe engaging member for positioning the wipers relatively to the plane of the shoe bottom and for preventing their movement toward said plane, means automatically operative in time relation to the overlaying movement of the wipers to disconnect said shoe engaging member from the controlling member, and means for thereafter effecting relative movement of the shoe positioning means and wipers heightwise of the shoe to cause the wipers to press the margin of the upper upon the insole.

27. In a machine of the class described, the combination with a shoe support, of end embracing wipers for laying the margin of the upper about an end of the shoe inwardly over the insole, said wipers being mounted for positioning movement heightwise of the shoe, a member for controlling said positioning movement of the wipers, a gaging device connected to said member and arranged to engage the bottom of the shoe to determine the position of said member and the wipers, means for effecting relative movement of the shoe support and the wipers heightwise of the shoe to press the margin of the upper upon the insole, and means for disconnecting the gaging device from said wiper controlling member to permit such relative movement.

28. In a machine of the class described, the combination with shoe positioning means, of means for laying the margin of the upper inwardly over the insole, a member for engaging the bottom of the shoe to determine the position of said overlaying means relatively to the plane of the insole, means for moving said member and the overlaying means together to positions determined by engagement of said member with the bottom of the shoe, and means for thereafter releasing the overlaying means from control of said member to permit further movement of said overlaying means toward the plane of the insole for pressing the margin of the upper upon the insole.

29. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers for laying the margin of the upper about an end of the shoe inwardly over the insole, said wipers being mounted for positioning movement heightwise of the shoe, controlling means including a device for engaging the bottom of the shoe to limit such positioning movement of the wipers, and means automatically operative at a predetermined time in the cycle of the machine to disconnect said gaging device from the remainder of said controlling means to permit further movement of the wipers toward the plane of the insole for pressing the margin of the upper upon the insole.

30. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers for laying the margin of the upper about an end of the shoe inwardly over the insole, said wipers being mounted for positioning movement heightwise of the shoe, a gaging device arranged to engage the bottom of the shoe to limit such positioning movement of the wipers, means for imparting to the wiper

in predetermined time relation inward movement over the bottom of the shoe and movement heightwise of the shoe to press the margin of the upper upon the insole, and means automatically operative in time relation to the wipers to render said gaging device inoperative to determine the position of the wipers.

31. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers for laying the margin of the upper about an end of the shoe inwardly over the insole, said wipers being mounted for advancing movement lengthwise of the shoe and for positioning and compressing movements heightwise of the shoe, a gaging device for limiting by engagement with the bottom of the shoe such positioning movement of the wipers, and mechanism automatically operative in response to the advancing movement of the wipers to render said gaging device inoperative to determine the position of the wipers.

32. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers and a wiper carrier mounted for advancing movement lengthwise of the shoe, said wipers being mounted also for positioning and compressing movements heightwise of the shoe, gaging mechanism including a member mounted independently of said wiper carrier for movement heightwise of the shoe and arranged to determine by engagement with the bottom of the shoe the heightwise position of the wipers, and a latch arranged to be operated by advancing movement of said wiper carrier to release the wipers from said gaging member to permit the compressing movement of the wipers.

33. In a machine of the class described, the combination with means for positioning a shoe bottom upward, of end embracing wipers mounted for operative movement lengthwise of the shoe and for downward positioning movement, a controlling member for upholding said wipers and for controlling their downward movement, a gaging member connected to said controlling member and arranged to engage the bottom of the shoe to limit the downward movement of the wipers, and means automatically operative at a predetermined time in the cycle of the machine to break the connection between said gaging member and controlling member to release the wipers for further downward movement.

34. In a machine of the class described, the combination with means for positioning a shoe bottom upward, of end embracing wipers mounted for advancing movement lengthwise of the shoe and also for movement heightwise of the shoe, gaging mechanism comprising a slide and a member locked to said slide for engaging the bottom of the shoe to determine the height of the wipers, means automatically operative in predetermined time relation to the wipers to unlock said member from the slide, and means for thereafter imparting to the wipers downward movement to press the margin of the upper upon the insole.

35. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers for laying the margin of the upper about an end of the shoe inwardly over the insole, spring means for imparting a preliminary positioning movement to the wipers heightwise of the shoe, and additional spring means for thereafter imparting to the wipers movement toward the plane of the insole to press the margin of the upper upon the insole.

36. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers for laying the margin of the upper about an end of the shoe inwardly over the insole, a wiper holder mounted for movement heightwise of the shoe, a cam controlled spring for moving said wiper holder and wipers toward the plane of the shoe bottom to position them for inward movement over the shoe, and power-operated means including a stronger spring for thereafter forcing the wiper holder and wipers farther toward the plane of the shoe bottom to press the margin of the upper upon the insole.

37. In a machine of the class described, the combination with end embracing wipers and a wiper holder mounted for tipping movement laterally of the shoe in response to resistance of the shoe materials, of spring means acting on said wiper holder in a direction substantially parallel to the plane of the wipers to oppose yielding resistance to such tipping movement.

38. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers and a wiper holder mounted for tipping movements in opposite directions laterally of the shoe, and spring means acting on opposite sides of said wiper holder in directions laterally of the shoe to oppose yielding resistance to such tipping movements.

39. In a machine of the class described, the combination with end embracing wipers and a wiper holder mounted for tipping movements in opposite directions, of oppositely directed spring plungers acting normally to centralize said wiper holder while permitting it to tip in one direction or the other in response to resistance of the shoe materials.

40. In a machine of the class described, the combination with end embracing wipers and a wiper holder, of a guideway in which said wiper holder is movable in a direction

substantially perpendicular to the plane of the wipers to apply pressure through the wipers to the shoe materials, said guideway being formed to permit tipping movements of the wiper holder and the wipers in response to resistance of the shoe materials, and spring pressed members acting respectively on opposite sides of the wiper holder to oppose yielding resistance to such tipping movements.

41. In a machine of the class described, the combination with end embracing wipers and a wiper holder, of a guideway in which said wiper holder is movable in a direction substantially perpendicular to the plane of the wipers to apply pressure through the wipers to the shoe materials, said guideway having portions at opposite sides of the wiper holder arranged in diverging relation to permit tipping movements of the wiper holder, and spring plungers tending to centralize the wiper holder in said guideway while permitting it to tip in opposite directions.

42. In a machine of the class described, the combination with end embracing wipers and a shoe support relatively movable in a direction substantially perpendicular to the plane of the wipers to apply pressure to the shoe materials, of a wiper holder mounted to tip laterally of the shoe in response to said pressure, and spring means acting on the wiper holder in a direction substantially parallel to the plane of the wipers to oppose yielding resistance to such tipping movement.

43. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers, a wiper holder on which said wipers are mounted, a wiper carrier movable lengthwise of the shoe and having a guideway in which said wiper holder is mounted for movement heightwise of the shoe to apply pressure through the wipers to the shoe materials, said guideway being formed to permit tipping movement of the wiper holder laterally of the shoe, and oppositely directed spring plungers acting on said wiper holder to oppose yielding resistance to such tipping movement.

44. In a machine of the class described, the combination with heel end lasting wipers, and a shoe support movable to carry a shoe into position for the operation of said wipers, of a flexible apron arranged to embrace the heel end of the shoe and to lie between the upper and the overwiping faces of the wipers to transmit the pressure of the wipers to the shoe materials.

45. In a machine of the class described, the combination with heel end lasting wipers, a heel end embracing band, and a shoe support movable to carry a shoe into said band to position it for the operation of the wipers, of a flexible apron carried by said heel band and extending across the edges of the wipers to be engaged by the wipers for gathering the margin of the upper and laying it inwardly over the heel end of the insole.

46. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers, a flexible apron interposed between the wipers and the shoe to transmit the pressure of the wipers to the shoe materials, and spring means connected to said apron to hold it across the edges of the wipers and yieldable in response to the pressure of the wipers against the apron.

47. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers, a band for embracing an end of the shoe, a flexible apron connected at one end to said band for embracing the end of the shoe and transmitting the pressure of the wipers to the shoe materials, and spring means connected to the other end of said apron to hold it across the edges of the wipers and yieldable in response to the pressure of the wipers against the apron.

48. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers, a flexible apron for embracing an end of the shoe and for transmitting the pressure of the wipers to the shoe materials, holding means connected to said apron at the opposite sides of the shoe on one side of the plane of the wipers, and spring means connected to the opposite side portions of said apron at the other side of said plane to hold the apron across the edges of the wipers and to control it during the operation of the wipers.

49. In a machine of the class described, the combination with shoe positioning means, of end embracing wipers, a band for embracing an end of the shoe, means for supporting the opposite side portions of said band for movement toward the sides of the shoe, a flexible apron for embracing the end of the shoe and for transmitting the pressure of the wipers to the shoe materials, and clamps on the opposite side portions of said band for holding said flexible apron.

50. In a machine of the class described, the combination with a shoe support, of a band for embracing an end of the shoe, members for supporting the opposite ends of said band mounted for movement inwardly toward the sides of the shoe in response to the pull of the band thereon when the shoe is pressed against the intermediate portion of the band, and a pivoted link arranged to extend heightwise of the shoe for supporting the intermediate portion of the band in its closing and opening movements.

In testimony whereof I have signed my name to this specification.

BERNHARDT JORGENSEN.