

H. SUNDHOFF.
MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.
APPLICATION FILED JUNE 25, 1910.

1,048,602.

Patented Dec. 31, 1912.

2 SHEETS—SHEET 1.

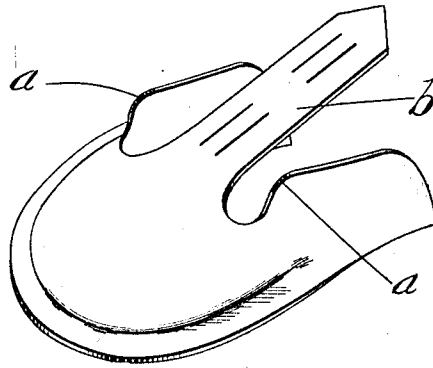


Fig. 2.

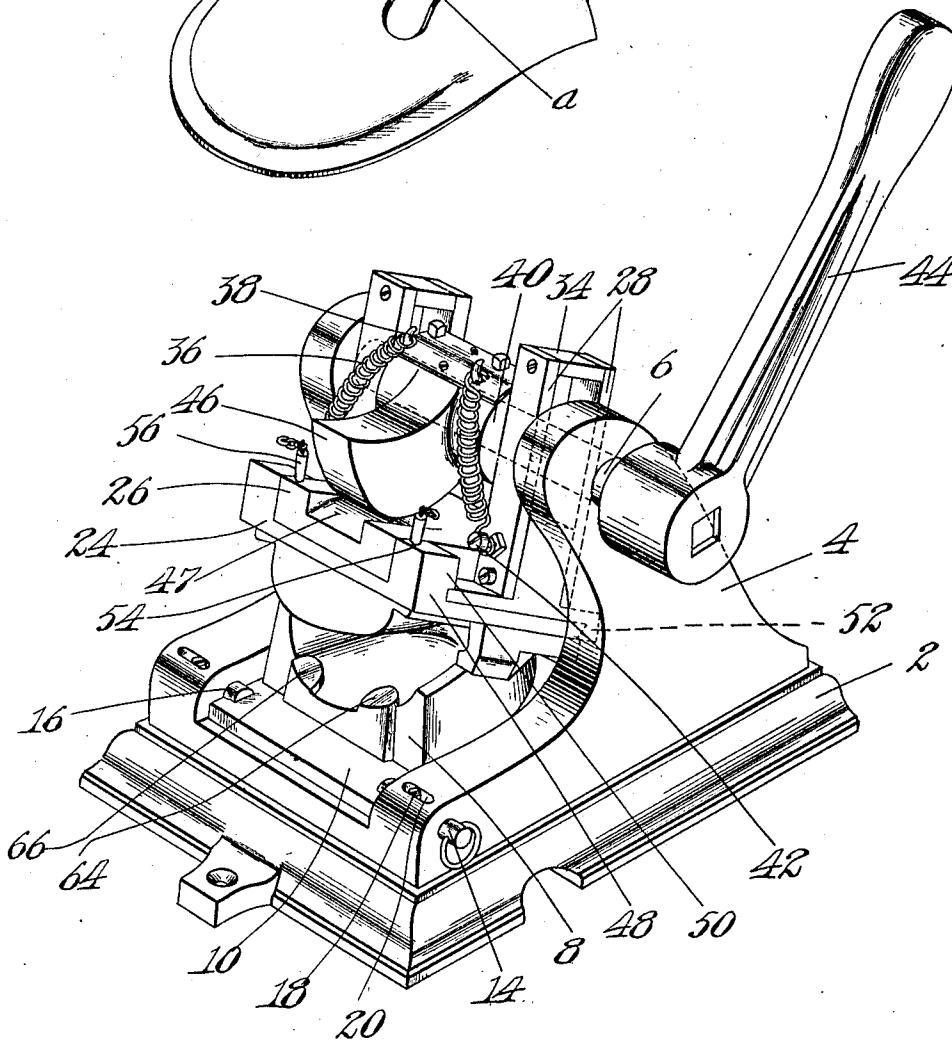


Fig. 1.

WITNESSES.

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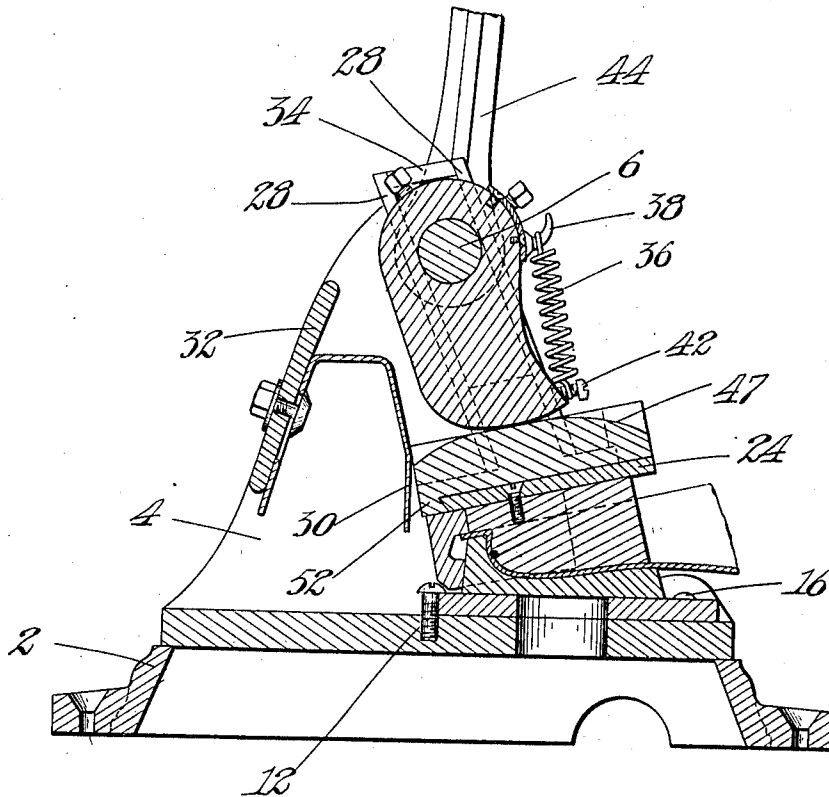


Fig. 3.

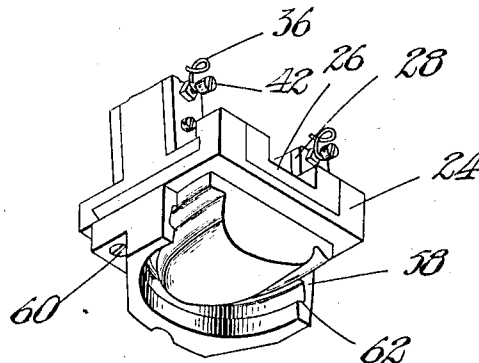


Fig. 4.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.

1,048,602.

Specification of Letters Patent.

Patented Dec. 31, 1912.

Application filed June 25, 1910. Serial No. 568,890.

To all whom it may concern:

Be it known that I, HUGO SUNDHOFF, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Machines for Use in the Manufacture of Boots and Shoes, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to machines for shaping parts of boot or shoe uppers and particularly to machines for shaping or molding the toes of stitch-down shoes.

An object of the invention is to provide a simple and compact machine which can be easily and quickly operated to mold the toe of a stitch-down upper and which is readily adaptable to mold toes of various sizes.

Another object of the invention is to provide a toe molding machine for use in the manufacture of stitch-down shoes, and particularly for use in the manufacture of sandals of the stitch-down type, which will quickly mold to shape a toe blank or the toe part of an upper blank which has been cut substantially to its final size, thus eliminating the waste which characterizes the ordinary methods of manufacturing such shoes.

Other objects of the invention are the provision of means for insuring the formation upon the toe of a sole attaching margin or flange of substantially uniform width, the provision of means for disengaging the molded toe after the molding operation whereby it may be conveniently removed from the machine, the provision of simple and conveniently operated mechanism for effecting the relative movements of the male and female shaping parts or molds, and the provision of novel gaging means cooperating with a rear edge of the toe blank to position the blank correctly in the machine and particularly to position the rear end of the blank in such manner as to cause it to be shaped with especial reference to certain characteristic features of the finished shoe.

Still other objects and features of the invention will become apparent as the description proceeds, one embodiment of the

invention being illustrated in the accompanying drawings in which,—

Figure 1 is a perspective view of the machine as a whole, the molds being in position to receive a blank preparatory to the molding operation; Fig. 2 is a perspective view of a molded toe; Fig. 3 is a vertical section showing the molds in operative relation to each other with a blank confined between them, and Fig. 4 is a perspective detail of the male mold showing the associated flange gage and work remover.

The illustrated machine comprises a base 2 provided with upwardly extending parallel side members 4 in which is journaled a shaft 6 through which the relative movements of the male and female molds are effected. The molds are preferably arranged in the manner shown in Fig. 1, the female mold being carried upon the base 2 and being normally stationary, and the male mold being moved into and out of operative molding relation thereto. To permit the molds to be readily changed for others of different sizes they are preferably carried upon plates which may be quickly locked to, or unlocked from, their respective supports.

The female mold 8 is carried on a plate 10 constructed to slide between the side members 4 until it contacts with a stop screw 12, the screw 12 being provided with a head which projects over the plate 10 and constrains it from vertical movement. When the plate 10 has been pushed back between the side members 4 to the stop screw 12, sliding bolts 14 passing through each of the side members 4 are pushed into lateral notches in the plate 10. If desired the bolts may be spring-pressed into engagement with the lateral edges of said plate. Each of the bolts 14 is provided with an end 16 which projects over the upper edge of the plate 10 and serves, together with the head of the screw 12, to constrain the plate from vertical movement. The bolts are kept from turning by pins or screws 18 traveling in slots 20 in the side members 4.

The male mold 22 is carried by a plate or support 24 arranged to be locked to a carrier 26. The carrier 26 is provided with upwardly extending guides 28 embracing the shaft 6, said guides 28, together with a spring guide and stop 30 connected to a

cross bar 32, serving to guide the male mold 22 as it moves into molding relation to the female mold 8. At their upper ends the guides 28 are connected by cross pieces 34 which prevent the carrier 26 from moving out of operative relation to the shaft 6. The carrier 26 is normally held in its uppermost position by springs 36 connected at their upper ends to hooks 38 on an enlargement 40 of the shaft 6 and at their lower ends to screws 42 in the front guide members 28. The enlargement 40 is so proportioned and arranged that the guide members 28 are confined between the ends of the enlargement 40 and the side members 4 of the machine frame.

The shaft 6 is provided with a handle 44 by which it may be turned, turning of the shaft 6 serving first to bring the rear end of the carrier 26 into engagement with the spring stop and guide 30 after which a cam or eccentric 46 formed upon the enlargement 40 bears upon the upper face of the carrier 26 and serves to depress the carrier and with it the mold 22 against the tension of the springs 36, the upper face of the carrier 26 being provided with a cooperating cam portion 47.

The plate or support 24 for the male mold 22 is provided with upwardly projecting lugs 48 which have lateral projections 50 arranged to overlies the upper face of the carrier 26 to aid in locking the plate or support 24 to said carrier, the rear end of said plate being beveled so that the upper face is longer than the lower face and engaging a reversely beveled depending flange 52 upon the carrier 26. When the support or plate 24 has been brought into locking relation to the carrier 26, as shown in Fig. 1, with the respective bevels upon the rear end of the plate 24 and upon the flange 52 in engagement with each other and with the lateral projections 50 upon the lugs 48 lying over the upper edge of the carrier 26, the two halves of openings 54 formed respectively in lateral edges of the carrier 26 and in the contacting edges of the lugs 48 will be brought into register with each other, whereby the plate or support 24 may be locked against endwise movement by pins 56 inserted in the said openings 54.

To gage the width of the outturned sole attaching flange to be formed upon the toe blank, a gage is preferably arranged in operative relation to one of the molds. In the illustrated preferred embodiment of the invention this gage is arranged in operative relation to the male mold and is combined with means for removing the molded toe from the female mold after the molding operation. The illustrated gage comprises a depending flange 58 upon the plate or support 24, said flange being preferably formed as a separate piece and attached to the

plate or support 24 by screws 60. The flange 58 is curved so that it has a profile corresponding substantially with the profile of the forward end of the toe and preferably extends around the forward end of the toe from the straight portion of the edge of the toe upon one side to the straight portion of said edge upon the other side. The gage thus serves to determine the width of the flange and at the same time to center the toe blank in proper operative relation to the two molds.

The lower part of the depending flange 58 below the gage forming portion of said flange has preferably formed thereon a ledge 62 over which the margin of the toe blank projects as the edge of the blank is brought into engagement with the gaging portion of the flange 58. This ledge is preferably formed wide enough so that after the molding operation the sole attaching flange of the toe will still project over the ledge and thus the molded toe may be engaged and removed from the female mold as the male mold is lifted out of operative relation thereto.

When the machine is to be used in molding the toe blanks of stitch-down sandals which have the profile shown in Fig. 2, such sandals being preferably formed with curved openings between the strap or buckle receiving portions *a* and the tongue *b*, means is preferably provided for determining the location of the rear edges of the toe blank with respect to the molds and particularly for locating the aforementioned openings so that the sole attaching flange will be formed with especial reference to these openings and thus the molded toe or upper may present a symmetrical appearance. In the illustrated embodiment of the invention the said gaging means for the rear edge or edges of the toe blank is preferably formed by projections 64 and 66 carried by the female mold 8 and arranged to enter the aforementioned openings in the toe blank.

The machine may be operated in various ways. For example the toe blank may be positioned with respect to the molds by means of the rear gages 64 and 66 alone, the flange gage and work remover in this case serving simply to remove the work. A second way of using the machine is to position the blank by means of the flange gage, allowing the blank to be supported by the work removing ledge 62 as the male mold moves into operative relation to the female mold, this mode of operation being particularly convenient when ordinary toe blanks having no openings which would cooperate with the gages 64 and 66 are to be molded. A third way of operating the machine, when molding toes of the type shown in Fig. 2, is to gage the flange and center the blank when the parts of the machine are in the po-

sition shown in Fig. 1, then while the blank is supported upon the work removing ledge 62 to move the male mold into close proximity to the female mold but not close enough to cause the work to be clamped between the molds, and then to position the rear end of the blank by means of the gages 64 and 66, after which the molding operation may be completed. It will thus be seen that the gage which coöperates with the front edge of the toe blank and the gages which coöperate with the rear edge or edges of the toe blank may be used independently of each other or together, the machine being thus adapted to operate with different types of blanks and having provision for insuring a proper positioning of the blanks with respect to the molds.

It will be noted that the mechanism for lifting the male mold out of operative relation to the female mold not only lifts the male mold but tilts it into such an angular relation to the female mold that the work may be conveniently presented to the machine.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A machine for forming a toe having an outturned sole attaching flange comprising, in combination, a female toe mold provided with an outlying flange forming portion, a coöperating male toe mold likewise provided with an outlying flange forming portion and a flange gage arranged to engage the flange edge to position a blank in such relation to said flange forming portions as to cause a flange of a determined width to be formed.

2. A machine for forming a toe having an outturned sole attaching flange comprising, in combination, a female toe mold provided with an outlying flange forming portion, a coöperating male toe mold likewise provided with an outlying flange forming portion and a flange gage constructed and arranged to gage the flange along the front and sides of a toe blank between said molds.

3. A toe molding machine, comprising a female toe mold, a coöperating male toe mold, means for centering the forward end of the toe blank with respect to said molds and means for centering the rear end of the toe blank with respect to said molds.

4. A toe molding machine comprising a female toe mold, a coöperating male toe mold, a margin or flange gage and a second gage coöperating with a rear edge of the toe blank.

5. An upper molding machine comprising a female mold, a coöperating male mold, said male mold being movable into and out of operative relation to the female mold, and a combined flange gage and work remover arranged to move with said male mold.

6. An upper forming machine comprising a female mold, a coöperating male mold, said male mold being movable into and out of operative relation to the female mold, a flange gage in operative relation to the male mold and movable therewith, and means for effecting the movements of the male mold constructed to tilt the male mold into position to permit convenient presentation of the work to the flange gage as said male mold is moved away from the female mold.

7. An upper forming machine comprising a rock-shaft, means for turning said rock-shaft, a male mold, lifting springs by which said male mold is suspended from said rock-shaft, a coöperating female mold and a cam upon said rock-shaft for depressing said male mold against the tension of the lifting springs into operative relation to the female mold.

8. An upper forming machine comprising a female mold, a coöperating male mold, a rock-shaft, means for turning said rock-shaft, means for suspending one of said molds from said rock-shaft comprising guides embracing said shaft, springs connected at their respective ends to said guides and said shaft, said springs tending normally to hold said mold in proximity to said shaft, and means for moving said mold away from said shaft into operative relation to the other mold comprising a cam carried by said shaft.

9. An upper molding machine, comprising a base, a female mold removably mounted upon said base, a rock-shaft arranged above said base, a male mold suspended by springs from said rock-shaft, means comprising a cam for moving said male mold into operative relation to the female mold against the tension of said springs, said springs being so connected to said male mold and said shaft that the male mold is tilted as it is moved away from the female mold.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HUGO SUNDHOFF.

Witnesses:

HENRY FRANK,
FREDERIC C. HOLMES.