Oct. 27, 1953 A. H. ALTVATER 2,656,554

SHOE BACK LINE PRESS

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Fig. 1.

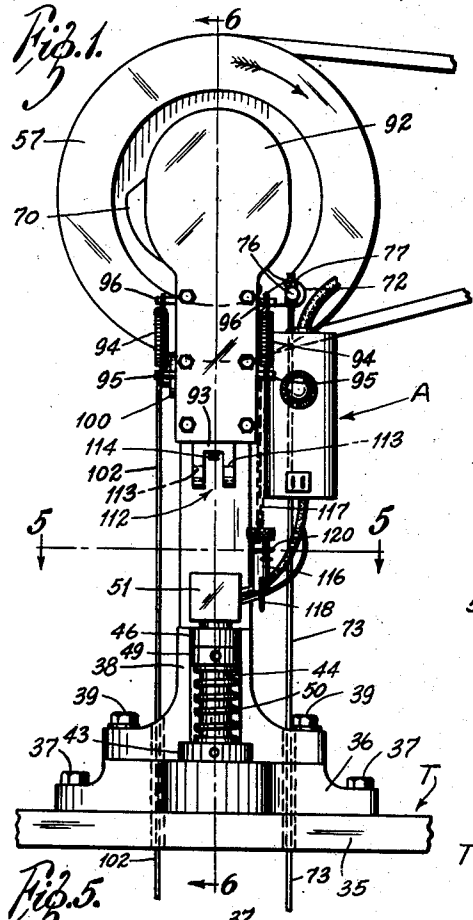


Fig. 2.

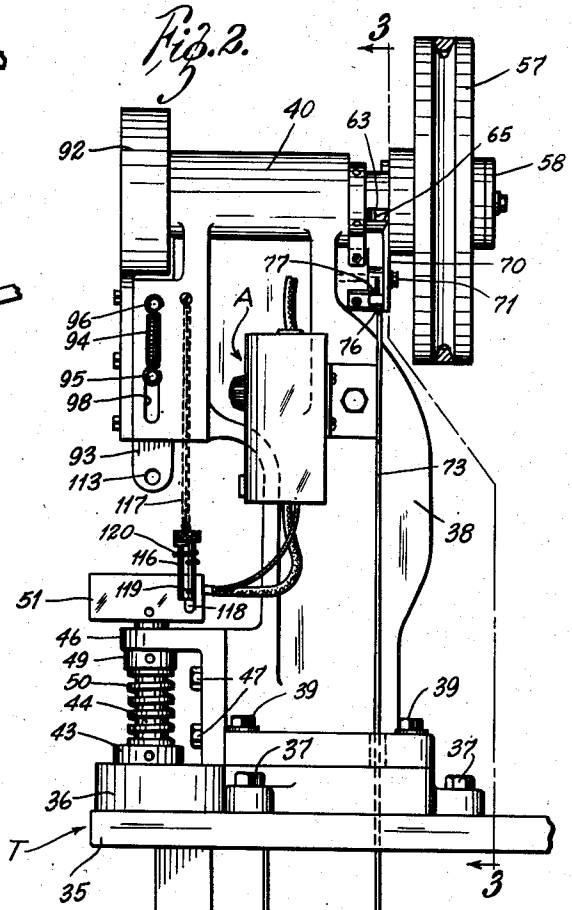


Fig. 5.

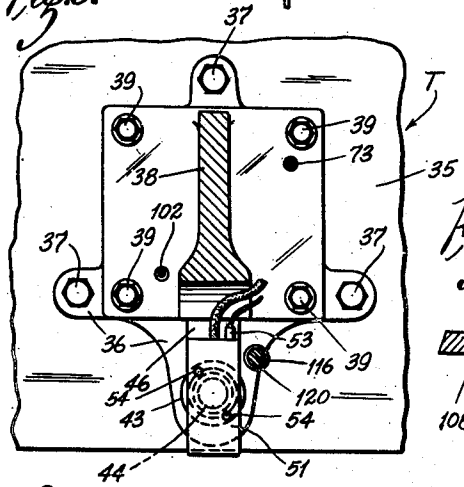


Fig. 2a.

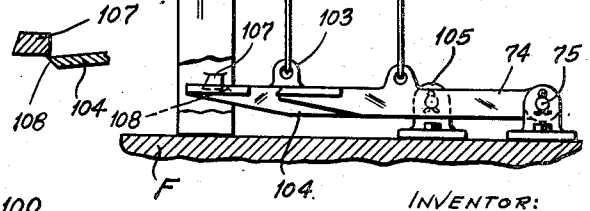
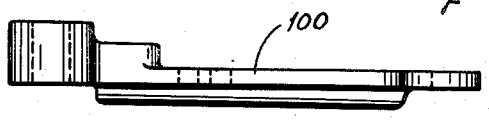


Fig. 15.



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Oct. 27, 1953 A. H. ALTVATER 2,656,554

SHOE BACK LINE PRESS

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Fig. 3.

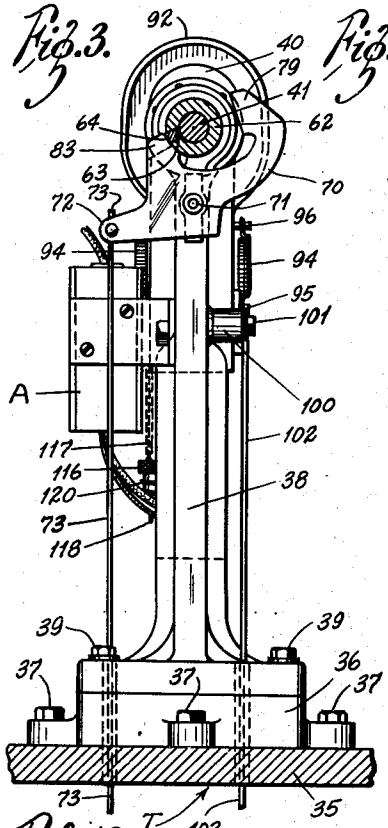


Fig. 4.

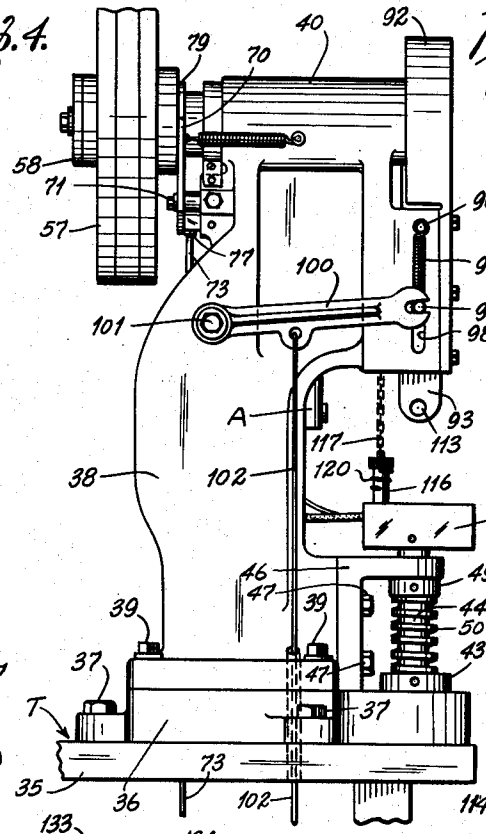


Fig. 16.

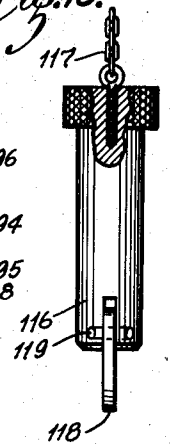


Fig. 17.

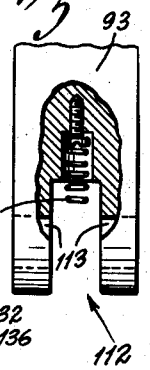


Fig. 18.

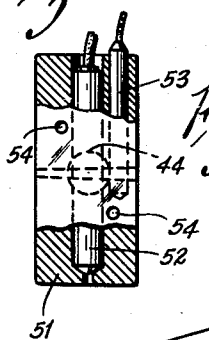


Fig. 19.

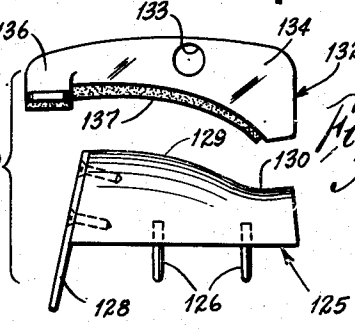


Fig. 20.

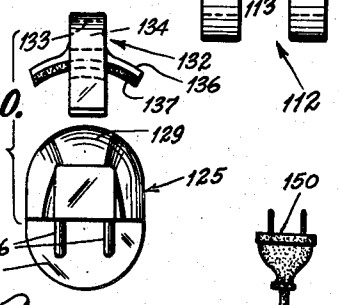


Fig. 21.

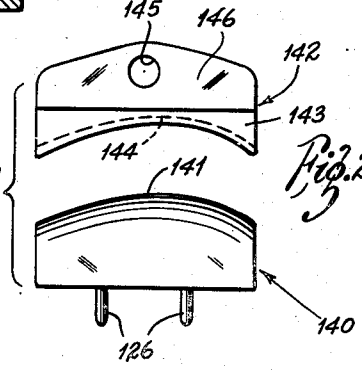


Fig. 22.

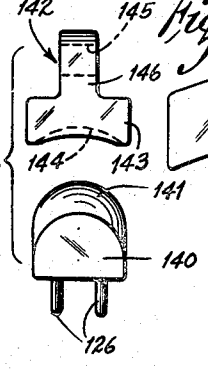
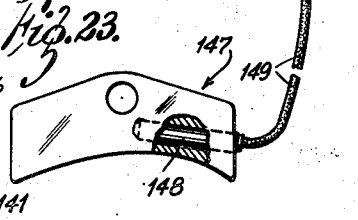


Fig. 23.



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Fig. 6.

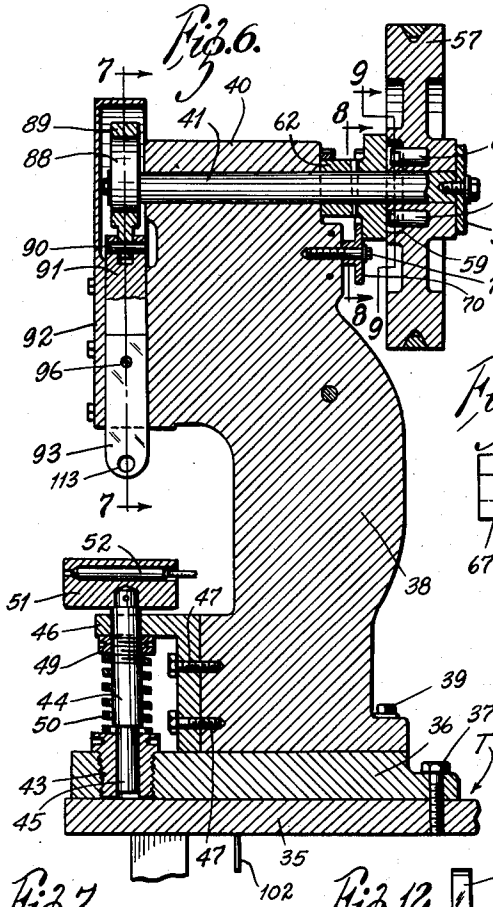


Fig. 8.

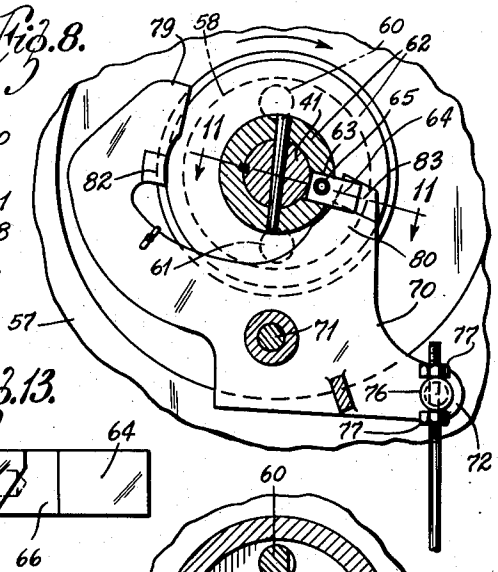


Fig. 13.

Fig. 9.

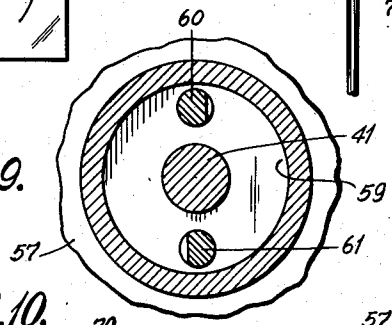


Fig. 10.

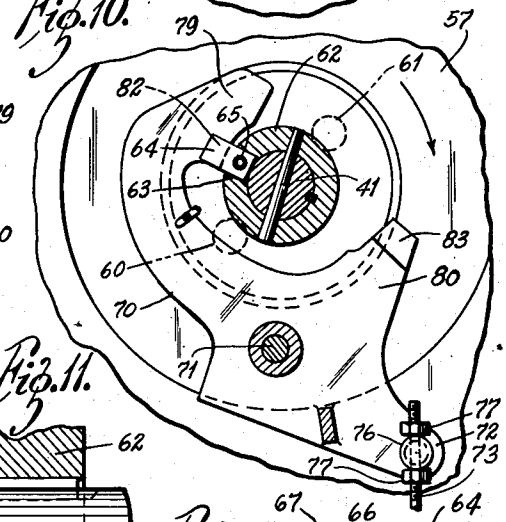


Fig. 7.

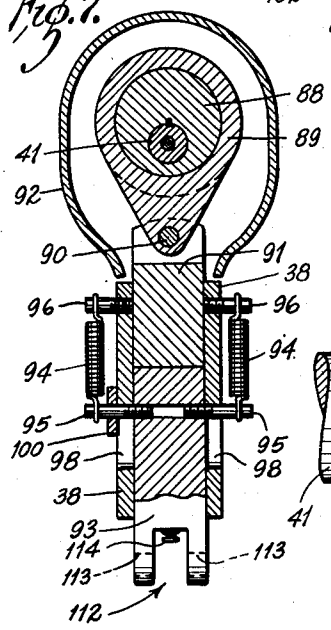


Fig. 12.

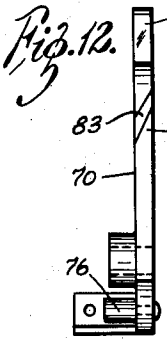


Fig. 11.

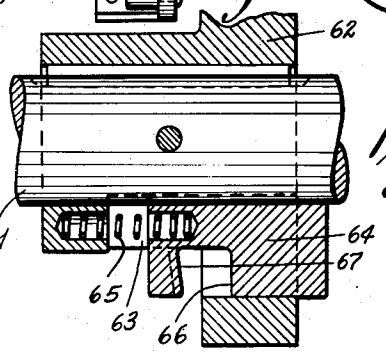


Fig. 14.



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Fig. 24.

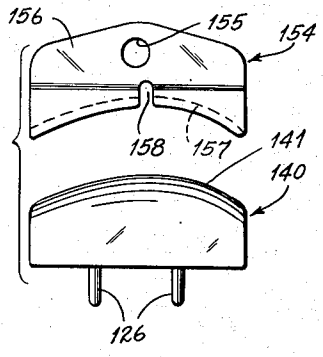


Fig. 25.

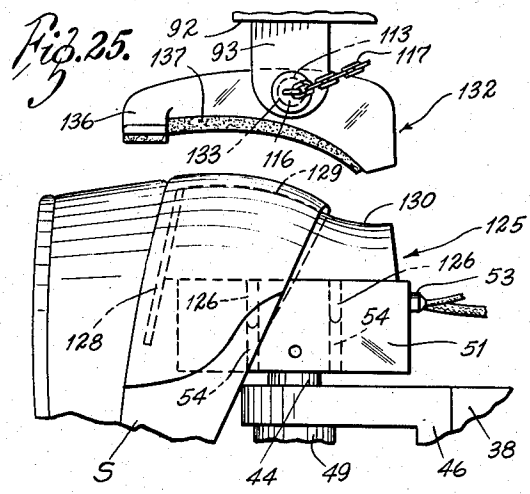


Fig. 27.

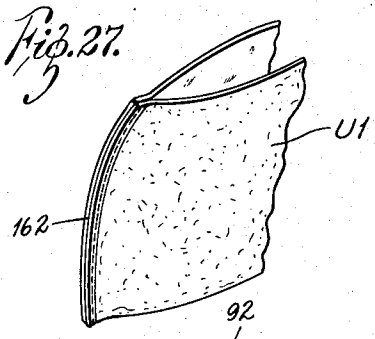


Fig. 26.

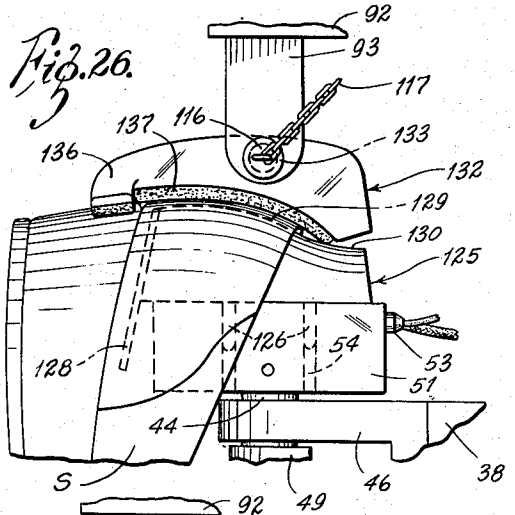


Fig. 28.

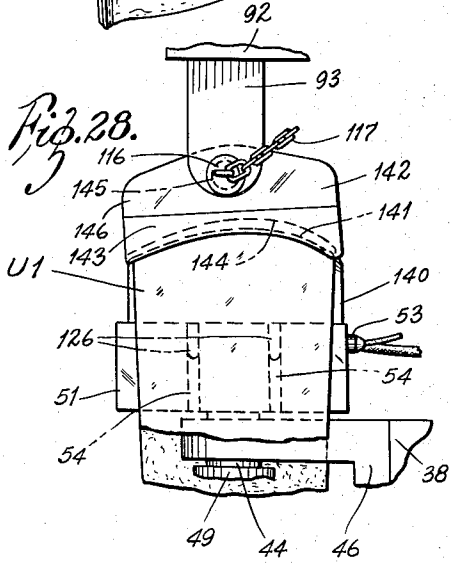
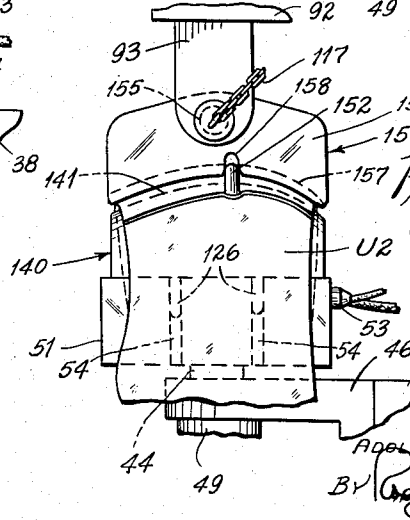


Fig. 29.



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Oct. 27, 1953 A. H. ALTVATER 2,656,554

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Fig. 30.

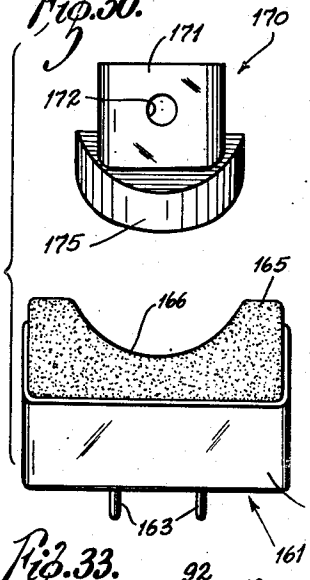


Fig. 31.

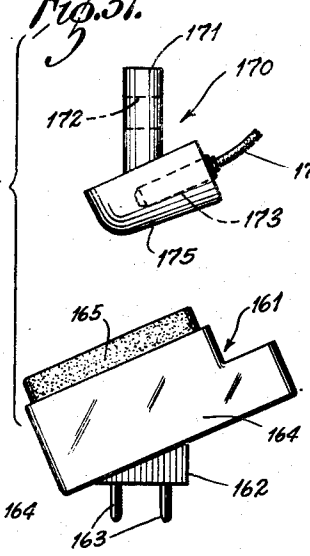


Fig. 32.

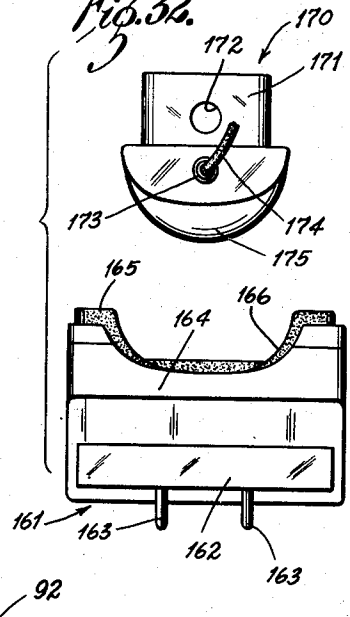


Fig. 33.

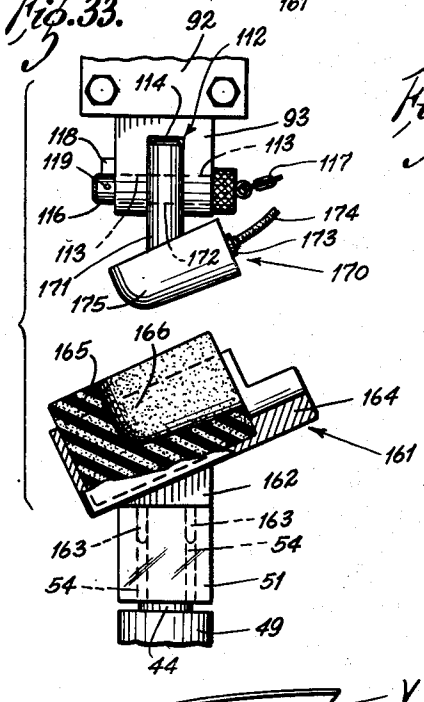


Fig. 34.

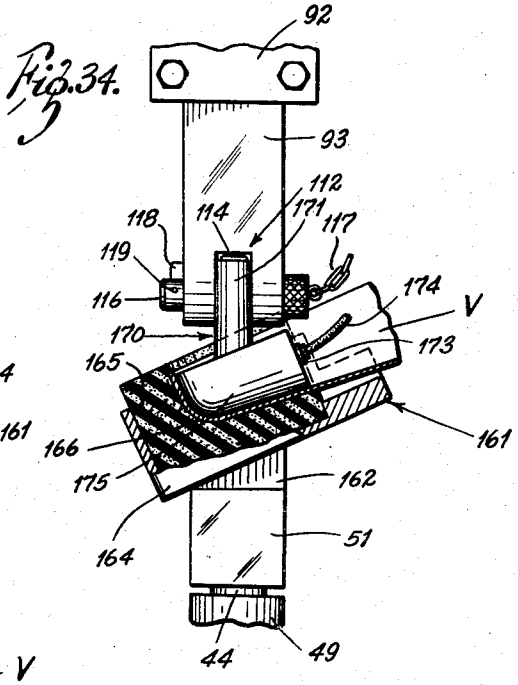
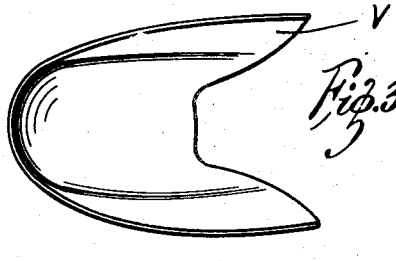


Fig. 35.



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Fig. 36.

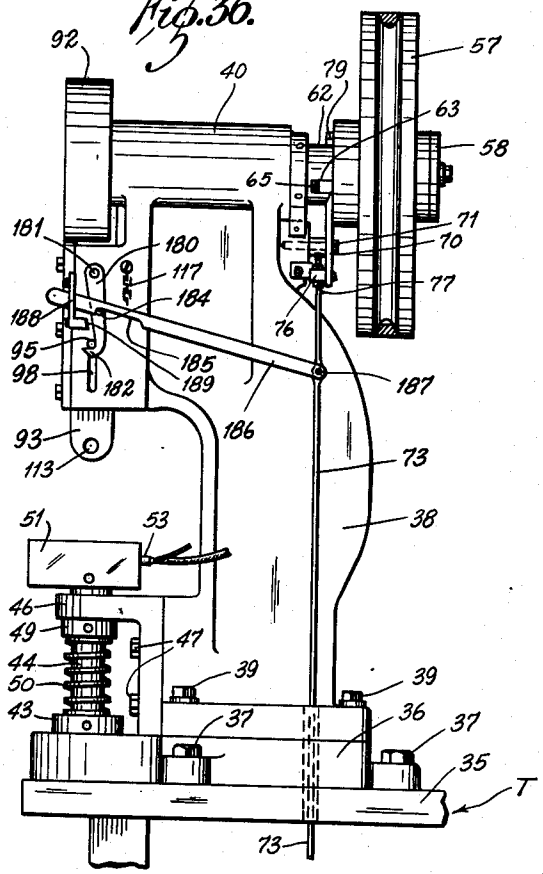


Fig. 37.

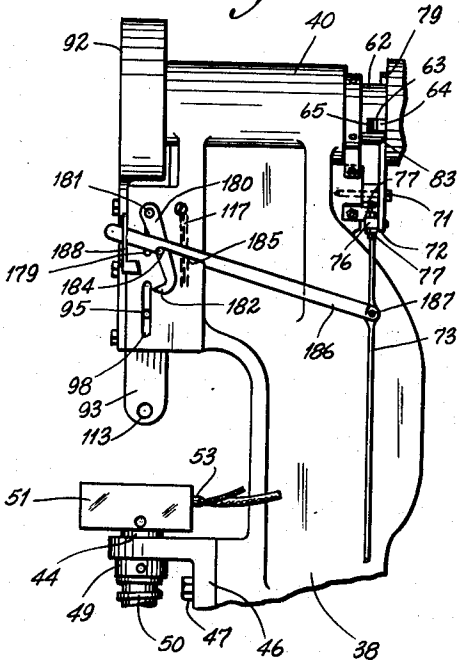


Fig. 38.

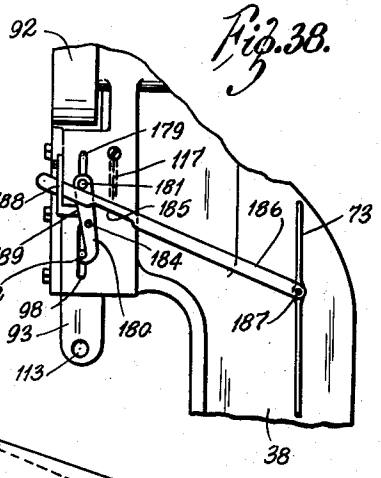
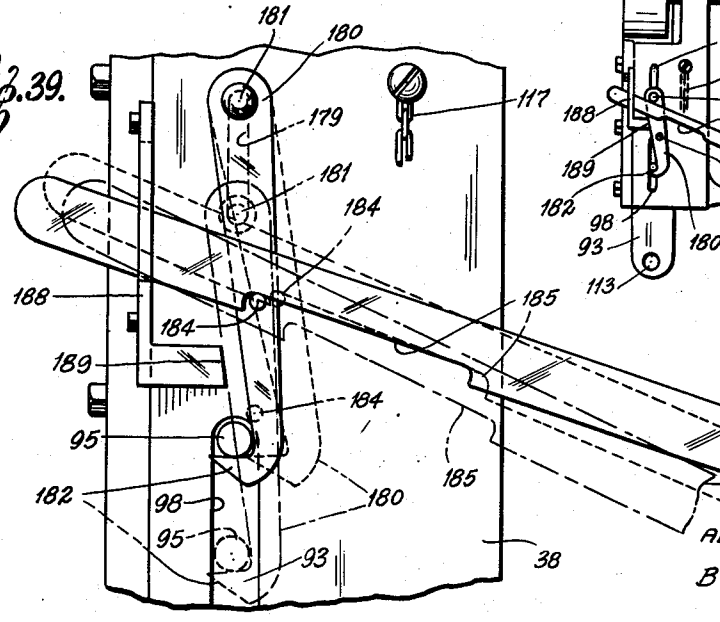


Fig. 39.



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Patented Oct. 27, 1953

2,656,554

UNITED STATES PATENT OFFICE

2,656,554

SHOE BACK LINE PRESS

Adolf H. Altvater, Chesterfield, Mo., assignor to Western Supplies Company, St. Louis, Mo., a corporation of Missouri

Application October 27, 1949, Serial No. 123,951

10 Claims. (Cl. 12—51)

1

The present invention relates to a shoe back line press, and more particularly to a so-called back seam press.

Heretofore, the conventional method of treating back seams in shoe uppers has been manual. Such back seams include the joined edges of the two quarters attached by a row of stitching, and with the quarters ultimately pulled around so that the seam is inside the shoe. In order to overcome the undesirable ridge effect of the inturned seam edges, it has been the practice in the past to employ a rubbing tool, operated manually, and to rub the seams therewith until the left edges are spread out and are much flatter than prior to such treatment.

The present invention is designed to provide a machine that will perform the above operation in much less time than the manual operation, and that will produce a better result. To this end, it is an object of the invention to provide a machine that, by a single press operation, can flatten back seams in shoe uppers. Another object of the invention is to provide a press of the foregoing type that will have a controllable time of application of pressure, and that will have a controllable application of heat to the seam at the time the pressure is being applied thereto. Another object is to provide a machine of this kind that will provide for the regulation of the amount of pressure, so that the force will be appropriate to the conditions of the given shoe upper being treated.

Another object of the invention is to provide a machine that is adapted to receive, by very simple procedure, suitable dies that are shaped to work upon variants of shoe styles and shapes, so that the machine can be employed with any number of different shoes.

Another function of this machine is to provide for the stretching of the top line of shoe uppers, and especially preformed shoe uppers of which the conventional slip-lasted shoes are typical. It is an object of this invention to provide a machine and process for performing this operation by a simple application of heat and pressure.

Another object of the invention is to provide a vamp forming press of the type that will shape the toe of a vamp. It is a particular object to provide a press that will, by the application of heat and pressure, so shape the toe of a vamp that it will be pre-shaped prior to its being applied to the shoe. It is a particular object to provide such a machine that will perform the shaping operation very simply and in a single press operation.

2

Another object of the invention is to provide a modified type of press of this kind capable of performing the functions aforesaid by a single treadle operation, particularly where initial depression of the treadle permits the upper press member to descend so that the parts can be lined up with the work and causes quick descent of the upper die to apply heat to the leather, and subsequent treadle operation releases the clutch for operation of the press upon the thus aligned and perhaps partially heated work, and finally so that the release of the treadle again picks up the movable head of the press and returns it to its starting position.

In the drawings:

Fig. 1 is a front elevation of the machine with the die members omitted and with the lower treadle parts broken away;

Fig. 2 is a right side elevation of the machine shown in Fig. 1, but with the treadle parts indicated;

Fig. 2*a* is a fragmentary section of a treadle lock or latch arrangement;

Fig. 3 is a vertical section of the machine, taken on the line 3—3 toward the left side of Fig. 2;

Fig. 4 is a side elevation of the left side of the machine shown in Fig. 1;

Fig. 5 is a horizontal section, taken on the line 5—5 of Fig. 1;

Fig. 6 is a front-to-rear, vertical, medial section taken on the line 6—6 of Fig. 1;

Fig. 7 is a vertical transverse section through the plunger drive, taken on the line 7—7 in the upper left portion of Fig. 6;

Fig. 8 is a section on the line 8—8 at the upper right of Fig. 6, showing part of the clutch mechanism in pedal-released position;

Fig. 9 is a section on the line 9—9 also at the upper right of Fig. 6, and showing another part of the clutch mechanism;

Fig. 10 is a section similar to that of Fig. 8, but showing the clutch in a pedal-depressed position;

Fig. 11 is a section through the main shaft, taken approximately on the line 11—11 of Fig. 8, but showing the clutch jaws in clutch engaging position;

Fig. 12 is an edge elevation of the clutch arm;

Fig. 13 is a side elevation of one of the clutch jaws;

Fig. 14 is a view of the clutch jaws from the side opposite that shown in Fig. 11 and partly broken away;

Fig. 15 is a top view of a ram lowering lever for use in operating the press;

Fig. 16 is an elevation partly broken away of a

latch pin for holding the die elements in the press;

Fig. 17 is a view partly broken away of the lower end of the press ram fork in which die elements are engageable;

Fig. 18 is a top view partly broken away of the bed portion of the machine;

Fig. 19 is a side elevation of two complementary die elements for use in the machine, particularly for top line stretching;

Fig. 20 is an end elevation of the die elements shown in Fig. 19;

Fig. 21 is a side elevation of two other complementary die elements for use in the machine, particularly for back seam pressing;

Fig. 22 is an end elevation of the die elements shown in Fig. 21;

Fig. 23 is a side elevation of another die element having a heater, for use in the machine;

Fig. 24 is a side elevation of two further complementary die elements for use in the machine, the upper die having a positioning notch that receives a kicker ridge on a shoe;

Fig. 25 is a side elevation of parts of the machine, showing the die elements of Fig. 19 in place and a shoe thereon preparatory to back seam pressing or top line stretching;

Fig. 26 is a view of the parts shown in Fig. 25, but with the presser elements down;

Fig. 27 is a perspective view of a shoe upper part showing a back seam, the upper being inside out;

Fig. 28 is a view of the die elements of Fig. 21 on a machine, used to press the seam shown in Fig. 27;

Fig. 29 is a view of the machine with the die elements of Fig. 24 therein in use to press a back seam;

Fig. 30 is a view of a die set for shaping shoe vamps in their toe portions;

Fig. 31 is a side view of the die set shown in Fig. 30;

Fig. 32 is a rear view of the die set shown in Fig. 30;

Fig. 33 is a view partly in section showing the die set of Fig. 30 on the machine, the machine being in front elevation corresponding to Fig. 1;

Fig. 34 is a view similar to Fig. 33 but with the die in pressure applying position on the work;

Fig. 35 is a top view of the work shaped by the die of Figs. 30–34;

Fig. 36 is a side elevation of a modified type of machine showing a single treadle operation with the pressure head in retracted position;

Fig. 37 is a view similar to Fig. 36, but showing the treadle in partially depressed position and the die head in its released downward position;

Fig. 38 is a fragmentary view similar to Figs. 36 and 37 showing the treadle in fully depressed position; and

Fig. 39 is an enlarged view of the latch mechanism between the treadle parts and the head.

In general, the machine consists of a base having a bed element thereon that preferably is heated. In addition, there is a power wheel on the machine to which a shaft may be selectively clutched. This shaft causes reciprocation of a crank head upon which die elements may be mounted, which die elements also may be heated. The clutch mechanism is operated by a treadle in such wise that, when the treadle is depressed, the clutch will cause pressure to be applied to the machine head. In one form of the invention, the head may be initially lowered for alignment and preheating of the work, by depression of a second treadle. In another form the head may be lowered by preliminary depression of a single treadle, further depression of which actuates the clutch and obtains application of pressure. In both cases, release of the main treadle causes retraction of the head.

As shown in Fig. 2, the machine is mounted upon a floor F, there being a table T on the floor, which table has a top **35** upon which the machine proper is supported.

The machine includes a bottom plate **36** that may be held as by bolts **37** to the table top. A pedestal **38** is also attached as by bolts **39** to the bottom plate **36**. The pedestal **38** is rounded as at **40** at its upper end, so as to receive and provide bearing support for an operating shaft **41** that extends from front to rear of the pedestal **38**. It will be understood that the bottom plate **36** and pedestal **38** are firmly attached together and constitute the main base or support part of the machine.

The bottom plate **36** of the machine has a bed member supported on it to cooperate with a movable press head. The bed has a threaded collar **43** mounted in a suitable threaded opening and rotatable by a proper spanner wrench. A reciprocable column **44** has a reduced lower end **45** that is slidably received within the axial opening through the collar **43**. The upper end of the column **44** passes through and is guided by a bracket **46** held by screws **47** onto the lower part of the pedestal **38**. Immediately beneath the bracket **46**, there is a collar **49** threaded onto an upper threaded portion of the column **44**. Between the collars **43** and **49**, there is a stiff coil spring **50**. At the top of the column **44**, there is a heater block or pressure-receiving element **51**. This heater block has imbedded therein an electric heater element **52**, and the heat-responsive element **53** of a thermostat system (Fig. 18). The upper surface of the heater block is provided with two holes **54** that are particularly positioned and spaced for a purpose to appear. It will be apparent that, when pressure is exerted on the top of the block **51**, it may be absorbed in part by a compression of the spring **50**.

As previously noted, the main shaft **41** at the top of the pedestal **38** is adapted to transmit movement from a source of power to a reciprocable pressure head or ram. There is a driving pulley **57** that is rotatably mounted upon one end of the shaft **41** and is held onto the shaft against axial displacement therefrom by an end plate **58** attached to the shaft. This pulley wheel **57** is typical of a power means to drive the shaft **41**. In its forward face, the driving wheel **57** has a circular recess **59** into which two pins **60** and **61** project. Viewed from the front of the machine, the two pins **60** and **61** have their clockwise faces flattened (Fig. 9).

Immediately forward of the driving wheel **57** upon the shaft **41**, there is a clutch collar **62** that is pinned to the main shaft **41**. This collar **62** has a flange at one end that covers over the open end of the recess **59** in the driving wheel **57**. The clutch collar **62** has a generally rectangular recess **63** extending axially along it and receiving a clutch dog **64** that is reciprocable in the recess and is urged backwardly of the machine by a coil spring **65**, illustrated particularly in Fig. 11. The radially outward edge of the dog **64** has a slot **66** across it. This slot has one edge **67** sloping as is illustrated particularly in Fig. 13. The larger end of the slot **66** faces clockwise when viewed from the front of the machine.

When the dog 64 projects backwardly from the collar 62 in the manner shown in Fig. 11, it can be engaged by either of the pins 60 and 61, so that rotation of the driving wheel 57 will cause rotation of the shaft 41. When, however, the dog 64 is retracted forwardly of the machine, it is out of the path of both of the pins 60 and 61 so that the driving wheel 57 rotates freely on the shaft 41 without rotating the shaft.

The clutch is treadle operated and the operating mechanism includes a clutch shifter arm 70 that has a hub, by means of which it is pivoted at 71 to the pedestal 38. The clutch shifter arm 70 is of the fork lever type and has a projecting end 72 that is adapted to receive a connecting link or rod 73 that extends downwardly through the base 36 and is attached to a treadle 74. The treadle 74 is pivoted at 75 to the floor. Preferably the link 73 passes through a collar 76 swivelled onto the end of the arm 70, and has adjusting nuts 77 on opposite sides of the collar. By this arrangement the relationship of the clutch arm 70 and the treadle 74 may be adjusted.

The clutch shifter lever 70, as previously stated, is forked so as to have ends 79 and 80 astride the shaft 41, and also of the collar 62 just forwardly of the flange thereof. The arm 79 has a sloping approach surface 82 and the other arm 80 has a similar surface 83. When the arm 80 is down, as shown in Fig. 10, the arm 79 is drawn over toward the collar 62, so that the sloping edge or surface 82 is in position to be engaged in the notch 66 of the clutch dog 64. Consequently, as the shaft rotates with the clutch engaged, the dog 62 will be rotated to bring the sloping surface 67 of the notch 66 thereof over the sloping surface 82 on the end 79 of the fork, and, as a result, the dog 64 will be drawn forwardly of the machine to disengage from the pins 60 and 61 and permit the driving wheel 57 to rotate freely on the shaft 41. This forward displacement of the dog 64 compresses the spring 65.

Subsequently, if the pedal 74 is elevated, the clutch shifter lever 70 will be displaced to the position of Fig. 8. This will withdraw the end 79 from the groove 66 of the clutch dog 64, whereupon the spring 65 will throw the clutch dog backwardly of the machine where it will be engaged by one of the pins 60 and 61. Thereupon, the sleeve and shaft will be rotated by the driving wheel 57 for a half a revolution until the dog 64 is picked up on the sloping surface 83 of the other arm 80 of the lever 70, as shown in Fig. 8. This will again stop the shaft 41. Thus it may be seen that the shaft 41 operates for half a revolution each time the treadle 74 is either elevated or lowered.

The forward end of the shaft 41 has an eccentric 88 attached to it. This eccentric is surrounded by a ring crank 89 that is pivoted at 90 to a reciprocating driving member 91, which latter is restricted to travel in a vertical direction by virtue of a groove in the member 36, which is closed by a cover 92 that also covers the cam 88 and the ring crank 89.

In the first embodiment of the invention, illustrated in Figs. 1–14, there is a plunger 93 below the driving member 91 that is also limited to the reciprocal movement aforesaid. The plunger 93 is normally urged and maintained in an upper position by two springs 94 on opposite sides that are attached to pins 95 on the plunger 93 and pins 96 that are attached to the pedestal 38. The pins 95 can reciprocate in slots 98 in the sides of the pedestal 38. The slots 98 limit the travel of the plunger 93. The plunger 93 and the driving member 91 constitute a press ram.

In this first embodiment as shown especially in Fig. 4, one of the pins 95 receives the slotted end of a ram lowering lever arm 100 that is pivotally or rockably mounted at 101 on the side of the pedestal 38. Between its ends, the lever 100 is pivotally connected to a rod 102 that extends down through suitable openings in the base of the machine and the table, and is connected pivotally to an ear 103 of a second treadle 104, that is rockably mounted on a fixed bracket 105. The lever 104 has a hold-down latch on it that is not required to be shown in great detail. However, in Fig. 2a is indicated a latching element 107 that is adapted to engage with an edge 108 on the treadle when the treadle is depressed and pushed back slightly which is permitted by virtue of the play in the pivot mounting. The treadle may be released by giving it a lateral pressure so that the edge 108 comes out from under the latching element 107.

It will be evident that, when the pedal is depressed, the rod 102 is pulled downwardly, thereby drawing down the ram lowering lever, and consequently forcing down the plunger 93.

The lower end of the plunger 93 is bifurcated, as indicated at 112. As shown in Fig. 17, particularly, the forked ends of the plunger have aligned holes 113 through them. Also, there is a compression spring 114 retained in an opening at the base of the bifurcations, and projecting therefrom.

A retaining pin 116 is adapted to fit through the holes 113. This pin 116 is maintained conveniently located by a chain 117 connected to the head 38. A latch plate 118 is freely pivotally mounted on a pivot 119 in the end of the latch pin 116. The latch plate 118 is of a length to swing out at its ends beyond the limits of the latch pin 116 when the latter is in a horizontal position. Thus, when the latch pin 116 is passed through the holes 113 horizontally, the latch plate 118 will swing to the vertical position and its ends will engage the sides of the bifurcated ends of the plunger 93 to prevent fortuitous removal of the latch pin 116. By finger action, the latch plate 118 may be drawn to a horizontal position for removal of the pin 116. This removal is aided by a compression spring 120 that is mounted around the latch pin 116.

This machine is designed to receive back line shaping dies, top line stretching dies and vamp shaping dies, as previously mentioned. One such set of dies is shown in Fig. 19. It includes a bed die 125. This die has pins 126 that are positioned and shaped to fit into the holes 54 in the bed plate 51, so that the bed die 125 is accurately aligned. As will appear, the various bed dies have such pins as the pins 126, so that any number of differently shaped dies may be applied to the bed and properly aligned.

The particular bed die 125 has on it a heel seat plate 128 that, as will appear, may fit against the heel seat of a shoe placed on the die. The surface of the die 125 is accurately shaped to provide the proper shaping of the back line or back seam of the shoe, and, in general, the portion 129 of the die, which is essentially its upper edge as appearing in Fig. 19, is shaped like the desired shape of the back seam of the shoe on the inside. An additional part 130 curves more

or less oppositely and is of a length to extend out the upper part of the shoe. The part 130 includes a portion that receives the back of the top edge of the shoe.

A companion plunger die 132 has an opening 133 that is on a ridge or rib part 134 on this die. This rib part is adapted to be received in the bifurcated portion 112 of the plunger, as will appear, so that the pin 116 may pass through the hole 133. In this particular plunger die, there is a laterally extending part 136 that is concave on its lower surface. The laterally extending portion 136 at the end of the die 132 is located somewhat beyond the heel seat plate 128 on the other die 125 for a purpose to appear. The lower surface or edge of the rib part of the die is concave and is shaped more or less complementarily to the shape of the upper part of the bed die 125, and the entire lower surface may be somewhat padded at 137 with material that will prevent injury to a shoe.

As shown in Figs. 25 and 26, the particular die set 125—132 is especially used in closed shoes and is illustrated in connection with a slip-lasted shoe. There the shoe, indicated as S, is shown mounted over the die 125. In Fig. 26, the other die 132 has been brought down onto the outer part of the seam. The details of this operation will be described hereafter.

Another type of dies that are used with the present machine and process are shown in Figs 21, 22 and 28. There, there is a bed die 140 that is more or less rounded on its upper surface, as shown by comparison of Figs. 21 and 22. The die has pins 126 as before. The plunger die 142 has an enlarged flanged lower portion 143 with a concave lower surface 144 that is more or less complementary to the upper surface 141 of the lower die 140.

As shown in Fig. 28, this die is particularly adapted for uppers prior to their being closed at the bottom. That is to say, this type of operation is usually performed prior to lasting. Fig. 28 shows the bed die 140 over which a shoe upper U1 is draped, so that the back seam comes about the middle of the surface 141. The upper die 142 is lowered upon the outside of the upper and applies pressure thereto, as will be described hereafter. The hole 145 in the rib portion 146 of the upper die 142 is engageable into the bifurcated end of the plunger 93, and secured therein by the pin 116.

The upper die may have a heater in it, as is shown in the die 147 in Fig. 23. The heater element 148 is energized through a power cable 149 that may be plugged in as at 150 to a source of electrical power.

Figs. 24 and 29 show another modification of the dies, in this case for use with an upper U2 that has a kick ridge 152 across its back. In this type of die, the die 140 of the previous description may be used, but the upper die 154 with its hole 155 in the ridge-like part 156 has a concave lower surface 157 that is indented, as at 158. The recess 158 can receive the kick ridge 152 so that the seam operation can be performed. Also, as will appear, this upper U2 may be aligned by the use of the pedal to bring the plunger 93 down, so that the rib 52 is positioned within the recess 158, an operation that automatically aligns the upper U2 with both of the dies.

Figs. 30 through 35 show another type of the dies that are used with the present machine. This type is for shaping vamps at the toe parts. In this type of die, there is a bed die 161 having a bottom part 162 that may be of metal or the like, it having pins 163 that correspond to the previously described pins for fitting into the holes in the bed of the machine. This bed die has a metal casing 164 attached to the bottom 162. This metal casing is somewhat box-shaped and holds a cushion type die element 165 that is preferably made of rubber. The die member 165 has a recess 166 in it that is shaped to the desired shape of the toe of a vamp of a shoe. It will be noted that this opening 166 is disposed so that the tip of the shoe is to the left of the operator facing the front of the machine as the machine appears in Fig. 1. Also, the die member slopes upwardly and to the right with respect to the base of the machine. This disposition enables the operator to slip the work in between the dies when they are relatively close together.

The plunger die member is shown at 170. It has an upstanding tongue 171 with the hole 172 for interfitting into the ram member 93 and to receive the holding pin 116. The lower end of this pressure member is shaped as at 175 to be complementary but slightly smaller than the shape of the recess 166 in the lower die member. It contains a heater element 173 that preferably is an electric heater having a wire 174 by means of which it can be connected to a source of electric power.

Fig. 34 shows a vamp V that is being shaped by this arrangement in a manner that will be described in detail hereafter.

A second embodiment of the press operating mechanism is shown in Figs. 36–39. This embodiment is operated by a single treadle which, in its initial depression, releases the lower element 93 of the ram head and, in further depression of the treadle, operates the clutch to cause pressure to be applied thereto.

In this embodiment, the ram head 93 is not attached by the springs 94 to the upper member 91. It does, however, have the pin 95 at its top that acts in the slots 98. This pin performs a function not present in the previous embodiment.

In the second embodiment, there is a latching lever 180 that is rockably mounted on a pin 181 that passes through a slot 179 in the side of the frame and is attached to the upper press ram element 91. The latch 180 depends downwardly and has a hook 182 that can engage beneath the pin 95, and thereby control the vertical descent of that pin and of the head element 93. Between its ends, the latching arm 180 has a releasing pin 184 that projects laterally from the arm. This pin engages in an elongated notch 185 in a connecting link 186. This link is pivoted at 187 to the treadle rod 73. At its other end, it is supported in a bracket 188 that is attached to the front of the machine. This bracket is slotted so that it will permit a rocking and sliding movement of the end of the link 186, but will maintain the end of that lever within limits of action, as will appear.

In the description of the operation of this embodiment of the invention to be made hereafter, it will appear that the initial depression of the treadle, which causes descent of the rod 73, will, by action of the link 186 and its notch 185 against the lug 184 on the latching lever 180, withdraw the latching lever so that its hook end releases the pin 95. When this pin is released, the plunger 93 descends by gravity, and thereby the work can

be aligned with respect to both die members. Also when the upper die is heated, the initial descent of the plunger produces increased period of heating of the work. Subsequently, upon full depression of the treadle, the clutch is operated and the pressure is applied through the press head. This causes a re-latching of the latch element on the pin 95 so that subsequent upward movement of the press head returns the parts to the position of Fig. 36.

Operation and method

Both embodiments of the machine provide for the mounting of a suitable bed die on the lower bed element 51, and a presser die on the lower ram element 93. Either one or both of the die elements may be heated and the temperature may be controlled as by suitable thermostatic means illustrated. Both embodiments provide for the preliminary lowering of the upper die element onto the work so that the work may be properly aligned with both the upper and lower die members, and to give an early start to the heating of the work.

In the first embodiment, the work will be draped over the lower die element as a preliminary step. In order to insure proper alignment with the upper die element, the second treadle 104 can be depressed. This will rock the ram lowering lever 100 downwardly in Fig. 4 about its pivot 101. This action, in turn, will cause the descent of the lower ram member 93 against the action of the springs 94. The parts may be then in some position such as that illustrated in Fig. 26 and under control of the treadle so that the shoe may be adjusted with respect to the dies. Where the dies are heated (and especially where the upper die is heated), this initial step gives an early start to the heating of the leather. Of course, a full force maintained upon the second treadle may perform the die action manually. However, ordinarily the action will be automatically performed by a subsequent depression of the main treadle 74.

A depression of the main treadle 74 will rock the bell crank clutch release arm 70 about its pivot 71. At the starting position, this lever is as shown in Fig. 8. If it is rocked clockwise in that view until the arm portion 79 engages the collar 62, the arm portion 80 will be withdrawn and it will release the block 64 so that the spring 65 can move the block toward the driving pulley 57. When the block is in such position, one or the other of the two pins 60 and 61 will engage the block and the rotation of the pulley wheel 57 will then cause rotation of the collar 62 and with it the shaft 41. In turn, the eccentric 88 will be rotated. After half a revolution the eccentric 88 will have lowered the ram so that pressure is applied to the upper die, thus performing the press operation of the dies. With this normal cycle of operation of the two treadles in the order named, there will be at least a certain minimum dwell of the work between the dies during which the work is heated.

The aforesaid half revolution of the eccentric required to act upon the ram will be accompanied by a rotation of the clutch block 64 one hundred eighty degrees until it moves toward the then inward arm 79 of the bell crank lever 70. As it approaches the one hundred and eighty degree position, the groove 66, 67 rides up on the slope 82 of the arm 79, and, when the full half revolution is obtained, this foregoing inter-action of the arm 79 with the block 64 causes the block to be withdrawn from the pins 60 and 61, whereupon the shaft 41 stops rotation. The machine thus applies the pressure to the dies and dwells in the pressure-applying position so long as the treadle remains depressed.

After the desired length of time of application of pressure, the treadle is lifted. This returns the bell crank arm to the position shown in Fig. 8, and releases the clutch block 64 from the arm 79. The clutch again engages and the shaft is rotated another half revolution until the clutch block is caught over the arm 80 of the clutch shifter lever 70. This again disengages the clutch and the machine stops in its starting position.

In the embodiment of the machine shown in Figs. 36–39, the starting position of Fig. 36 finds the upper die elevated. The work is draped over the upper die, and, in order to align the work with respect to the upper die, the treadle is partially depressed as, for example, to the position of Fig. 37. This withdraws the pivot end 187 of the connecting link 186 to the right in the drawings, which position is indicated by the dotted line of Fig. 39. The end of the notch 185 and the link 186, by engagement over the lug 184, pivots the latch 180 slightly clockwise to the position of Fig. 37, in which position the hook end 182 is relieved from the pin 95 on the lower ram element. The lower ram element may thereupon drop by gravity until the parts occupy again the position illustrated in Fig. 26, in which the parts may be aligned with the work. A subsequent release of the treadle while the parts are being aligned will have no effect because the return of the latch 180 cannot again hook the pin 95 as the latter has descended. The latch 180 will rock clockwise until it engages the stop 189 on the bracket 188.

When it is desired to obtain a pressure action, the treadle is depressed all the way, which operates to cause clutch engagement and a half rotation of the shaft, followed by descent of the ram head in the manner of the first embodiment. The descent of the ram head carries the pin 181 downwardly, as shown in Fig. 38, and with it the latch link 180. This action, of course, applies pressure to the upper die member to cause the formation of the vamp into the desired shape. As before, the press head is driven down by the power means, and the clutch operates to disengage the power means with the ram in its lower position. This will permit the proper shaping of the vamp under the action of heat and pressure in the two die members.

When the ram reaches approximately its lowermost position, the bottom edge of the hook 182 of the latch 180 slides over the top of the pin 95 and around the same so that the latch again hooks onto this pin, as indicated in the dash lines in Fig. 39 and as shown in Fig. 38. After the ram has been down the desired length of time, the treadle is reverse operated to again connect the power means and the driving shaft so that the ram head is lifted. As the latch 180 is now engaged on the pin 95, the lower ram head, and with it the upper die member, is lifted. The parts are then returned to their starting position for a subsequent cycle of operation.

Thus, while both embodiments of the press arrangement provide for the manual lowering of the ram to permit alignment of the die elements with the work and both provide for the power operation of the press, the second embodiment obtains the foregoing cycles of operation

with a single treadle, whereas the first embodiment requires two treadles. Both provide, in their normal cycles, for an initial application of the dies to the work to start the heating promptly and increase the minimum dwell of the compression phase without slowing down the entire cycle (as by slowing the speed of the drive shaft).

The relationship of the treadle **74** to its operations and hence the relationship of the operations to each other may be adjusted by adjusting the nuts **77**.

A simple form of upper U**1** is shown in Fig. 27 as having a back seam **162**. This seam is on a curved line so that the back line of the shoe will ultimately conform to the heel of the wearer. The upper in Fig. 27 is, of course, inside out and, when it is part of a completed shoe, it will be turned right side out so that the smooth part of the seam is exposed. This, however, leaves the two meeting edges projecting inwardly of the shoe upper, and forming an undesirable ridge thereat. In the post, this ridge has been smoothed down by a manual operation. With a suitably shaped hand tool, a worker would rub the seam **162** down, spreading its two sides and reducing the ridge effect materially. The work required skilled operators and it could not, by the nature of things, be uniform or wholly satisfactory. Among other deficiencies, the hand method tended to produce an irregular and occasionally puckered or bulging back seam.

The applicant has discovered that satisfactory seams may be made very simply by the suitable application of heat and controlled pressures and forces to the shoe upper. Fig. 28 shows the shoe upper U**1** turned right side out and applied over the bed die **140**, with the plunger **93** down. The bed die **140** is brought to a proper temperature by the application of heat to the heating element **52**, which is transmitted to the working surfaces of the die through the metal of which the dies are made. This temperature is controlled by the thermal bulb **53** that is connected to the thermostat A. The operator draws the free ends of the upper tightly over the die **140** with the seam **162** of the upper along the upper edge **141** of the bed die **140**. Then, by operation of the machine in a manner hereafter to be explained, he causes the plunger **93** to descend and apply a determined pressure to the outside of the seam. With the die **142**, this force or pressure will be distributed over an area that extends to the opposite sides of the actual seam line, owing to the lateral extensions **143** of this die **142**.

The shape of the two dies is such as to give the seam or back line of the shoe its proper shape, and such shape will be arrived at despite some variations in the stitched shape of the upper. Also, the seam **162** itself will be properly spread and smoothed down so as to have a minimum projection inwardly of the shoe upper.

The foregoing is accomplished by the concurrent application of heat and pressure. In ordinary use of the machine, the pressure and heat may be applied only for a relatively few seconds, and at least several operations per minute can be performed. The resulting product will have a smooth, spread seam which does not have any bulges or wrinkles, and has only a minimum ribbed effect. A particularly important improvement in the present method over the hand method is that it does not produce bulges along the seam that are frequently inevitable in a hand operation. The present method produces a seam that conforms to the shapes of the die by stretching the upper where it is out of shape and somewhat compressing it also, until it does conform to the desired shape, and by heat, relieving the stresses that cause bulging, so that the shape is not only produced but also retained.

In Figs. 25 and 26 is shown another operation that is performed on the present machine. It is also a back line operation and involves the application of pressure and heat to the back and top line of a shoe. In a sense, it is a substitute for a lasting operation.

Slip-lasted shoes do not ordinarily have perfectly conformed uppers. By the use of the equipment shown in the drawings and particularly in Figs. 25 and 26, such shoes may be given a proper shape, as will appear.

The shoe S is disposed over the lower die in the manner of Fig. 25. The bottom plate **128** preferably extends substantially over the entire inside heel portion or heel seat of the shoe, and even may extend forwardly thereof as needed. The plunger die is then lowered, causing the shoe to be forced firmly over the die. With the plate **128** against the heel seat, at least at its lower end, and with the pressure applied against the back of the heel, the shoe is stretched along the sole, substantially from back to toe; and as the top line is held by the lower die, the entire upper is stretched, including the entire top line thereof. This action may be understood by considering a shoe requiring top line stretching, in which the top of the back seam is initially too far forward. When such a shoe is draped over the bed die **125**, it will contact primarily at two points, namely the lower or forward part of the plate **128** and the rightward part of the upper edge of the die **125**, about the area **130** thereof. The parts of the back of the shoe adjacent the heel will be spaced above the die **125**. When the plunger die **132** descends, it may first contact the shoe by the engagement of the heel extensions **136** with the heel of the shoe. Since the die is rockable about the pin **116**, it will, after such initial engagement, rock until it establishes a second point of contact with the shoe, to the right of the pivot **116**. Such may be obtained by parts of the upper die **132** to the right of the pivot **116** obtaining solid backing on the lower die **125**, after which further downward movement of the plunger die **132** will force the heel of the shoe downward while the top of the back seam is restrained against the bed die **125**. Where, as shown, the plunger die **132** contains a back line pressing portion such as the padding **137**, the entire action will also press the back seam. Hence this action not only smooths the back line, but also stretches the upper to eliminate wrinkles, and stretches the top line. The heat in the lower die, particularly, heats the leather to render it more pliable, and may also soften a thermoplastic counter if such is present in the shoe. The felt liner **137** shown on this upper die prevents injury to the shoe.

The dies of Figs. 24 and 29 are particularly used where there is a kicker rib **152** on the upper. In this type of operation, the plunger **93** will preferably be brought down by the second treadle, in the first embodiment, or by release action of the single treadle in the second embodiment to insure that the rib **152** fits within the recess **158**. This action also causes a proper

alignment of the back line along the lower die. Then the application of heat and pressure produces a bulge-free and wrinkle-free back line to the shoe, and spreads and smooths out any seam that may exist thereat.

The type of shaping operation performed on the die set of Figs. 30–35 is another one that is obtained by application of heat and pressure. A blank vamp is applied to the lower die 161 and is hand pressed into the recess 166. This may be done very conveniently from the front of the machine. Positioning the dies sideways enables the operator to conveniently slip the work between the dies and to have maximum vision of the work during the cycle of operation. Then, when the upper die member 170 is manually lowered, alignment can be insured and heating begun. Finally, the application of power to the upper die compresses the vamp V between the two dies. Heat in this case is preferably applied to the upper die 170, which is of metal, as the lower die, being made of rubber, is not a good transmitter of heat. The lower rubber die does not injure the outer surface of the vamp V. It is preferable to have the die members on a slope as indicated relatively to the angle of pressure application, since this insures a smooth operation, applies force to all critical parts of the vamp, and prevents the wiping of the vamp out of the tip part of the die recess. The tendency of the die surfaces is rather to wipe the vamp down toward the bottom of the recess as it appears in Figs. 33 and 34.

After the application of heat and pressure has continued for a necessary length of time, the press is operated to withdraw the ram with the upper die 170. Then the vamp will be found to have been preformed to a shape such as is indicated in Fig. 35.

Where it is desired to heat the upper die, this may be done by employing a die having a heating element 148, as illustrated in Fig. 23.

In using the various dies on the machines illustrated, the lower dies of desired shape are located on the bed plate 51 by means of the pins 126. The upper dies all have tongues, each with a hole, to receive the pin 116 by means of which they may be mounted on the plunger 93. When so mounted, they have a slight amount of rocking lost motion, so that they are self-aligning in use. The compression spring 114 is slightly compressed by this action, so that the upper dies do not unduly move about, but the upper dies are subject to some self-aligning operation so that they will properly engage with the upper and force it against the lower dies.

When the plunger descends to force the dies together, a spring pressure deriving from the spring 59 will act between the two dies. This force is adjustable by means of the member 43 so that the operator may have the proper force not too large nor too small between the die elements and acting upon the backs of the shoes. The initial elevation of the base die may be adjusted by moving the collar 49. This also may regulate spring force, as is evident.

The thermostat is adjustable in conventional manner to obtain the proper heat in the lower die.

It will be seen that this machine provides a very much improved method of treating back seams of shoes. It insures that they shall have the proper shape without bulges or wrinkles, and, where used with stitched seams, it provides a smooth spread seam that is superior to those that are now obtained by other methods. In addition, it can be used to provide a proper top line on shoes, an operation that is especially valuable in connection with preformed shoes such as those made by a slip-lasting process.

It will be understood that variations can be made within the scope of the invention, and it is intended to cover all reasonable equivalents that come within the language of the claims to follow.

What is claimed is:

1. In a machine for making shoes, a base, a first die element on the base, a second die element, means mounting the second die element for movement on the base toward and from the first die element, the two die elements having concavo-convex surface portions shaped to correspond to a finished concavo-convex shape in a shoe upper, whereby they may shape the upper when brought together, the mounting means for the second die element including means to force the dies together, and means to separate the dies after a selected period of compression, the said means for forcing the dies together and for separating them being power operated, and manually operable means for bringing the dies together with any selected space between them, said power operated means having manually controlled means for causing the dies to be forced together into compressing relationship, and to dwell in such positions.

2. In a machine for use in shoe-making, a base, a first die relatively fixedly mounted on the base, a ram movably mounted on the base, a second die on the ram, means for preliminary movement of the second die toward the first die, and means for forcing the second die toward the first die, an operating member movable from a first position to a second position, connections between the preliminary movement means and the operating member for effecting preliminary movement during initial movement of the operating member from its first position, and connections between the forcing means and the operating member to obtain application of force, by additional movement of the operating member to its second position.

3. A shoe machine, comprising a bed member; a first die member removably mounted on the bed member in a predetermined position; a ram member movable relative to the bed member; a second die member removably fastened adjacent one end of the ram member, the two die members having concavo-convex surface portions shaped to correspond to a finished concavo-convex shape in a shoe upper so that they will properly shape the same when brought together about it; means for moving the ram member toward the bed member to position the second die member adjacent the first die member; means for further moving the ram member toward the bed member to position the second die member closer to the first die member; and means for maintaining it in said position for any selected period of time.

4. A shoe machine, comprising a bed member; a first die member removably mounted on the bed member in a predetermined position; a ram member movable relative to the bed member; a second die member removably fastened adjacent one end of the ram member; manually operable means for moving the ram member toward the bed member to position the second die member adjacent the first die member; power means operable to move the ram member further to-

ward the bed member to position the second die member closer to the first die member; and means for maintaining it in said position for any selected period of time.

5. A shoe machine, comprising a bed member; a first die member removably mounted on the bed member in a predetermined position; a ram member movable relative to the bed member; a second die member removably fastened adjacent one end of the ram member; manually operable means for moving the ram member toward the bed member to position the second die member at any selected distance from the first die member; power means operable to move the ram member further toward the bed member to position the second die member in close proximity to the first die member; and means for maintaining it in said position for any selected period of time.

6. A shoe machine, comprising a base; a yieldable bed member adjustably mounted on the base and having limited movement relative thereto; means for removably mounting a die member on the bed member in a predetermined position; a ram member mounted on the base for reciprocating movement relative to the bed member; means for removably fastening a second die member to one end of the ram member; manual means for moving the ram member toward the bed member; power means for moving the ram member further toward the bed member; and means for maintaining the ram member in said last named position for any selected period of time.

7. A shoe machine, comprising a base; a bed member mounted on the base and containing means for removably receiving a first die member; a ram member mounted on the base for reciprocating movement relative to the bed member; a second die member removably fastened to one end of the ram member for slight pivotal movement so as to be self-aligning with the first die member; manual means for moving the ram member toward the bed member; power means for moving the ram member further toward the bed member; and means for maintaining the ram member in said last named position for any selected period of time.

8. A shoe machine, comprising a base; a bed member mounted on the base and containing means for receiving a die member; a ram member mounted on the base for reciprocating movement relative to the bed member between a retracted position and an extended position; manual means for moving the ram member from the retracted position toward the extended position; a power source; manually operable means for momentarily connecting the power source with the ram member to cause the latter to move to the extended position and remain there until the manually operable means is again actuated.

9. A shoe machine, comprising a base; a bed member mounted on the base and containing means for receiving a die member; a ram member mounted on the base for reciprocating movement relative to the bed member between a retracted position and an extended position; a power source; manually operable means for moving the ram member from the retracted position toward the extended position and for momentarily connecting the power source with the ram member to cause the latter to move to the fully extended position.

10. A shoe machine, comprising a base; a bed member mounted on the base and containing means for receiving a die member; a shaft rotatably mounted on the base and having an eccentric adjacent one end thereof; a ram member mounted on the base for reciprocating movement relative to the bed member between a retracted position and an extended position, said ram member being actuated in one direction by the eccentric; manual means for moving the ram member any selected distance toward the bed member; a power source; manually operable clutch means for connecting the power source with the shaft for rotating the latter one-half revolution to drive the ram member to the fully extended position, the clutch member being automatically disengaged after one-half revolution so that the ram member remains in the fully extended position until the clutch is manually reengaged.

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