Oct. 25, 1932. J. GOULDBOURN 1,884,660

MACHINE FOR SHAPING SHOE UPPERS

Filed Oct. 25, 1929 2 Sheets-Sheet 1

Fig. 1.

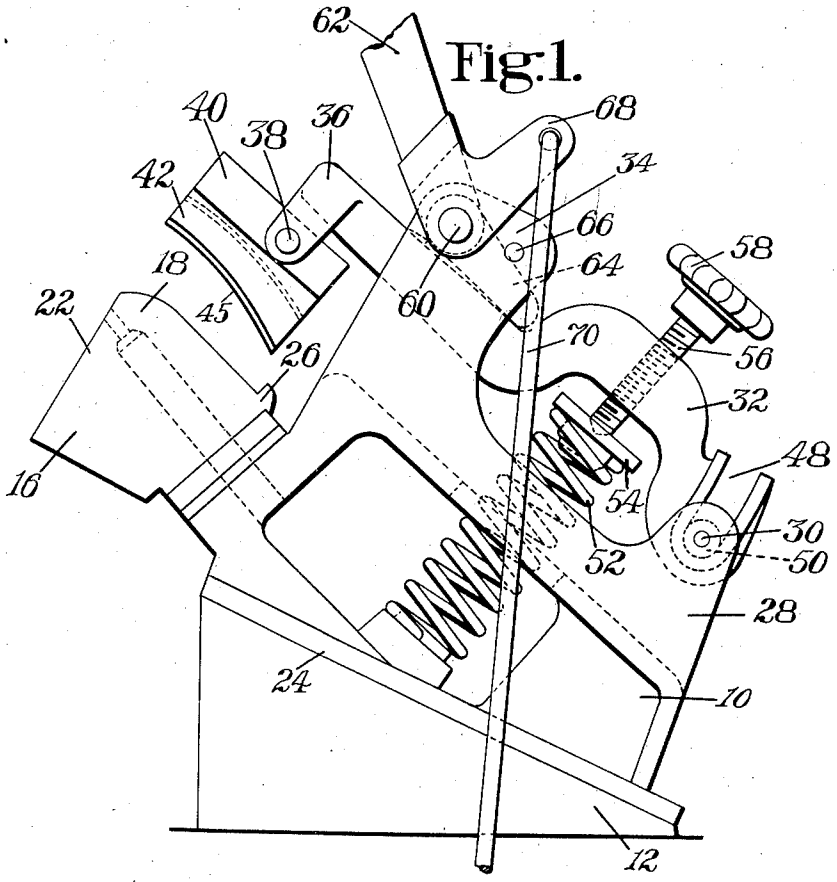
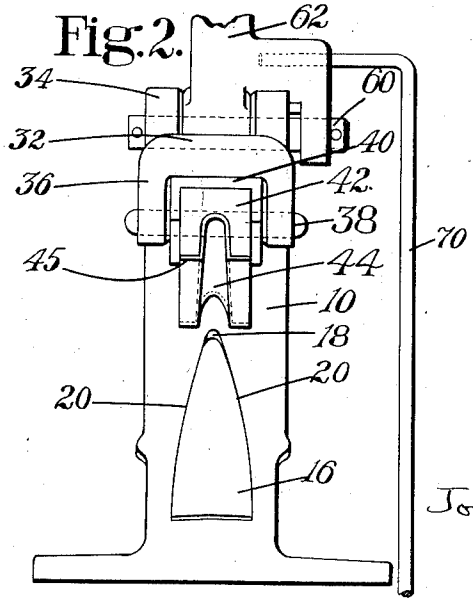


Fig. 2.



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Fig. 3.

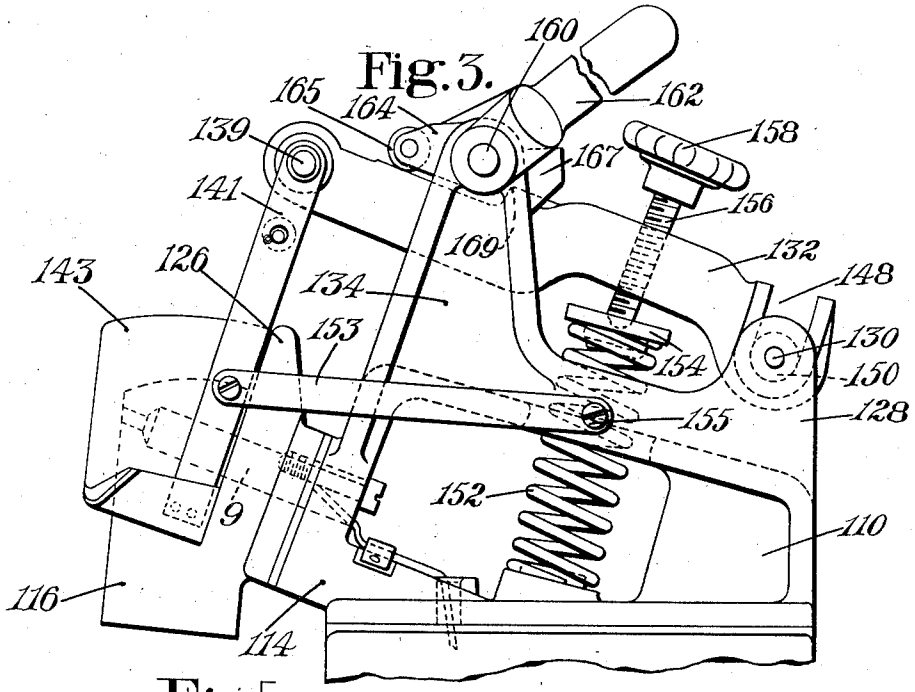


Fig. 5.

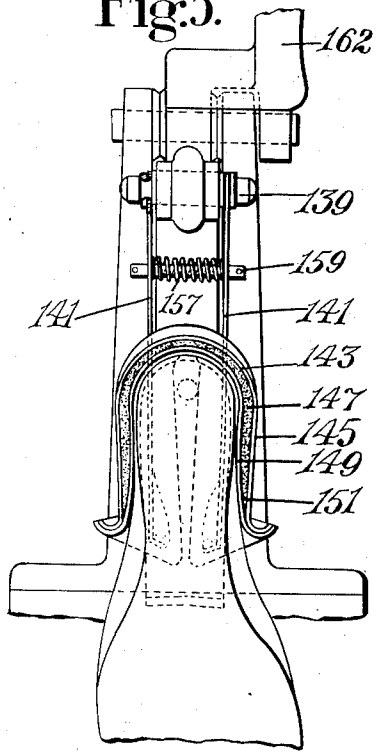
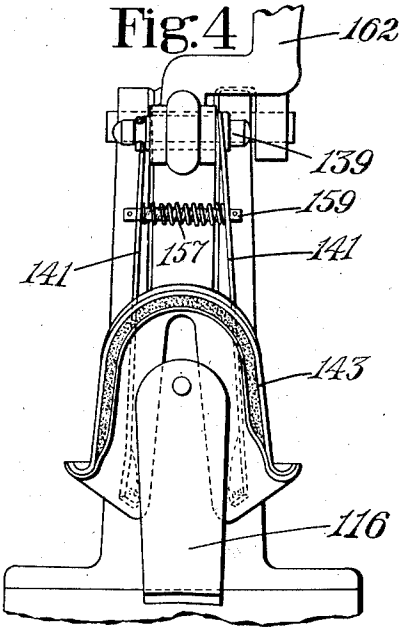


Fig. 4



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Patented Oct. 25, 1932

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UNITED STATES PATENT OFFICE

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MACHINE FOR SHAPING SHOE UPPERS

Application filed October 25, 1929, Serial No. 402,491, and in Great Britain November 12, 1928.

This invention relates to the shaping of shoe uppers and is illustrated herein as embodied in apparatus for molding rear portions of a shoe upper.

Prior to assembling a shoe upper with its last it is found desirable to shape or mold the back portion of the shoe upper while in its loose state so as clearly to define the middle and preferably the vertical middle line of the rear end of the upper and to flatten the back-seams of the quarter and of the lining especially at and adjacent to the top of the back-strap or back-seam. Such an operation will tend not only to keep the back-strap or back-seam straight and prevent the finished shoe from having a back-strap, or back-seam, that is distorted but also will assist the operator in properly positioning the shoe upper on a last with the back-strap, or back-seam, in alignment with the middle of the back of the last, thereby preventing defects from occurring during subsequent operations on the shoe due to improper positioning of a shoe upper on its last.

While thus molding the shoe upper in its loose state is of great assistance in making a well-shaped shoe, it is also found, after the completion of a shoe and the withdrawal of its last, that the upper portion of the quarter of the shoe upper around the heel end may and sometimes does have a somewhat wrinkled and unsightly appearance. Probably this distortion of the shoe upper is due to the fact that, while the stiffener tends to cause the lower part of the heel end to hold its shape, the comparatively stiff and rigid back-strap, or back-seam, tends to pull back the top margin of the quarter thus causing a wrinkle to appear in the upper portion of the quarter, from the top of the back-strap, or back-seam, to the forward ends or wings of the stiffener. As a result not only is the outside of the shoe unsightly but the lining also is wrinkled. Accordingly, the shoe can be improved both as regards appearance and comfort if it be subjected after manufacture to a molding of the top part of the heel end of the quarter, which operation may be subsequent to and cumulative with the molding of the loose upper previously described.

If the molding be accompanied by heating of the shoe upper, it will be even more effective, the heat tending to contract or shrink the leather lining and so permanently to remove wrinkles therefrom, thereby assisting in molding the top portion of the heel end of the quarter whereby not only are the outside and inside of the top portion curved in a continuation of the curves of the lower portions supported by the stiffener but a close fit of the top portion of the quarter around the ankle of the wearer of the shoe will be assured.

In view of the foregoing it is an object of the present invention to provide means for performing operations such as the molding operations above described satisfactorily and economically, and with this object in view the invention provides apparatus comprising, as illustrated, a device for molding a portion of the back of an upper before it is affixed to its sole so as to define the vertical middle line of the top of the rear end of the upper and to flatten the back-seams of the quarter and the lining at or adjacent to the top of the back-strap, or back-seam, and also improved means for molding the back and sides of the quarter of a finished shoe.

In accordance with an important feature, the invention provides inner and outer molds, and, as illustrated, one of said molds is supported upon a pressure lever for movement in one direction to engage and shape the rear end of the upper of a substantially completed shoe, means being provided to move the pressure lever in another direction to apply pressure to cause the molds to shape also the sides of said shoe upper.

Further features of the invention include means for moving the outer mold toward the inner mold to clamp the heel end of a shoe upper therebetween to receive its shape therefrom, means constructed and arranged to prevent creeping movement of the molds relatively to each other heightwise of the shoe while molding pressure is being applied to the shoe upper; and means for holding the molds in said position.

With the above and other objects and features in view, the invention will now be de-

scribed with reference to the accompanying drawings, and pointed out in the claims.

In the drawings,—

Fig. 1 is a side elevation of the device arranged for defining a crease along the middle of the back-strap, or back-seam, and for flattening the back-seams in the lining and the quarter;

Fig. 2 is a front elevation of the parts shown in Fig. 1;

Fig. 3 is a side elevation of the device arranged for shaping the back and sides of the upper of a finished shoe;

Fig. 4 is a front elevation of the parts shown in Fig. 3 with the molds in inoperative position;

Fig. 5 is a front elevation of the parts shown in Fig. 3 illustrating the closed position of the outer mold relatively to the inner mold during the molding of the back and sides of a shoe upper.

There will now be described with reference to Figs. 1 and 2 a device arranged for molding the heel end of an assembled loose upper to define a crease along the middle of the back-strap, or back-seam, and to flatten the back-seams in the lining and the quarter. The device comprises a base 10 mounted upon a sloping sub-base 12. To the lower front portion 14 of the base 12 there is fixed by means of screws a stationary inner mold or form 16 of nickel-plated brass which is shaped approximately as an inverted V (Fig. 2). The upper surface 18 of the mold 16 is rounded to blend with the side surfaces 20, 20 of the mold 16 and the side surfaces 20, 20 are inclined relatively to each other. To obtain a sharply defined crease in the top part of the back of the quarter of the shoe upper while the bottom of the back of the quarter will be rounded to conform to the lower portion of the back of a last, the side surfaces 20, 20 are also inclined relatively to the front surface 22, thus the upper surface 18 tapers from its front end rearwardly.

In order that the operator may see clearly to place the work in correct position on the inner mold the upper surface 24 of the sub-base 12 is inclined at an angle of 30° to the horizontal in order to bring the upper surface 18 of the inner mold 16 approximately in line with the line of vision of an operator standing at the left of the device, as shown in Fig. 1. On the upper rear part of the mold 16 is formed an upwardly projecting horn or shoulder 26 which acts to guide an external mold 42 as it closes on the work and to position the rearward upper edge of the said mold in its molding position. The shoulder 26 acts also as a stop to position the heel end of the shoe upper properly relatively to the molds.

The rear top portion of the base 10 is provided with two upstanding lugs, one of which is shown at 28, which form bearings for a transverse horizontal pivot-pin 30 which acts as a pivot for a pressure-lever 32 which extends between and forwardly of two upstanding lugs 34 formed in the front portion of the base 10. The front of the pressure-lever 32 is formed with depending lugs 36 between which there is mounted a transverse shaft 38 upon which is hung a metal casing 40 to which is secured a rubber outer mold 42. The rubber outer mold 42 frictionally grips the shaft 38 so that the outer mold tends to remain in any position in which it is set upon its pivot. The lower face of the outer mold 42 is a central rearwardly-extending recess 44 shaped to correspond to the shape of the upper surface 18 of the inner mold 16, the recess being lined with a thin piece of soft leather 45.

The rear end of the pressure lever 32 is provided with an arcuate U-shaped slot 48 to receive a roll 50 mounted on the pivot-pin 30. The slot 48 is concentric with the center of the shaft 38 so that movement of the lever 32 relatively to the outer mold 42 cannot cause creeping movement of the outer mold 42 relatively to the inner mold 16. Between the rear lugs 28 and the forward lugs 34 there is located on the base 10 a spiral compression spring 52 carrying at its upper end a washer 54 the top of which bears against the lower end of a screw 56 threaded in the median portion of the lever 32. The spring 52 urges the lever 32 upwardly through the washer 54 and screw 56 until the roll 50 engages the bottom of the arcuate slot 48. The screw 56 carries at its upper end a small hand-wheel 58 by which it can be screwed into and out of the lever 32 thereby increasing or diminishing the pressure of the spring 52 against the end of the screw 56.

Extending transversely between the front lugs 34 is a small horizontal spindle 60 upon which is fixed an operating lever 62 having a rearwardly extending toe 64. A stop 66 on one of the front lugs 34 is disposed for engagement with the handle 62 when the latter is actuated so as to limit rearward rocking movement of the handle 62.

The spiral spring 52 in pushing the pressure lever 32 upwardly forces the front end of the lever against the boss of the operating lever 62 which thus acts as a stop to limit the extent of such upward movement.

The operating lever 62 has fixed to it a rearwardly extending arm 68 which is connected by a treadle-rod 70 to a treadle, not shown. When the treadle is depressed the rearwardly extending toe 64 will rotate from its rearward position (Fig. 1) until it is just past the vertical position in a forward direction at which time the operating lever 62 comes against the stop 66, preventing further rearward movement of the operating lever 62 and locking the toe in its pressure-applying position. To remove the pressure the lever 62 is

pulled forwardly. During this rotary movement of the toe 64 into pressure-applying position, the toe 64 acts upon the upper surface of the pressure-lever 32 and rocks it downwardly about its pivot-pin 30 against the spiral-spring 52 until the outer mold 42 comes into operative relationship to the inner mold 16 as it engages the interposed work at which time the front end of the lever 32 becomes fixed. Further rotary movement of the toe 64 causes the lever 32 to rotate in the opposite direction, the rear end of the lever 32 moving downwardly about the shaft 38 as a pivot. Since the arcuate slot 48 formed in the rear portion of the lever 32 is concentric with the shaft 38 it guides by means of the roll 50 of the downward movement of the lever 32 about the pin 38 as a pivot to apply additional pressure and thus prevents creeping movement of the outer mold 42 with respect to the inner mold 16 heightwise of the shoe.

The point of connection of the shaft 38 to the metal casing 40 is about one third of the length of the casing from the rear of the casing so that pressure is applied more strongly at the rear of the molds than at the front of the molds. The result of this application of the pressure is that the molding is most intense at the top of the back-strap, or back-seam, and gradually decreases toward the bottom of the back-strap, or back-seam. As a result there is formed at the back of the shoe upper a well-defined crease which is more definite at the top than at the bottom. By reason of this crease the upper when applied to a last will automatically tend to locate itself centrally upon the back ridge of the last. The crease may extend right down the back of the upper or only a portion of the way down.

If desired the recess in the outer mold may be shaped to relieve or increase pressure at certain parts, and if desired the outer mold may be made rigid instead of resilient or yielding.

There will now be described with reference to Figs. 3, 4 and 5 another embodiment of the invention, which comprises means suitable for molding the heel end of an upper of a completed shoe and adapted to eliminate wrinkles from the top part of the quarter at the heel end and to define the shape of the back of the shoe.

This device so far as the base, the pressure-lever, and the actuation of the latter are concerned may be similar to the device already described, but in the particular illustrated construction a specifically different means of actuating the pressure-lever is shown.

A base 110 is substantially similar to the base 10 of Fig. 1 but is adapted to be mounted upon a bench. A pressure lever 132 is substantially the same as the pressure-lever 32 except as to its forward end which will be hereinafter referred to. The lever 132 is normally held upwardly by a compression spring 152 similar to the spring 52 already described. Other parts 128, 130, 150, 154, 156, and 158 are functionally like corresponding parts in Fig. 1 and having numerals less by one hundred.

In place of the moulds used in the device of Figs. 1 and 2 the molds now to be described are used. Instead of the inner mold 16 there is used a similar mold 116 but shaped substantially to the shape to which it is desired to mold the heel end of the shoe, the actual shape being such that the shoe will be "over-molded" in order that the inherent resiliency of the materials of the shoe will bring it back, when the shoe is removed from the device, only to the desired shape. The heel end of the mold is uppermost so that the shoe will be applied in depending position with its length approximately vertical. The upper end of the mold 116 corresponding to the rear end of the shoe is thicker than that part of the mold which lies opposite the shank portion of the shoe supported on it, and the part of the mold adjacent to the shoulder 126 is substantially thinner than that part of the mold which lies toward the left in Fig. 3. As a result of this construction a shoe brought to the shape of the inner mold by the operation to be described will have a close fitting ankle. The device may of course be supplied with variously-shaped interchangeable molds. An electric heating cartridge 9 extends from the rear into the inner mold 116 so that the mold will be heated. The degree of heat applied will be such that it not only assists in the molding but also shrinks the leather lining and so permanently removes the wrinkles therefrom.

Extending transversely between front lugs 134 is a small horizontal spindle 160 upon which is fixed an operating lever 162 having a forwardly-extending toe 164 carrying at its end an anti-friction roller 165. The spiral spring 152 in pushing the lever 132 upwardly forces the front of the lever 132 upwardly against the boss of the operating lever 162 which thus acts as a stop to limit the extent of such upward movement. A stop 167 on one of the front lugs 134 underlies a part of the operating lever 162 so as to limit rearward rocking movement of the operating lever 162. When the operating lever 162 is rocked forwardly about the axis of its spindle 160 the forwardly-extending toe 164 will rotate from its forward position (Fig. 3) until it is just past the vertical position in a rearward direction at which time the roller 165 comes against a stop 169 on the lever 132 that prevents further forward movement of the operating lever 162; thus

the lever is locked in pressure-applying position.

The front end of the pressure-lever is provided with a transversely-extending pin 139 upon the outer ends of which two links 141 that extend downwardly and that diverge slightly toward their lower ends are pivoted loosely for movement about axes at right angles to each other. This allows the links to swing laterally as well as from front to back. The lower ends of the links carry the open ends of an inverted U-shaped outer mold 143 holding it suspended above the inner mold to facilitate the insertion of a shoe therebetween said outer mold being shaped generally to correspond to the shape of the upper end of the inner mold 116.

This mounting of the outer mold 143 causes it to be wrapped around a shoe supported on the inner mold as pressure is applied through the carrying links 141. This wrapping action follows partly from the fact that the mold 116 is wider at its heel portion than at the part opposite the shank portion of the shoe and is greatly facilitated by the mounting of the carrying links 141 at opposite points upon the pin 139 spaced more widely than the points on the inner mold at which pressure is applied by said links. It follows, therefore, that the wrapping action of the outer mold is not limited by contact of intermediate portions of said links by the sides of the shoe supported on the inner mold. The attachment of the links to the mold 143 is near the rear so that greatest pressure will be exerted near the top margin of the heel end of a shoe placed between the molds. This outer mold 143 may conveniently be expanding or flexible and is in the present instance built up of layers, an outer layer 145 of stiff hide molded to shape, an intermediate layer 147 of sponge rubber, and an inner layer 149 of comparatively soft leather, the whole being molded to a desired shape. The sponge rubber is beveled off at its lower ends 151 so as to decrease gradually the pressure on the shoe towards the front part of the shoe acted on by the molds. In order to restrict movement of said carrying links 141 so as to prevent the outer mold 143 from swinging to an undesired degree about the shaft 139 and creeping heightwise of the shoe, there is pivoted to the lower portion of each downwardly-extending link 141 the front end of a substantially horizontal anchoring link 153 that extends rearwardly and is pivoted to the base 110 at 155. These anchoring links are substantially parallel to the pressure lever 132 and insure the correct positioning of the outer mold on the inner mold. The downwardly extending carrying links 141, 141 are spring-pressed apart to open out the mold 143 by a spring 157 coiled around a pin 159 extending between the links 141, 141.

Thus in the operation of the device, when the workman wishes to mold the back portion of a shoe upper so as to flatten the back-seam, for example, he will apply a loose upper to the lower mold 16 which is part of the embodiment of the invention illustrated in Figs. 1 and 2, and bringing the upper edge of the upper against the shoulder 26 will slide it along the sharp upper edge 18 so as to straighten the back seam and will bring the upper mold 42 into engagement with the upper by means of the presser lever 62. Actuation of this lever either manually or by the foot treadle connection 70 will cause the upper mold to be brought into firm contact with the shoe upper in close engagement with the sides of the upper which lie adjacent to the back-seam, and will then by continued actuation of said lever 62 cause additional pressure to be applied to said mold thereby to distort the mold and apply molding pressure to the upper. This additional pressure will be secured as the lever 32 is turned around the pivot pin 38 further compressing the spring 52 and drawing down the arcuate slot 48 with respect to the roller 50 thereby at the same time holding the outer mold from creeping movement.

When at a later stage in the manufacture of the shoe, after the same has been substantially completed, it is desired still further to shape the upper at its rear upper end so as to remove wrinkles and provide a close fitting ankle, he will hold the shoe in depending position with the heel end of the shoe upon the inner mold 116, the top of the heel end of the upper being located against the shoulder 126. The operator will then apply pressure to the outer mold 143 to bring it into engagement with the outside of the shoe by actuating the operating lever 162 so as to cause the outer mold 143 to contact with the shoe, and then as still further pressure is applied, to wrap itself around the shoe forcing the bottom ends of the outer mold against the sides of the shoe adjacent to the shank portion thereof. Movement of the presser lever 132 will be of the same character as that already described in connection with Fig. 1, and when the roll 165 on the operating lever 162 has been brought against the shoulder 169, the outer molds will be locked in engagement with the shoe. The shoe is then left in the device for a short time, and, assuming that electric current has been supplied to the heating device 9, the heat of the inner mold combined with the pressure of the outer mold will mold the rear end of the shoe with the result that when the shoe is removed from the device both the outside and inside of the top portion of the quarter is smooth and is curved in a continuation of the curves of the lower portions that are supported by the stiffener.

It may be found convenient to use the described illustrated devices not in single

units but in "banks" of say half a dozen, in which case a number of devices of the kind in question may be arranged side by side so that a single operator may have under his control such a number of devices that by the time he has operated the last one of a "bank" the first has held the work under pressure for the desired length of time.

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

1. A shoe upper shaping device having, in combination, an inverted V-shaped inner mold, an outer mold, means for moving said outer mold toward said inner mold to engage the back of the heel end of a shoe upper and for applying pressure to said outer mold thereby to define the vertical middle line of the top of the rear end of the shoe upper.

2. A shoe upper shaping device having, in combination, an inner mold for supporting a shoe upper, an outer mold, a carrier for said outer mold, and means for moving said carrier toward said inner mold to cause the outer mold to engage the back of the heel end of the shoe upper and for applying pressure to said outer mold, thereby to define the vertical middle line of the top of the rear end of the shoe upper.

3. A shoe upper shaping device having, in combination, an inner mold, an outer mold, a carrier for said outer mold movable toward and from said inner mold, depending links supporting said outer mold on said carrier, a lever arranged to engage said carrier to move said carrier up and down toward said inner mold, and means constructed and arranged to guide the carrier toward the inner mold correctly to position the outer mold in operative relation to the inner mold.

4. A shoe upper shaping device having, in combination, an inner mold, an outer mold, a carrier for said outer mold movable toward and from said inner mold, a lever arranged to engage said carrier to move said outer mold into operative relation to said inner mold and to apply an adjustable yielding pressure to said outer mold, and means for varying said pressure after the molds are in operative position.

5. A shoe upper shaping device having, in combination, an inner mold adapted to support a shoe upper, a pressure lever, an outer mold pivotally connected thereto, and means for moving the pressure lever in one direction to cause the molds to shape the heel end of a shoe upper supported by the inner mold and for thereafter moving the pressure lever in another direction to cause the molds also to shape the sides of the shoe upper.

6. A shoe upper shaping device having, in combination, an inner mold, a pressure lever, an outer mold hung from said lever and pivotally connected thereto, and means for moving the pressure lever in one direction to bring the outer mold into operative relation to the inner mold and for thereafter moving the pressure lever in another direction to apply additional pressure while holding the outer mold in said position.

7. A shoe upper shaping device having, in combination, an inner mold, a pressure lever, an outer mold carried thereby, and means for moving the pressure lever in one direction to bring the outer mold into operative relation to the inner mold and for moving the pressure lever in the opposite direction to apply pressure while locking the outer mold in said position.

8. A shoe upper shaping device having, in combination, a base, an inner mold mounted thereon, an outer mold, means for raising the outer mold above the inner mold, means for moving the outer mold bodily into engagement with the inner mold, and means for holding the outer mold in said position.

9. A shoe upper shaping device having, in combination, a base, an inner mold mounted thereon for supporting a shoe upper, said inner mold having a shoe positioning shoulder formed thereon, an outer mold, means for guiding the outer mold toward the inner mold to engage the shoe upper, said means being adapted yieldingly to press the outer mold around the inner mold, and means for locking the outer mold in said position.

10. A shoe upper shaping device having, in combination, a base, an inner mold mounted thereon, a pressure lever, an outer mold pivotally connected thereto, a stop, and means tending normally to hold the pressure lever against the stop with the outer mold held a predetermined distance above the inner mold.

11. A shoe upper shaping device having, in combination, a stationary inner mold adapted to support the heel end of a shoe upper, a movable outer mold having a yieldable work-engaging face, and means for moving said outer mold relatively to said inner mold to shape the heel end of the shoe upper supported on said inner mold, said means being unsymmetrically loosely connected to said outer mold to cause a molding pressure to be applied to the heel end of the shoe upper variable in the direction of its height.

12. A shoe upper shaping device having, in combination, a stationary inner mold, a movable flexible outer mold, and means for moving the outer mold relatively to the inner mold to clamp the heel end of a shoe upper therebetween, said mold and said means being constructed and arranged to act both upon the bottom and top of the heel end of the upper but differently thereby to apply a greater molding pressure to the top portion of the heel end of the upper than the pressure applied to the bottom portion thereof.

13. A shoe upper shaping device having, in combination, an inner mold for support-

ing the rear end of a shoe, said inner mold being thicker at the heel end than at the portion adjacent to the shank portion of the shoe, a flexible U-shaped outer mold, a pressure lever, and links each of which has one end connected to the free end of the outer mold, said links being loosely connected to opposite spaced points on the pressure lever and mounted thereon to rock around axes at right angles to each other whereby pressure applied through the pressure lever will draw the outer mold around the shoe and press the free ends of said mold inwardly into close contact with the shoe in the region of the shank of the shoe.

14. A shoe upper shaping device having, in combination, a frame, an inner mold on the frame for supporting the rear end of a shoe, said inner mold being thicker at the heel end than at the portion opposite to the shank portion of the shoe, a flexible U-shaped outer mold, a pressure lever, links each of which has one end connected to the free end of the outer mold, said links being loosely connected to opposite spaced points on the pressure lever and mounted thereon to rock around axes at right angles to each other, resilient means holding said links normally separated, and anchoring links between the frame and the outer mold to prevent relative displacement of said molds heightwise of the shoe after they have both contacted with the shoe.

15. A shoe upper shaping device having, in combination, a frame for supporting an inner mold in upright position to receive the heel end of a shoe upper, a cooperating outer mold, a pressure lever, supporting said outer mold, pivoted in said frame on a transverse pivot pin and slotted to provide for movement with respect to the pivot pin, a spring tending to hold said slotted lever upwardly against the pivot pin, and an operating lever bearing against an intermediate point on said pressure lever, thereby to press the outer mold into engagement with the shoe upper and then to compress said spring moving said pressure lever with respect to said pivot pin and causing additional pressure to be applied to the outer mold without displacing the mold heightwise of the shoe.

16. A shoe upper shaping device comprising a frame supporting a rigid inner mold adapted to receive the heel end of a shoe upper, an outer mold adapted to be brought into contact with the outside of the shoe upper thus supported, a pressure lever pivotally connected to said outer mold and provided at its other end with an arcuate slot centered on said pivotal connection, a transverse pivot pin in said frame associated with the arcuate slot of said pressure lever, a spring normally holding said pressure lever upwardly against the pivot pin, and an operating lever bearing against an intermediate point on said pressure lever, thereby to bring said outer mold into contact with the shoe and operable then to compress said spring moving said pressure lever with respect to its pivot pin whereby creeping of the outer mold with respect to the shoe upper will be prevented.

17. A shoe upper shaping device comprising a frame supporting a rigid inner mold adapted to receive the heel end of a shoe upper, an outer mold adapted to be brought into contact with the outside of the shoe upper thus supported, a pressure lever pivotally connected at one end to said outer mold and provided at its other end with an arcuate slot centered on said pivotal connection, a transverse pivot pin in said frame associated with the arcuate slot of said pressure lever, a spring normally holding said pressure lever upwardly against the pivot pin, and an operating lever provided with a toe bearing against an intermediate point of said pressure lever, and means for limiting movement of the toe of said operating lever, thereby to hold the pressure lever in position to apply pressure to the outer mold.

18. A shoe upper shaping device having, in combination, an inner mold for supporting a shoe upper, a U-shaped outer mold, means for holding the outer mold suspended above the inner mold, and means for moving the outer mold downwardly into operative relation to the inner mold, said means including a pressure lever, a pair of arms pivoted to said pressure lever and connected to the free ends of said U-shaped outer mold and links substantially parallel to said pressure lever and arranged to move with said pressure lever and to guide the swinging movement of said pivoted arms whereby said outer mold is positioned properly relatively to said inner mold.

19. A shoe upper shaping device having, in combination, an inner mold for supporting a shoe upper, a pressure lever, an outer mold carried thereby, means for swinging the pressure lever in one direction to bring the outer mold into engagement with the heel end of a shoe upper supported on said inner mold and for thereafter swinging the pressure lever in another direction to cause the outer mold to press the sides of the shoe upper against the inner mold, and means for preventing movement of the outer mold relatively to the inner mold heightwise of the shoe during the last-named movement of the pressure lever.

20. A shoe upper shaping device having, in combination, an inner mold for supporting a shoe upper, said inner mold having a shoulder formed therein to position the shoe upper on the mold heightwise of the shoe, a U-shaped outer mold, means for moving the outer mold into operative relation to the inner mold to mold the back and sides of the shoe upper supported on said inner mold, and means for locking the outer mold in said position.

21. A shoe upper shaping device having, in combination, an inner mold for supporting a shoe supper, a flexible U-shaped outer mold, and means for moving the outer mold relatively to the inner mold to shape the back and sides of a shoe upper, said means including pivoted arms connected to the free ends of said outer mold, and links arranged to restrict the movement of said arms.

22. A shoe upper shaping device having, in combination, an inner mold for supporting a shoe upper, a U-shaped outer mold, means for moving the outer mold toward the inner mold until the outer mold comes in contact with the heel end of the shoe upper and for thereafter causing the free ends of the outer mold to press the sides of the shoe upper against the inner mold, said means comprising a pressure lever and a pair of pivoted arms connected between the free ends of said outer mold and spaced points on said pressure lever, and links arranged to restrict the swinging movement of said arms.

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

JOSEPH GOULDBOURN.