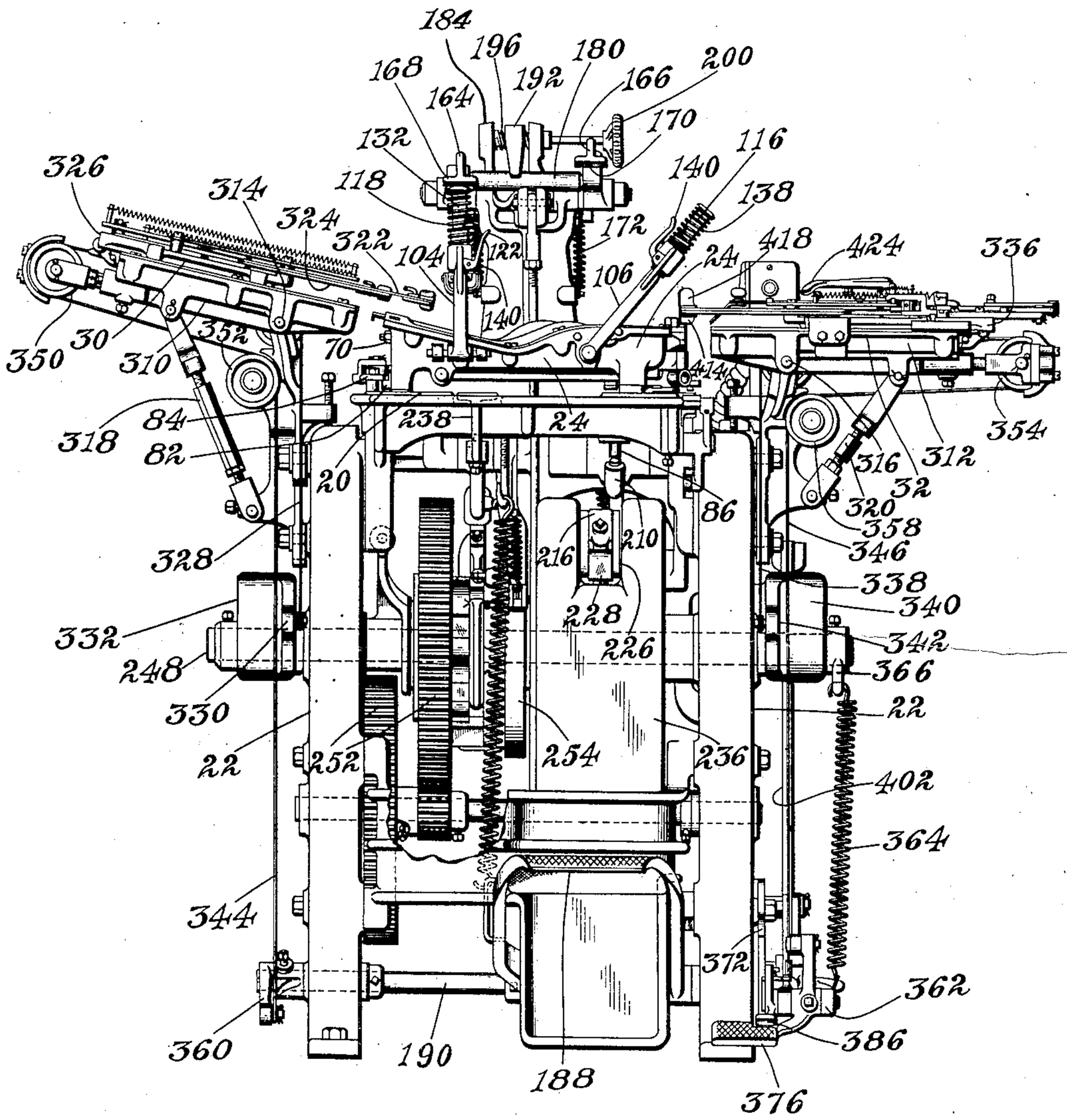
Feb. 14, 1933. M. H. BALLARD 1,897,105

MACHINE FOR PRESSING SOLES UPON SHOES AND PAD THEREFOR

Filed Aug. 27, 1929 6 Sheets-Sheet 1

Fig. 1.



INVENTOR-
Milton H. Ballard
By his Attorney,
Harlow M. Davis

Feb. 14, 1933. M. H. BALLARD 1,897,105

MACHINE FOR PRESSING SOLES UPON SHOES AND PAD THEREFOR

Filed Aug. 27, 1929 6 Sheets-Sheet 2

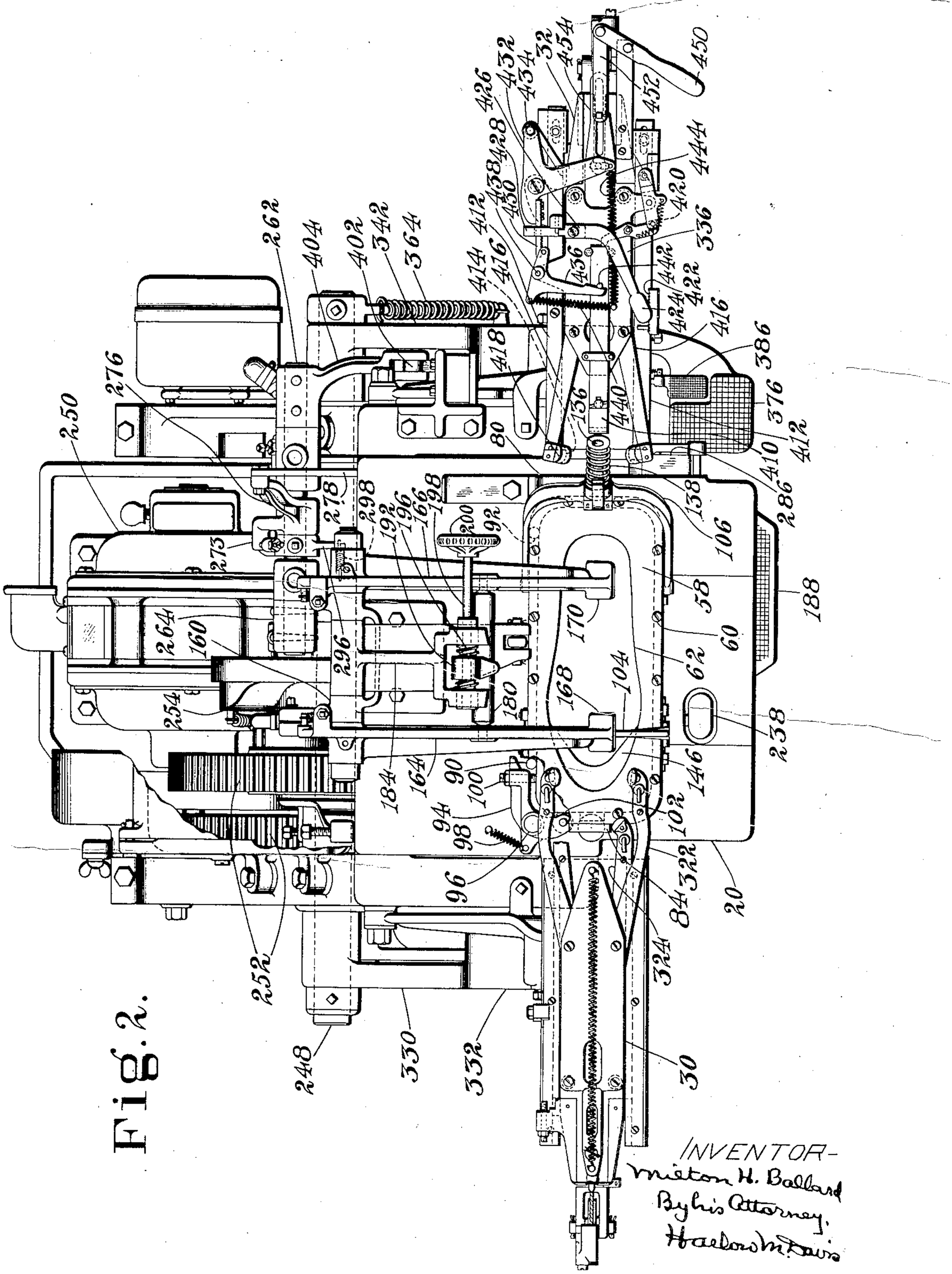


Fig. 2.

INVENTOR-
Milton H. Ballard
By his Attorney,
Hasbrouck Davis

Feb. 14, 1933. M. H. BALLARD 1,897,105

MACHINE FOR PRESSING SOLES UPON SHOES AND PAD THEREFOR

Filed Aug. 27, 1929 6 Sheets-Sheet 3

Fig. 3.

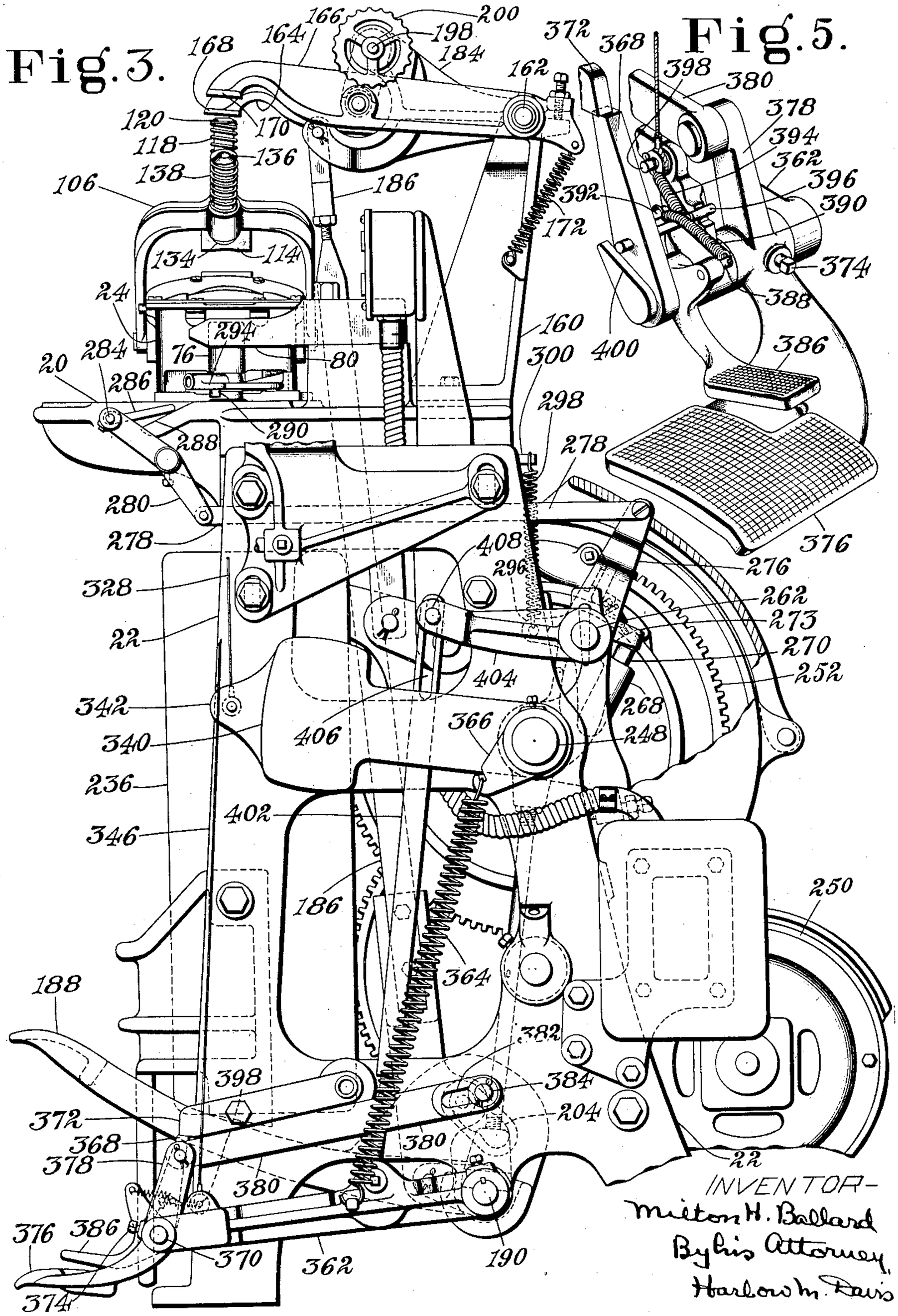


Fig. 5.

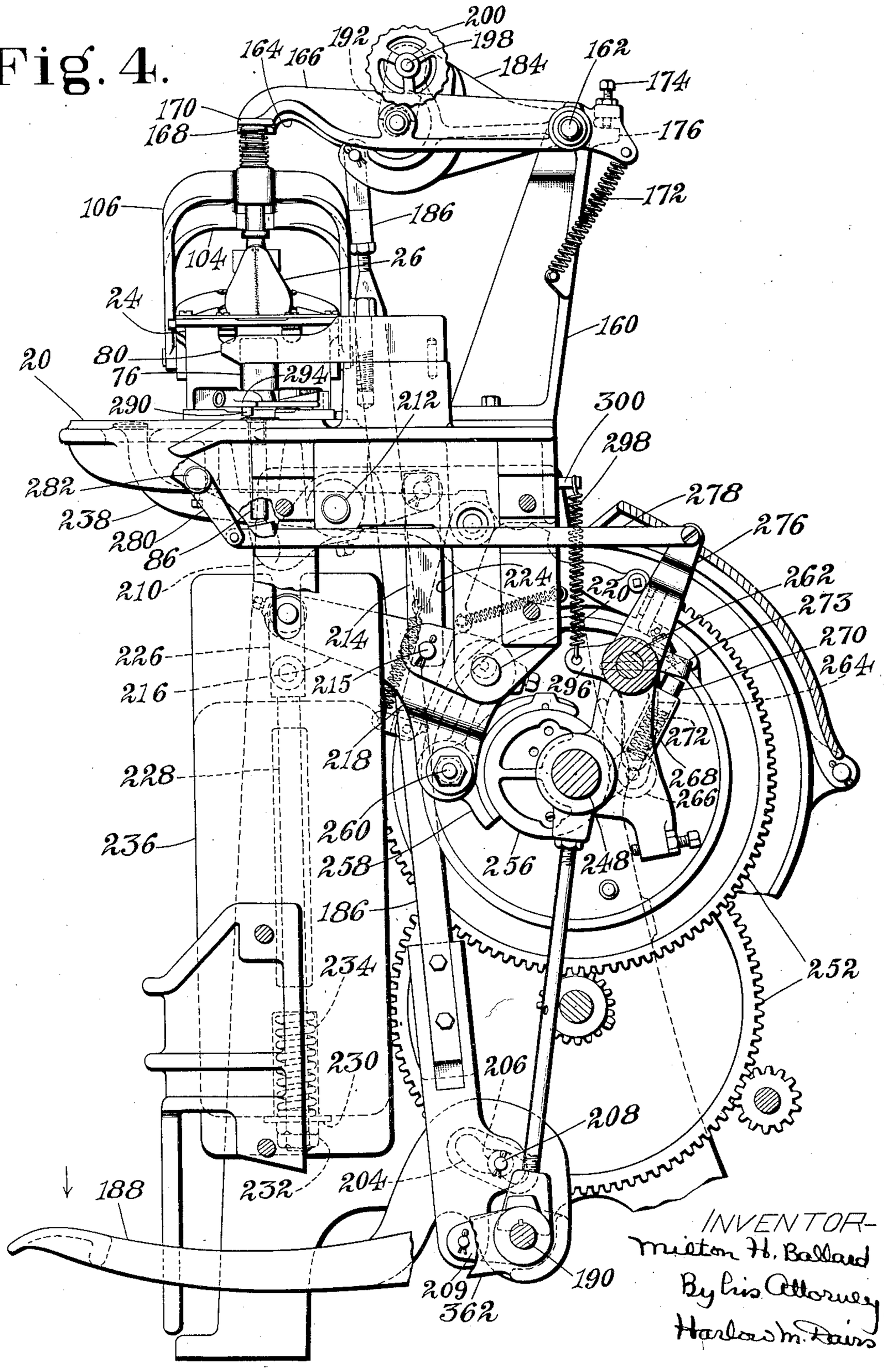
INVENTOR-
Milton H. Ballard
By his Attorney,
Harlow M. Davis

Feb. 14, 1933. M. H. BALLARD 1,897,105

MACHINE FOR PRESSING SOLES UPON SHOES AND PAD THEREFOR

Filed Aug. 27, 1929 6 Sheets-Sheet 4

Fig. 4.



INVENTOR-
Milton H. Ballard
By his Attorney
Harlan M. Sains

Feb. 14, 1933. M. H. BALLARD 1,897,105

MACHINE FOR PRESSING SOLES UPON SHOES AND PAD THEREFOR

Filed Aug. 27, 1929 6 Sheets-Sheet 5

Fig. 8.

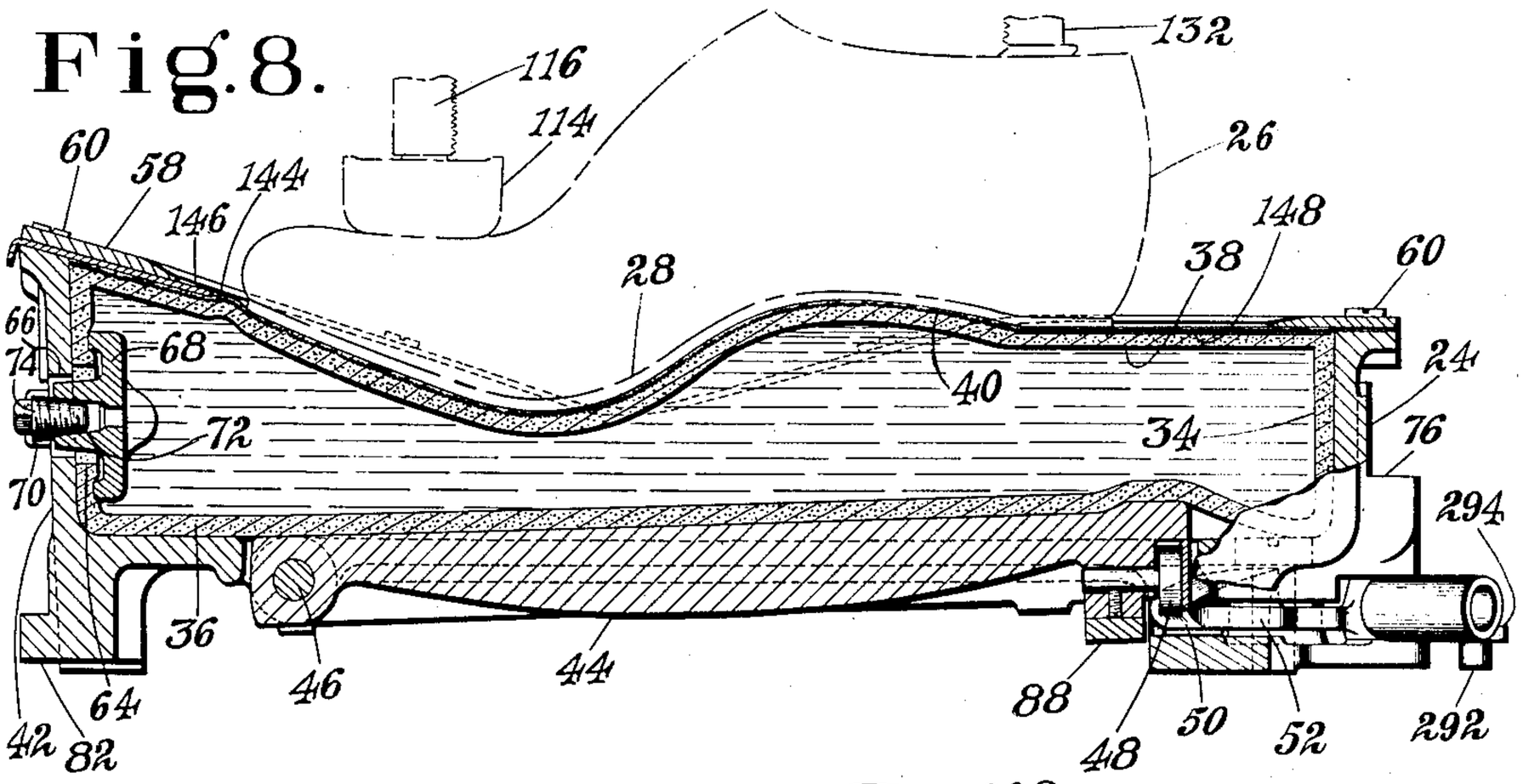


Fig. 7.

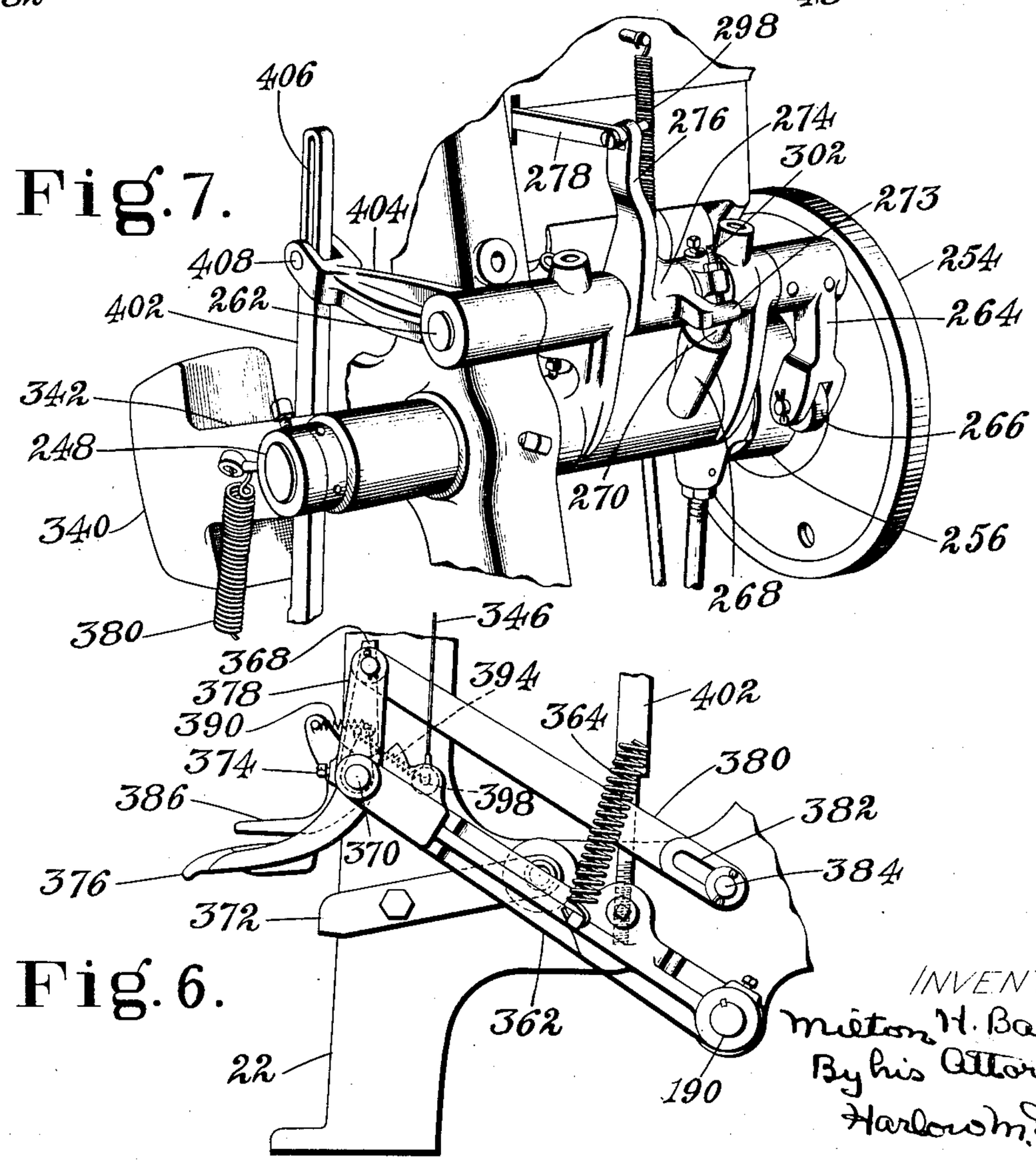


Fig. 6.

INVENTOR-
Milton H. Ballard
By his Attorney,
Harlow M. Davis

Feb. 14, 1933. M. H. BALLARD 1,897,105

MACHINE FOR PRESSING SOLES UPON SHOES AND PAD THEREFOR

Filed Aug. 27, 1929 6 Sheets-Sheet 6

Fig. 9.

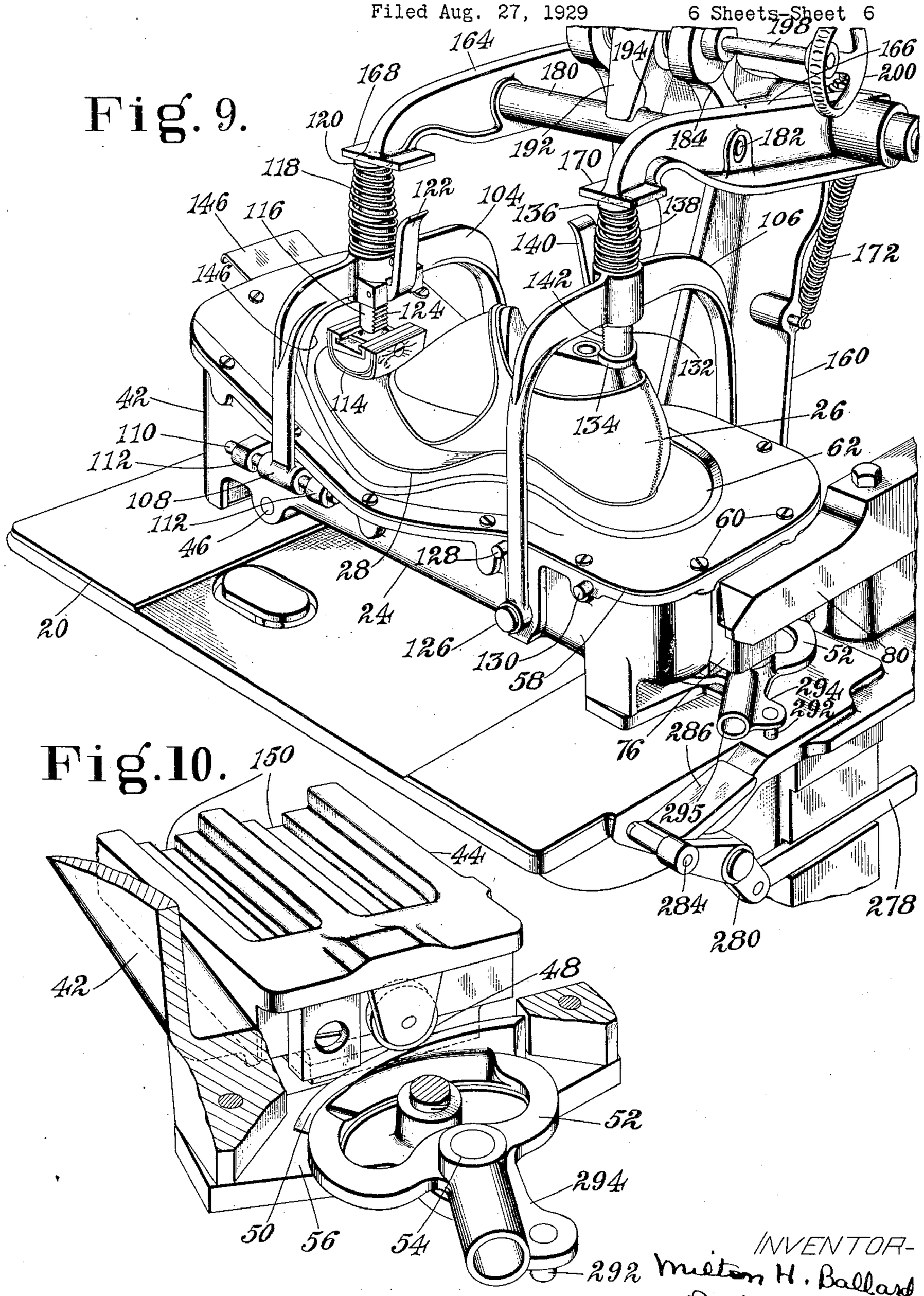


Fig. 10.

INVENTOR-
Milton H. Ballard
By his Attorney
Harlow M Fairs

Patented Feb. 14, 1933

1,897,105

UNITED STATES PATENT OFFICE

MILTON H. BALLARD, OF BEVERLY, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY

MACHINE FOR PRESSING SOLES UPON SHOES AND PAD THEREFOR

Application filed August 27, 1929. Serial No. 388,739.

This invention relates to machines for use in the manufacture of shoes and is illustrated herein as embodied in a machine for use in cement-attaching soles to shoes.

The modern revival of the long-known compo process of shoemaking, in which the outsoles of shoes are secured to the uppers by cement, has called for the development of improved machinery for pressing the soles forcibly against the uppers of the shoes and for maintaining the pressure while the cement is setting. An improved machine particularly adapted for use in this work is that disclosed in an application for Letters Patent of the United States, Serial No. 352,278, filed April 3, 1929, in the name of Sidney J. Finn. It is an object of the present invention to provide a still further improved machine for this purpose.

In the manufacture of shoes in which cement is relied upon to the exclusion of stitching, metallic fastenings or pegs to secure the soles to the shoe uppers, in accordance with present day practice pyroxylin cement is applied to the roughened or scoured surfaces of the overlasted portion of the shoe upper and to the marginal portion of the attaching surface of the sole. This cement is allowed to dry, after which it is cut with a suitable solvent, the sole is applied to the shoe, and the two pressed forcibly together and held under pressure until the cement sets sufficiently to hold the sole securely in place. With the cements now in use for this kind of work and under the usual conditions this takes a considerable time, ordinarily 30 minutes or thereabouts. From this it follows that each operator must be supplied with a large number of presser units, which may be permanent parts of a pressure-applying machine as in the cement sole attaching machines of the well-known Ferris-wheel type, or which may be separate from or separable from the pressure-applying machine, as in the machine set forth in the Finn application referred to in which each of the presser units consists of a so-called pad box comprising, as illustrated therein, a hollow vessel containing liquid and made of distortable material such as rubber, confining means for said vessel formed and arranged to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, means arranged to engage the shoe and last to receive the thrust caused by the sole-attaching pressure, and means for deforming a wall of the vessel thereby dilating the sole-engaging surface of the vessel and pressing the sole forcibly against the shoe bottom. Such a pad box is provided also with means for holding the deformed wall of the vessel in its deformed position in such a manner that the pressure will be retained after the operation of the deforming means, so that the pad box and the shoe can be removed bodily from the machine to a storage place while the cement sets.

In view of the foregoing, a feature of the present invention comprises automatically-actuated mechanism for holding a movable pressure-applying member of a fluid-containing pad member, the walls of which are of distortable material, in pressure-applying position. In accordance with another feature of the invention, the displaceable pressure-applying member, as illustrated, is pivoted to the wall of the vessel and when displaced inwardly toward the wall of the vessel thereby dilates or distends a sole-receiving wall of the vessel, causing that wall to be pressed forcibly against the sole of a shoe to hold the sole in close contact with the shoe while the cement by which the sole is to be attached to the shoe is setting. A preferred form of the mechanism for holding the displaceable pressure-applying mechanism in position comprises, as illustrated herein, a curved wedge or cam member engaging a roll or other suitable part carried by the displaceable member and automatically actuated to contact with said part by pivotal movement of the wedge or cam member, so that the latter will hold the displaceable pressure-applying member in any pressure-applying position to which it may be moved.

The means for resisting the thrust caused by the sole-applying pressure in machines of this character preferably, and as illustrated in the above-mentioned Finn application, comprises an abutment engaging the cone

of the last and a toe rest engaging the forepart of the shoe upper. These members in the machine disclosed in the Finn application are moved into engagement with the shoe and last after the shoe is properly positioned relatively to the sole and are used to apply preliminary pressure before final pressure is applied by distortion of the pad member. In accordance with another feature of the present invention the means for moving these thrust-receiving members into engagement with the shoe and the last include an adjustable connection and mechanism for adjusting said connection to vary the relative extent of the movement imparted to and the force exerted by the two members. This enables the operator to control the application of the preliminary pressure in such a manner that he can in every instance cause the preliminary pressure to press both ends of the shoe firmly into contact with the sole and to press both ends of the sole firmly against the pad, regardless of variations in the size and shape of the shoes operated on.

In the illustrated machine, as in the machine set forth in the above-mentioned application, the sole and the shoe are positioned relatively to each other by gage members or feelers which are moved into and out of operative position at the toe and heel ends of the shoe lengthwise of the sole of the shoe. Features of the present invention comprise improvements in the operating means for these feelers or gage members, including an improved construction in which each set of gage members is moved to operative position by a weight mounted on a lever normally supported in inoperative position but manually releasable to render the weight effective to move the gage member to operative position. In accordance with a further feature of the invention power-operated means are provided for raising the weights to their normal inoperative position and for returning a treadle, displaced to release the weights and thereby to render them operative, to its inoperative position.

Still another feature relates to the provision of means by which the preliminary clamping pressure is maintained substantially uniform per unit area regardless of the sizes of the different shoes operated upon. In accordance with this feature, and as illustrated herein, the mechanism for moving the last and shoe engaging members to apply the preliminary pressure includes a treadle lever and connections thereto of such a nature that the mechanical advantage of the lever system including the treadle is greater when the treadle is in the position which it occupies when applying preliminary pressure to a large shoe than when in the position it occupies when applying pressure to a small shoe.

While the invention is illustrated herein as embodied in a machine developed for use in cement-attaching soles to shoes it should be noted that in various of its aspects it is not limited to embodiment in such a machine. Obviously, in various of its aspects it is adapted for use in machines of other types and machines for performing other operations, for example sole laying or direct pressure leveling as performed in the manufacture of shoes the soles of which are permanently attached by stitching or other fastenings.

With the above and other objects and features in view the invention will now be described with respect to the accompanying drawings and pointed out in the claims.

In the drawings:

Fig. 1 is a front elevation of a machine for cement-attaching soles to shoes embodying the present invention;

Fig. 2 is a plan view and Fig. 3 is a side elevation of the machine of Fig. 1;

Fig. 4 is a view of the machine with a number of the parts which are shown in Fig. 3 removed and with other parts in cross-section particularly to show the power-operating means and related parts;

Figs. 5 and 6 are detailed views of the treadle mechanism by which the sole and shoe-positioning means are rendered operative;

Fig. 7 is a perspective view showing parts of the power-transmitting mechanism of the machine;

Fig. 8 is a longitudinal sectional view of an improved pad box which forms a feature of the invention and which is shown on a smaller scale in Fig. 1 in its relation to the machine as a whole;

Fig. 9 is a perspective view of the pad box of Fig. 8 showing also parts of the preliminary pressure-applying means of the machine; and

Fig. 10 is a detailed view of the means for holding the displaceable pressure-applying member of the pad box in pressure-applying position.

The illustrated machine is provided with a frame comprising a table 20 (Figs. 1 to 4, inclusive) supported by legs 22 and arranged to receive a pad box 24 (Figs. 1 to 4, 8 and 9) by which a shoe 26 and a sole 28 may be held clamped forcibly together while cement, by which the sole is to be attached to the shoe, sets. The machine is provided with means for positioning the toe end of the shoe relatively to the sole before the clamping pressure is applied, as indicated generally by the reference character 30 in Figs. 1 and 2, which means preferably, and as illustrated, is of the character described in said Finn application, Serial No. 352,278. Means is also provided for positioning the heel end of the shoe relatively to the sole, as indicated generally by the reference character 32 in

Figs. 1 and 2. Preferably, and as illustrated, the heel end positioning means is of the general type disclosed in said Finn application, Serial No. 352,278, and, more specifically, of the character disclosed in another application for Letters Patent of the United States Serial No. 414,516 filed December 16, 1929 in the name of said Finn.

The pad box

My improved pad box 24, details of the construction of which are best shown in Figs. 8, 9 and 10, comprises, as illustrated herein, a hollow pad member 34 of heavy rubber about one quarter of an inch thick, approximately rectangular in plan view and having a normally flat bottom wall 36 and top wall 38 reinforced with a sheet of textile fabric 40, such as duck, to prevent stretching of the wall 38 without substantially impairing its flexibility. The pad member 34 is contained in a box-like confining member 42, preferably an aluminum casting, having a door-like bottom member 44 pivoted at 46 and provided with a roll 48 at its end remote from the pivot 46 and arranged to engage with a wedge or cam surface 50 of a cam member 52 pivoted at 54 to the aluminum casting 42 and rotatable about the pivot 54 by mechanism hereinafter described. When the cam member 52 is rotated to the full extent of its movement in the clockwise direction as viewed in Fig. 10 the roll 48 engages a portion of a surface 56 of the casting 42 on which surface the cam member 52 rests. The top surface of the pad-confining means comprises a steel plate 58 secured to the casting 42 by screws 60 and provided with an opening 62 conforming generally to the outline of the sole of a shoe and sufficiently large to permit the sole of the largest shoe which is to be operated upon to be placed on the upper wall 38 of the pad member 34 without touching the plate 58. As best shown in Figs. 8 and 9, the top of the wall of the box-like member 42, the top wall of the rubber pad member 34 and the steel plate 58 conform in side elevation to each other and approximately to the longitudinal curvature of a last bottom thereby minimizing the deformation of the top wall 38 of the pad 34 necessary to bring the pad into contact with the entire area of the sole which is to be attached to the shoe.

The pad member 34 is provided with an opening 64, illustrated in Fig. 8 at its left-hand end, through which it is filled with a fluid, preferably a liquid, for example water. The box-like member 42 is provided with an opening 66 in alinement with the opening 64, the pad member 34 being clamped to the wall of the box 42 by a closure 68 threaded to receive a pair of cap screws 70 which pass through holes formed on the end wall of the box 42. The closure 68 is also provided with a threaded opening 72 through which water can be introduced into the pad 34, after which the opening 72 is closed by a plug 74 having a taper thread. In filling the pad 34 with water all the air in the pad is displaced by water, but the pad is maintained in a somewhat collapsed condition at the time the plug 74 is inserted so that a portion of the wall of the pad can be displaced inwardly somewhat before substantial resistance is encountered.

The pad box positioning means

The right-hand end of casting 42 of the pad box 24 is provided with a lug 76 arranged to be received beneath a rigid arm 80 (Figs. 3 and 9) secured to the table 20 of the machine and the left-hand end of the casting 42 of the pad box is provided with a lug 82, arranged to be received beneath a member 84 (Fig. 1) also carried by the table 20 to prevent the pad box from being moved upwardly when pressure is applied thereto by the engagement of a plunger 86 (Figs. 1 and 4) against a surface 88 of the pivoted bottom member 44, as will be more fully described hereinafter. The table 20 of the machine is also provided with a pair of stops 90, 92 (Fig. 2) to limit the rearward movement of the pad box 24 when the pad box is placed on the table 20. To position the pad box 24 lengthwise on the table 20 with its right-hand end in engagement with the arm 80, an angle lever 94 is pivoted at the left-hand rear corner of the position occupied by the pad box. The lever 94 is normally rocked somewhat in a clockwise direction from the position shown in Fig. 2 by a spring 98 anchored at one end to the lever 94 and at the other end to the table 20. The right-hand end of the lever 94 is provided with an adjustable stop member, illustrated as a screw 100, arranged to be engaged by the rear of the pad box as the latter is positioned on the table 20, rearward movement of the pad box 24 rocking the lever 94 in a counter-clockwise direction, as viewed in Fig. 2 so that a roll 102, carried by the other end of the lever 94, is brought into engagement with the left-hand end of the pad box forcing it into engagement with the arm 80. Thus it will be seen that the pad box 24 may be quickly and easily brought into definite predetermined position on the table 20 of the machine, and may be removed therefrom with equal facility.

The pad box yokes

A pair of yokes 104 and 106 (best shown in Fig. 9) project upwardly from the casting 42 of the pad box 24 and transversely of the pad 34, serving to oppose and sustain the pressure by which the sole 28 is forced into engagement with the shoe 26 by pad member 34. The lower ends of the arms of the yoke 104 are slidably mounted, as indicated at 108, on a rod 110 carried by a pair of lugs 112 projecting from the casting 42 to permit the

yoke 104 to be moved somewhat lengthwise of the pad box 24 so that a toe rest 114 carried by a plunger 116 having a bearing in the cross bar of the yoke 104 can be properly placed relatively to the shoe 26 notwithstanding variations in the size of the different shoes operated upon. A spring 118 bears at one end against a surface of the yoke 104 and at the other end against an enlarged head 120 of the plunger 116, tending to force the plunger upwardly. A spring-pressed pawl 122, pivoted to the yoke 104, cooperates with ratchet teeth 124 formed in the plunger 116 to prevent upward movement of the plunger 116 except when the pawl 122 is withdrawn.

The yoke 106 is pivoted at 126 to the casting 42, thus being mounted for swinging movement to the right or in a clockwise direction, as viewed in Fig. 9. A pair of stops 128, 130 serve to limit this swinging movement so that the yoke 106 cannot move to the left substantially beyond the vertical and cannot swing to the right beyond 45° or thereabouts. A plunger 132 is carried by the yoke 106, being provided at its lower end with an enlargement 134 to engage the cone of a last and at its upper end with a head 136 between which and the yoke 106 a compression spring 138 is confined. A pawl 140 pivoted to the yoke 106 cooperates with a ratchet 142 formed on the plunger 132 to prevent upward movement of the plunger 132 under the influence of the spring 138 except when the pawl 140 is withdrawn from the ratchet 142.

The operation of the pad box

In the operation of the machine a pad box 24 is placed on the table 20 and positioned as already described. The operator then places a sole on the top wall 38 of the pad 34 and positions a shoe relatively thereto with the aid of the positioning devices 30, 32. The yokes 104, 106 are positioned so that the toe rest 114 carried by the plunger 116 engages the toe portion of the shoe upper and the head 134 of the plunger 132 engages the cone of the last. Then the plungers 116, 132 are depressed by mechanism, which will hereinafter be described, and the positioning means 30, 32 withdrawn, leaving the shoe and the pad box in the condition shown in Fig. 9. Thus the shoe and sole are placed under a pressure which may be advantageously of the order of about twenty pounds to the square inch. The plunger 86 is then elevated by mechanism hereinafter described, thus rocking the pivoted member 44 about its pivot 46 and distorting the bottom wall 36 of the pad member 34, as shown in Fig. 8. This dilates the upper surface 38 of the pad member causing it to bulge slightly around the sole, as indicated at 144 in Fig. 8, pressing the sole forcibly against the shoe bottom by a pressure which may advantageously be about sixty pounds to the square inch. To prevent excessive bulging around the toe of a small shoe the pad box 24 is provided with an adjustable masking plate 146 (Figs. 8 and 9), and to prevent any such bulging at the heel end of the sole a metal plate 148 is vulcanized into the rubber of the top wall 38 of the pad 34, as illustrated toward the right-hand end of the wall 38 in Fig. 8.

The pivoted bottom member 44 is maintained in any pressure applying position to which it may be moved by the wedge 50 of the cam member 52 which is rotated in a counter-clockwise direction, as illustrated in Fig. 10, for that purpose.

If the form of the interior of the pad box casting 42 and the amount of liquid contained in the pad member 34 are such as to make it desirable, the upper surface of the pivoted member 44 may be provided with grooves 150 (Fig. 10) into which the bottom of the pad member 34 may settle somewhat as the final pressure is applied, thus insuring, even in the case of a large shoe, that the cam member 52 will be permitted to rotate sufficiently to bring the roll 48 away from the extreme end of the wedge 50, which portion of the wedge, in order to strengthen it, is preferably somewhat steeper than the remainder.

The preliminary pressure-applying means

A bracket 160 (Figs. 3, 4 and 9) projects upwardly from the rear portion of the table 20 and carries the fulcrums 162 of a pair of forwardly projecting levers 164, 166 having at their ends flat plates 168, 170 arranged for engagement with the tops of the plungers 116, 132 when the levers 164, 166 are rocked downwardly. Each of the levers 164, 166 is provided with a tension spring 172 connected at one end to the extreme rear end of the lever and at the other end to the bracket 160 so that the forward ends of the levers 164, 166 are normally rocked upwardly, as shown in Fig. 3, away from the position normally occupied by plungers 116, 132 when the pawls 122, 140 are released. Adjustable stops illustrated as screws 174 (Fig. 4) carried by each of the levers 164, 166 engage with lugs 176 formed on the upper end of the bracket 160 to limit the movement of the levers 164, 166 under the action of their springs 172.

The levers 164, 166 are connected toward their forward ends by a rod 180 (Figs. 1, 2 and 9) the ends of which are loosely engaged, as shown at 182 (Fig. 9), in seats formed in those levers. The rod 180 is adjustably connected, as hereinafter described, to a lever 184, also fulcrumed to the bracket 160 at 162, and connected by a link 186 to a treadle 188 (Figs. 3 and 4) fulcrumed at 190 to the frame of the machine. Thus depression of

the treadle 188 is effective to rock the lever 184 and through it to rock the levers 164, 166 in a counter-clockwise direction, as viewed in Figs. 3 and 4, depressing the plungers 116, 132 and thereby applying the preliminary pressure to the shoe and sole. So that this preliminary pressure may be effective to press the sole into engagement with the shoe bottom over the whole area thereof regardless of the size or shape of the shoe, the connection between the lever 184 and the rod 180 is adjustable lengthwise of the rod 180, thereby varying the proportion of the pressure applied through the respective levers 164, 166 without, however, varying the positions of the plungers 116 and 132 lengthwise of the shoe. Thus if the heel end of the shoe is reluctant to engage the sole then the connection between the link 186 and the rod 180 will be moved to the right, as viewed in Fig. 9, applying a greater proportion of the pressure to the heel end of the shoe. As illustrated, these connections include a dog 192 adjustably carried by the lever 184 (Figs. 1, 2 and 9) the lower end of which is provided with a seat 194 engaging the rod 180, the dog being threaded to receive a relatively coarse screw 196 formed on or secured to a shaft 198 journalled in an upstanding portion of the lever 184 and provided with a hand wheel 200 by which it may be turned to adjust the dog 192 to the right or to the left as the case may be.

In order that the preliminary pressure per unit area may be maintained approximately uniform regardless of variations in the sizes of soles of different shoes, and to obviate the necessity of excessive movement of the treadle 188, differential connections are provided between the link 186 and the treadle 188. This, as best shown in Fig. 4, comprises a cam slot 204 formed in the treadle 188 and engaged by a roll 206 carried on a pin 208 projecting from the link 186. The form of the slot 204 is such that while the treadle 188 is being moved from its inoperative position to the position which it occupies when the plates 168, 170 of the levers 164, 166 contact with the upper ends of the plungers 116, 132, the mechanical advantage of the treadle, considered as a lever, is relatively small so that the effect on the levers 164, 166 of a small movement of the treadle 188 is relatively great, thereby rapidly bringing the parts of the machine into pressure-applying position. By the time the treadle 188 reaches the position which it occupies while a relatively large shoe with a relatively high last is being operated upon its mechanical advantage is relatively great so that the operator can apply a relatively large force to the shoe. As the treadle 188 is further depressed and moves to the position it occupies when a relatively small shoe mounted on a relatively low last is being operated on, the mechanical advantage of the lever 188 diminishes so that the total pressure applied to the sole of the small shoe is less than that applied to the sole of a large shoe and the pressure per unit area is substantially the same in both cases. Forward and rearward movement of the link 186 in response to pressure of the cam slot 204 on the roll 206 is controlled by a link 209 having its ends pivoted respectively to the lower end of the link 186 and to the shaft 190.

Means for applying the final pressure

It will be remembered that the final pressure by which the sole 28 is clamped to the shoe bottom is provided by upward movement of the plunger 86 which slides in a hole in the table 20. For this purpose the lower end of the plunger 86 bears against a convex surface formed on the forward end of a lever 210 (Figs. 1 and 4) fulcrumed at 212 beneath the table 20 and pivoted at its rear end to a downwardly extending link 214 which is in turn pivoted at its lower end at 215 to the intermediate portion of the forwardly extending arm 216 of a bell crank lever 218 fulcrumed at 220 on a bracket 224 extending downwardly from the table 20. Pivoted to the forward end of the lever arm 216 is a pair of short parallel links 226 (Fig. 4) the lower ends of which are pivoted to the upper end of a rod 228 on the lower end of which is a washer 230 positioned above a nut and lock nut 232 threaded on the lower end of the rod 228. A stiff compression spring 234 is seated on the washer 230 and surrounds the rod 228, its upper end serving to support a heavy weight 236 which is bored or cored to receive the spring 234, the rod 228 and the links 226. The upper end of the weight 236 is provided with a forwardly and rearwardly extending slot to receive the lever arm 216. The weight 236 tends, through the lever 218 and the link 214 to rock the lever 210 in a clockwise direction as viewed in Fig. 4, thus tending to elevate the plunger 86 to its pressure-applying position. This action, however, is normally prevented by mechanism, which will now be described, and is permitted to take place only when a controlling lever 238 is depressed.

The machine is provided with a main power shaft 248 (Figs. 2, 3, 4 and 7) journalled in suitable bearings somewhat lower than and at the rear of the fulcrum 220 of the lever 218 and operated from a motor 250 through the gearing 252 and a suitable one-revolution clutch 254 controlled by the lever 238. Fast upon the shaft 248 is an eccentric 256 (Figs. 4 and 7) which engages and cooperates with a shoe 258 pivoted at 260 to a depending arm of the lever 218. These parts occupy the position shown in Fig. 4 when the machine is at rest and serve to maintain the weight 236 in its elevated position, permitting the plunger 86 to occupy its lower inoperative position in which its upper end

is somewhat below the position occupied by the surface 88 of the pad box 24, so that it will not interfere with the positioning of the pad box on the table 20 or the removal of the pad box therefrom. When the controlling lever 238 is depressed, however, and the clutch 254 becomes operative, the shaft 248 is rotated through a single revolution in a counter-clockwise direction, as viewed in Fig. 4, so that the eccentric 256 permits the lever 218 to rock, also in a counter-clockwise direction, under the influence of the weight 236, thus rocking the lever 210 in a clockwise direction and forcing the plunger 86 upwardly against the surface 88 of the pad box 24 so that the pivoted bottom member 44 of the pad box is forced upwardly, distorting the pad member 34 and transmitting the final pressure of about sixty pounds to the square inch to the shoe bottom. The application of pressure by the weight 236 is gradual during the earlier part of the revolution of the shaft 248 by reason of the characteristic action of the eccentric 256. As the shaft 248 completes its revolution the eccentric 256 returns to the position shown in Fig. 4, lifting the weight 236 and thereby releasing the plunger 86 and allowing it to return to its inoperative position. Before the plunger 86 starts to drop, however, the cam member 52 is actuated automatically to lock the pivoted member 44 of the pad box 24 in its elevated position, thereby maintaining the pressure on the shoe and sole after the plunger 86 drops. The mechanism by which this is done will now be described.

The mechanism for operating the pressure maintaining device of the pad box

Journaled in suitable bearings carried by the frame of the machine somewhat above the shaft 248 is a rock shaft 262 (Figs. 3, 4 and 7) to which is secured a depending rock arm 264 carrying a roll 266 engaging the eccentric 256 at the rear thereof. Also secured to the shaft 262 is a downwardly extending arm 268 bored to receive a plunger 270 seated upon a spring 272. The upper end of the plunger 270 engages an arm 273 of a bell crank lever 274 loose on the rock shaft 262 and having an upwardly extending arm 276 connected by a link 278 to a lever 280 fulcrumed at 282 to the forward portion of the table 20 and having an upwardly extending arm pivoted at 284 (Fig. 3) to a finger 286 resting upon an inclined surface of the table 20 and arranged, when the lever 280 is rocked in a clockwise direction as viewed in Fig. 3, to engage a lug 290 depending from the lower surface of an arm 294 forming a portion of the cam member 50. Thus when the shaft 248 is rotated the lever 280 will be yieldingly rocked, first in a clockwise direction and then back to its original position, the clockwise movement causing the finger 286 to rotate the cam member 52 to such an extent that the roll 48 carried by the bottom member 44 of the pad box in the machine is engaged by the wedge or cam surface 50. When the finger 286 returns to its inoperative position the cam member 52 is left in the extreme position to which it has been moved and retains the pivoted member 44 in its pressure-applying position. The lever 274 is also provided with a forwardly extending arm 296 connected by a spring 298 to a pin 300 (Fig. 4) carried at the rear of the table 20, thereby rocking the shaft 262 in a clockwise direction as the eccentric 256 returns to its inoperative position. To insure the return of the finger 286 and the lever 280 to their normally inoperative positions, the shaft 262 is provided with an adjustable member, illustrated as a screw 302 (Fig. 7), arranged to engage the arm 273 in opposition to the plunger 270.

The shoe and sole-positioning means and the operating mechanism therefor

The shoe and sole-positioning means 30 and 32 are mounted on a pair of brackets 310, 312 (Fig. 1) carried at the left and right-hand sides of the machine respectively and adjustable about pivots 314, 316 by a pair of struts including the turn buckles 318, 320. The positioning mechanism 30 for the toe end of the shoe comprises two sets of feelers, as illustrated herein gage members (best shown in Fig. 2) carried by two pairs of arms 322, 423 mounted on a carriage 326 slidably mounted in ways formed in or carried by the bracket 310, the construction of this mechanism being as more fully disclosed in said Finn application Serial No. 352,278. The carriage 326 is connected by a cord or cable 328 to the forward end of a lever 330 (Fig. 1) fulcrumed for swinging movement on the shaft 248 which projects outwardly from the frame of the machine for that purpose. Secured to the lever 330, and formed integrally therewith as herein illustrated, is a weight 332 which thus tends to move the carriage 326 to the right as viewed in Fig. 1, toward the position occupied by the toe of a shoe upon the pad box 24. Similarly, a carriage 336, upon which the heel end positioning means 32 are mounted, is connected by a cord or cable 338 with a weight 340 carried by a lever 342 fulcrumed on the shaft 248 at the right-hand side of the machine, thus tending to move the heel end positioning means 32 to the left toward the position occupied by the heel end of the shoe on the pad box 24.

In order to operate the positioning means 30, 32 against the action of the weights 332, 340, the carriages 326, 336 are connected by cords or cables 344, 346 respectively, running over suitably arranged pulleys 350, 352, 354 and 358 (Fig. 1) to rock arms 360, 362 (Figs. 1 and 3) fast to the ends of the shaft 190 which serves also as a fulcrum for the

treadle 188. The rock arm 362 is provided with a spring 364 anchored at the other end to a stationary member 366 secured to the frame of the machine and thus tends to lift the rock arm 362.

The rock arm 362, when the machine is at rest, occupies the position shown in Fig. 3, being latched against upward movement by a latch member 368 (Figs. 3, 5 and 6) pivoted thereto by means of a club shaft 370 and engaging at its upper end a stationary stop 372 secured to the frame of the machine. Thus it will be seen that when the latch 368 is released and the rock arm permitted to rise, the weights 332, 340 will move the shoe and sole and shoe-positioning devices 30, 32 into operative position, while when the rock arm 362 is depressed from the position shown in Fig. 6 to the position shown in Fig. 3, the weights 332, 340 will be elevated and the cords 344, 346 will return the shoe and sole-positioning devices 30, 32 to the positions in which they are shown in Fig. 1.

Details of the treadle mechanism for releasing the shoe and sole positioning devices

The fulcrum 370 of the latch member 368 is secured by a set screw 374 to a foot member or pedal 376 (Figs. 3 and 5) which has an upwardly extending arm 378 pivotally connected to the forward end of a link 380 the rear end of which is formed with a slot 382 receiving pin 384 carried by the frame of the machine. Thus the rock arm 362 and the link 380 form substantially a parallel motion device but the slot 382 in the link 380 permits a certain amount of clockwise movement of the pedal member 376 from the position shown in Fig. 3. Later the treadle 376 is returned to the position shown in Fig. 3 by power-operated mechanism, and if it should happen that the operator's foot is beneath the pedal 376 the latter will yield upwardly, owing to the presence of the slot 382, thus avoiding injury to the operator's foot.

Loosely fulcrumed on the shaft 370 is a secondary foot member or pedal 386 overlying the pedal 376 and provided with a pin 388 (Fig. 5) connected by a spring 390 with a pin 392 projecting from the latch member 368. Thus it will be seen that when the operator places his foot upon the pedals 386 and 376, those parts occupying the position shown in Fig. 3, and presses downwardly, he will first tension the spring 390 and then will move the two pedals downwardly so that the latch 368 moves downwardly from the stop 372 and is swung forward (to the right as viewed in Fig. 5) by the spring 390, As the operator lifts his foot the latch 368 moves upwardly beyond the end of the stop 372 and the weights 332, 340 become effective to move the shoe and sole-positioning devices 30, 32 to the right and left respectively to their operative positions. When the operator thereafter removes his foot from the pedals 386,376 the latch member 368 is moved rearwardly by a spring 394 connected at one end to a pin 396 carried by the latch member 368 and at the other end to a pin 398 projecting from the rock arm 362 and serving also as an anchorage for the cord 346. The left-hand end of the pin 396, projecting from the latch member 368, serves by engagement with a stop member 400 (Fig. 5) to prevent excessive rearward movement of the latch member 368.

In order to lift the weights 332, 340 after the shoe and sole have been positioned, thereby returning the shoe and sole positioning devices 30, 32 to their inoperative positions and at the same time returning the treadle mecchanism 362, 376 and 386 from the elevated position of Fig. 6 to the lowered inoperative position of Fig. 3, the rock arm 362 is connected by a link 402 with a rock arm 404 secured to the end of the rock shaft 262. To insure that this may not take place prematurely the upper end of the link 402 is provided with a slot 406 engaging the pin 408 carried by the rock arm 404 so that the link 402 is not moved downwardly until the shaft 262 has partaken of a substantial portion of its rocking movement. When, however, the pin 408 in its downward movement reaches the lower end of the slot 406 the link 402 is forced downwardly, returning the treadle mechanism to the position shown in Fig. 3 so that the latch member 368 can be snapped under the stop 372 by the spring 394.

The heel end positioning means and its operation

The heel end positioning means 32, best shown in Fig. 2, is not claimed herein since it is the invention of said Finn and forms the subject-matter of his said application Serial No. 414,516 filed December 16, 1929. It may be convenient to note, however, that its carriage 336 carries an end gage 410 (Fig. 2) as well as a pair of lever arms 412 carrying sole engaging members 414 and a pair of lever arms 416 carrying shoe positioning gage members 418, the arrangement being such, as more fully pointed out in said Finn application Serial No. 414,516, that when the end gage 410 is brought to rest, as by engaging the end of a sole positioned upon the pad member 34, the carriage 336 will be brought to rest and will be latched against further movement by the engagement of a latch member 420 with a ratchet 422. This prevents further forward movement of the carriage 336 and of the gage members carried thereby and permits movement of the sole engaging members 414 toward each other and of the shoe engaging members 418 toward each other until the former engage the opposite edges of the sole and are positioned thereby. After the operator has placed the shoe upon the sole, un-

der the guidance of the shoe gage members at the forward end, he depresses a hand lever 424 fulcrumed at 426 to the carriage 336, thus releasing a latch 428 from engagement with a cooperating member 430 carried by a lever 432 fulcrumed at 434 to the carriage 336. This simultaneously permits a lever 436 fulcrumed at 438 to be swung in a counter-clockwise direction, as viewed in Fig. 2, thereby withdrawing the end gage 410 by reason of the engagement of a pin 442 carried thereby with the lever 436, and permits a spring 444 to rock the lever 432 in a clockwise direction, as viewed in Fig. 2, thereby moving the levers 416 of the shoe positioning gage members or feelers 418 carried thereby toward each other, through connections fully disclosed in said Finn application Serial No. 414,516, thus positioning the shoe upon the sole.

The operation of the machine after a shoe and sole have been positioned

After a sole and shoe, the contacting faces of which have been suitably coated with cement, and the cement suitably cut with solvent, have been positioned in this manner, the operator brings the yokes 104, 106 into the desired position so that the toe rest 114 is above the forepart of the shoe and the plunger 132 is above the cone of the last and steps upon the treadle 188 thus applying the preliminary pressure. As he does this, and after sufficient pressure has been applied to prevent the shoe from slipping relatively to the sole, he moves a hand lever 450, which at that time extends further to the right than the position illustrated in Fig. 2, to the position illustrated in Fig. 2, thus withdrawing the shoe-positioning gage members 418, the levers 416 of which are connected to the hand lever 450 through a link 452 and a gage-operating slide 454. Thereafter the operator depresses the controlling lever 238 causing the power-operating mechanism to apply the final pressure and at the same time causing the return of the treadle mechanism 362, 376, 386 to its lowered position and raising the weights 332, 340 which withdraw the carriages 326, 336 and the sole and shoe-positioning devices 30, 32 carried thereby to the positions shown in Fig. 1. The operator then slides the pad box 24 forwardly from the table 20 of the machine, placing it, for example, on a rack, and replacing it with another pad box.

After the shoe has remained under pressure in the pad box until the sole-attaching cement has set the pressure will be released by striking a sharp blow upon the arm 294 of the cam member 52, or the cam member 52 may be swung by pressure upon a lever placed in a hole 295 formed in the arm 294 for that purpose. Then the pawls 122, 140 are pressed to release the plungers 116, 132, so that the shoe may be removed from the pad box.

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 use in the manufacture of shoes, the combination of a hollow vessel containing fluid and having a wall arranged for the reception of a sole and shoe, and power-operated means for distorting another portion of the wall of the vessel thereby causing the sole and shoe-receiving portion to be distorted by pressure transmitted by the fluid contained in the vessel and thus exerting pressure on the sole and shoe.

2. In a machine for use in the manufacture of shoes, the combination of a hollow vessel containing fluid and having a wall arranged to receive a sole and shoe, power-operated means for distorting another portion of the wall of the vessel to cause the sole and shoe-receiving portion to be distorted, thereby exerting pressure on the sole and shoe, and automatically actuated means for maintaining the vessel in distorted position.

3. A machine for use in the manufacture of shoes having, in combination, a hollow vessel containing fluid, confining means for the vessel including a pivoted member constructed and arranged to be displaced toward the vessel, thereby distorting a portion of the wall of the vessel and causing another portion of the wall of the vessel to exert pressure on the sole of a shoe positioned thereon, and means for maintaining the pivoted member in pressure-applying position.

4. A machine for use in the manufacture of shoes having, in combination, a hollow vessel containing fluid, confining means for the vessel including a pivoted member constructed and arranged to be displaced toward the vessel, thereby distorting a portion of the wall of the vessel and causing another portion of the wall of the vessel to exert pressure on the sole of a shoe positioned thereon, and power-operated means for displacing said pivoted member toward the wall of the vessel, thereby exerting pressure on the sole and shoe.

5. A machine for use in the manufacture of shoes having, in combination, a hollow vessel containing fluid, confining means for the vessel including a pivoted member constructed and arranged to be displaced toward the vessel, thereby distorting a portion of the wall of the vessel and causing another portion of the wall of the vessel to exert pressure on the sole of a shoe positioned thereon, power-operated means for displacing said pivoted member toward the wall of the vessel, thereby exerting pressure on the sole and shoe, and automatically actuated means for maintaining the pivoted member in pressure-applying position.

6. A device for use in applying pressure to soles and shoes comprising a hollow vessel

containing fluid and having a wall of deformable material exposed for the reception of a sole and a shoe to which the sole is to be attached, and a pivoted member engaging a portion of the wall of the vessel and arranged when displaced about its pivot toward the wall to displace a portion thereof, thereby causing the exposed sole-receiving wall of the vessel to be pressed forcibly against the sole of the shoe.

7. A device for use in attaching soles to shoes comprising a hollow fluid-containing vessel having a pair of opposite walls of deformable material, one of said walls being exposed for the reception of a sole and a shoe to which the sole is to be attached, and a pivoted member engaging the other wall and arranged when displaced about its pivot toward that wall to displace a portion thereof, thereby causing the exposed wall of the vessel to be pressed forcibly against the shoe bottom.

8. A device for use in applying pressure to soles and shoes comprising a hollow vessel containing liquid and having two walls of deformable material, one of said walls being exposed for the reception of a sole and a shoe, and a pivoted member engaging the other wall and arranged when displaced about its pivot toward that wall to displace a portion thereof, thereby causing the exposed wall of the vessel to be pressed forcibly against the sole of the shoe.

9. A device for use in cement-attaching soles to shoes comprising a hollow vessel containing liquid and having a pair of opposite walls of deformable material, one of said walls being exposed for the reception of a sole and a shoe to which the sole is to be attached, a pivoted member engaging the other wall and arranged when displaced about its pivot toward that wall to displace a portion thereof, thereby causing the exposed wall of the vessel to be pressed forcibly against the shoe bottom, and means for holding the pivoted member in displaced position.

10. A device for use in attaching soles to shoes comprising a hollow vessel filled with fluid, means confining the vessel constructed and arranged to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, said confining means including a pivoted member engaging the hollow vessel and arranged when displaced inwardly about its pivot to displace a portion of the vessel, thereby causing the exposed face of the vessel to be pressed forcibly against the shoe bottom.

11. A pad box comprising a hollow distortable vessel filled with fluid, a box confining the vessel constructed and arranged to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, one of the walls of said box comprising a pivoted member arranged when displaced inwardly about its pivot to displace a portion of the vessel, thereby causing the exposed face of the vessel to be pressed forcibly against the shoe bottom, and means for holding the pivoted member in its displaced position.

12. A device for use in attaching soles to shoes comprising a hollow distortable vessel filled with fluid, a box confining the vessel constructed and arranged to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, said box having a displaceable bottom member pivoted at one end and arranged when displaced inwardly about its pivot to displace a portion of the vessel, thereby causing the exposed face of the vessel to be pressed against the shoe bottom, and means for holding the pivoted member in its displaced position.

13. A device for use in attaching soles to shoes comprising a hollow distortable vessel filled with fluid, means confining the vessel constructed and arranged to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be cement-attached, means including a pivoted member engaging the vessel and arranged when displaced to distort the vessel, thereby causing its exposed face to be pressed forcibly against the shoe bottom, means for moving the pivoted member, thereby pressing the exposed face of the vessel forcibly against the shoe, and a wedge secured to the box and bearing against said pivoted member, said wedge being constructed and arranged to hold said pivoted member in the position to which it is moved, thereby causing the exposed wall of the vessel to maintain its pressure against the shoe bottom.

14. A device for use in cement-attaching soles to shoes comprising a hollow distortable vessel filled with fluid, a box confining the vessel constructed and arranged to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, a displaceable member at the bottom of the box arranged when displaced to distort the vessel, thereby causing its exposed face to be pressed against the shoe bottom, and an arcuate wedge pivoted to the box and engaging said displaceable member and arranged to hold the displaceable member in any pressure-applying position to which it may be moved.

15. A device for use in cement-attaching soles to shoes comprising a hollow distortable vessel filled with fluid, a box confining the vessel constructed and arranged to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be cement-attached, a displaceable member one end of which is pivoted at the bottom of the box arranged when displaced to distort the vessel, thereby causing its exposed face to be pressed against the shoe bottom, a roll carried by said displaceable member, and an arcuate wedge

pivoted to the box and arranged during its pivotal movement to bear against the roll carried by the displaceable member, thereby holding the displaceable member in any pressure-applying position to which it may be moved.

16. A machine for use in cement-attaching soles to shoes comprising a pad member constructed and arranged to receive a sole and a shoe to which the sole is to be attached, means for deforming the pad member, thereby applying pressure to the sole and the shoe comprising a displaceable member engaging the pad, a plunger constructed and arranged to move the displaceable member to pressure-applying position, a pivoted wedge member, and means for moving the pivoted wedge member, thereby maintaining the wedge member in engagement with the displaceable member as the latter is moved and holding the latter in pressure-applying position.

17. A machine for use in cement-attaching soles to shoes comprising a pad member constructed and arranged to receive a sole and a shoe to which the sole is to be attached, a displaceable member engaging the pad member for deforming the pad member, thereby applying pressure to the sole and the shoe, a pivoted member engaging the displaceable member, means for displacing the displaceable pad engaging member, thereby deforming the pad member and applying pressure to the sole and the shoe, and means for rotating the pivoted wedge member, thereby holding the displaceable member in pressure-applying position after the displacing means is rendered inoperative.

18. A device for use in cement-attaching soles to shoes comprising a hollow distortable vessel filled with fluid, means confining the vessel constructed and arranged to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, said confining means including a displaceable member, a cam member carried by the confining means and having a surface in engagement with a portion of the displaceable member and arranged as the cam member is rotated to hold the displaceable member in vessel-distorting position, thereby causing the exposed face of the vessel to be held against the shoe bottom in pressure-applying position.

19. A device for use in cement-attaching soles to shoes comprising a hollow distortable vessel filled with fluid, a box confining the vessel constructed and arranged to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, a displaceable member carrier by the box, a roll carried by said member, a cam member pivoted to the box and having a wedge surface in engagement with the roll and arranged by rotation of the cam member to hold the displaceable member in displaced position, thereby maintaining the vessel in distorted condition and holding the exposed face of the vessel pressed against the shoe bottom.

20. A device for use in cement-attaching soles to shoes comprising a hollow distortable vessel filled with fluid, a box confining the vessel constructed and arranged to expose one wall of the vessel for the reception of a sole and shoe to which the sole is to be attached, a displaceable member carried by the box, means for displacing the displaceable member, thereby causing said member to distort the vessel and pressing the exposed face of the vessel forcibly against the shoe bottom, a roll carried by said member, a cam member pivoted to the box and having an inclined surface in engagement with the roll and arranged to hold the displaceable member in any pressure-applying position to which it may be moved.

21. A device for use in cement-attaching soles to shoes comprising a hollow distortable vessel filled with fluid, a box confining the vessel constructed and arranged to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, a displaceable member pivoted at the bottom of the box, a wedge member carried by the box and having a surface in engagement with a member carried by the displaceable member and arranged as the wedge member is moved to hold the displaceable member in any vessel-distorting position to which it may be moved, thereby holding the exposed face of the vessel pressed forcibly against the shoe bottom.

22. A device for use in cement-attaching soles to shoes comprising a hollow distortable vessel filled with fluid, a box confining the vessel constructed and arranged to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, a displaceable member in the bottom of the box, a roll carried by said member, a cam member pivoted to the box and having a surface in engagement with the roll and arranged as the cam member is rotated to hold the displaceable member in displaced position, thereby causing said member to maintain the vessel in distorted condition and pressing the exposed face of the vessel forcibly against the shoe bottom.

23. A device for use in cement-attaching soles to shoes comprising a hollow distortable vessel filled with fluid, a box confining the vessel constructed and arranged to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, a displaceable member in the bottom of the box, a plunger operable to displace the displaceable member, thereby causing said member to distort the vessel and pressing the exposed face of the vessel forcibly against the shoe bottom, and a cam member pivoted to the box and having a surface in engagement

with a member carried by the displaceable member, said cam member being movable to hold the displaceable member in any pressure-applying position to which it may be moved.

24. In a machine for use in the manufacture of shoes, the combination of a hollow fluid-filled vessel, confining means for the vessel constructed and arranged to expose a portion thereof for the reception of a sole and shoe, means for distorting another portion of the vessel to cause the exposed portion to be distorted inwardly to exert pressure on the sole and shoe, and power-operated means for maintaining the vessel in distorted condition.

25. In a machine for use in cement-attaching soles to shoes, the combination of a hollow vessel filled with fluid and having a wall of distortable material exposed for the reception of a sole and shoe to which the sole is to be attached, a member engaging a portion of the wall of the vessel and arranged when displaced toward the wall to displace a portion thereof, thereby causing the exposed sole-receiving wall of the vessel to be pressed forcibly against the sole of the shoe, and automatically actuated means for maintaining said member in displaced position.

26. In a machine for use in cement-attaching soles to shoes, the combination of a hollow vessel containing liquid and having walls of distortable material, one of said walls being exposed for the reception of a shoe and sole to which the shoe is to be attached, a pivoted member engaging another wall and arranged when displaced about its pivot toward said other wall to displace a portion thereof, thereby causing the exposed face of the vessel to be pressed forcibly against the sole of the shoe, and automatically actuated means for holding said pivoted member in its displaced position.

27. A machine for use in cement-attaching soles to shoes having, in combination, a hollow vessel filled with fluid and having a wall exposed for the reception of a sole and a shoe to which the sole is to be attached, a member arranged to be displaced toward the wall of the vessel to displace a portion of the wall, thereby causing the exposed face of the vessel to be pressed forcibly against the shoe bottom, means for holding said member in displaced position, and power-operated mechanism for displacing said member and for actuating said holding means.

28. A machine for use in cement-attaching soles to shoes having, in combination, a hollow vessel containing fluid and having a wall exposed for the reception of a sole and a shoe to which the sole is to be attached, a member arranged to be displaced toward the wall of the vessel to displace a portion of the wall, thereby causing the exposed face of the vessel to be pressed forcibly against the shoe bottom, a wedge for holding said member in displaced position, power-operated mechanism for displacing said member, and automatically actuated means for moving said wedge to maintain the wedge in engagement with said member in any pressure-applying position to which said member may be moved.

29. In a machine for use in cement-attaching soles to shoes, the combination of a hollow vessel filled with liquid and having a wall of distortable material exposed for the reception of a sole and a shoe to which the sole is to be attached, a member engaging a portion of the wall of the vessel and arranged when displaced toward the wall to displace a portion thereof, thereby causing the exposed sole-receiving wall of the vessel to be pressed forcibly against the sole of the shoe, a rotary wedge to hold said member in displaced position, and automatically actuated means for rotating the wedge to maintain said member in displaced position.

30. A device for use in cement-attaching soles to shoes comprising a hollow distortable vessel filled with liquid and having an exposed dilatable wall for the reception of a sole and a shoe to which the sole is to be attached, means including a pivoted member engaging the hollow vessel and arranged when displaced about its pivot to displace a portion of the vessel, thereby causing the exposed face of the vessel to be pressed forcibly against the shoe bottom, and means constructed and arranged to engage the last or the shoe or both to receive the thrust caused by the displacement of the pivoted member.

31. A device for use in cement-attaching soles to shoes comprising a hollow distortable vessel filled with liquid and having a surface exposed for the reception of a sole and a shoe to which the sole is to be attached, a pivoted member engaging a surface of the hollow vessel and arranged when displaced about its pivot to displace a portion of the vessel, thereby causing the sole-receiving surface of the vessel to be pressed forcibly against the shoe bottom, and a pair of yokes in opposed relation to the shoe-receiving surface of the vessel, one of said yokes carrying an adjustable member arranged to engage the cone of the last and the other yoke carrying an adjustable member arranged to engage the toe portion of the shoe to receive the thrust caused by the displacement of the pivoted member.

32. A device for use in cement-attaching soles to shoes comprising a hollow vessel filled with liquid, means confining the vessel constructed and arranged to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, said means including a pivoted member engaging the hollow vessel and arranged when displaced about its pivot to displace a portion of the vessel, thereby causing the exposed face of the vessel to be pressed forcibly against the

shoe bottom, and a pair of yokes carried by the vessel confining means, one of said yokes carrying an adjustable member arranged to engage the cone of the last and the other yoke carrying an adjustable member arranged to engage the toe portion of the shoe to receive the thrust caused by the displacement of the pivoted member.

33. A pad box for use in cement-attaching soles to shoes having a pad constructed and arranged to receive a sole and a shoe to which the sole is to be attached, a pair of yokes extending upwardly from and transversely of the pad box, a member carried by one of the yokes to engage the cone of the last, and a member carried by one of the yokes to engage the toe portion of the shoe and cooperating with the pad to apply pressure to the sole and the shoe, one of said yokes being mounted for sliding movement lengthwise of the shoe on the pad to facilitate the use of the pad in attaching soles to shoes of different sizes.

34. A device for use in cement-attaching soles to shoes comprising a pad constructed and arranged to receive a sole and a shoe to which the sole is to be attached, a pair of yokes each extending transversely of the pad, a member carried by one of the yokes to engage the cone of the last, and a member carried by the other yoke to engage the toe portion of the shoe and cooperating with the pad to apply pressure to the sole and the shoe, one of the yokes being mounted for sliding movement lengthwise of the shoe on the pad and the other yoke being mounted for swinging movement in the same general direction to facilitate the use of the pad in attaching soles to shoes of different sizes.

35. A device for use in cement-attaching soles to shoes comprising a pad constructed and arranged to receive a sole and a shoe to which the sole is to be attached, a pair of yokes extending transversely of the pad, a member carried by one of the yokes to engage the cone of the last, and a member carried by the other yoke to engage the toe portion of the shoe and cooperating with the pad to apply pressure to the sole and the shoe, the yoke which carries the toe-engaging member being mounted for sliding movement lengthwise of the shoe on the pad and the yoke which carries the member which engages the cone of the last being mounted for swinging movement in the same general direction to facilitate the use of the pad in attaching soles to shoes of different sizes.

36. A device for use in cement-attaching soles to shoes comprising a hollow vessel filled with liquid, means confining the vessel constructed and arranged to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, said means including a pivoted member engaging the hollow vessel and arranged when displaced about its pivot to displace a portion of the vessel, thereby causing the exposed face of the vessel to be pressed forcibly against the shoe bottom, and means carried by the vessel confining means to engage the last or the shoe or both to receive the thrust caused by the displacement of the pivoted member.

37. A machine for use in cement-attaching soles to shoes having, in combination, a removable pad of distortable material provided with a movable member arranged when displaced to cause the pad to apply pressure to a sole and a shoe upon the pad, means carried by the pad for maintaining the movable member in any pressure-applying position to which it may be moved, a lever carried by the machine and provided with a member arranged to engage said means as the lever is rocked, and mechanism including a yielding element for rocking said lever so that said means will be moved to whatever position may be necessary to maintain the movable member in pressure-applying position and will not be damaged by an overthrow of the lever rocking means.

38. A machine for use in cement-attaching soles to shoes having, in combination, a removable pad provided with a pivoted member arranged when displaced about its pivot to cause the pad to apply pressure to a sole and a shoe upon the pad, a cam carried by the pad for maintaining the pivoted member in any pressure-applying position to which it may be moved, a lever carried by the machine and provided with a member arranged to engage the cam member as the lever is rocked, and mechanism including a yielding element for rocking said lever so that the cam member will be moved to whatever position may be necessary to maintain the pivoted member in pressure-applying position and will not be damaged by overthrow of the lever rocking means.

39. A machine for use in attaching soles to shoes comprising a pad constructed and arranged to receive a sole and a lasted shoe to which the sole is to be attached, presser members arranged to bear against the shoe and last, and means for operating the presser members including a connection adjustable to vary the extent of the movement imparted thereby to different portions of the shoe and last without varying the positions of the presser members lengthwise of the shoe.

40. A machine for use in attaching soles to shoes comprising means arranged to receive a sole and a lasted shoe to which the sole is to be attached, presser members arranged to engage and to transmit pressure to different parts of the shoe and last, and means for moving said presser members into pressure-applying position, said means including an adjustable connection constructed and arranged to vary the relative extent of the movement imparted to and the force ex-

erted by the two presser members on different parts of the last without changing the parts of the shoe and last engaged by the presser members.

41. A machine for use in attaching soles to shoes comprising a member constructed and arranged to receive a sole and a lasted shoe to which the sole is to be attached, presser members arranged to transmit pressure to different parts of the shoe and last, and means for operating said presser members including a dog adjustable lengthwise of the shoe and a rod slidingly engaged by the dog and operable to transmit pressure to press both ends of the sole firmly against the sole-receiving member regardless of variations in the size and shape of the shoes operated on.

42. A machine for use in applying pressure to soles and shoes comprising a pad constructed and arranged to receive a sole and a shoe to which the sole is to be cement-attached, a presser member arranged to bear against the cone of the last, a presser member arranged to transmit pressure to the forepart of the last, separate means bearing against the respective presser members and arranged when moved to press the last, the shoe and the sole against the pad, a connection between said means, and mechanism for moving said means engaging said connection and adjustable to vary the relative extent of the movement imparted to the two presser members.

43. A machine for use in applying pressure to soles and shoes comprising a pad constructed and arranged to receive a sole and a lasted shoe to which the sole is to be cement-attached, a presser member arranged to bear against the cone of the last, a presser member arranged to transmit pressure to the forepart of the last, two levers bearing respectively against the two presser members and arranged when rocked to press the last, the shoe and the sole against the pad, a connection between said levers, and mechanism for rocking said levers engaging said connection and adjustable to vary the relative extent of the rocking movement imparted thereby to the two levers.

44. A machine for use in applying pressure to soles and shoes comprising a pad constructed and arranged to receive a sole and a lasted shoe to which the sole is to be cement-attached, a plunger arranged to bear against the cone of the last, a plunger arranged to transmit pressure to the forepart of the last, a pair of levers bearing against the respective plungers and arranged when rocked to press the last, the shoe and the sole against the pad, a connection between said levers, and mechanism for rocking said levers engaging said connection and adjustable relatively to said connection to vary the relative extent of the rocking movement imparted thereby to the two levers.

45. A machine for use in attaching soles to shoes comprising a pad arranged to receive a sole and a lasted shoe to which the sole is to be attached, a pair of plungers connected to the pad and freely movable toward the pad to hold the lasted shoe in pressure-applying relation to the pad, releasable means normally effective to prevent movement of said plungers away from the pad, a pair of levers engaging the respective plungers and arranged when rocked about their fulcrums to press the last against the pad, a bar the ends of which are loosely received by the respective levers, and means adjustable lengthwise of the bar for moving the bar transversely both of its length and of the levers, thereby rocking the levers and applying pressure to the shoe and sole upon the pad.

46. A machine for use in attaching soles to shoes having, in combination, a pad arranged to receive a sole and a lasted shoe to which the sole is to be attached, a pair of plungers connected to the pad and freely movable toward the pad to hold the lasted shoe in pressure-applying relation to the pad, releasable means normally effective to prevent movement of said plungers away from the pad, a pair of substantially parallel levers engaging the respective plungers and arranged when rocked about their fulcrums to press the last against the pad, a bar the ends of which loosely engage the respective levers, a dog engaging the bar and adjustable lengthwise of the bar, and means for moving the dog transversely of the bar, thereby rocking the levers and applying pressure to the shoe and sole upon the pad.

47. A machine for use in attaching soles to shoes comprising a member arranged to receive a sole and a shoe to which the sole is to be attached, and means including a lever for applying pressure to the sole and the shoe and connections extending from the lever to the vicinity of the shoe such that as the lever is rocked it has at first a relatively small mechanical advantage which increases to a maximum when the lever is in the position it occupies when operating on a shoe on a large last and thereafter decreases as the lever reaches the position which it occupies when operating on a shoe on a small last.

48. A machine for use in applying pressure to soles and shoes comprising a pad arranged to receive a sole and a shoe, means including a lever for applying preliminary pressure to hold the shoe and the sole in engagement prior to the application of the final pressure, and connections extending from the lever to the vicinity of the pad such that the lever as it is rocked has at first a relatively small mechanical advantage which increases to a maximum when the lever is in the position it occupies

when operating on a shoe on a large last and thereafter decreases as the lever reaches the position it occupies when operating on a shoe on a small last.

49. A machine for use in attaching soles to shoes comprising a pad arranged to receive a sole and a shoe to which the sole is to be attached, means for applying preliminary pressure to hold the shoe and the sole in engagement prior to the application of final pressure, said preliminary pressure-applying means including a lever provided with a slot, and connections extending from the slot to the vicinity of the pad, the form of the slot being such that as the lever is rocked it has at first a relatively small mechanical advantage which increases to a maximum when the lever is in the position it occupies when operating on a shoe on a large last and thereafter decreases as the lever reaches the position it occupies when operating on a shoe on a small last.

50. A machine for use in cement-attaching soles to shoes having, in combination, a pad arranged to receive a sole and a shoe to which the sole is to be attached, and means for appling pressure to the last and shoe positioned on the pad comprising a lever, a connection for transmitting pressure from the lever to the last, a treadle, and a link connected at one end to the lever and at the other end to the treadle by a connection constructed and arranged to cause the treadle as it is displaced from its inoperative position to have at first a relatively small mechanical advantage to bring the lever quickly into position for operating on a shoe on a large last and increasing to a maximum when the lever is in the position it occupies when operating on a shoe on a large last and thereafter decreasing as the lever moves to the position it occupies when operating on a shoe on a small last.

51. A machine for use in cement-attaching soles to shoes comprising a pad arranged to receive a sole and a shoe to which the sole is to be attached, and means for applying pressure to the last and shoe positioned on the pad comprising a lever, a connection for transmitting pressure from the lever to the last, a treadle, and connections between the lever and the treadle comprising a link connected at one end to the lever and carrying near its other end a roll positioned in a slot formed in the treadle, the form of the slot being such that as the treadle is displaced from its in operative position it has at first a relatively small mechanical advantage which increases to a maximum when the lever is in the position it occupies when operating on a shoe on a large last, thereafter decreasing as the lever moves to the position it occupies when operating on a shoe on a small last.

52. A machine for use in cement-attaching soles to shoes comprising a pad arranged to receive a sole and a shoe to which the sole is to be attached, means for applying preliminary pressure to hold the shoe and the sole in engagement prior to the application of final pressure, said preliminary pressure-applying means including a lever provided with a slot, and connections extending from the slot to the vicinity of the pad, the form of the first part of the slot being such that the initial movement of the connections as the lever is displaced is large relatively to the displacement of the lever, thereby rapidly bringing the parts of the machine into pressure-applying position, the form of the next part of the slot being such that the movement of the connections relatively to the movement of the lever is thereafter small, thereby applying considerable pressure when the shoe being operated upon is on a large last, and the form of the final portion of the slot being such that the final portion of the movement of the lever has a greater effect on the connections than the intermediate portion so that a lighter pressure is exerted if the shoe which is being operated upon is on a small last whereby the pressure per unit area applied to the shoe is substantially the same regardless of the size of the shoe.

53. A machine for use in attaching soles to shoes having, in combination, a hollow vessel containing fluid, means confining the vessel constructed and arranged to expose a wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, said confining means including a pivoted member engaging the vessel and arranged to be displaced inwardly about its pivot to displace a portion of a wall of the vessel, thereby causing the exposed wall of the vessel to be pressed forcibly against the shoe bottom, and means for displacing said pivoted member inwardly about its pivot.

54. A machine for use in attaching soles to shoes having, in combination, a hollow vessel containing liquid, means confining the vessel constructed and arranged to expose a wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, said confining means including a pivoted member engaging the vessel and arranged to be displaced inwardly about its pivot to displace a portion of a wall of the vessel, thereby causing the exposed wall of the vessel to be pressed forcibly against the shoe bottom, and a power operated plunger for displacing said pivoted member inwardly about its pivot.

55. A machine for use in cement-attaching soles to shoes having, in combination, a hollow vessel containing liquid, means confining the vessel constructed and arranged to expose a wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, said confining means including a pivoted member engaging the vessel and arranged to be displaced inwardly about its pivot to displace a portion of the wall of the vessel, thereby causing the exposed face of

the vessel to be pressed forcibly against the shoe bottom, a plunger, and mechanism for operating the plunger constructed and arranged to cause the plunger to displace the pivoted member inwardly about its pivot, thereby displacing a portion of the wall of the vessel and causing the exposed face of the vessel to be pressed forcibly against the shoe bottom.

56. A machine for use in cement-attaching soles to shoes having, in combination, a hollow vessel filled with liquid, means confining the vessel constructed and arranged to expose a wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, said confining means including a pivoted member engaging the vessel and arranged to be displaced inwardly about its pivot to displace a portion of the wall of the vessel, thereby causing the exposed face of the vessel to be pressed forcibly against the shoe bottom, a plunger, and mechanism for operating the plunger constructed and arranged to bring the plunger into engagement with said pivoted member and thereafter by continued movement of the plunger to displace the pivoted member inwardly about its pivot, thereby displacing a portion of the wall of the vessel and causing the exposed wall of the vessel to be pressed forcibly against the shoe bottom.

57. A machine for use in cement-attaching soles to shoes having, in combination, a hollow distortable vessel filled with liquid, a box confining the vessel constructed and arranged to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, said box having a displaceable bottom member pivoted at one end and arranged to be displaced inwardly about its pivot to displace a portion of the vessel, thereby causing the exposed face of the vessel to be pressed against the shoe bottom, a plunger, and means for moving the plunger in a manner to cause the plunger to displace the pivoted member inwardly about its pivot, thereby displacing a portion of a wall of the vessel and causing the exposed face of the vessel to be pressed forcibly against the shoe bottom.

58. A machine for use in cement-attaching soles to shoes having, in combination, a member constructed and arranged to receive a sole and a shoe to which the sole is to be attached, a weight sufficiently heavy to apply by its weight sole attaching pressure to a shoe and sole, said weight being normally supported and arranged when released to apply the entire sole-attaching pressure to a shoe and sole positioned on said member, and power-operated means for returning the weight to its normal inoperative position after it has been released.

59. A machine for use in cement-attaching soles to shoes having, in combination, a weight sufficiently heavy to supply and arranged to apply the sole-attaching pressure to the sole of a shoe, means for normally supporting the weight, thereby rendering it inoperative, means for releasing the weight, thereby rendering it operative to apply sole-attaching pressure, and power-operated means for returning the weight to its operative position.

60. A machine for use in attaching soles to shoes having, in combination, a hollow distortable vessel containing fluid, confining means for the vessel constructed and arranged to expose a wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, a displaceable member, a weight normally supported and arranged when lowered to displace said member toward a wall of the vessel, thereby displacing a portion of the wall of the vessel and causing the exposed wall to be pressed forcibly against the shoe bottom, and power-operated means for thereafter returning the weight and supporting it in its normal position.

61. A machine for use in attaching soles to shoes having, in combination, a hollow vessel filled with fluid, means confining the vessel constructed and arranged to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, said confining means including a pivoted member engaging the hollow vessel and arranged when displaced inwardly about its pivot to displace a portion of the vessel, thereby causing the exposed face of the vessel to be pressed forcibly against the shoe bottom, and a weight normally supported and arranged when released to move said pivoted member about its pivot, thereby displacing a portion of the vessel and causing the exposed face of the vessel to be pressed forcibly against the shoe bottom.

62. A machine for use in attaching soles to shoes having, in combination, a hollow distortable vessel filled with liquid, a box confining the vessel constructed and arranged to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, said box having a displaceable bottom member pivoted at one end and arranged to be displaced inwardly about its pivot to displace a portion of the vessel, thereby causing the exposed wall of the vessel to be pressed against the shoe bottom, and a weight normally supported and arranged when released to displace the pivoted member inwardly about its pivot, thereby displacing a portion of a wall of the vessel and causing the exposed wall of the vessel to be pressed forcibly against the shoe bottom.

63. A machine for use in attaching soles to shoes having, in combination, a hollow distortable vessel filled with liquid, a box confining the vessel constructed and arranged

to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, a displaceable member carried by the box, a weight normally supported and arranged when lowered to displace said member toward the wall of the vessel, thereby displacing a portion of the wall of the vessel and causing the exposed wall of the vessel to be pressed forcibly against the shoe bottom, and power-operated means arranged to permit the weight to be lowered, thereby causing the weight to displace said member, and thereafter to return the weight and support it in its normal position.

64. A machine for use in cement-attaching soles to shoes having, in combination, a hollow vessel filled with liquid, means confining the vessel constructed and arranged to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, said confining means including a pivoted member engaging the hollow vessel and arranged when displaced inwardly about its pivot to displace a portion of the vessel, thereby causing the exposed face of the vessel to be pressed forcibly against the shoe bottom, a plunger arranged to cooperate with said pivoted member to move the latter about its pivot, thereby displacing a portion of the vessel and causing the exposed face of the vessel to be pressed forcibly against the shoe bottom, a weight normally supported and arranged when released to operate the plunger, and power-operated means for releasing the weight arranged to return the weight to its former position and to support it in that position after the conclusion of the pressure-applying movement of the plunger.

65. A machine for use in cement-attaching soles to shoes having, in combination, a hollow vessel containing liquid, means confining the vessel constructed and arranged to expose a wall for the reception of a sole and a shoe to which the sole is to be attached, said confining means including a pivoted member engaging the vessel and arranged to be displaced inwardly about its pivot to displace a portion of the wall of the vessel, thereby causing the exposed wall of the vessel to be pressed forcibly against the shoe bottom, a weight normally supported and arranged when lowered to displace the pivoted member toward the wall of the vessel, and means arranged to cause gradual lowering of the weight, thereby gradually forcing the exposed wall of the vessel against the shoe bottom.

66. A machine for use in cement-attaching soles to shoes having, in combination, manually operated means for applying preliminary pressure to a shoe and a sole, weight-operated means for thereafter applying a greater final pressure to the shoe and sole, means for normally supporting the pressure-applying weight, thereby rendering it inoperative, means for releasing said weight, thereby rendering it operative to apply pressure, and power-operated means for returning the weight to its original position.

67. A machine for use in attaching soles to shoes having, in combination, a pad member arranged to receive a sole and a shoe to which the sole is to be attached, a weight normally supported while the machine is inoperative and arranged when released to cause the pad to press the sole forcibly into engagement with the shoe, means constructed and arranged to engage the shoe and the last on which the shoe is mounted to receive the thrust resulting from the pressure of the pad upon the sole of the shoe, and power-operated means arranged to release the weight, thereby causing the application of pressure to the sole and shoe, and thereafter to return the weight to its original position and to support the weight in that position.

68. A machine for cement-attaching soles to shoes having, in combination, a pad member arranged to receive a sole and a shoe to which the sole is to be attached, a weight normally supported while the machine is inoperative and arranged when released to cause the pad to press the sole into engagement with the shoe, a pair of yokes connected to the pad and constructed and arranged to engage the shoe and the last on which the shoe is mounted to receive the thrust resulting from the pressure of the pad upon the sole of the shoe, an eccentric, and connections from the eccentric to the weight constructed and arranged to cause rotation of the eccentric to release the weight, thereby causing the weight to actuate the pad to apply pressure to the sole and the shoe and thereafter to return the weight to and support it in its original position.

69. A machine for cement-attaching soles to shoes having, in combination, a pad member arranged to receive a sole and a shoe to which the sole is to be attached, a weight normally supported while the machine is inoperative and arranged when released to cause the pad to press the sole forcibly into engagement with the shoe, means constructed and arranged to engage the shoe and the last on which the shoe is mounted to receive the thrust resulting from the pressure of the pad upon the sole of the shoe, an eccentric, means for rotating the eccentric, and connections from the eccentric to the weight constructed and arranged to cause the eccentric to release the weight, thereby causing the weight to actuate the pad to apply pressure to the sole of the shoe, and thereafter to return the weight to and support it in its original position.

70. A machine for use in attaching soles to shoes having, in combination, a hollow

vessel containing liquid and provided with an exposed wall for the reception of a sole and a shoe to which the sole is to be attached, a movable member engaging the vessel and arranged to be displaced, thereby displacing a portion of the wall of the vessel and causing the exposed wall of the vessel to be pressed forcibly against the shoe bottom, a weight normally supported and arranged when lowered to displace said movable member toward the wall of the vessel, and means arranged to cause gradual lowering of the weight, thereby gradually forcing the exposed wall of the vessel against the shoe bottom.

71. A machine for use in cement-attaching soles to shoes having, in combination, a hollow distortable vessel filled with liquid, a box confining the vessel constructed and arranged to expose one wall of the vessel for the reception of a sole and a shoe to which the sole is to be attached, a displaceable member carried by the box, a weight normally supported and arranged when released to displace said member toward the wall of the vessel, thereby displacing a portion of the wall of the vessel and causing the exposed wall of the vessel to be pressed forcibly against the shoe bottom, and a power-operated eccentric for releasing the weight, thereby causing the weight to displace said member, and thereafter to return the weight and support it in its normal position.

72. A machine for cement-attaching soles to shoes having, in combination, a pad member arranged to receive a sole and a shoe to which the sole is to be cement-attached, a weight normally supported while the machine is inoperative and arranged when released to cause the pad to press the sole forcibly into engagement with the shoe, means constructed and arranged to engage the shoe and the last on which the shoe is mounted to receive the thrust resulting from the pressure of the pad upon the sole of the shoe, an eccentric, means for operating the eccentric through a single revolution, and connections from the eccentric to the weight constructed and arranged to cause one revolution of the eccentric to release the weight, thereby causing the weight to actuate the pad to apply pressure to the sole of the shoe, and thereafter to return the weight to and support it in its original position.

73. A machine for use in cement-attaching soles to shoes having, in combination, a pad member constructed and arranged to receive a sole and a shoe to which the sole is to be cement-attached, and means for moving the sole-engaging portion of the pad to press the sole forcibly against the shoe bottom including a lever, a weight carried by the lever, connections between the weight and the pad member, and power-operated means operable to render the weight operative and thereafter to return the lever to such a position that when again released the weight will render the pad effective to apply pressure to the sole and shoe.

74. A machine for use in cement-attaching soles to shoes having, in combination, a pad member constructed and arranged to receive a sole and a shoe to which the sole is to be cement-attached, means in opposed relation to the pad constructed and arranged to contact with the shoe or with a last on which the shoe is mounted or both, and mechanism for causing relative movement of the sole-engaging portion of the pad and the means in opposed relation thereto to press the sole forcibly against the shoe bottom including a lever, a weight carried by the lever, and an eccentric arranged to support the lever in such a position that when the weight is released it will render the pad effective to apply pressure to the sole and shoe.

75. A machine for use in attaching soles to shoes having, in combination, a pad arranged to receive a sole and a shoe to which the sole is to be attached, feelers constructed and arranged to engage the edge face of a sole placed on the pad and to hold it against movement in its own plane, means for moving the feelers into sole-engaging position including a lever and a weight carried by the lever and normally supported in inoperative position, and means for releasing the weight and the lever whereby the weight rocks the lever and moves the feelers into sole engaging position.

76. A machine for use in attaching soles to shoes having, in combination, a pad upon which a sole is placed by the operator, a carrier mounted for movement toward and from said pad, feelers carried by the carrier and arranged to engage and to be positioned by a sole on the pad, a weight, connections between the weight and the feelers, means for releasing the weight whereby the weight is effective through the connections to move the feelers into operative relation to the pad, and power-operated means for returning the weight to its inoperative position.

77. A machine for use in attaching soles to shoes having, in combination, a pad arranged to receive a sole and a shoe to which the sole is to be attached, feelers constructed and arranged to engage the shoe and position it relatively to a sole on the pad, means for moving the feelers into shoe engaging position including a lever and a weight carried by the lever and normally supported in inoperative position, and means for releasing the weight and the lever whereby the weight and the lever drop and move the feelers into shoe-engaging position.

78. A machine for use in attaching soles to shoes having, in combination, a pad arranged to receive a sole and a shoe to which the sole is to be attached, feelers movable to

and from the pad and arranged to position a shoe relatively to a sole on the pad, a weight, connections between the weight and the feelers whereby the weight when released is effective through the connections to move the feelers into operative relation to the shoe on the pad, means for normally supporting the weight in inoperative position, means for releasing the weight thereby rendering the weight effective to move the feelers into operative relation to the pad, and power-operated means for returning the weight to its inoperative position.

79. A machine for use in attaching soles to shoes having, in combination, a pad arranged to receive a sole and a shoe to which the sole is to be attached, two sets of feelers constructed and arranged to engage the edge face of the sole at the toe and heel ends thereof and to hold it against movement in its own plane, means for moving the feelers into sole-engaging position including two levers, one for each set of feelers, a weight carried by each lever, the weights and levers being normally supported in inoperative position, and manually controlled means for releasing the weights and the levers whereby the weights rock the levers and move the feelers into sole-engaging position.

80. In a machine for attaching soles to shoes, the combination of a hollow liquid-filled vessel or dilatable material having a wall exposed for the reception of a sole and a shoe to which the sole is to be attached, a plunger operable to distort another portion of the wall of the vessel, thereby effecting dilation of the exposed wall and pressing the sole forcibly into engagement with the shoe, a lever, a weight carried by the lever and normally supported in inoperative position, connections between the weight and the plunger, and power-operated means arranged to release the lever, thereby permitting the weight to move the plunger, thus causing the plunger to distort the wall of the vessel and thereby applying pressure to the sole of the shoe, and thereafter to return the lever and weight to and support them in their original inoperative positions.

81. In a machine for cement-attaching soles to shoes, the combination of a hollow liquid-filled vessel of dilatable material having a wall exposed for the reception of a sole and a shoe to which the sole is to be attached, a plunger operable to distort another portion of the wall of the vessel, thereby effecting dilation of the exposed wall and pressing the sole forcibly into engagement with the shoe, a lever, a weight carried by the lever and normally supported in inoperative position, connections between the weight and the plunger, an eccentric, and connections between the eccentric and the lever arranged when the eccentric is rotated to release the lever, thereby permitting the weight to move the plunger, thus causing the plunger to distort the wall of the vessel and thereby applying pressure to the sole of the shoe, and thereafter to return the lever and weight to and support them in their original inoperative positions.

82. A machine for use in cement-attaching soles to shoes having, in combination, a pad upon which a sole is placed by the operator, a carrier mounted for movement toward and from said pad, gage members carried by the carrier and arranged to engage and be positioned by the sole on the pad, other gage members carried by the carrier in predetermined relation to the first gage members and arranged to position a shoe relatively to the sole by which the first gage members are positioned, a lever, a weight carried by the lever, means for normally supporting the weight and lever in inoperative position, connections between the weight and the carrier, and manually-controlled means for releasing the weight and lever whereby the weight is effective through the connections to move the gage members into operative relation to the pad.

83. A machine for use in cement-attaching soles to shoes having, in combination, a pad upon which a sole is placed by the operator, a carrier mounted for movement toward and from said pad, feelers carried by the carrier and arranged to engage and be positioned by the sole on the pad, other feelers carried by the carrier in predetermined relation to the first feelers and arranged to position a shoe relatively to the sole by which the first feelers are positioned, a lever, a weight carried by the lever, means for normally supporting the weight and lever in inoperative position, connections between the weight and the carrier, manually controlled means for releasing the weight and lever whereby the weight is effective through the connections to move the feelers into operative relation to the pad, and power-operated means for returning the lever and weight to their inoperative position.

84. A machine for use in cement-attaching soles to shoes having, in combination, a pad upon which a sole is placed by the operator, a carrier mounted for movement toward and from said pad, feelers carried by the carrier and arranged to engage and be positioned by the sole on the pad, other feelers carried by the carrier in predetermined relation to the first feelers and arranged to position a shoe relatively to the sole by which the first feelers are positioned, a lever, a weight carried by the lever, means for normally supporting the weight and lever in inoperative position, connections between the weight and the carrier, manually controlled means for releasing the weight and lever whereby the weight is effective through the connections to move the feelers into opera-

tive relation to the pad, another lever, connections between the last-named lever and the weight supporting and releasing means constructed and arranged so that rocking of the last-named lever in one direction is effective to restore the weight and the lever by which it is carried to their normal inoperative positions, and power-operated means for rocking the lever in said direction.

85. A machine for use in applying pressure to soles and shoes having, in combination, pressure-applying mechanism, means for positioning a sole and a shoe relatively to each other for operation thereon by said mechanism, a treadle, connections from the treadle to said positioning means constructed and arranged so that displacement of the treadle from its normal inoperative position renders the positioning means operative, and power-operated means to return the treadle to its normal inoperative position.

86. A machine for use in applying pressure to soles and shoes having, in combination, pressure-applying mechanism, means for positioning a sole and a shoe relatively to each other for operation thereon by said mechanism, a treadle, means tending to elevate the treadle, a latch arranged normally to hold the treadle in depressed position, connections from the treadle to said mechanism constructed and arranged so that elevation of the treadle from its normal inoperative position renders the positioning means operative, and power-operated means to depress the treadle to its normal inoperative position.

87. A machine for use in applying pressure to soles and shoes having, in combination, pressure-applying mechanism, means for positioning a sole and a shoe relatively to each other for operation thereon by said mechanism, a treadle, connections from the treadle to said positioning means constructed and arranged so that displacement of the treadle from its normal inoperative position renders the positioning means operative, and power-operated means to return the gage mechanism to its normal inoperative position.

88. In a cement sole attaching machine, the combination of a pad box, a pad in the box, sole engaging members movable laterally of the box to engage the edge face of a sole located on the pad, means normally urging said members into sole engaging position, power-operated means for withdrawing the members to permit introduction of a sole, and operator-controlled means for permitting movement of said members to engage the sole.

89. In a cement sole attaching machine, the combination of a pad box, a pad in the box, sole engaging members movable laterally of the box to engage the edge face of the forepart of a sole located on the pad, means tending to urge said sole engaging members toward a sole on the pad, power-operated means for retracting the sole engaging members to permit a sole to be placed between them, and manually-operated means for causing said members to engage the sole.

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

MILTON H. BALLARD.

CERTIFICATE OF CORRECTION.

Patent No. 1,897,105. February 14, 1933.

MILTON H. BALLARD.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 6, line 99, for "423" read "324"; page 7, line 60, strike out the comma after "390" and insert a period; page 10, line 60, claim 19, for "carrier" read "carried";page 12, line 16, claim 33, for "one of the yokes" read "the other yoke"; page 13, line 110, claim 47, for "and" read "of"; page 18, line 32, claim 80, for "or" read "of"; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 29th day of August, A. D. 1933.

M. J. Moore.

Acting Commissioner of Patents.

(Seal)