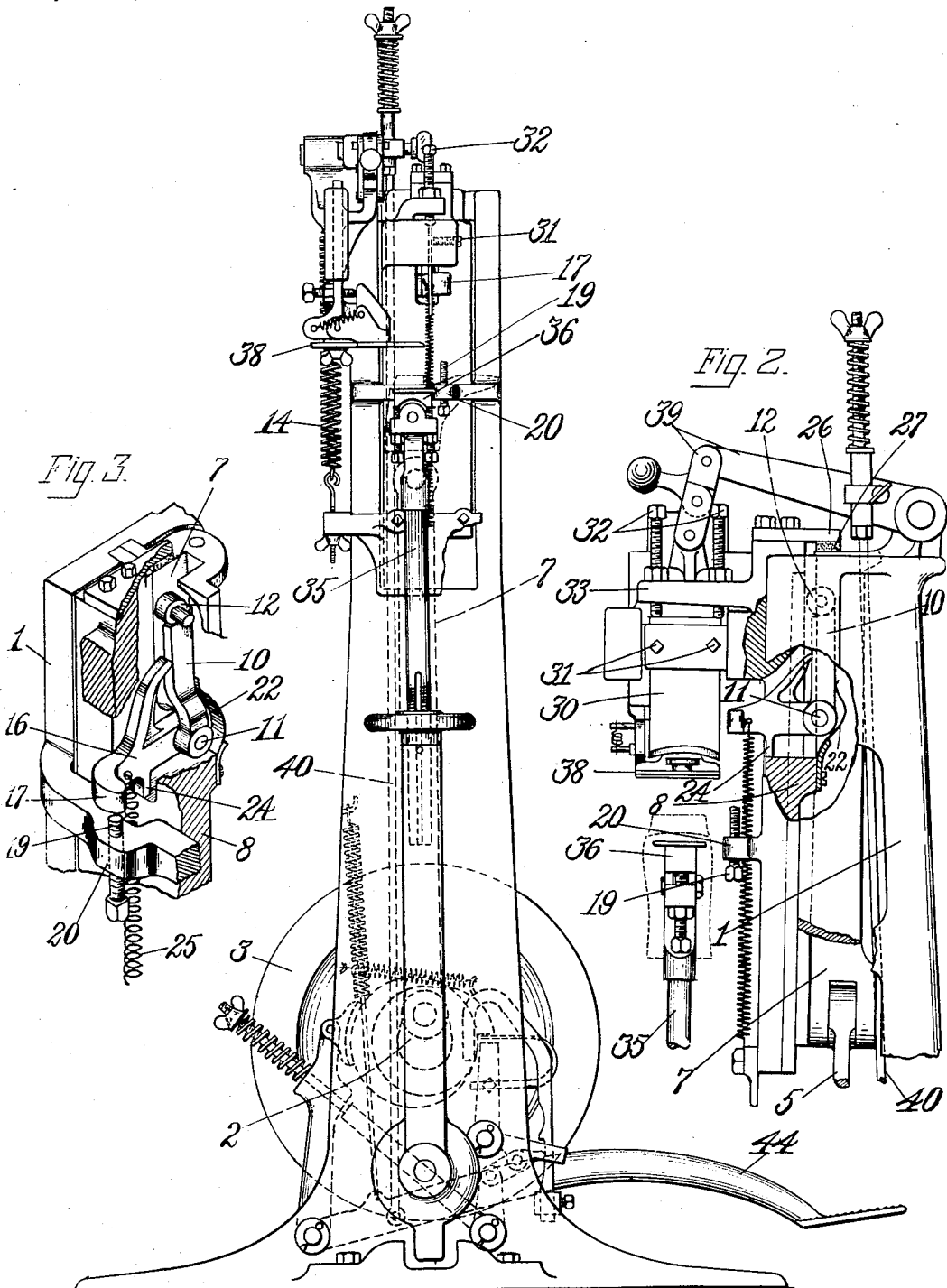


J. H. POPE.
HEEL BREASTING MACHINE.
APPLICATION FILED JUNE 15, 1907.

1,053,641.

Patented Feb. 18, 1913.



WITNESSES.

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Fig. 1.

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UNITED STATES PATENT OFFICE.

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HEEL-BREASTING MACHINE.

1,053,641.

Specification of Letters Patent.

Patented Feb. 18, 1913.

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To all whom it may concern:

Be it known that I, JOSEPH H. POPE, a citizen of the United States, residing at Hamilton, in the county of Essex and Commonwealth of Massachusetts, have invented certain Improvements in Heel-Breasting Machines, 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 in which it is desired to limit, at a predetermined point, the effective stroke of a tool in its operation upon stock. As herein shown, it is applied to a machine wherein the full stroke of the actuating mechanism is greater than that desired to be given to the operating tool.

The invention also embodies means for adjusting the point of termination of the stroke of such tool, independent of the actuating mechanism.

I have herein shown the invention embodied in a heel breasting machine used in the manufacture of boots and shoes, but in the broader scope of the invention it is not to be limited to use in such machines.

In the preferred form herein shown, I apply this invention to limiting the effective stroke of the breasting knife in a heel breasting machine, the object being to stop the effective stroke of the knife at the exact point desired, viz: after the knife has completed the breasting operation and before it cuts into the sole.

In heel breasting machines heretofore in use, means to limit the stroke of the breasting knife have been employed, usually consisting of a tripping device which is actuated by an arm or bunter striking against the shank of the shoe being operated upon, such tripping device serving to disconnect the knife from its driving mechanism. While this device which utilized the shank of the shoe in connection with a bunter and tripping device was sufficiently accurate in operating upon the larger sizes of shoes, it was found to be entirely inaccurate and unsatisfactory in breasting certain small sizes and grades such as children's shoes. The

shanks of such smaller shoes are too yielding to effectively actuate a bunter and also such shoes being short, a bunter if employed would strike the incline of the shank at or near the ball of the shoe and hence the effective operation of a bunter upon such shanks varies too much to permit of its use.

This invention consists of a device to stop the effective stroke of the breasting knife at a predetermined point. It is herein shown as tripping the clutch to disconnect the knife from its actuating mechanism at a predetermined point. This predetermined point may and preferably will be adjustably fixed with relation to a work support for the shoe being operated upon, and the device will act at the point, so determined irrespective of the height of the heel, or the incline, resiliency or thickness of the shank. It is therefore peculiarly advantageous in connection with the heel breasting operation on many grades of children's shoes, though it is also applicable to any size or grade of shoe.

The heel breasting operation on the larger grades of shoes, such as men's and women's, is usually performed while a last or follower is in the shoe, and this requires a work support comprising a heel spindle and a toe saddle, which are well known in the art. In the smaller grades of misses' and children's shoes the heel breasting operation is usually performed without a last or follower being in the shoe and in the machine herein shown a work support having a heel plate only is required, which plate contacts with the innersole at the heel seat of the shoe to be breasted. A toe saddle could be employed if desired.

The drawings illustrate my invention as applied to a type of machine generally in use and well known in the art and which will therefore be only briefly described.

The features of the invention, including details of construction and combination of parts will now be described and further defined in the claims.

Figure 1 is a side elevation of a machine in which is incorporated one form of my invention; Fig. 2 is a front elevation of the upper part of the machine, with portions

broken away; Fig. 3 is an enlarged detail, in perspective, and with portions broken away, more particularly illustrating the invention.

In the machine illustrated in the drawings, 1 designates the frame in which a shaft is mounted carrying a small crank 2, shown in dotted lines, on one end and a driving pulley 3 on the other end. The driving pulley may be connected by a belt to any suitable source of power. 5 is a link connecting said crank with a driver or actuator 7 mounted to slide vertically in guideways on the frame 1. A knife carrier 8 is also arranged to slide vertically in guideways on the frame 1, and motion is communicated by the driver or actuator 7 to the carrier 8 through a clutch member 10. This member 10 is pivoted at 11 to the carrier 8 and when in a vertical position it is in line with another clutch member or roller 12 mounted in the driver 7. A spring 14, secured at one end to the frame and at the other end to a plate bolted to the carrier 8, counterbalances the weight of the carrier and assists in raising and maintaining it in uppermost position. In addition to said spring the carrier is positively raised during the upward movement of the driver by means of a plate 26 extending over the top of the driver. A piece of elastic material 27 may be disposed between the top of the driver and the plate 26. Thus when the member 10 is in its vertical position and the driver 7 and carrier 8 are in their uppermost position, the upper end of the member 10 is in contact with the roll 12, and the driver or actuator is thus clutched to the knife carrier, as clearly shown in Fig. 3. By this construction, the downward motion of the driver 7 caused by movement of the crank 2 is imparted to the knife carrier 8 through said member 10, and downward movement of the carrier can be checked at any time during the stroke of the driver by moving the upper end of the member 10 out of contact with the roll 12 and thus unclutching the knife from its actuator.

16 is a two-arm lever, pivotally mounted on the stud 11, and having an arm arranged to contact with the member 10, the other arm 17 being in line with an adjustable stop or clutch opener 19 threaded through a rigid extension 20 of the frame 1. Thus in the descent of the driver and carrier, when the arm 17 of said lever contacts with the stop 19, the member 10 is thrown out of acting contact with the roll 12 on the driver and the downward movement of the carrier is checked while the driver continues its stroke. A spring 22 serves to move the member 10 back to vertical position during the upward movement of the driver. The projection 24 on the lever serves to contact with a portion of the carrier and in connection with the spring 25

holds the lever in the position shown in Fig. 3.

A knife 30 is adjustably clamped in a laterally projecting portion of the carrier 8 by the set screws 31. The back of the knife bears against the screws 32 which are threaded through a block 33 rigidly secured to or integral with the carrier 8.

An adjustable work support 35, carrying a suitable heel plate 36, to support a shoe to be operated upon, is arranged in position to cooperate with the breasting knife. Means to secure the heel is also provided comprising a heel plate 38 and an operating device 39 actuated by the rod 40 attached to the foot treadle 44. Thus during the first portion of the depression of the foot treadle the plate 38 is yieldingly held down upon the top lift of the shoe about to be operated upon. Such device is well-known and need not be particularly described.

The heel plate 36 on the work support determines the position of the innersole at the heel seat of the shoe to be operated upon, and the stop 19 may be adjusted with relation to such heel plate either before or after the shoe is positioned thereon. In practice, this adjustment will usually be to allow for the thickness of the shank as fixing the point to check the knife in its cutting stroke.

Mechanism to start and automatically stop the rotation of the main shaft, whereby the crank 2 will be given one rotative movement and the driver 7 is reciprocated down and up, is arranged to be actuated by the foot treadle 44. Any suitable mechanism which will give a single rotation to said shaft may be employed, and, as the same form no part of this invention and is well-known and used in the art, it is not particularly described.

In operating the machine, the work support 35 may be adjusted for height and the stop 19 is adjusted to contact with the arm 17 of lever 16 to trip the member 10, disconnect the knife from its actuating driver, and thereby stop the knife at the point desired. A shoe is fitted over the work support and the treadle depressed, first bringing the heel plate 38 down upon the heel, and later actuating the driving shaft to turn one revolution, moving the driver 8 downward and then upward, making one complete reciprocation therefor. During the downward movement when the knife has made the desired cut the lever 16 strikes against the stop 19 and the member 10 is moved to the right, disconnecting the knife carrier 8 from the driver and stopping the cutting movement of the knife. During the upward movement of the driver, the spring 22 forces the member 10 back into vertical position as soon as the roll 12 has been raised high enough to permit this movement and the carrier and actuator are again

clutched or locked together. The top of the driver contacting with the plate 26 lifts the carrier in addition to the action of spring 14, and the mechanism is in position for another operation.

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

1. In a machine of the class described, a movable knife, mechanism to actuate the knife, means comprising a rotary member, a swinging member and a stationary adjustable stop on the machine frame whereby the knife may be freed from the knife moving mechanism at a predetermined point in the movement of the said knife.

2. In a machine of the class described, a reciprocating tool carrier, a reciprocating actuator for the carrier normally locked to the carrier, power means for giving the actuator a constant stroke, and means for unlocking the carrier from its actuator at a predetermined point in the movement of the actuator.

3. In a heel breasting machine the combination with the knife carrier 7 and its actuator 8 having the roll or abutment 12, of the arm 10 pivotally mounted on the knife carrier and having coöperating with it the two-armed member 16 pivoted to the carrier and having one arm arranged to engage the arm 10 and to swing it from operative relation with the roll 12 and a stationary adjustable stop 19 arranged in the path of the other arm of member 16, said parts operating to disconnect the knife carrier from its actuator at a selected point in the knife stroke independent of the shoe.

4. In a heel breasting machine the combination of a frame, a knife actuator 7, a knife carrier 8, said actuator and carrier being mounted in the frame for sliding movement parallel to each other, an arm 10 pivoted to the carrier, a member 16 pivoted to the carrier and normally engaging said arm, a stop screw 19 arranged in the path of said member to be engaged thereby at a predetermined point in the movement of the carrier and cause pivotal movement of the member 16 in the direction to free the carrier arm 10 from the actuator roll 12, and a spring 14 acting to retract the carrier as soon as it is freed from the actuator.

5. In a heel breasting machine, a knife carrier mounted for reciprocation, an actuator mounted for movement adjacent the said carrier, a roll mounted on said actuator, an arm pivoted to said carrier and adapted to be engaged by said roll during the initial movement of the actuator, tripping means for disengaging said arm from said roll and means independent of the parts named and of the work for engaging said tripping means.

6. In a heel breasting machine, a knife

carrier mounted for reciprocation, an actuator mounted for movement adjacent the said carrier, a roll mounted on said actuator, an arm pivoted to said carrier and adapted to be engaged by said roll during the initial movement of the actuator, tripping means for disengaging said arm from said roll, means independent of the parts named and of the work for engaging said tripping means, and a spring arranged to be tensioned by the downward movement of the actuator to reverse instantaneously the direction of the carrier as soon as the tripping means is operated.

7. In a heel breasting machine, a frame, a knife carrier, and a knife actuator mounted for vertical reciprocation in said frame adjacent each other, rotary means upon the actuator and swinging means upon the carrier whereby downward pressure of said rotary means upon said swinging means will positively actuate the carrier downwardly for a portion of the movement of the actuator, and means independent of the shoe for swinging said swinging means from beneath said rotary means to free the carrier from the actuator.

8. A power heel breasting machine, having in combination, a knife carrier, a power driven actuator unyieldingly actuated through a predetermined stroke, a clutch connecting the knife carrier to the actuator, a shoe support and a clutch opener adjustable relatively to the shank of a shoe on the support to free the knife carrier from the actuator when the knife reaches the shoe shank.

9. A power heel breasting machine, having in combination, a knife carrier, a power driven actuator unyieldingly actuated through a predetermined stroke, a clutch connecting the knife carrier to the actuator, a shoe support, and a clutch opener adjustable in a fixed support and located in the path of one of the clutch members.

10. In a heel breasting machine, an actuator having a constant range of movement to and fro, power means for moving the same, a knife carrier mounted for movement alongside the actuator, coöperating devices on the carrier and on the actuator respectively to cause a predetermined portion of the movement of the actuator to be communicated to the carrier, said means including an adjustable stop independent of the work and acting to effect discontinuance of the movement of the carrier after said predetermined movement thereof has taken place.

11. In a heel breasting machine, a knife carrier slidably mounted, an actuator mounted for movement adjacent to the carrier, power means for giving the actuator a constant range of movement, coöperating devices on the carrier and on the actuator

respectively for locking the carrier positively to the actuator, and adjustable means independent of the said parts and of the work for unlocking the carrier from the actuator at a predetermined point in the movement of the actuator.

12. In a heel breasting machine, a knife carrier mounted for reciprocation, a knife actuator, power means for giving the actuator a constant stroke, means for positively locking the actuator to the carrier for a

portion of the stroke and an adjustable stationary stop for freeing the carrier from the actuator at a predetermined point in its travel.

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

JOSEPH H. POPE.

Witnesses:

ARTHUR L. RUSSELL,
JAMES R. HODDER.