F. H. WARREN.

MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.

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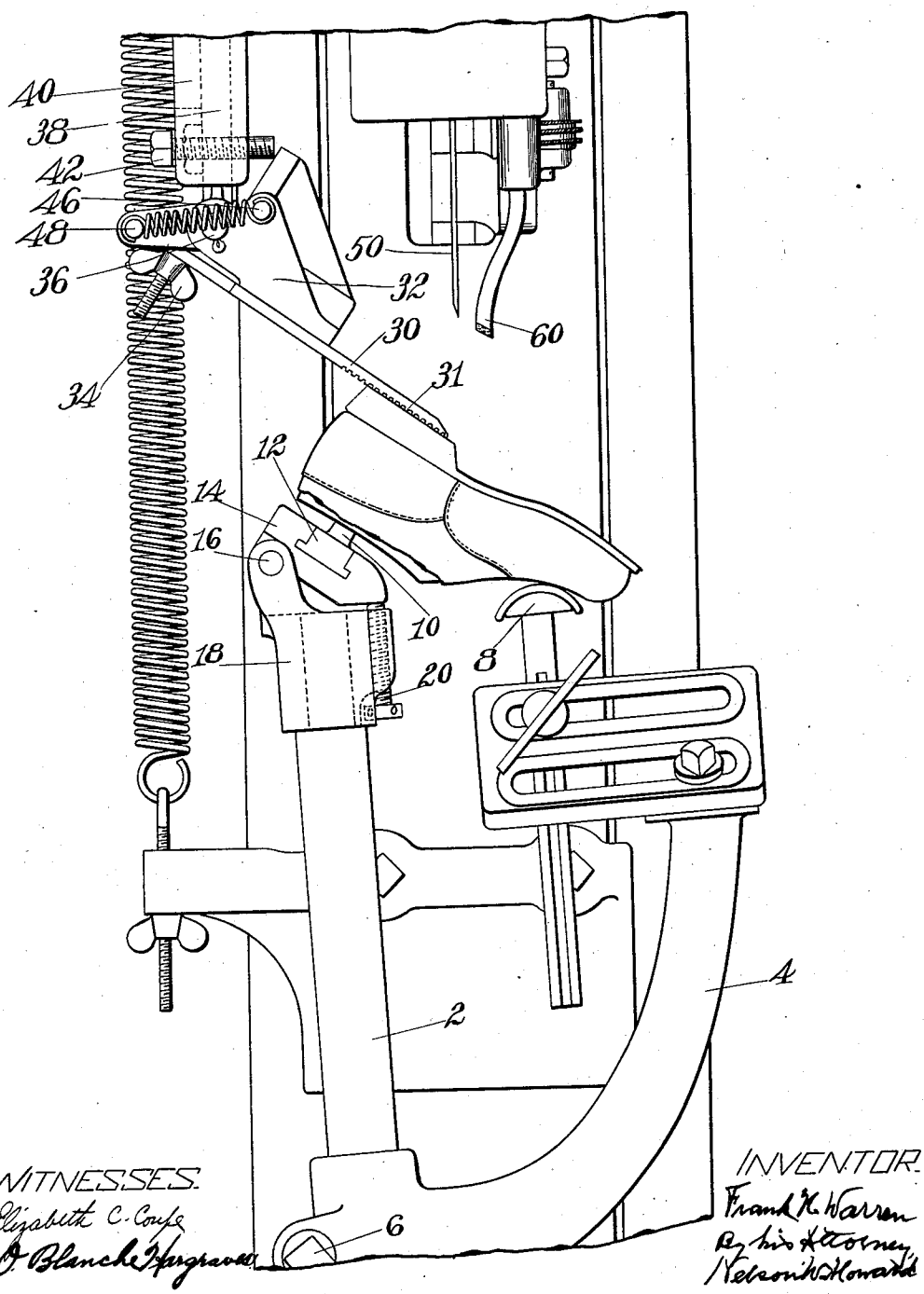
1,023,284. Patented Apr. 16, 1912.



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MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.

1,023,284. Specification of Letters Patent. Patented Apr. 16, 1912.

Application filed July 8, 1911. Serial No. 637,524.

To all whom it may concern:

Be it known that I, FRANK H. WARREN, a citizen of the United States, residing at Swampscott, in the county of Essex and State of Massachusetts, 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 heel breasting machines and is herein shown and described by way of example as applied to machines adapted to breast what are known as spring heels, after they have been attached to shoes.

In the manufacture of shoes having spring heels, it has been customary to attach to the heel-seat a lift having a breast face beveled at approximately 45° and then to break down the heel end of the outsole over the attached lift to form the tread face of the heel. It has become usual, however, in place of the procedure mentioned to attach the outsole against the heel-seat of the insole and then to attach a lift outside of the heel portion of the outsole in the same manner as ordinary heels are attached, and thereafter to bevel off by hand the front or breast face of the lift so attached.

An object of the present invention is to provide a machine whereby this operation of breasting spring heels on a slant may be mechanically performed in place of hand labor.

As a feature of the invention the usual presser plate which engages the tread face of the heel is inclined to the horizontal at an angle of substantially 45°, or to whatever angle it is desirable that the breast face shall have, and is adjustably held in that position, means being provided for moving the plate vertically in order to clamp the shoe upon the work support.

As another feature of the invention the presser plate is provided upon its under side with a roughened work engaging face to prevent relative movement or slipping between the plate and the heel.

As a further feature of my invention a knife mounted for vertical reciprocation has the bevel of its edge disposed toward the heel being breasted, this arrangement of the knife preventing the knife from working too far into the substance of the heel or increasing the inclination of the cut of the breast to the tread surface of the heel. Moreover, the knife with the bevel of its edge thus located acts to diminish the angle of the cut to the tread surface of the heel, so that it is not necessary to have the heel and clamping plate inclined so steeply in order to get a cut of the required inclination to the vertical. This is of advantage as the difficulty of properly clamping the work increases as the inclination of the clamping plate to the horizontal becomes greater. Furthermore a component of the vertical motion of the knife is directed by the bevel of the knife transversely thereof against the face of the heel being breasted, and to that extent the vertical pressure of the knife against the jack and shoe shank is relieved. This arrangement of the bevel of the knife also presents the edge at a greater inclination to the direction of the fiber of the leather, so that the cut is made with less expenditure of energy.

The figure of the drawing shows a side elevation of a machine embodying the invention, the front thereof being to the right.

The machine is provided with a work support or jack comprising a jack post 2 and a toe arm 4, the latter being adjustably clamped to the former by a clamping screw 6 and both being mounted to swing together in the plane of the paper about a pivot on the jack post near the base of the machine, not shown. The arm 4 carries a toe rest which is provided with the usual vertical and horizontal adjustments. The jack post 2 carries a heel pin 10 on a slide 12 which is mounted for movement laterally in a block 14, the block in turn being pivoted at 16 to ears on a sleeve 18 carried on the upper end of the jack post 2. The movement of the block 14 about its pivot is limited by an adjusting screw 20 which is provided with a capstan head. By turning the screw 20 the inclination of the heel pin 10 may be varied.

A presser plate 30 for engaging the tread face of the heel is mounted upon a block 32 and may be adjusted longitudinally or removed by loosening a winged nut 34. The block 32 is pivoted at 36 to a slide 38 mounted for vertical movement in a bracket 40

on the machine frame. An adjusting screw 42 is threaded through the slide 38 and engages the block 32 for limiting its movement in a counter-clockwise direction, while a spring attached to pins 46 and 48, one of which is on the block 32 and the other on a rearward projection from the slide 38, normally holds the plate against the screw 42, the centers of the pins being above the center of the pivot. The presser plate, as shown, is arranged at an angle of approximately 45°, but this angle may be varied by adjusting the screw 42 to suit different styles of shoe heels. The heel engaging face of the plate 30 is deeply checkered, knurled, or milled at 31 so as to afford a firm grip on the heel without liability of the heel slipping.

A knife 50 is mounted in the usual knife carrier for reciprocation vertically, and a stop or bunter 60 is provided which, upon engagement with the shank of the shoe, acts to arrest the movement of the knife when the heel is cut through to the shank, or the stop may act through suitable mechanism to disconnect the knife from its actuating mechanism when the shank is reached, as is usual. The knife is positioned with the bevel of its edge toward the heel being breasted. This arrangement serves to prevent the knife, when used in breasting spring heels which have their breasts at acute angles to the plane of the knife, from cutting too far into the substance of the heel or from increasing the angle between the tread surface and the breast. Furthermore, as before stated, the action of the knife with its bevel in this relation to the heel is to reduce the inclination of the breast relatively to the tread face of the heel, the change of inclination being proportional to the degree of bevel of the knife or the angle of the knife edge. It is hence not necessary to clamp the shoe at so great an angle to the horizontal in order to secure the required inclination of the breast; that is, by this arrangement of the bevel the angle of the knife edge is, so to speak, subtracted from the inclination to the tread face which the breast would have if breasted with the unbeveled side of the knife next to it. It will be observed also that as the knife descends the bevel of the edge presses against the breast face of the heel and a certain component of the pressure applied to the knife is transmitted laterally. The shank of the shoe and the work support are thus relieved of this pressure and the reaction to the operative stroke of the knife is distributed.

In operation, the work is placed upon the jack and adjusted to the proper inclination by means of the adjustable toe rest and heel pin. The presser plate, having been adjusted to the same angle as the tread face of the heel, is brought to bear forcibly thereupon by means of a foot treadle, or otherwise, in position to expose at its front edge the portion of the heel which is to be removed. The knife is then set in operation, as, for example, by further movement of the presser foot treadle, and the heel is breasted at the angle required.

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

1. In a heel breasting machine the combination with a presser plate having its under face knurled, of means for supporting said plate at a substantial angle to the horizontal, and a knife arranged to be reciprocated in vertical plane across the end of the presser plate and having its bevel on the side next the heel being treated, whereby the breasting cut is effected at an angle to the tread surface approximating 45°.

2. A machine for breasting attached spring heels, comprising a last support adapted to hold a shoe in an inclined position, a vertically reciprocating knife having its bevel toward the heel to be breasted, a presser plate inclined at an angle in the vicinity of 45° and arranged to be pressed against the heel, and means for preventing relative movement between the plate and the heel.

3. A machine for breasting attached spring heels, comprising a last support adapted to hold a shoe in an inclined position, a vertically reciprocating knife having its work engaging face at an angle to the direction of movement of the knife, and a presser plate inclined at a sharp oblique angle and mounted for vertical movement against the shoe, said plate having its under face provided with anti-slipping means.

4. A machine for breasting attached spring heels, comprising a last support adapted to hold a shoe in an inclined position, a vertically reciprocating knife having its bevel on the side next the heel to be breasted, a presser plate inclined to the plane of the tread face and provided with a roughened work engaging face and a support for said plate mounted for vertical movement.

5. In a machine for breasting attached spring heels, the combination of a work support, a knife, means for actuating the knife in a vertical plane, a presser plate to engage the tread face of the heel mounted for vertical movement and inclined to the horizontal at an angle approximating 45°, means for adjusting the plate to vary the angle, and means for actuating the plate to clamp the work upon the support.

6. In a machine for breasting attached spring heels, the combination of a work support adapted to hold the shoe with the tread face of the heel at an angle to the

knife, a reciprocating knife having the bevel of its edge disposed toward the heel being breasted whereby the angle to the tread face of the heel of the cut made by the knife upon the breast is rendered less than the angle of the tread face to the plane of reciprocation of the knife.

7. In a machine for breasting attached spring heels, the combination of a work support adapted to hold the shoe with the tread face of the heel at an angle to the knife, a reciprocating knife having the bevel of its edge disposed toward the heel being breasted whereby the angle to the tread face of the heel of the cut made by the knife upon the breast is rendered less than the angle of the tread face to the plane of reciprocation of the knife, in proportion to the bevel of the knife edge.

8. A heel breasting machine, having in combination, means for clamping the shoe, a breasting knife arranged for movement at an angle to the tread face of the shoe heel, means for actuating the knife to breast the heel, and means for transmitting a component of the pressure applied by the knife to the heel transversely to the path of the knife and against the breast face of the heel being breasted, thereby distributing the reaction to the operative stroke of the knife.

9. In a machine for breasting attached spring heels, the combination of a reciprocating knife, means for clamping the shoe with the tread face of its heel inclined at a substantial angle to the knife, said knife having the bevel of its edge in contact with the breast face of the heel whereby the inclination to the tread face of the cut made by the knife is decreased and less resistance is offered to the passage of the knife across the fiber of the heel.

10. A heel breasting machine, having in combination, a reciprocating breasting knife, a support arranged to sustain a shoe with its tread face inclined downwardly and forwardly with relation to the plane of reciprocation of the knife for the production of a beveled breast face on the heel, and means for actuating said knife, said knife having on the side that is toward the heel a beveled face which operates during the passage of the knife edge through the work to resist the tendency of the knife to displace the heel in the direction of the inclination of its tread face.

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

FRANK H. WARREN.

Witnesses:

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HOWARD R. SHAW.