T. LUND.

HEEL COMPRESSING MACHINE.

APPLICATION FILED FEB. 19, 1906.

974,405. **Patented Nov. 1, 1910.**

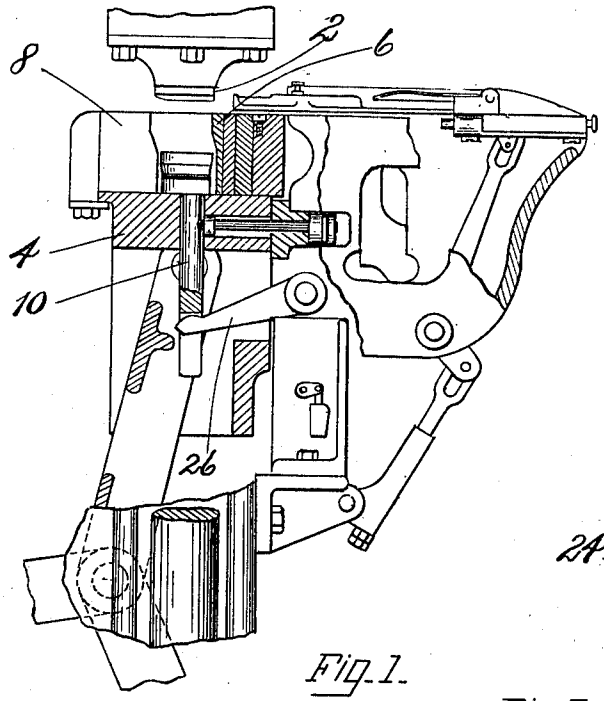

Fig. 1.

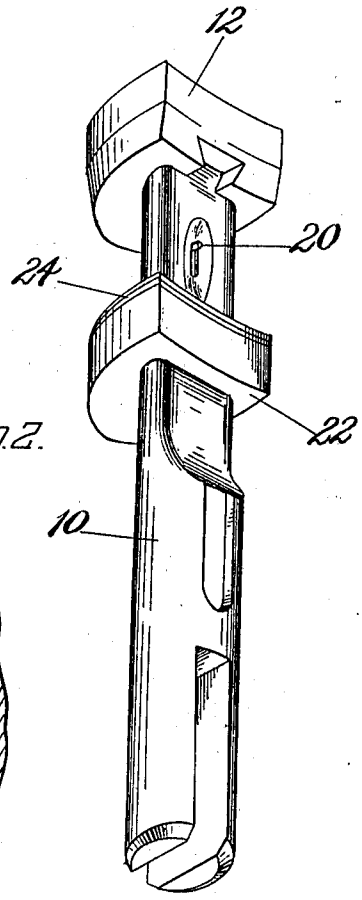

Fig. 2.

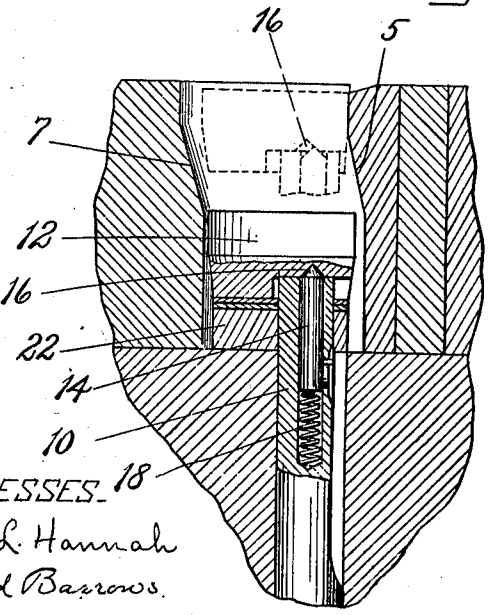

Fig. 3.

WITNESSES.

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UNITED STATES PATENT OFFICE.

THOMAS LUND, OF BEVERLY, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

HEEL-COMPRESSING MACHINE.

974,405. Specification of Letters Patent. Patented Nov. 1, 1910.

Application filed February 19, 1906. Serial No. 301,825.

To all whom it may concern:

Be it known that I, THOMAS LUND, a citizen of the United States, residing at Beverly, in the county of Essex and Commonwealth of Massachusetts, have invented certain Improvements in Heel-Compressing 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 heel compressing machines.

In the manufacture of boots and shoes there is at times occasion for compressing heels having inclined breast faces. For example, it may be desired to provide boots or shoes with heels the breast faces of which are inclined inwardly from the outer lift to the face of the outer sole. While this shape may be given the heels in the heel breasting operation, still it is desirable that prior to breasting the contour of a heel approximate as closely as may be its final form in order to reduce the amount of waste stock removed in breasting. It is of advantage therefore to build such heels and also compress them with their breast faces inwardly inclined.

A further advantage incident to compressing heels of this shape relates to the building of certain forms of heels. If the breast face of a heel be inclined rearwardly from the outer lift to the heel seat there is less variation in size between the several lifts forming the heel. For example, if the breast face have approximately the same angle of inclination as the rear face of the heel, certain kinds of heels may be produced by superposing lifts of the same area, the lifts being arranged to overlap at the breast and rear. This is of advantage more particularly because it tends to diminish the number of dies required in dieing out the lifts and also because it results in considerable economy in the stock.

The heel compressing dies herein disclosed are designed to compress heels having inclined breast faces. The present embodiment of the invention is shown as applied to a heel compressing machine comprising a die or follower and a mold formed by relatively movable side dies, a breast plate movable with the side dies relatively to the mold cavity and a top lift plate normally constituting the bottom of the mold, and arranged to be raised to eject the compressed heel from the mold cavity. Heretofore, the acting face of the breast plate in machines of this class has been vertical. In the machine herein disclosed said face is inclined so that it overhangs or projects over a portion of the mold cavity.

An important feature of the invention relates to mechanism for actuating the top lift plate. In prior machines of this class the movement of said plate has been in a vertical direction. It is desirable that the top lift plate be raised to eject the compressed heel approximately as soon as the dies have separated sufficiently to relieve pressure upon the heel. It has been found however that if it is attempted to raise the top lift plate with the degree of quickness desired it strikes the inclined face of the breast plate, and frequently by wedging against said face breaks the machine. To obviate this objection, in the machine described herein, I have arranged the top lift plate for movement rearwardly in the mold cavity so that as it is raised it may be moved away from the breast plate. A convenient arrangement comprises a top lift plate mounted upon a vertically movable post in such a manner that it may move horizontally and rearwardly as the post is raised. I have shown a dove tail and groove connection between the top lift plate and its supporting post adapted to permit this movement of the plate. As the plate is raised it may be moved rearwardly by engagement with the inclined face of the breast plate, and thus danger of injury to the machine by conflict between said plate and die is avoided.

In the drawings which illustrate one embodiment of this invention,—Figure 1 shows partly in section and partly in side elevation a portion of a heel compressing machine with my invention applied. Fig. 2 is a perspective view of the top lift plate and its supporting post. Fig. 3 is a fragmentary view in vertical section of the parts of the machine immediately contiguous to the die cavity.

The heel compressing machine to which I have described my invention as applied,

and a portion of which is shown in the drawings, is substantially the same in general construction and mode of operation as that shown in United States Letters Patent No. 776,787, dated December 6, 1904. As will be obvious my invention is capable of application to other forms of heel compressing machines, and its application to the machine shown in said Letters Patent is to be regarded merely as illustrative.

In the drawings, 2 indicates a follower, mounted in a stationary position upon the machine frame. A head 4 is arranged to be reciprocated vertically to and from said follower, and sustains a mold formed by separable side dies 8, and a breast plate 6, which in this machine moves with the side dies in their opening and closing movement. The side dies and breast plate are actuated in the manner disclosed in United States Letters Patent No. 776,823, dated December 6, 1904, and a detailed description of their actuating mechanism is accordingly not herein given. The acting face of the mold at the rear is inclined rearwardly from the bottom of the mold cavity, so that the heel to be compressed may be inclined at the back. The face 5 of the breast plate is also inclined rearwardly and upwardly in order that the breast face of the heel may be inclined inwardly from the outer lift. The walls of the mold cavity above the faces 5 and 7 are vertical in order to permit the follower 2 to move vertically in contact therewith. A post 10 is arranged for vertical movement in a bearing in said head, and has mounted upon its upper end a top lift plate 12, normally forming the bottom of the mold cavity. The plate 12 is provided with a groove in its lower face, extending longitudinally of the plate from approximately the center of the plate to the breast edge. This groove is formed to receive the dove tail shaped upper end of the post 10, and to permit said plate to move horizontally upon said post longitudinally of the mold cavity.

If desired a pin 14 may be provided to hold the top lift plate yieldingly in its normal position upon said post, said pin 14 being yieldingly held in a socket 16 in the top lift plate by means of a spring 18. A projection 20 upon the pin may be provided for depressing it.

It will be observed that the top lift plate may be disengaged from its supporting post by relative transverse movement of said parts. It will also be seen that the spring-pressed pin 14 is of advantage in preventing the top lift plate from becoming disengaged from the supporting post in case the post and plate are removed from their operative position in the machine.

The top lift plate in its lower position in the mold cavity rests upon filling pieces 24 and a block 22. Said plate is moved vertically by a lever 26, which is actuated at a predetermined point in the cycle of operations of the machine, by mechanism such as disclosed in the patents above referred to.

In the operation of the mechanism shown a heel inclined rearwardly from the outer lift at the rear and the breast having been placed upon the top lift plate, by means of feeding mechanism such as disclosed in the patents above mentioned, said heel descends into the mold cavity during the first part of the upward movement of the head. During the further rise of the head, the side dies and breast plate close upon the heel to compress it laterally, and the follower 2 coöperates with the top lift plate to compress the heel vertically.

As the head 4 descends after the compression of a heel, the side dies are drawn apart and the breast plate is moved back. Approximately as soon as the dies and breast plate have separated sufficiently to relieve pressure upon the heel, the post 10 and top lift plate are raised relatively to the head 4. It will be seen that since the side dies are somewhat separated at this point in the operation of the machine, rearward movement of the top lift plate is permitted. Hence as the top lift plate rises relatively to the mold it may be moved rearwardly upon its supporting post by engagement with the inclined face of the breast plate, as indicated in Fig. 3. In the rise of the head 4, the post 10 descends to its normal position and the top lift plate is moved forwardly by the side dies to its normal position upon the post 10.

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 compressing machine, a mold comprising side dies, a breast plate formed to project over a portion of the mold cavity, and a top lift plate arranged for movement at right angles to the plane of its acting face, said plate being also mounted for movement in a direction parallel to said face.

2. In a heel compressing machine, a mold comprising relatively movable side dies, a breast plate arranged for movement with the side dies and formed to project over a portion of the mold cavity, and a top lift plate arranged to be raised in the cavity and mounted for movement rearwardly in said cavity.

3. In a heel compressing machine, a mold comprising relatively movable side dies, a breast plate having an acting face inclined rearwardly and upwardly, and a top lift plate arranged to be raised in the mold cavity and mounted to be moved rearwardly in said cavity by engagement with the inclined face of said breast plate.

4. In a heel compressing machine, a mold

comprising relatively movable side dies, a breast plate movable with the side dies and formed with an acting face inclined rearwardly and upwardly, and a top lift plate arranged to be raised in the mold cavity and mounted to be moved rearwardly in said cavity by engagement with the inclined face of said breast plate.

5. In a heel compressing machine, a mold comprising relatively movable side dies, a breast plate formed with an acting face inclined rearwardly and upwardly, a post arranged for vertical movement in the mold cavity, and a top lift plate mounted for horizontal movement upon said post.

6. A mold for a heel compressing machine having the outer portion of the mold cavity formed by vertical walls and its inner portion at the breast end and rear end formed by walls inclined rearwardly from the bottom toward the outer portion of the cavity, and merging with said vertical walls.

7. In a compressing machine, a mold, a top lift plate arranged to form the bottom of the mold cavity, a supporting post for said top lift plate and a connection between said post and said plate constructed to permit the plate to be disengaged from the post by relative transverse movement of the post and the plate.

8. In a compressing machine, a mold, a top lift plate arranged to form the bottom of the mold cavity, a supporting post for said top lift plate, a connection between said post and said plate constructed to permit the plate to be disengaged from the post by relative transverse movement of the post and the plate, and means for normally retaining said plate in its operative position on the post.

9. In a heel compressing machine, a follower, in combination with a mold having the outer portion of its cavity formed by vertical walls and its inner portion at the breast end and rear end formed by walls inclined rearwardly from the bottom toward the outer portion of the cavity, said follower and mold being arranged for relative vertical movement.

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

THOMAS LUND.

Witnesses:

BERNARD BARROWS,

FREDERICK L. EDMONDS.