March 9, 1926. 1,576,463

L. B. POPE

HEEL BLANK BREASTING MACHINE

Filed Oct. 4, 1923 2 Sheets-Sheet 1

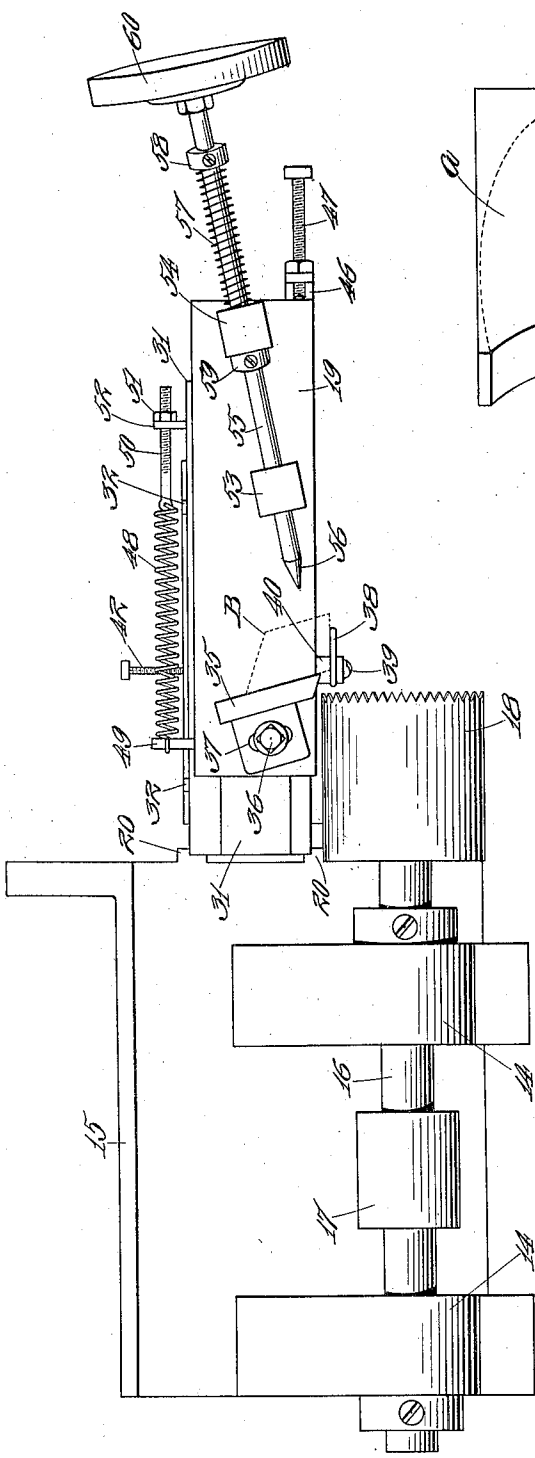


FIG. 1.

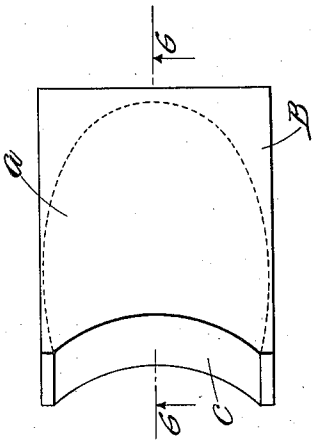


FIG. 5.

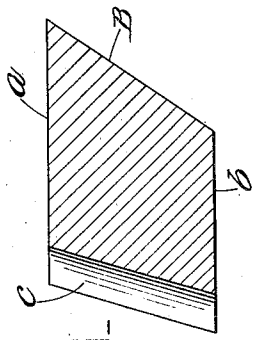


FIG. 6.

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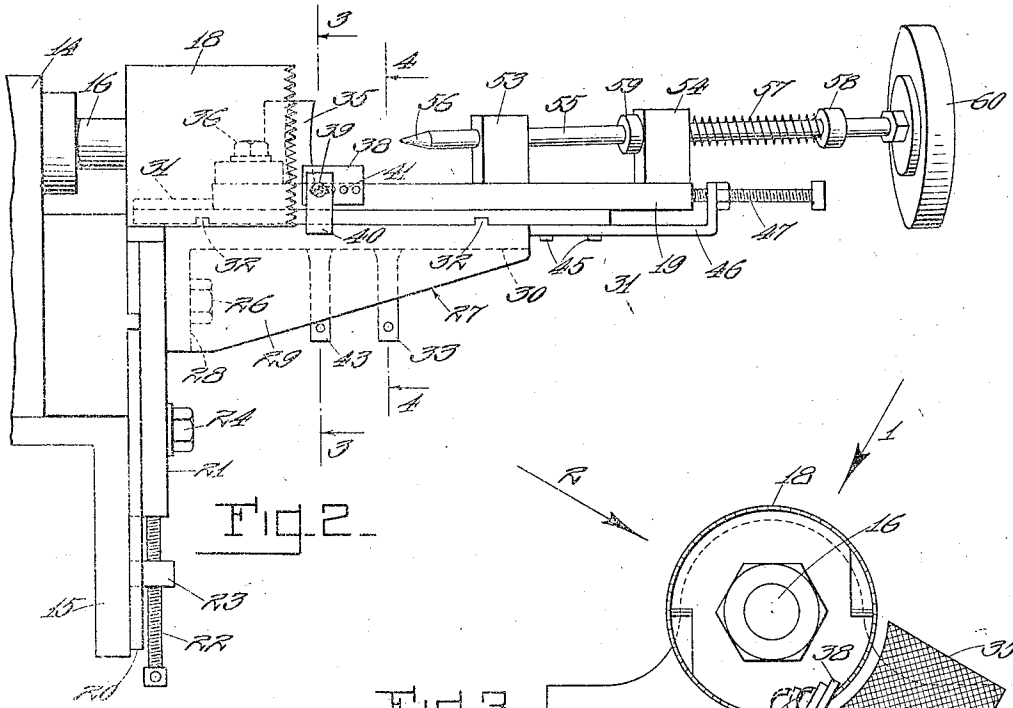


Fig. 2.

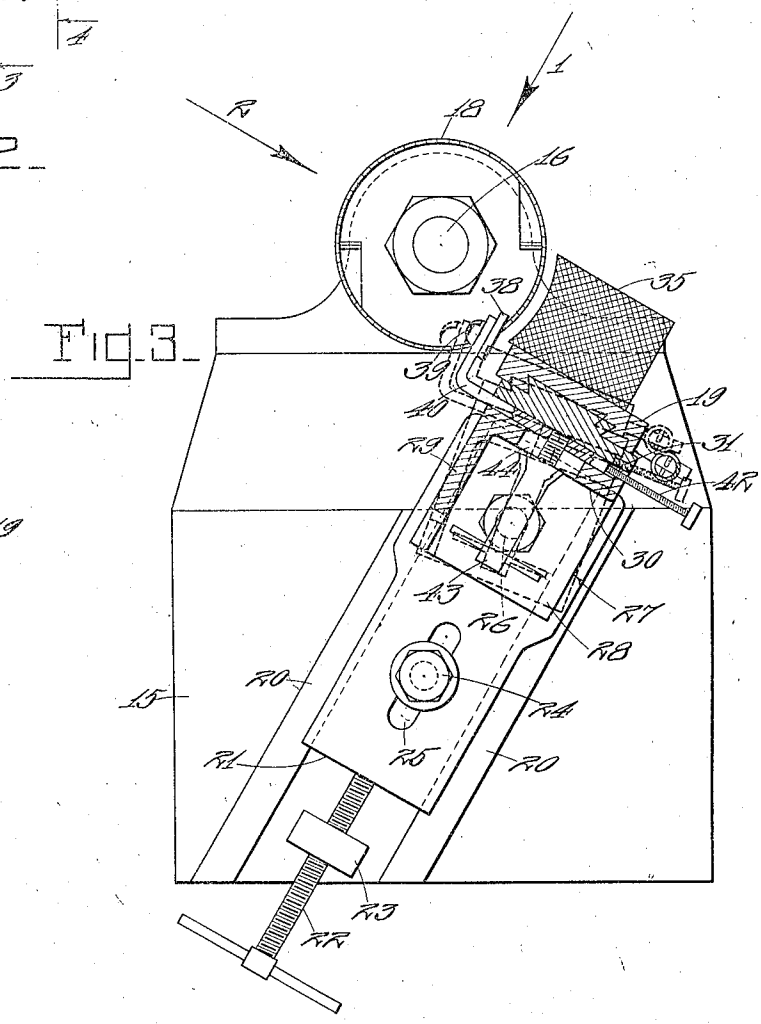


Fig. 3.

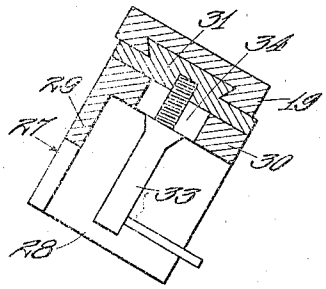


Fig. 4.

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UNITED STATES PATENT OFFICE.

LYMAN B. POPE, OF BRADFORD, MASSACHUSETTS.

HEEL-BLANK-BREASTING MACHINE.

Application filed October 4, 1923. Serial No. 666,600.

To all whom it may concern:

Be it known that I, LYMAN B. POPE, a citizen of the United States, residing at Bradford, county of Essex, State of Massachusetts, have invented a certain new and useful Improvement in Heel-Blank-Breasting Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to machines for shaping the breasts of wooden heel blanks, particularly those from which heels of the Cuban or military type are formed, and has for its object to provide a machine of this character which is substantially universally adjustable so as to adapt the same for use in the breasting of heel blanks of different sizes and shapes, which is provided with operating means of such a character as to leave the hands of the operator free for the insertion and manipulation of the heel blanks, and which is so constructed and arranged as to cause the blanks to be automatically discharged from the machine after the operation thereon is completed.

The foregoing and other objects of the invention, together with means whereby the same may be carried into effect, will best be understood from the following description of one form or embodiment thereof illustrated in the accompanying drawings. It will be understood however that the particular construction described and shown has been chosen for illustrative purposes merely, and that the invention, as defined by the claims hereunto appended, may be otherwise practised without departure from its spirit and scope.

In said drawings—

Figs. 1 and 2 are top views of the machine looking in the direction of the arrows 1 and 2, respectively, Fig. 3.

Figs. 3 and 4 are sections taken substantially on the lines 3—3 and 4—4, respectively, Fig. 2.

Fig. 5 is a plan view of a heel blank after the breasting operation.

Fig. 6 is a section on line 6—6, Fig. 5.

In Figs. 5 and 6 is shown a heel blank B of which the seat, or portion which is subsequently shaped for attachment to the bottom of the shoe, is designated *a*, the top or ground-engaging surface *b*, and the breast *c*. Said breast *c* is concave, being cut substantially on the surface of a cylinder whose axis is inclined to the faces *a* and *b*. The rough heel blanks are first breasted upon the machine hereinafter described to form the concave surface *c*, after which their side and rear portions are formed to the shape indicated by dotted lines on Figure 5 by means of a heel turning machine.

The machine herein shown, forming the concave cylindrical breast *c*, comprises a frame 15 which may be of any suitable shape but which, for convenience, is preferably of such a height as to bring the top thereof substantially level with the hip of the operator. Journalled in suitable bearings 14 in the frame 15 is a shaft 16 having a suitable belt pulley 17, or other means through which power may be supplied from any suitable source. Detachably secured to the forward end of the shaft 16 is a cutter in the form of a crown or cylindrical saw 18, the cutting edge of which is disposed forwardly and operates to cut the blanks B in such a manner as to form the breast surfaces *c*. Said blanks are moved toward and past the cutting edge of the saw 18 by means of a work carriage 19 guided for movement substantially parallel to the axis of said saw, as will now be explained.

The frame 15 has formed on its forward side a pair of guides 20 in which is guided, for adjustment in a direction generally tangential to the saw 18, a slide 21. Said slide is adjusted by means of a screw 22 journalled in said slide and in threaded engagement with a lug 23 on the frame 15, and is secured in adjusted position by means of a clamping bolt 24 in threaded engagement with the frame 15 and passing through a slot 25 in the slide. Pivoted to the slide 21, by means of a clamp screw 26 whose axis is substantially parallel to the axis of the saw 18 and shaft 16, is a support designated as a whole by the numeral 27. Said support is of angular form and comprises an end flange 28 pivoted by the screw 26 to the slide 21, a side stiffening flange 29, and a top supporting flange 30 upon which the guide 31 for the carriage 19 is mounted. The support may be clamped in any desired position of angular adjustment by tightening the screw 26. The flange 30 is formed on its upper surface with a suitable number of transverse ribs 32 which are received in transverse grooves in the under surface

of the guide 31, whereby said guide is, in turn, guided for movement on the support 27 in a rectilinear direction toward and away from the saw 18, being clamped in adjusted position by means of a screw 33 in threaded engagement therewith and passing through a slot 34 in the flange 30.

The heel blanks B are longitudinally and angularly positioned on the carriage 19 by means of a gauge 35 which is secured to the work-supporting surface of said carriage by means of a clamping screw 36 which passes through a slot 37 in the base of said gauge, whereby the latter may be laterally and angularly adjusted on said carriage. Said blanks B are laterally positioned on the carriage by means of a fixed gauge 38 disposed adjacent the edge of said carriage toward the saw 18. The gauge 38 is secured by a screw 39 to an angular bracket 40, being preferably provided with a plurality of holes 41 for the reception of said screw 39, whereby the longitudinal position of said gauge may be determined in accordance with the requirements of the work and the convenience of the operator. The bracket 40 is received in a transverse groove in the upper face of the flange 30 and between the latter and the guide 31, being transversely adjustable in said groove by means of an adjusting screw 42, and being clamped in adjusted position by means of a clamping screw 43 in threaded engagement with said bracket and passing through a slot 44 in the flange 30.

Each heel blank B is placed on the carriage 19 with its seat portion *a* in engagement with the gauge 35, and is held with its breast portion in engagement with the gauge 38, while the carriage is moved rearwardly or toward the saw 18 on the guide 31, causing said saw to cut said blank in such manner as to form the concave breast surface *c*. It will be seen that by adjustment of the slide 21 in the guides 20, the machine may be adapted for operation upon heel blanks of different widths. It will also be seen that by adjusting the gauge 38, the extent to which the blank is cut by the saw may be varied in accordance with the width of the heel operated upon. It will further be seen that, by angularly adjusting the gauge 35, the inclination of the breast *c* to the surfaces *a* and *b* may be determined. By employing saws of different diameters, the curvature of the concavity of the breast can be varied, and the lateral adjustment of the guide 31 upon its supporting flange 30 readily adapts the machine for use in connection with saws of different sizes. Further variations are provided for by the angular adjustment of the support 27 on the slide 21, as indicated in dotted lines on Fig. 3. This adjustment, however, is never of great extent, and the work supporting surface of the carriage 19 is preferably in all adjustments, disposed at a downward inclination away from the saw (the guides 20 being so disposed as to provide for this), so as to cause each heel blank, when released after the operation of the saw thereon, to fall by gravity from said carriage into a suitably placed container without further attention on the part of the operator. It will be observed that the parallelism of the guide 31 to the axis of the saw is not disturbed by any of the adjustments above referred to.

Secured, as by screws 45, to the forward end of the guide 31, is an angular bracket 46 carrying an adjustable abutment screw 47. The carriage 19 is normally held in its outermost position in engagement with the abutment screw 47 by means of a spring 48 secured at one end to a stud 49 projecting from said carriage, and at its opposite end to a threaded rod 50 having thereon an adjustable nut 51 which engages a lug 52 projecting from the guide 31 and through which said rod extends. Guided for longitudinal movement in aligned openings in lugs 53 and 54 rising from the carriage 19 is a plunger 55 having a pointed end 56 adapted to engage a heel blank B when the latter is in position against the gauges 35 and 38, as above explained. The plunger 55 is normally held in its forward or outermost position, as shown in Figs. 1 and 2 by means of a spring 57 surrounding said plunger and interposed between the outer side of the lug 54 and a collar 58 secured to the plunger whose outward movement, under the influence of said spring, is limited by the engagement of a second collar 59 thereon with the inner side of the said lug 54. The spring 57 is relatively weak, as compared to the spring 48, so that when an inward pressure is exerted upon the outer end of the plunger 55, the carriage 19 will first be held against movement by the relatively strong spring 48, and said plunger will be moved inwardly relative to the carriage 19 and into engagement with the heel blank B, pressing the latter into engagement with the gauge 35, after which continued inward movement of the plunger will cause the same to move the carriage through said heel blank and gauge, carrying the blank into engagement with the saw. The aligned openings in the lugs 53 and 54 are so disposed that the plunger 55 is inclined in two directions, said plunger converging both toward the work-supporting surface of the carriage and toward the side gauge 38 in the direction toward the saw. By reason of the downward inclination of said plunger, engagement thereof with the heel blank B causes said heel blank to be pressed, not only against the gauge 35, but against the surface of the carriage, while

the lateral inclination of said plunger causes said heel blank to be pressed against the gauge 38, so that operation of said plunger toward the cutter serves, first, to position the heel blank accurately on the carriage, and thereafter to move the carriage and at the same time guide said heel blank into engagement with the cutter. It will therefore be seen that the heel blank need only be placed loosely against the gauges 35 and 38, the accurate positioning thereof, and its subsequent presentation to the saw, being effected by the plunger 55, and it being unnecessary that the hands of the operator approach the saw at all closely. When said plunger is retracted, so as to cause the end 56 thereof to disengage the blank, the latter will drop by gravity from the carriage, as above explained.

In order that the hands of the operator may be left perfectly free to pick up and insert the blanks, the plunger 55 is preferably provided at its outer end with a relatively large, flat, disk-like head 60 adapted for engagement by the hip of the operator, so that the latter may operate said plunger to position the heel blank and force the same against the cutter merely by leaning the weight of his body against said head.

Having thus described my invention, I claim:—

1. In a heel blank breasting machine, in combination, a cylindrical saw, a work carriage guided for movement substantially parallel to the axis of said saw and a member having a work positioning surface angularly adjustable on said carriage in a plane radial to the saw.

2. In a heel blank breasting machine, in combination, a cylindrical saw, a work carriage guided for movement substantially parallel to the axis of said saw, a gauge mounted adjacent said carriage for adjustment transversely thereof, and a gauge on said carriage angularly adjustable in a plane radial to said saw.

3. In a heel blank breasting machine, in combination, a cylindrical saw mounted to rotate upon a substantially horizontal axis, and a work carriage guided for movement substantially parallel to said axis, said carriage having a work supporting surface inclined downwardly away from said saw and parallel to the axis thereof.

4. In a heel blank breasting machine, in combination, a cylindrical saw, a work carriage, and a guide for said carriage disposed substantially parallel to the axis of said saw, said guide being adjustable in a direction tangential to said saw.

5. In a heel blank breasting machine, in combination, a cylindrical saw, a work carriage, and a guide for said carriage disposed substantially parallel to the axis of said saw, said guide being adjustable toward and away from said saw and in a direction tangential thereto.

6. In a heel blank breasting machine, in combination, a frame, a cylindrical saw mounted to rotate on said frame, a work carriage, a slide guided on said frame for adjustment in a direction tangential to said saw, and a guide for said carriage carried by said slide and disposed substantially parallel to the axis of said saw.

7. In a heel blank breasting machine, in combination, a cylindrical saw, a work carriage, and a guide for said carriage disposed substantially parallel to the axis of said saw, said guide being angularly adjustable about an axis substantially parallel to the axis of said saw.

8. In a heel blank breasting machine, in combination, a cylindrical saw, a work carriage, and a guide for said carriage disposed substantially parallel to the axis of said saw, said guide being angularly adjustable about an axis substantially parallel to the axis of said saw and in a rectilinear direction toward and away from the latter.

9. In a heel blank breasting machine, in combination, a cylindrical saw, a work carriage, and a guide for said carriage disposed substantially parallel to the axis of said saw, said guide being angularly adjustable about an axis substantially parallel to the axis of said saw and in a rectilinear direction substantially tangential to the latter.

10. In a heel blank breasting machine, in combination, a cylindrical saw, a work carriage, and a guide for said carriage disposed substantially parallel to the axis of said saw, said guide being angularly adjustable about an axis substantially parallel to the axis of said saw and in rectilinear directions toward and away from and substantially tangential to said saw.

11. In a heel blank breasting machine, in combination, a cylindrical saw, a work carriage, a guide on which said carriage is mounted for movement substantially parallel to the axis of said saw, and a support on which said guide is mounted for adjustment toward and away from said saw, said support being angularly adjustable about an axis substantially parallel to the axis of said saw.

12. In a heel blank breasting machine, in combination, a frame, a cylindrical saw mounted to rotate on said frame, a work carriage, a slide guided on said frame for adjustment in a direction tangential to said saw, and a guide for said carriage angularly adjustable on said slide about an axis substantially parallel to the axis of said saw, said guide being substantially parallel to the axis of said saw in all positions of adjustment of said parts.

13. In a heel blank breasting machine, in combination, a frame a cylindrical saw mounted to rotate on said frame, a work carriage, a slide guided on said frame for adjustment in a direction tangential to said saw, a guide for said carriage, and a support on which said guide is mounted for adjustment toward and away from said saw, said support being angularly adjustable on said slide about an axis substantially parallel to the axis of said saw, and said guide being substantially parallel to the axis of said saw in all positions of adjustment of said parts.

14. In a heel blank breasting machine, in combination, a cutter, a work carriage movable toward and from said cutter, a gauge on said carriage, a relatively strong spring for resisting movement of said carriage toward said cutter and for returning the same to normal position, a plunger on said carriage movable toward said cutter to press a heel blank against said gauge and thereafter move said carriage through said blank and gauge toward said cutter, and a relatively weak spring for resisting movement of said plunger toward said gauge and for returning the same to normal position.

15. In a heel blank breasting machine, in combination, a cutter, a work carriage, a gauge on said carriage, and a plunger on said carriage movable toward said cutter to press a heel blank against said gauge and thereafter to move said carriage through said blank and gauge, said plunger converging toward the work supporting surface of said carriage in the direction toward said cutter.

16. In a heel blank breasting machine, in combination, a cutter, a blank carriage, a blank gauge on said carriage, a fixed gauge adjacent said carriage, and a plunger on said carriage movable toward said cutter to press a heel blank against the gauge on the carriage and thereafter to move said carriage through said blank and gauge, said plunger converging toward said side gauge in the direction toward said cutter.

17. In a heel breasting machine, in combination, a cutter, a heel carriage, a heel gauge on said carriage, a fixed heel gauge adjacent said carriage, and a plunger on said carriage movable towards said cutter to press a heel against the gauge on the carriage and thereafter to move said carriage through said heel and gauge, said plunger converging toward the work supporting surface of said carriage and also toward said side gauge in the direction toward said cutter.

18. A machine for grooving or curving the breast face of a heel blank comprising a rotatable tubular saw, a carriage arranged to move in a direction substantially parallel to the longitudinal axis of the saw, and means on said carriage for holding a heel blank in a position wherein the front end portion of the blank is disposed in longitudinal alignment with a portion of said saw, said means being constructed so as to permit the blank to be set at different angles to vary the angle of the cut in the front end portion of the blank.

19. In a machine for grooving or curving the breast face of a heel blank, the combination with a rotatable tubular saw, of a carriage and a heel blank engaging member thereon for holding a heel blank in a position wherein the front end portion of the blank is disposed in longitudinal alinement with a portion of said saw, a guide in which said carriage is movable in a direction substantially parallel to the longitudinal axis of the saw to cause the latter to form a groove or curved surface in the breast face of the blank, and means adjustably connecting said carriage and heel engaging member to permit the latter to be set at different angles so as to vary the angle of the cut in the front end portion of the heel blank.

20. A machine for grooving or curving the breast face of a heel blank comprising in combination, a rotatable tubular saw, a reciprocating carriage movable in a direction parallel to the longitudinal axis of the saw, a heel blank engaging member angularly adjustable on said carriage, means for clamping a heel blank against said member, and a fixed guide for the heel blank adjustable in a direction transverse to the axis of the saw to determine the depth of cut.

In testimony whereof I affix my signature.

LYMAN B. POPE.