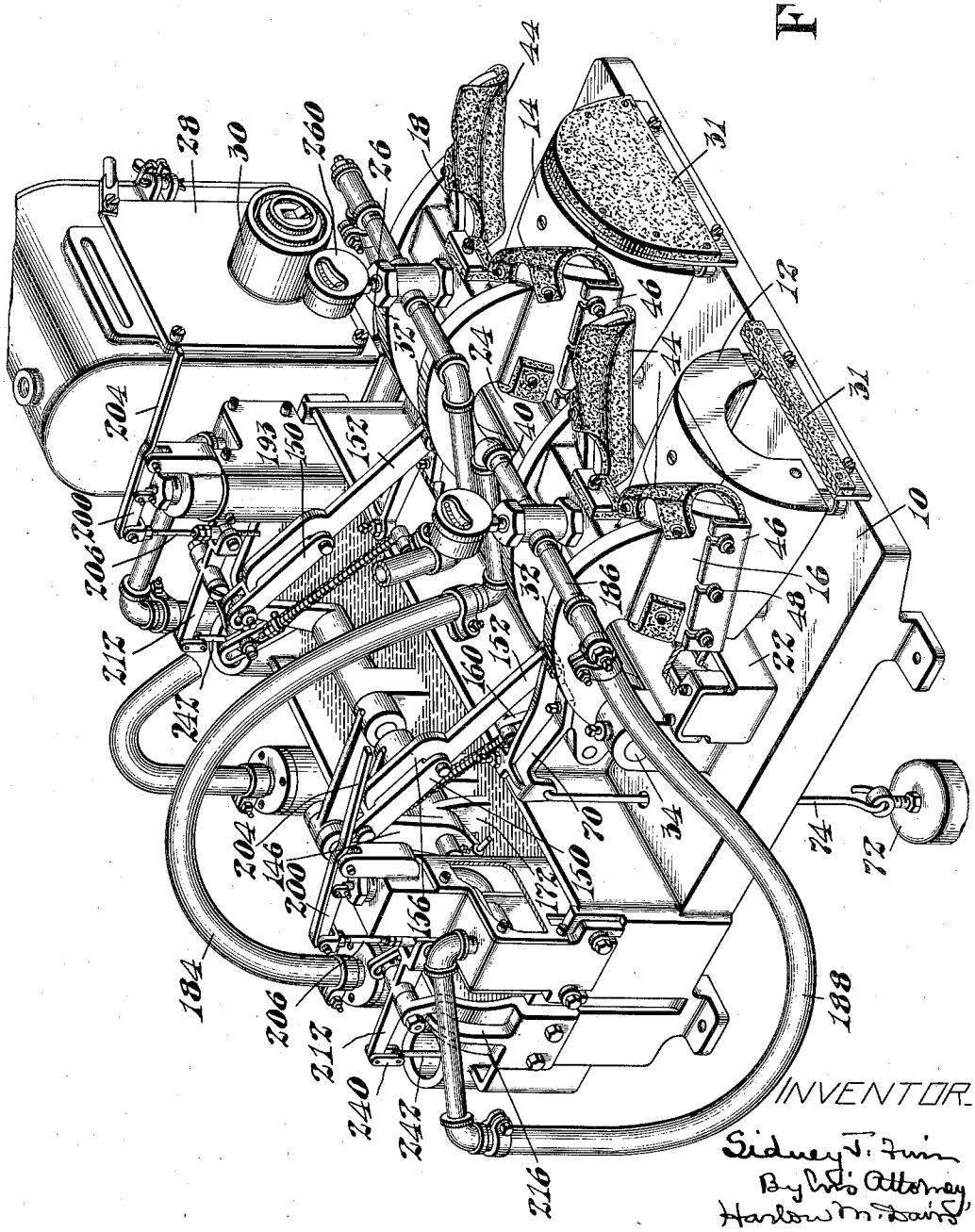
July 14, 1936. S. J. FINN 2,047,259

MACHINE FOR SHAPING AND PRESSING SHOE PARTS

Filed Dec. 13, 1934 4 Sheets-Sheet 1

Fig. 1.



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July 14, 1936. S. J. FINN 2,047,259

MACHINE FOR SHAPING AND PRESSING SHOE PARTS

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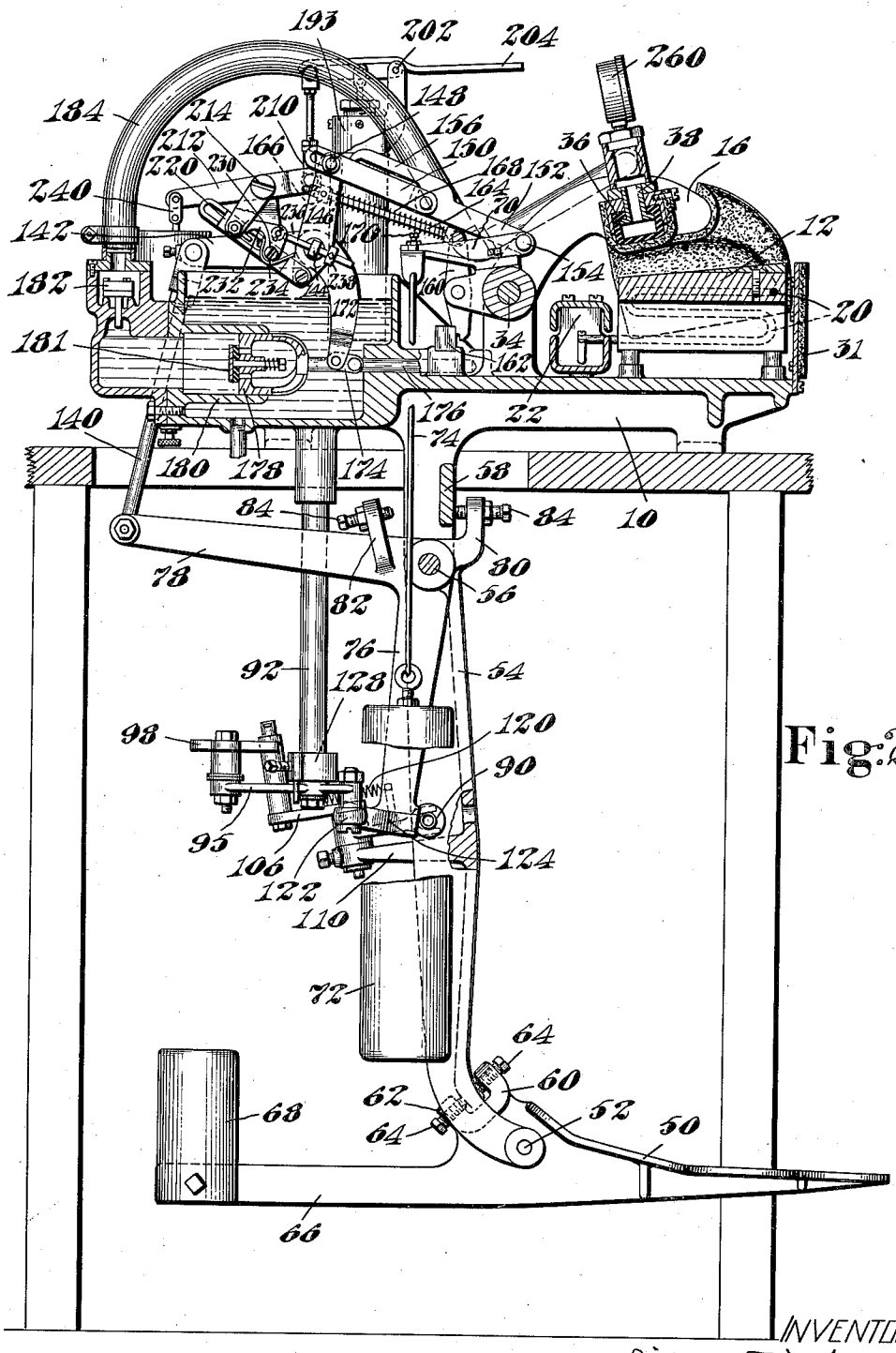


Fig. 2.

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July 14, 1936. S. J. FINN 2,047,259

MACHINE FOR SHAPING AND PRESSING SHOE PARTS

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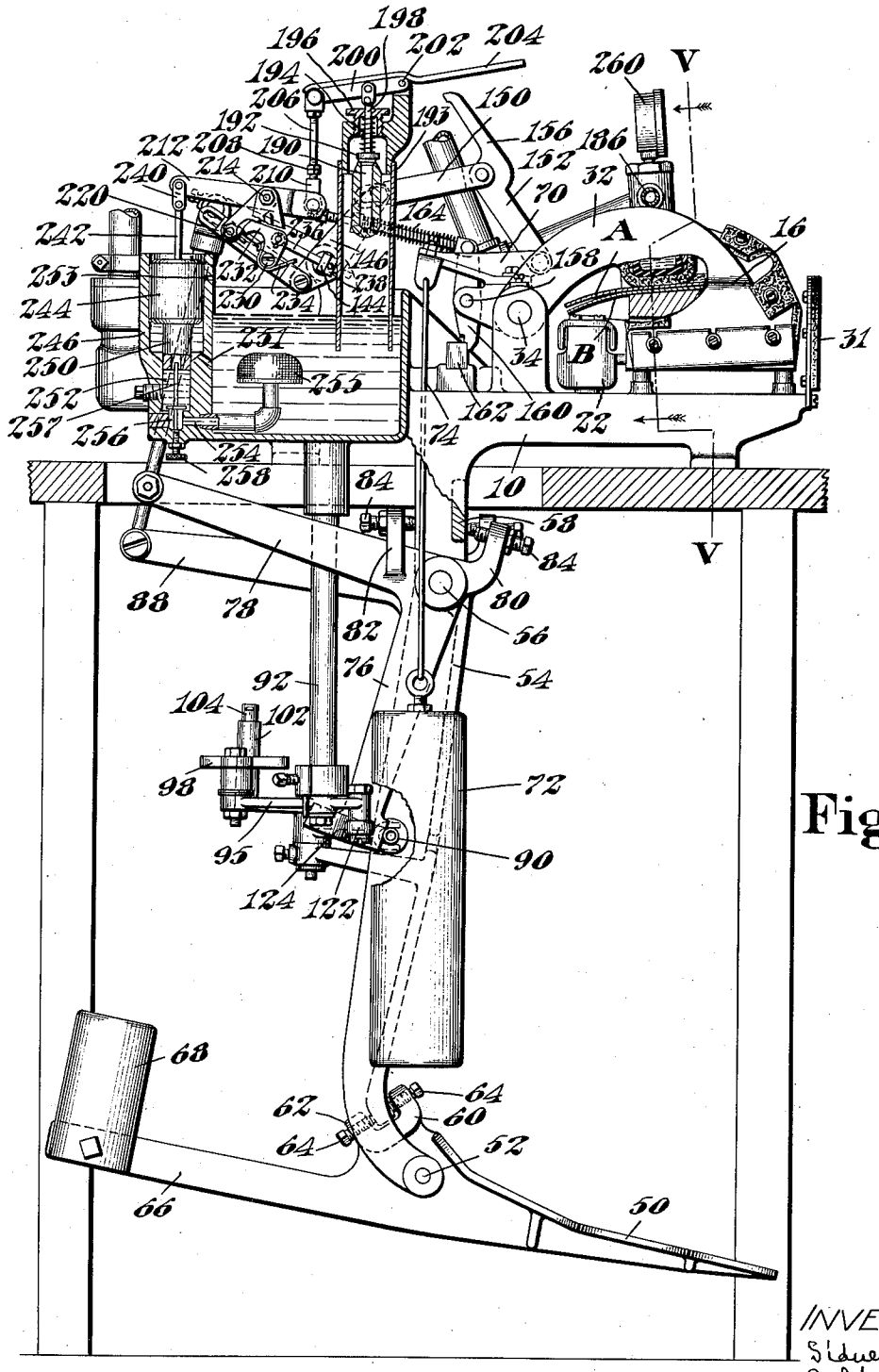


Fig.3.

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MACHINE FOR SHAPING AND PRESSING SHOE PARTS

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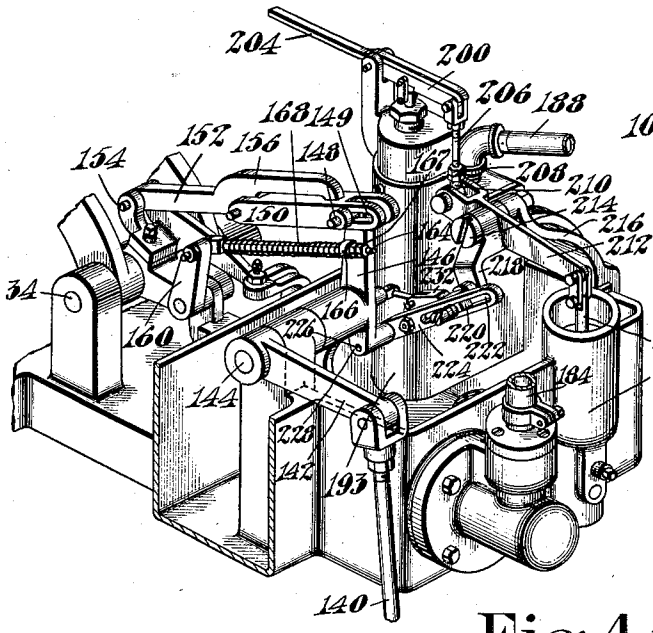


Fig.4.

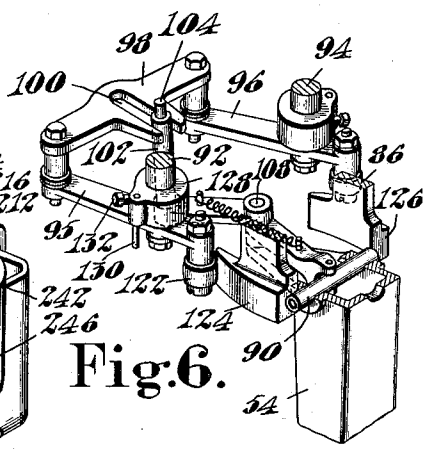


Fig.6.

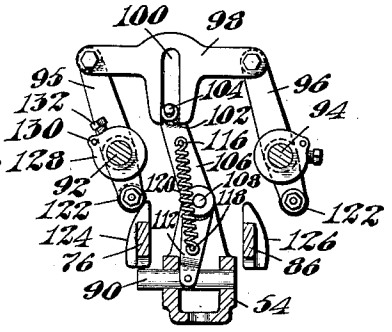


Fig.7.

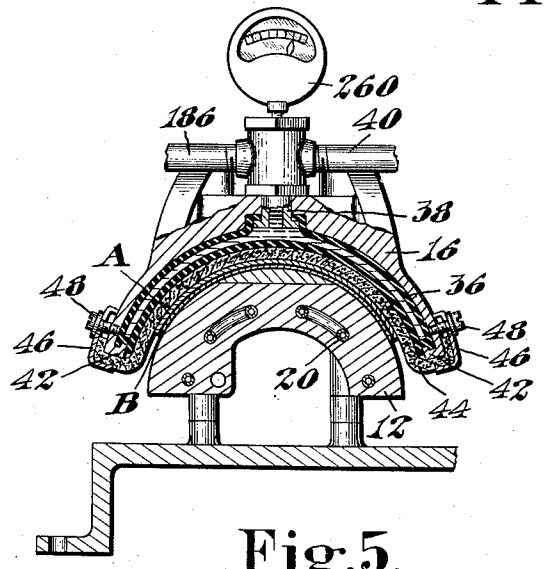


Fig.5.

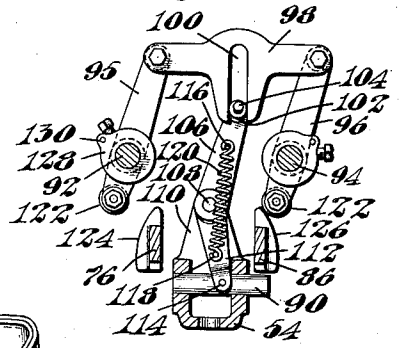


Fig.8.

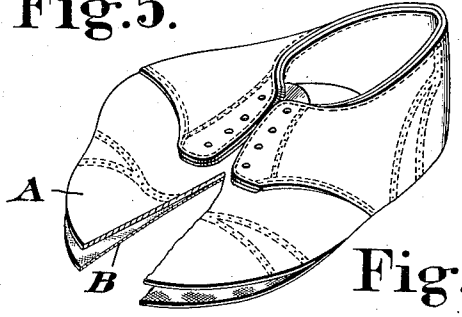


Fig.9.

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Patented July 14, 1936 2,047,259

UNITED STATES PATENT OFFICE

2,047,259

MACHINE FOR SHAPING AND PRESSING SHOE PARTS

Sidney J. Finn, Beverly, Mass., assignor to United Shoe Machinery Corporation, Paterson, N. J., a corporation of New Jersey

Application December 13, 1934, Serial No. 757,362

29 Claims. (Cl. 12—97)

This invention relates to machines for shaping and pressing shoe parts and, in the embodiment shown for the purpose of illustration, comprises a heated form and a cooperating presser member adapted to give a preliminary transverse curvature to a shoe vamp, for example the vamp portion of a closed unlasted shoe upper, the curvature approximating but preferably being less than that which the vamp will assume when lasted. The machine is therefore adapted for use in practicing the method disclosed in application for Letters Patent of the United States Serial No. 675,375, filed June 12, 1933, in the name of Harold L. Sawyer.

Objects of the invention are to enable the Sawyer method to be practiced with dispatch and to enable similar shaping and pressing operations to be performed upon shoe parts, particularly upon closed shoe uppers before they are lasted.

Features of the invention consist in a timing device for insuring that the work will remain under pressure for a predetermined time after the pressure is applied and for causing release of the pressure after that period of time has elapsed. There are provided in the illustrated machine means for effecting relative approach of the form and presser member, means for locking them in operative position against separation, means for applying fluid pressure to the work to cause all parts thereof to be held against the form with uniform pressure, and means for setting the timing device so that after a predetermined time has elapsed the pressure will be released. In the illustrated machine, a single operating member, for example a treadle, is arranged to cause the above operations to be effected in the order named. The illustrated machine is duplex and means is provided, as a further feature of the invention, for connecting the operating member with the two sides of the machine alternately.

These and other features of the invention will now be more particularly described with reference to the accompanying drawings and will be pointed out in the appended claims.

In the drawings,

Fig. 1 is a perspective view of the upper portion of a machine embodying the present invention;

Fig. 2 is a side elevation of the machine, partly in section, with the parts in inoperative position;

Fig. 3 is a view similar to Fig. 2 with the parts in operative position;

Fig. 4 is a perspective view, taken from the rear, of parts shown at the left of Fig. 1;

Fig. 5 is a transverse section of one of the upper shaping and heating devices with which the machine is equipped taken on the line V—V of Fig. 3 while the work is being operated upon;

Fig. 6 is a perspective detail of treadle-operated mechanism shown in Figs. 2 and 3;

Figs. 7 and 8 are details in plan, partly in section, showing the treadle-operating mechanism in different positions; and

Fig. 9 is a perspective view, partly broken away, of a shoe upper before it has been operated upon by the machine.

The illustrated machine for shaping the vamp portions of shoe uppers over a heated form to cause activation of thermoplastic cement on the lining and cause it to adhere to the upper comprises a frame 10 upon which are mounted two heated forms 12, 14 with which presser members 16, 18, respectively, cooperate. Each of the forms 12, 14 is approximately semi-cylindrical in outer contour and has a curvature somewhat less than that which an upper is made to assume when worked into lasted position upon a last. Each of the forms 12, 14 is provided with an electric heating unit 20, as shown in Fig. 5, the terminals of the units leading to junction boxes 22, 24 from which a cable 26 leads to an outlet box 28, to the door of which is secured a switch 30 for controlling the supply of current to the heating elements 20. In front of each heated form is an insulated guard 31 to protect the operator.

The illustrated machine is intended to operate upon closed shoe uppers, such as that indicated at A in Fig. 9, before they are assembled upon the last preparatory to lasting, the lining B or doubler or both being of woven fabric having a napped surface upon the fibers of which are discrete particles of thermoplastic adhesive, the lining and/or doubler material being preferably prepared in accordance with the method disclosed in Letters Patent of the United States No. 1,931,612, granted October 24, 1933, on an application filed in the name of Henry Kahlmeyer. The vamp portion of such shoe upper is placed upon the form 12 and the presser member 16 operated to conform the upper to the shape of the form 12 and to press it thereupon for a predetermined time and then release it.

The construction of the presser member 16, as disclosed in Figs. 1, 2, 3 and 5, comprises a casting having rearwardly extending portions 32 pivoted on a shaft 34 and having its front lower surface concave, as shown in Fig. 5. The presser member 16 extends forwardly along the two sides of the vamp but is open over the throat of the vamp so that pressure will not be applied to that

portion of the upper. Preferably, also, the toe portion of the vamp extends rearwardly beyond the form 12, it being undesirable to stick that portion of the upper and lining together since these layers must later be separated to introduce the toe stiffener; that is, the presser member 16 is shaped to apply pressure to that portion of the upper between the tip line and the throat and along the sides from the tip line rearwardly as far as the vamp extends. Inside the concave portion of the presser member 16 is fitted a rubber pad or bag 36, the pad 36 being connected by a nipple 38 to a pipe 40 and having in its edge faces grooves which interlock with projecting ribs 42 on the presser member 16 as shown. Preferably the inflatable rubber pad 36 is covered by a layer of felt 44 which is brought around the edge of the presser member 16 and secured thereto by clips 46 attached to the presser member 16 by screws 48.

The operator, after placing a shoe upper on the form 12 with its tip portion projecting rearwardly beyond the end of the form as shown in Fig. 3, operates a treadle 50 which first causes the presser member 16 to be moved downwardly about its axis 34 into cooperative relation to the form 12, causes the form to be locked in that position, and then forces fluid such as water through the pipe 40 to inflate the rubber pad 36.

The treadle 50 is connected at 52 to an upright member 54 pivoted on a shaft 56 to a depending portion 58 of the frame 10, the frame being supported, as shown in Figs. 2 and 3, on a suitable bench or table. The treadle 50 is provided with opposed lugs 60, 62 which embrace a portion of the lower end of the member 54 and are each provided with a screw 64 by adjustment of which the angular relation of the treadle 50 to the upright 54 may be varied to suit the operator. The treadle 50 has a rearward extension 66 which carries a counterweight 68. The counterweight serves to return the treadle 50 and the mechanism operated thereby to the position shown in Fig. 2 after it is swung rearwardly about the pivot 56 by the operator. To each of the presser members 16 is attached a bracket 70 which extends rearwardly of the shaft 34 and carries a counterweight 72 suspended therefrom by a rod or wire 74. On one side of the upright member 54 an angle lever is pivoted on the same shaft 56. One arm 76 of the angle lever is normally nearly vertical (Fig. 2) and the other arm 78 extends rearwardly. The angle lever has on opposite sides of its pivot 56 threaded ears 80, 82 in each of which is a screw 84, said screws being arranged for alternate contact with the depending portion 58 of the frame 10 adjustably to limit the swinging movement of the angle lever 76, 78. On the opposite side of the upright 54 a similar angle lever 86, 88 is mounted and mechanism is provided to cause movement of the treadle to operate these two angle levers alternately.

For this purpose, the upright member 54 is provided substantially midway of its ends with a transversely sliding bolt 90 which, for the sake of lightness, is made hollow. This bolt may be projected to the operator's left (Fig. 7) so that movement of the upright 58 by the treadle will cause the bolt 90 to engage the angle lever arm 76, or it may be projected toward the right (Fig. 8) to cause it to engage the angle lever arm 86.

To cause the bolt 90 to be projected alternately to the left and right of the upright 54, mechanism shown in Figs. 2, 3, 6, 7 and 8 is provided. Depending from the under side of the frame 10 are two shafts 92, 94. Upon the lower end of the shaft 92 is mounted a lever 95 and upon the lower end of the shaft 94 is mounted a lever 96. The rear ends of the levers 95, 96 are connected by a link 98 which has between its ends a forwardly and rearwardly extending slot 100, the slot being open at its front end and being engaged by a sleeve 102 mounted on a pin 104 carried by an arm 106 pivoted at 108 to a rearward projection 110 of the upright 54. Also pivoted at 108 is a forwardly extending arm 112 having its end bifurcated to receive the bolt 90 to the middle of which it is pivoted at 114. Between a pin 116 on the arm 106 and a pin 118 on the arm 112 is arranged a tension spring 120. With the parts in the position shown in Fig. 7 it will be seen that a line connecting the pins 116 and 118 falls to the left of the pivot 108 and that hence the pull of the spring 120 tends to hold the bolt 90 at the limit of its movement toward the left. As the slotted link 98 is moved toward the position shown in Fig. 8, the arm 106 is swung first into alinement with the arm 112 and then beyond such alinement so that the pull of the spring 120 is transferred to the right of the pivot 108, thus causing the bolt 90 to be shot suddenly to the right to the position shown in Fig. 8, in which position, upon the next operation of the upright 54 by the treadle, the bolt will engage the arm 86 of the right-hand angle lever and not the arm 76 of the left-hand angle lever. To shift the slotted link 98 alternately to right and left, the levers 95, 96 have short, forwardly projecting arms upon each of which is a roll 122. When the treadle is operated with the bolt 90 in the position shown in Fig. 7, the bolt engages the arm 76 upon which is a cam surface 124 which engages the roll 122 on the lever 95 and swings the lever clockwise, throwing the slotted plate 98 to the right, as shown in Fig. 8, thus shifting the bolt 90 to the right. When the treadle is next operated, the bolt 90 will engage the arm 96 of the right-hand bell-crank lever which has a cam surface 126 which engages the roll 122 on the lever 96, causing it to turn counterclockwise to shift the slotted plate 98 back to its original position and shift the bolt 90 to the left. To limit movements of the levers 95, 96, there is on the shaft 92 a collar 128 having a downwardly projecting pin 130 which, by rotation of the collar, is brought into position to arrest the lever 95 in its counterclockwise movement so that its roll 122 will be in position to engage the cam 124. The collar 128 is held on the shaft by a set screw 132. A similar construction is provided for the lever 96 to limit its clockwise movement.

Operation of the mechanism at the left-hand side of the machine is derived from movement of the bell-crank lever 76, 78 in the manner described, and operation of the right-hand side of the machine is derived from similar operation of the bell-crank lever 86, 88.

The mechanism for operating the left-hand side of the machine will now be described, it being understood that the mechanism for operating the right-hand side of the machine is similar and is similarly operated by a movement of the bell-crank lever 86, 88, the parts of the two sides of the machine being arranged in bilateral symmetry with respect to a vertical plane located between the two sides and extending from front to rear. The link 140 (Figs. 2 and 3) connects the arm 78 to an arm 142 of a rock shaft 144 upon which is an upwardly extending arm 146 carrying a pin 148 which engages a slot 149 (Fig.

4) in the rear end of a link 150 which, at its forward end, is pivoted to a link 152. The forward end of the link 152 is pivoted at 154 to the presser member 32 at a point somewhat above its pivot 34. The links 150, 152 constitute a toggle and the link 152 has a rearward projection 156 which engages the link 150 when the toggle is straightened and prevents its being broken in a downward direction but permits it to be broken upwardly. Supposing the toggle to be in the position shown in Fig. 2 and the bell crank 76, 78 to be operated, the arm 142, 146 will be moved clockwise and the arm 146 will push on the straight toggle 150, 152 to move the presser member 16 into operative position, the counterweight 72 being raised.

To lock the presser member 16 in operative position, a portion of the presser member 32 extends rearwardly of its pivot 34 and has pivoted thereto at 158 a locking lever 160 the lower end of which has two notches to engage a block 162. When the presser member 16 is in raised position, the upper notch engages the block 162 and when the presser member is lowered the lower notch engages the block and locks the presser member in operative position. To the upper end of the locking lever 160 is pivoted a rod 164 the rear end of which slides through an ear 166 on the arm 146. On the rod 164 rearwardly of the ear 166 is a lock nut 167 (Fig. 4) and between the ear and the locking lever 160 is a compression spring 168 which, as the arm 146 moves clockwise, is compressed and tends to move the locking lever 160 into locking engagement with the block 162. During the described movement of the presser member 16 into operative position there is mutual approaching movement between the middle joint of the toggle 150, 152 and a screw 170 threaded into the rear end of the bracket 70 so that, after the locking lever 160 has been raised far enough for the lower notch in its lower end to engage the block 162, the screw 170 will engage the toggle 150, 152 and break it upwardly, as shown in Fig. 3, thus freeing the arm 146 for further clockwise movement, which only serves, so far as the parts described are concerned, to apply further tension to the spring 164 which tends more firmly to hold the locking lever 160 in locking position.

This movement of the rock shaft 144 is utilized to inflate the rubber pad 36 of the locked presser member 16. Extending downwardly from the rock shaft 144 (Fig. 2) is an arm 172 the lower end of which is connected by a link 174 to a horizontally reciprocating shaft 176 the front portion of which is guided in a hole in the base 10 and the rear end of which is connected to a piston 178 arranged in a cylinder 180. The frame 10 is formed as a tank surrounding the cylinder 180 and is filled with a liquid, for example water. In the piston 178 is a one-way valve 181 which allows liquid to flow into the cylinder but not out of it. As the piston 178 is pushed to the left by clockwise swinging movement of the arm 172, water will be forced through a check valve 182 through a flexible pipe 184 connected to the pipe 40 which communicates with the inflatable pad 36. Thus, after the pressing member is lowered and locked, fluid under pressure is forced into the inflatable pad 36 to cause the required pressure to be applied to the work to shape it over the heated form 12 and cause the cement to be activated so that the parts will adhere. Although movement of the piston 178 to the left begins with the downward movement of the presser member and hence water begins to flow into the pad before it is lowered and locked, this part of the piston movement merely fills the pad and prepares it for the pressure applied by that portion of the stroke of the piston 178 which occurs after the presser member is locked down.

It is desired that the pressure be maintained for a brief but predetermined period, on the order of three to six seconds, and that then the pressure be relieved and the parts returned to normal position, the operator in the meantime having introduced an upper into the mechanism at the right-hand side of the machine and moved the treadle to cause that side of the machine to operate. A pipe 186 communicating with the inflatable pad 36 is connected by a flexible tube 188 (Fig. 1) to a valve chamber 190 (Fig. 3). In the upper portion of the chamber 190 is an opening closed by a valve 192 which is held in closed position by a spring 194 the tension of which may be adjusted by a threaded sleeve 196. This spring is set for the pressure (in the neighborhood of ten pounds) which it is desired to apply to the work and, if pressure in excess of that is applied, the spring will yield and allow pressure in excess of that required to be relieved. The valve 192 has a stem 198 connected to a lever 200 fulcrumed at 202 to the frame. The lever has a forward extension 204 for hand manipulation and at its rear end has pivoted thereto a depending rod 206 the lower end of which is threaded to receive adjustable lock nuts 208, the lower threaded end of the rod being guided in an upwardly projecting sleeve 210 pivoted to the front end of a lever 212 which is fulcrumed between its ends at 214 on a bracket 216 secured to the frame 10. As best shown in Fig. 4, the lever 212 has a depending arm 218 offset therefrom, which arm has pivoted thereon a block 220 arranged to slide in a slot 222 formed in a link 224 pivoted at 226 to a short arm 228 on the rock shaft 144. On the link 224 is pivoted at 230 a pawl 232 (Fig. 3) which is held by a spring 234 in position to engage the block 220. Connected to the pawl above its pivot 230 is a rod 236 which passes through an ear formed in the end of the rock shaft 144 and carries an adjustable collar 238 which, by engagement with the ear, lifts the pawl 232 for a purpose to be later explained. The rear end of the lever 212 is connected by a link 240 to a rod 242 fixedly secured to a cylindrical weight 244 guided for vertical movement in a cylinder 246 formed in the frame 10. Below the weight 244 and fixed thereto is a smaller cylindrical portion 250 forming a piston which reciprocates substantially fluid tight in a cylindrical recess or cylinder 252 formed in the frame and communicating with the water in the tank by a passage 254 provided with a strainer 255. At the bottom of the cylinder 252 is a leak valve 256 through which fluid from the cylinder 252 may pass through the passage 254 to the tank. The valve 256 has a disk-like head and a reduced fluted body portion which fits loosely in a vertical portion of the passage 254 and rests on an adjusting screw 258 by which it may be raised or lowered to vary the distance between its head and the bottom of the cylinder 252 and thus vary the rate of passage of liquid from the cylinder 252 to the tank. To prevent the leak valve 256 from being thrown out of position by the rush of water into the cylinder 252 when the piston 250 is raised, a stem 257 is connected thereto at the center of its head and extends into a hole bored centrally of the piston 250.

The cylindrical weight 244 is only tight enough in its cylinder 246 to be properly guided thereby

but in order that the descent of the weight may be controlled by the piston 250 a relatively large port 251 in the cylinder is provided which communicates with the tank and allows water to flow substantially freely into and out of the cylinder 246. This prevents any dash-pot action of the weight 244 and avoids interference with the action of the piston 250. In order that any liquid which gets above the weight 244 may return to the tank, a port 253 is provided which is located just above the piston when it is in its lowest position.

During the movement of the treadle 50 from the position shown in Fig. 2 to the position shown in Fig. 3, the presser member 16 will be lowered by the toggle 150, 152, locked by the lever 160 and the piston 178 moved to inflate the bag 36 and apply the desired pressure to the shoe upper, the amount of pressure being indicated by a pressure gage 260 and the pressure being limited and maintained by the setting of the spring-pressed valve 192. Also, by the simultaneous rearward movement of the arm 228 (Fig. 4) the link 224 will be moved rearwardly while the pawl 232 is in engagement with the block 220, thus causing the arm 218 to swing rearwardly and to raise the rearwardly extending arm of the lever 212, thereby raising the cylindrical weight 244 and the piston 250 and allowing liquid to pass from the tank into the cylinder 252 beneath the piston. During this movement the sleeve 210 on the forwardly extending arm of the lever 212 will move downwardly on the threaded portion of the rod 220 away from the nuts 208. Near the end of the rearward movement of the treadle the collar 238 (Fig. 3) on the rod 236 will engage the ear on the rock shaft 144 through which the rod passes, thus arresting movement of the pawl 232 and causing it to be lifted away from the block 220, thus freeing the lever 212 from the treadle and placing it under the influence of the weight 244 which then begins to descend. Its rate of descent, however, is controlled by the passage of the liquid from the cylinder 252 through the leak valve 256, this valve being set for the screw 258 to cause the required number of seconds to be consumed by the descent of the piston 250. As the piston approaches the lower end of its movement the sleeve 210 will, in its corresponding upward movement, engage the nuts 208 on the rod 206 and operate the lever 200 to lift the valve 192, thus releasing the pressure in the bag 36 on that side of the machine. The liquid which passes through the valve 192 is conducted back to the tank by a tube 193.

After operation of the treadle 50 the operator will release it, whereupon it will be returned by the weight 68 to its normal position and the bolt 90 will be shifted into position to engage the bell crank 86, 88 upon its next operation. The bell crank 76, 78, which has just been operated, now returns, which it tends to do due to the weight of the parts. The toggle 150, 152 will first be straightened and while the pin 148 is moving in the slot 149 the ear 166 will engage the nut 167 on the rod 164. When the pressure in the pad 36 is released by the opening of the valve 192, the pull on the rod will move the locking lever 160 to release the notch in its lower end from the block 162, whereupon the weight 72 will lift the presser member. When the angle lever 76, 78 and the parts connected thereto reach their initial positions, the pawl 232 will reengage the block 220 ready for the next operation.

During the dwell of the presser member 16 upon the work placed upon the form 12, another piece of work will be placed upon the form 14 and the presser member 18 operated by another movement of the treadle, at which time the treadle will, in the manner described, operate the bell crank 86, 88 which, through mechanism similar to that already described for operating the member 16 on the left-hand side of the machine, will operate the presser member 18 on the right-hand side.

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

1. A machine for pressing shoe upper parts having, in combination, a form having the shape it is desired to impart to the inner face of a shoe upper part, a presser member movable into and out of cooperative relation to the form to shape the upper part to the form, means for applying pressure to the shoe upper part located between the presser member and the form, and means for releasing the pressure after a predetermined time has elasped.

2. In a machine for pressing shoe upper parts, the combination of a form having a convex operating face, means for electrically heating the form, a presser member movable toward and from the convex face of the form, a layer of felt covering the operative face of the presser member, means for bringing the presser member into cooperative relation with the form with a shoe upper part between them and applying pressure to the shoe upper part to shape the upper part over the form, and means for relieving the pressure after it has been applied for a predetermined period.

3. A machine for pressing shoe parts having, in combination, relatively movable members between which an upper is to be shaped, an inflatable pad between one of said members and the work, a cylinder and piston arranged for relative operation to force fluid into the pad, a single manually operated lever, means including a toggle connected between said lever and one of the shaping members whereby relative movement of said shaping members is effected, and connections from said lever for effecting relative operation of the cylinder and piston.

4. A machine for pressing shoe parts having, in combination, relatively movable members between which an upper is to be shaped, an inflatable pad between one of said members and the work, a cylinder and piston arranged for relative operation to force fluid into the pad, a single operating lever, means including a toggle connected between said lever and one of the shaping members whereby relative movement of said shaping members is effected, a latch rendered operative by movement of the lever for maintaining the shaping members in operative relation to each other, and connections from said lever for effecting relative operation of the cylinder and piston to cause the inflation of the pad.

5. A machine for pressing shoe parts having, in combination, relatively movable members between which an upper is to be shaped, an inflatable pad between one of said members and the work, a cylinder and piston arranged for relative operation to force fluid into the pad, a single operating lever, means including a toggle connected between said lever and one of the shaping members whereby relative movement of said shaping members is effected, a latch for maintaining the shaping members in operative rela-

tion, means for breaking the toggle after the latch is engaged to permit further movement of the lever, and connections from said lever for effecting relative operation of the cylinder and piston.

6. A machine for pressing shoe parts having, in combination, a form having the shape it is desired to impart to the inner face of a shoe part, a member movable into and out of cooperative relation to the form, said member carrying an inflatable pad by inflation of which pressure is applied to shape the shoe part to the form, and a device for releasing the pressure in the pad after a predetermined time has elapsed.

7. A machine for pressing shoe parts having, in combination, a form having the shape it is desired to impart to the inner face of a shoe part, a member movable into and out of cooperative relation to the form, said member carrying an inflatable pad by inflation of which pressure is applied to shape the shoe part to the form, a valve for limiting the pressure applied to the pad, and a device for releasing the pressure in the pad after a predetermined time has elasped.

8. A machine for pressing shoe parts having, in combination, relatively movable members between which an upper is to be shaped, an inflatable pad between one of said members and the work, a single operating means acting successively to cause relative approach of said members, to cause locking of the members against separation and to force fluid into the pad to apply pressure to the work, and a timing device for releasing the pressure after it has been applied for a predetermined time.

9. A machine for pressing shoe parts having, in combination, a form having the shape it is desired to impart to the inner face of a shoe part, a member movable into and out of cooperative relation to the form, said member carrying an inflatable pad by inflation of which pressure is applied to shape the shoe part to the form, a valve for maintaining pressure in the pad, a cylinder, a weighted piston in the cylinder, and connections therefrom to the valve for opening the valve at a predetermined point in the descent of the piston.

10. A machine for pressing shoe parts having, in combination, a form, means for electrically heating the form, a presser member movable toward and from the form, a liquid-containing pad lining the presser member, means for moving the presser member toward the form to bring it into operative relation to work pressed between the form and the pad, means for holding the presser member in operative position, means for forcing liquid into the pad under predetermined pressure, and means for automatically releasing the pressure after a predetermined time has elapsed.

11. A machine for pressing shoe parts having, in combination, a form having the shape it is desired to impart to the inner face of a shoe part, a member movable into and out of cooperative relation to the form, said member carrying an inflatable pad by inflation of which pressure is applied to shape the shoe part to the form, a valve for maintaining pressure in the pad, a cylinder, a weighted piston in the cylinder, connections therefrom to the valve for opening the valve at a predetermined point in the descent of the piston, and a leak valve for controlling the descent of the piston.

12. A machine for pressing shoe parts having, in combination, a form, means for electrically heating the form, a presser member movable toward and from the form, a rubber pad lining the presser member, means for moving the presser member toward the form to bring it into operative relation to work pressed between the form and the pad, means for locking the presser member in operative position, means for forcing liquid into the pad under predetermined pressure, and means for maintaining the pressure for a predetermined time after its application and then releasing the pressure.

13. A machine for pressing shoe parts having, in combination, a form having the shape it is desired to impart to the inner face of a shoe part, a member movable into and out of cooperative relation to the form, said member carrying an inflatable pad by inflation of which pressure is applied to shape the shoe part to the form, a valve for maintaining pressure in the pad, a cylinder, a weighted piston in the cylinder, connections therefrom to the valve for opening the valve at a predetermined point in the descent of the piston, and a leak valve in the cylinder for controlling the movement of the piston.

14. A machine for shaping and securing together layers of material having between them thermoplastic cement comprising a convex heated form to receive the layers of material, a rigid presser member complementary to the form, means for moving the presser member toward the form, means for locking the presser member in operative position, an inflatable pad between the presser member and the form for pressing the layers of material against the form, and manually operated means for inflating the pad.

15. A machine for treating the vamp portion of a multi-ply shoe upper having thermoplastic cement between the plies comprising a form having a curvature less than that which the vamp will have when lasted, a presser member complementary to the form, means for effecting relative approaching movement between the presser member and the form, means for locking the presser member and form against separation, inflatable means backed by the presser member for pressing the vamp against the form, and means for forcing fluid into the inflatable means to apply pressure to the vamp.

16. A machine for shaping and securing together layers of material having between them thermoplastic cement comprising a convex heated form to receive the layers of material, a presser member complementary to the form, a straightened toggle for moving the presser member toward the form, means for locking the presser member in operative position, means for breaking the toggle after the presser member is locked, an inflatable pad between the presser member and the form, and means for thereafter forcing liquid into the pad.

17. A machine for treating the vamp portion of a multi-ply shoe upper having thermoplastic cement between the plies comprising a heated form having a shape to impart a preliminary curvature to the vamp, a presser member complementary to the form, means for effecting relative approaching movement between the presser member and the form, means for locking the presser member and form against separation, inflatable means backed by the presser member for pressing the vamp against the form, and means for releasing the pressure after the pressure has been applied for a predetermined period.

18. A machine for pressing shoe parts having,

in combination, relatively movable members between which an upper is to be shaped, an inflatable pad between one of said members and the work, and a single operating means acting successively to cause relative approach of said members, to cause locking of the members against separation, to force fluid into the pad to apply pressure to the work and to set a timing device by which the pressure is automatically released after the lapse of a predetermined period.

19. A machine for shaping and securing together layers of material having between them thermoplastic cement comprising a convex heated form to receive the layers of material, a rigid presser member complementary to the form, means for moving the presser member toward the form, means for locking the presser member in operative position, an inflatable pad between the presser member and the form for pressing the layers of material against the form, a cylinder and piston for forcing fluid into the pad, and a manually operated treadle for operating the piston.

20. A machine for treating the vamp portion of a multi-ply shoe upper having thermoplastic cement between the plies comprising a form having a curvature less than that which the vamp will have when lasted, a presser member complementary to the form, means for effecting relative approaching movement between the presser member and the form, means for preventing separation of the presser member and form, inflatable means backed by the presser member for pressing the vamp against the form, a cylinder and piston for forcing fluid into the inflatable means to apply pressure to the vamp, and means for operating said piston.

21. A machine for shaping and securing together layers of material having between them thermoplastic cement comprising a convex heated form to receive the layers of material, a presser member complementary to the form, a straightened toggle for moving the presser member toward the form, means for locking the presser member in operative position, means for breaking the toggle after the presser member is locked, an inflatable pad between the presser member and the form, and a piston operating in a cylinder for thereafter forcing liquid into the pad.

22. A machine for treating the vamp portion of a multi-ply shoe upper having thermoplastic cement between the plies comprising a heated form having a shape to impart a preliminary curvature to the vamp, a presser member complementary to the form, means for effecting relative approaching movement between the presser member and the form, and locking the presser member and form against separation, an inflatable pad backed by the presser member for pressing the vamp against the form, means for forcing fluid under pressure into said pad, and means for releasing the pressure after the pressure has been applied for a predetermined period.

23. A machine for pressing shoe parts having, in combination, relatively movable members between which an upper is to be shaped, an inflatable pad between one of said members and the work, a cylinder and piston arranged to force fluid into the pad, and a single operating means acting successively to cause relative approach of said members, to cause locking of the members against separation, to operate the piston to force fluid into the pad to apply pressure to the work and to set a timing device by which the pressure is automatically released after the lapse of a predetermined period.

24. A machine for pressing shoe parts having, in combination, relatively movable members between which an upper is to be shaped, an inflatable pad between one of said members and the work, a cylinder and piston arranged for relative movement to cause fluid to be forced into the pad, and a single manually operated means acting successively to cause relative approach of said members, to prevent separation of the members and to effect relative movement of the cylinder and piston to force fluid into the pad to apply pressure to the work.

25. In a machine for shaping and pressing shoe uppers, the combination of a pair of forms, a pair of presser members cooperating with the forms, a single operating lever, a pair of levers one connected to each presser member, and means for connecting the operating lever first to the lever connected to one of the presser members and then to the lever connected to the other presser member.

26. In a machine for shaping and pressing shoe uppers, the combination of a pair of forms, a pair of presser members cooperating with the forms, a single operating lever, a pair of angle levers located one on each side of the operating lever, connections from one angle lever to one of the presser members, connections from the other angle lever to the other presser member, a bolt arranged to slide transversely of the operating lever into a position to engage either one of the angle levers, and means operated by the angle levers for first locating the bolt in position to engage one angle lever and then into position to engage the other angle lever.

27. In a machine for shaping and pressing shoe uppers, the combination of a pair of forms, a presser member cooperating with each form, an inflatable pad on each presser member, a single operating lever, a pair of angle levers located one on each side of the operating lever with one arm of each adjacent thereto, connections from each angle lever to one of the presser members whereby operation of the angle lever moves the presser member toward its form, locks it in operative position and forces fluid into the pad to apply pressure to the form, means for predetermining the amount of pressure applied, and means for connecting the operating lever alternately to the adjacent arms of the angle levers so that the presser members will be operated alternately.

28. In a machine for shaping and pressing shoe uppers, the combination of a pair of forms, a presser member cooperating with each form, an inflatable pad on each presser member, a single operating lever, a pair of angle levers located one on each side of the operating lever with one arm of each adjacent thereto, connections from each angle lever to one of the presser members whereby operation of the angle lever moves the presser member toward its form, locks it in operative position and forces fluid into the pad to apply pressure to the form, means for connecting the operating lever alternately to the adjacent arms of the angle levers so that the presser members will be operated alternately, and means for releasing the fluid pressure in each pad after the pressure has been maintained for a predetermined time.

29. In a machine for shaping and pressing shoe uppers, the combination of a pair of heated convex forms, a presser member cooperating with

each form, an inflatable pad on each presser member, a single operating lever, a pair of angle levers located one on each side of the operating lever with one arm of each adjacent thereto, connections from each angle lever to one of the presser members whereby operation of the angle lever moves the presser member toward its form, locks it in operative position and forces fluid into the pad to apply pressure to the form, and means for connecting the operating lever alternately to the adjacent arms of the angle levers so that the presser members will be operated alternately.

SIDNEY J. FINN.