(No Model.) 2 Sheets—Sheet 1.

R. MARSHALL.

CRIMPING MACHINE FOR BOOTS AND SHOES.

No. 348,135. Patented Aug. 24, 1886.

Fig. 2.

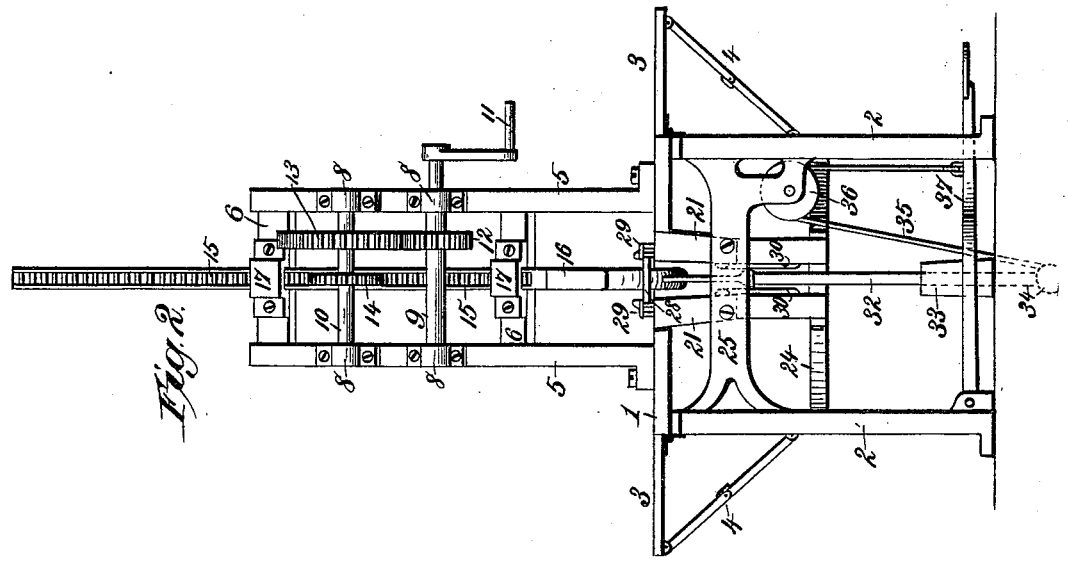
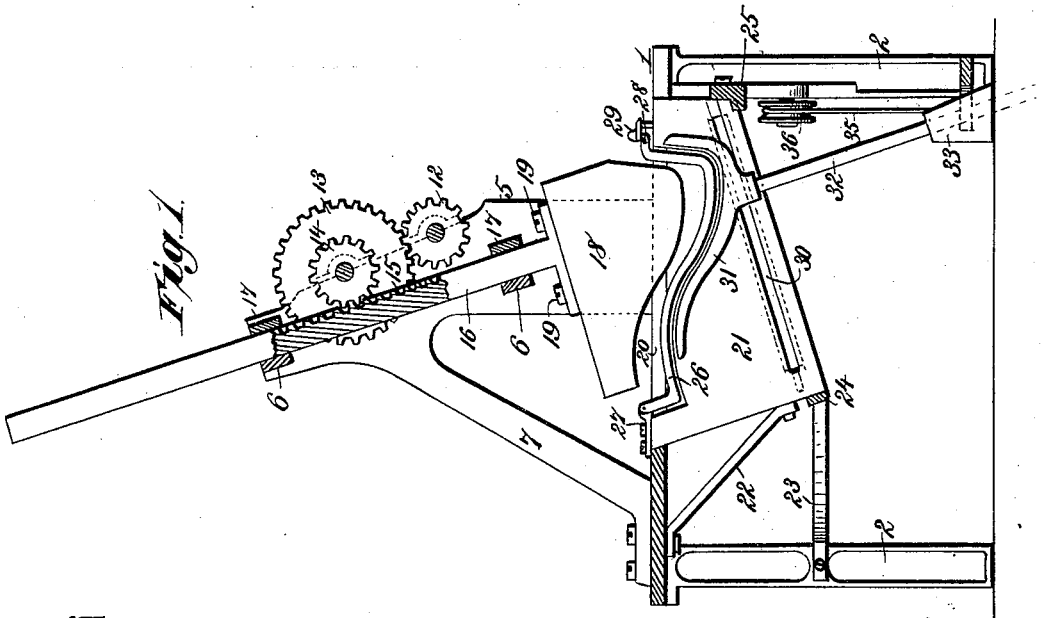


Fig. 1.



Witnesses,
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Dennis Bumby.

Inventor,
Robert Marshall.
By James L. Norris.
Atty

(No Model.) 2 Sheets—Sheet 2.

R. MARSHALL.

CRIMPING MACHINE FOR BOOTS AND SHOES.

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Fig. 3.

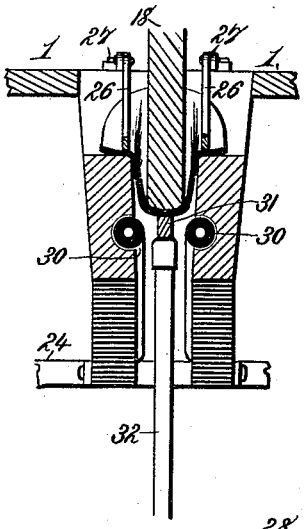


Fig. 4.

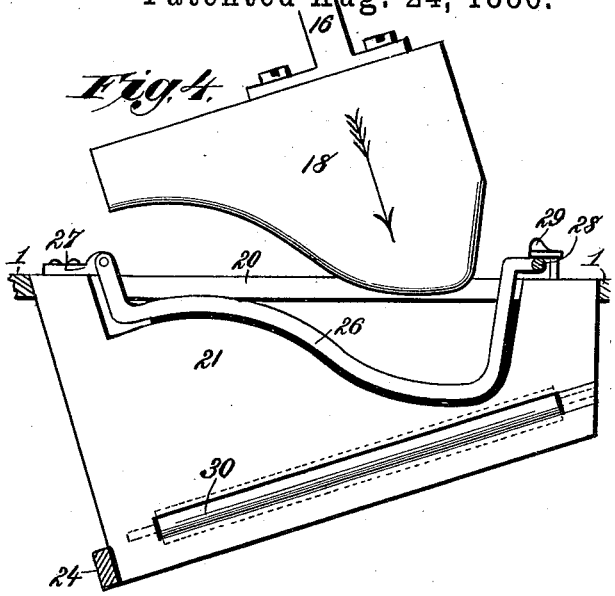


Fig. 5.

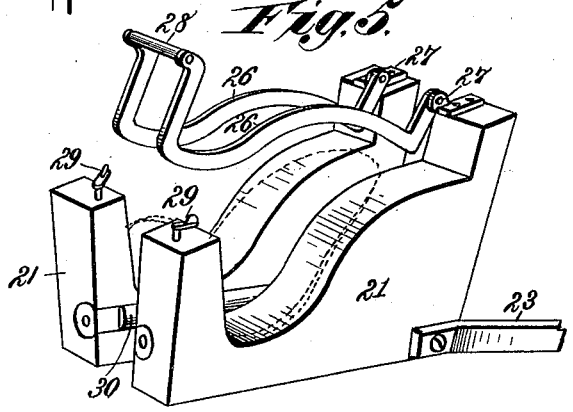


Fig. 6.

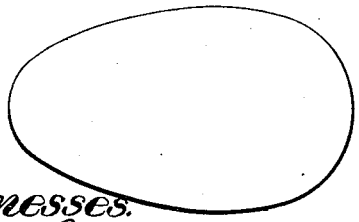
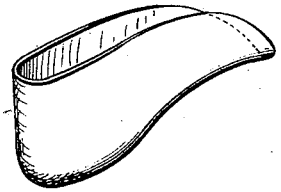


Fig. 7.



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Dennis Sumby.

Inventor.
Robert Marshall.
By James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

ROBERT MARSHALL, OF HAMILTON, ONTARIO, CANADA.

CRIMPING-MACHINE FOR BOOTS AND SHOES.

SPECIFICATION forming part of Letters Patent No. 348,135, dated August 24, 1886.

Application filed June 15, 1886. Serial No. 205,263. (No model.)

To all whom it may concern:

Be it known that I, ROBERT MARSHALL, a subject of the Queen of Great Britain, residing at Hamilton, in the Province of Ontario and Dominion of Canada, have invented new and useful Improvements in Boot and Shoe Crimping Machines, of which the following is a specification.

My invention relates to a mechanism for shaping boot and shoe uppers of that class in which the upper consists of a quarter and heel portion formed in one continuous seamless piece of leather and in which the opening for receiving the foot is cut subsequent to the operation of crimping and shaping.

The invention comprises the combination, with a mold and dies correspondingly shaped to conform to the desired curvatures of the upper-leather, of a pressure-clamp pivoted at one end to and above the mold and provided with detachable fastenings at the other end and a pair of elastic pressure-rollers located diagonally in the lower part of the mold to prevent creasing or wrinkling; and it further consists in certain novel features in the construction and combination of parts, as hereinafter more fully set forth.

In the annexed drawings, illustrating the invention, Figure 1 is a sectional side elevation of my improved boot and shoe crimping machine. Fig. 2 is a front elevation of the machine. Fig. 3 is a vertical transverse section of the mold, the pivoted clamp for holding the blank to be crimped, and the reciprocating upper and lower dies, said mechanism being shown in the act of crimping a boot or shoe upper. Fig. 4 is a side view of the upper die and an inner side view of one half of the mold and pivoted clamp, showing the blank in position to be acted upon by the crimping-dies. Fig. 5 is a perspective of the mold and pivoted clamp, the latter having one end unfastened and raised, and the blank being shown in dotted lines. Fig. 6 is a plan of the upper-leather or blank. Fig. 7 is a perspective of the upper after it has been shaped by the crimping mechanism.

The frame of the machine comprises a table, 1, supported by legs 2, of any suitable construction. This table may have drop-leaves 3, held up by hinged supports 4 or otherwise.

Above the table 1 are standards 5, which are securely braced by cross-pieces 6 and rear supports, 7, or other convenient means. These standards 5 are provided with journal-bearings 8 for the shafts 9 and 10, one of which is located above and somewhat to the rear of the other. One of these shafts, as 9, is provided with a crank, 11, or other means of rotation, and carries a pinion, 12, which meshes with a spur-gear, 13, on the shaft 10, which is also provided with a pinion, 14, that engages a rack, 15, formed on or attached to a reciprocating bar, 16, which is supported in a vertically-inclined position in guides 17, attached to the cross-pieces 6 of the inclined frame. To the lower end of the reciprocating bar 16 is detachably secured an upper crimping-die, 18, by means of screws 19 or otherwise.

The table 1, beneath the upper die, 18, is formed with a slot or opening, 20, for receiving the upper part of a mold, 21, which consists of two side pieces supported by braces 22 23 and cross-pieces 24 25 in any suitable manner beneath the table, and so as to be detachable, if desired.

By reference to Figs. 1 and 4, it will be seen that the upper side edges of the mold 21, beneath the slot 20, are curved longitudinally to conform to the proper relative curvatures to be imparted to the instep and heel portions of the upper-leather. A similar conformation is given to the lower part of the upper die, 18, and also to a longitudinally-curved pressure-clamp, 26, which is pivoted to lugs 27, secured to the rear upper portion of the mold. The precise construction of this clamp 26 is immaterial. As shown, it consists of two correspondingly-curved side pieces pivoted at their rear ends to the rear upper part of the mold 21, and connected at their forward ends by a cross piece or bar, 28, for engaging thumb buttons 29, attached to the front upper part of said mold. This construction enables the forward end of the pivoted clamp 26 to be raised for the purpose of admitting the blank to be crimped, and after said blank has been placed in position the clamp can be lowered

and secured at its forward end by means of the buttons 29, so as to hold the leather with a firm even pressure and deliver it gradually as the crimped upper descends with the shaping-dies, as hereinafter explained.

The internal construction of the mold 21 is such that it tapers gradually from above downward, so as to give an increasing pressure to the blank acted upon while the operation of crimping progresses. In the inner opposing faces of the mold 21, near the bottom, are formed diagonal grooves for receiving a pair of diagonally-located pressure-rollers, 30, which are faced with rubber or other elastic material. These opposing rollers 30 are inclined downward and backward away from the heel portion of the mold, as shown, in such a manner as to exert a yielding but firm pressure on the outside of the leather for the purpose of smoothing the same and preventing unsightly creases, and so as to force the crimps and creases forward on the vamp, where, should any remain, they can easily be disposed of in the subsequent operation of soling. The heel portion of the upper is thus formed smoothly and without crease or wrinkle, so that it will always present a neat appearance when the upper is soled.

Beneath the upper or forming die, 18, is an adjustable lower gripping-die, 31, which is longitudinally curved and formed with an upturned heel portion, as shown in Fig. 1, so as to afford a firm support for the upper and conform to the shape to be imparted thereto, in the operation of crimping. It will be observed that the longitudinal curvature of the lower gripping-die, 31, is such as to conform to the curvature imparted to the lower edge of the upper or forming die, 18, and that the upturned heel portion of the gripping-die 31 conforms to the front vertical edge of the forming-die 18, thereby enabling the leather to be firmly gripped, so as to prevent any liability of its slipping laterally as it is forced down through the mold during the operation of forming the upper. This lower or gripping die, 31, is socketed in its under side and thereby set detachably on the upper end of an inclined bar, 32, which is arranged to reciprocate in a guide, 33, beneath the machine-table. The lower end of the reciprocating bar 32 is provided with a weight, 34, (shown by dotted lines in Fig. 2,) and is also attached to one end of a belt, 35, which passes up over a pulley, 36, journaled in the machine-frame, and thence down to a treadle-lever, 37, to which it is secured. By placing the foot on the treadle 37 the weighted bar 32 and attached lower die, 31, will be carried up in position to support the leather during the operation of crimping, and when the upper has been shaped the removal of pressure from the treadle will permit the weighted bar 32 and die 31 to drop so as to release the upper.

As shown in Figs. 1 and 2, the lower end of the reciprocating bar 32 with weight attached is passed down through an opening in the floor or platform that supports the machine; but it is obvious that this arrangement is not essential and may be replaced by any that will allow a sufficient range of movement to the lower die.

The operation of the machine will be readily understood and need not be explained at length. It will be seen that in order to admit the blank, Fig. 6, into the mold 21 the buttons 29 will be turned, so as to allow the forward end of the pivoted clamp 26 to be raised, as shown in Fig. 5. After the blank is in position the clamp 26 will be again secured by these buttons, as shown in Fig. 4. In the meantime the upper die, 18, has been raised by the operation of its rack-and-pinion gearing, and the lower die, 31, has been held down by its weight. Before the upper die, 18, is allowed to descend through the mold the operator, by placing his foot on the treadle 37, raises the lower die, 31, into position to support the upper-leather under the action of the descending upper die, and both dies, with the leather pressed between them, as shown in Fig. 3, now pass down through the mold 22, and between the diagonally-located pressure-rollers 30, thereby imparting the desired shape to the upper, as shown in Fig. 7, without crease or wrinkle. The treadle and connected lower die are then released to permit the removal of the crimped upper-leather, the upper die and the pressure-clamp are raised to admit a new blank, and the operation is repeated.

The upper die can be operated either by hand or with power applied in any convenient manner, and by varying the dimensions of the detachable crimping devices, uppers of various sizes can be rapidly shaped with great neatness and accuracy.

What I claim as my invention is—

1. In a crimping-machine, the combination of a mold, a pressure-clamp pivoted to one end of said mold, and detachably fastened to the other end thereof, and a reciprocating die, all of said parts being horizontally curved to correspond to the curves of a boot or shoe upper, substantially as described.

2. The combination, with a mold and an upper and a lower die, of a pressure-clamp pivoted to the rear upper part of said mold, and detachably fastened to its front end, substantially as described.

3. The combination of a mold, a pressure-clamp pivoted to one end of said mold, and detachably fastened to its other end, a pair of elastic pressure-rollers located diagonally in the lower part of said mold on opposite sides, and inclined away from its heel portion, an upper reciprocating die, and a lower adjustable die, substantially as described.

4. The combination, with a mold and an upper die, of a lower die, a weighted vertically-reciprocating bar for supporting said die, a treadle, a pulley, and a belt passed over said pulley and connecting said treadle and weighted bar, substantially as described.

5. The combination of a mold having an

internal surface tapered from above downward, a pair of elastic pressure-rollers located diagonally in the lower part of said mold, a pivoted pressure-clamp having a detachable fastening at one end, an upper reciprocating die, and a lower adjustable die, substantially as described.

6. The combination of a slotted table, a mold located beneath said table, a pivoted pressure-clamp, an upper reciprocating die, rack-and-pinion gearing for actuating said upper die, an adjustable lower die carried by a weighted bar, and a treadle-movement for raising said bar, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT MARSHALL.

Witnesses:

JAMES L. NORRIS,

JOS. L. COOMBS.