

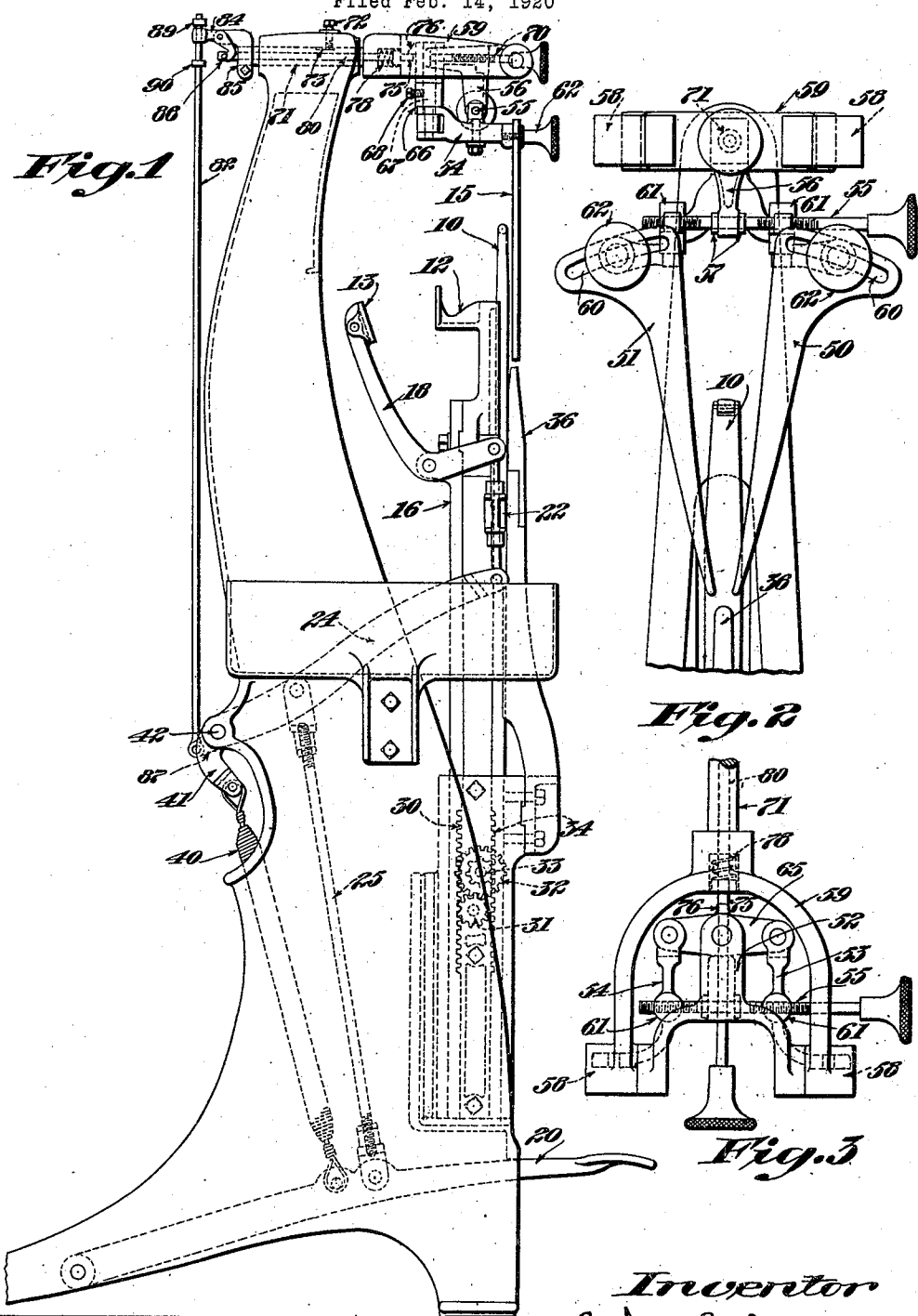
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FOREPART TURNING MACHINE

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UNITED STATES PATENT OFFICE.

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FOREPART-TURNING MACHINE.

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To all whom it may concern:

Be it known that I, ANDREW EPPLER, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Forepart-Turning Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to shoe turning machines and more particularly to machines of this character employed for turning the forepart of a shoe.

Shoe turning machines of this character, in which the turning instrumentalities are manually actuated, have certain features of advantage over those machines in which the turning instrumentalities are actuated by power, more particularly because of the intimate control which may be exercised by the operator in the manually actuated machines.

It is the object of the present invention therefore to incorporate in a forepart turning machine of the type in which the turning instrumentalities are manually actuated, certain new features of construction which tend to simplify the turning operation and leave the operator entirely free to manipulate the shoe upper as desired, and aid in the functioning of the machine.

With this object in view the invention consists in certain novel features of construction, combination, and arrangement of parts hereinafter described and claimed, the advantages of which will be obvious to those skilled in the art from the following description.

In the accompanying drawings illustrating the preferred form of the invention, Figure 1 represents a side elevation of a forepart turning machine embodying the several features of the invention. Fig. 2 is a detail illustrating a front elevation of the forepart spreader, and Fig. 3 is a detail showing a top plan view of the spreader mechanism illustrated in Fig. 2.

The forepart turning machine of the present invention comprises generally a turning post about which the shoe is bent, a heel engaging member connected with treadle mechanism and adapted to draw the shoe over the turning post, and a forepart

spreader member adapted to distend the forepart of the shoe and retain it in position during the turning operation. In the illustrated embodiment of the invention, the turning post is connected with the heel member in such a manner that as the latter moves downwardly to perform the turning operation, the turning post is moved in the same direction at one-half the speed to correspond with the movement of the shoe.

The machine shown in the illustrated embodiment of the invention comprises generally a vertical turning post 10, a heel engaging member consisting of two co-operating clamps 12 and 13, and a forepart spreader indicated generally at 15. The shoe to be turned is bent over the turning post in the usual manner with the heel seat engaged between the clamps 12 and 13 and the forepart spreader member received within the forepart of the shoe. The clamp 12 is formed integral with a vertical slide 16, upon which is fulcrumed a bell-crank lever 18 carrying the clamp 13. This bell-crank lever is connected with a treadle 20, through a link 22, a pivoted arm 24, and a connecting rod 25. This system of connections is such that upon depressing the treadle the clamp member 13 is first moved toward the clamp 12 to engage the heel of the shoe, and thereafter a continued depression of the treadle moves the slide 16 carrying both clamps downward to draw the shoe over the turning post 10. This movement of the slide 16 actuates the turning post in the same direction through a series of inter-meshing racks and gears. As shown in Fig. 1, the lower end of the slide 16 is provided with a rack 30 engaging with a gear 31 which meshes with a large intermediate gear 32 carrying a smaller driving pinion 33 meshing with a rack 34 formed upon the lower end of the turning post slide. This construction serves to move the turning post downwardly with the clamp at one-half the speed. It will be observed that with this construction and mode of operation, the turning of the forepart may be accomplished without placing any excessive strain upon the operator. The complete turning of the toe portion of the shoe is secured by an iron 36 detachably secured to the front of the machine frame and having its upper end located adjacent to the end of the forepart spreader. After the turning

operation is completed, the various instrumentalities are returned to initial position, as shown at Fig. 1, by a tension spring 40 connecting the treadle with a tail 41 projecting rearwardly from the arm 24 adjacent the fulcrum 42.

During the turning operation, the forepart spreader member is held stationary and serves to retain the shoe bent over the turning post. Before and after the turning operation it is desirable that the spreader member shall be removed from the immediate proximity of the turning post in order to permit of the convenient application and removal of a shoe. The present invention contemplates mechanism for locking the forepart spreader in position adjacent the turning post during the turning operation and for automatically unlocking and removing the spreader from operative position at the completion of the turning operation. With the forepart spreader member held positively in position during the turning operation, the hands of the operator are left entirely free to manipulate the upper and aid in working the shoe over the turning post which, it will be readily understood, is a great advantage in this type of machine.

In the simplest and most efficient form of the invention which has yet been devised, the forepart spreader member is mounted in such a position that it will normally swing away from the turning post when released, mechanism being provided for locking the spreader in operative position when moved thereinto by the operator. This locking mechanism is conveniently connected with the treadle mechanism in such a manner that it is automatically released at the completion of the turning operation.

As shown in the drawings, the forepart spreader comprises two spreader fingers 50 and 51, which are respectively mounted upon the outer ends of the two arms 53 and 54, moved toward and from one another through a right and left hand adjusting screw 55. As shown more particularly in Figs. 2 and 3 of the drawings, the adjusting screw is loosely received in a depending portion 56 of the head 52 and is provided with threaded portions engaging with similarly threaded bosses 61 connected to the arms for swivelling movement. The screw is retained against movement transversely of the head 52 through collars 57 secured to the screw and engaging with opposite sides of the head. In addition to the simultaneous adjustment of the fingers toward and from one another, they are independently adjustable upon their respective arms through the provision of angularly disposed slots 60 which receive clamping members 62 threadedly engaging in the ends of the arms. The head 52, as shown more particularly in Fig. 3 of the drawings, is provided with oppositely

extending trunnions 58 which are journaled in an overhanging yoke 59. These trunnions are so disposed with relation to the head 52 that when released, the head normally tends to swing forwardly moving the fingers into an inclined position in which the shoe may be readily applied to or removed from the machine. The arms carrying the spreader fingers are pivoted at their rear ends to a transverse bar 65 provided with a central hub 66 which is secured to a connecting stud 67 through a set screw 68 as indicated in Fig. 1. The stud 67 is received and supported in the rear end of the head 52 and held in position by a holding screw 70 threaded in the head as shown in the drawings and having its rear end engaging with the stud 67. Through the provision of this mechanism, a bodily vertical adjustment of the spreader fingers may be secured relative to the head and yoke 59.

The yoke 59 is provided with a supporting stem 71 which is received in the upper end of the machine frame and held in position by a set screw 72. As will be observed from an inspection of Fig. 1, the set screw engages with an elongated recess 73 formed in the stem which permits a bodily adjustment of the yoke and forepart spreader member carried thereby to move the spreader member toward and away from the turning post when so desired. The spreader member is normally locked in the operative position shown in Fig. 1 by a detent 75 which engages beneath the tooth 76 formed upon the head 52. The detent 75 is normally retained in locking position by a spring 78 and is provided with a stem 80 slidably received within the stem 71. The rear end of the stem 80 is connected with a releasing bar 82 through a bell-crank 84 pivoted upon an arm 85 secured to the stem 71 and engaging behind a pin 86 mounted in the stem 80. As will be observed from an inspection of Fig. 1, the releasing bar 82 is connected at its lower end with a projection 87 extending from the pivoted arm 24 in such a manner that the releasing bar is gradually elevated during the continuance of the turning operation. The upper end of the releasing bar is provided with spaced collars 89 and 90 adapted to engage with opposite sides of one arm of the bell-crank lever 84. These collars are spaced a sufficient distance apart to permit an elevation of the releasing bar throughout the turning operation without operating the bell-crank lever, but at the completion of the turning operation the lower collar 90 engages beneath the bell-crank to rock the latter and move the detent 75 outwardly. This permits the forepart spreader to swing forwardly into an inclined position in which the shoe may be removed. After a new shoe has been applied to the machine, the

forepart spreader may be swung back to vertical position, the detent 75 riding over the rounded upper face of the tooth 76.

It will be obvious to those skilled in the art that this construction permits the operator to devote his entire attention to manipulating the upper of the shoe as the latter is turned over the turning post, and at the same time to instantly stop the turning operation if too great a strain is placed upon the upper. Furthermore, the provision of mechanism for varying the position of the spreading member with relation to the turning post and the spreader fingers with relation to one another enlarges the capacity of the machine and enables it to be successfully employed for turning shoes of widely varying styles and sizes.

While it is preferred to employ the specific construction and arrangement of parts shown and described, it will be understood that this construction and arrangement is not essential except so far as specified in the claims, and may be changed or modified without departing from the broader features of the invention.

The invention having been described, what is claimed is:

1. A shoe turning machine having, in combination, a turning post, a forepart spreader member for engaging with the shoe at one side of the turning post, a heel retaining member for engaging with the shoe upon the opposite side of the post, means for actuating the heel engaging member and turning post to turn the shoe, and means for locking the forepart spreader in position adjacent the post adapted to automatically release the spreader at the completion of the turning movement.

2. A shoe turning machine having, in combination, a turning post, means for retaining the shoe bent over the post, including a forepart spreader and heel clamping members, mechanism for actuating the heel clamp and turning post to turn the shoe, and means for locking the forepart spreader in a position in proximity to the turning post controlled by the actuating mechanism.

3. A shoe turning machine comprising a turning post, a forepart spreader adapted to normally move away from the post, means for drawing the shoe over the turning post, and means for locking the forepart spreader in position adjacent the post adapted to automatically release the spreader at the completion of the turning operation.

4. A shoe turning machine having, in combination, a turning post, a forepart spreader for engaging with the shoe at one side of the post, a heel retaining member for engaging with the shoe upon the opposite side of the post, a manually actuated arm for moving the heel member to draw

the shoe over the post, means for locking the forepart spreader in position adjacent the post, and connections between the arm and locking means for releasing the latter when the heel retaining member has substantially completed the turning movement.

5. A shoe turning machine comprising a turning post, mechanism for actuating the turning post in a rectilinear path, cooperating turning members positioned upon opposite sides of the post including a forepart spreader, means for normally supporting the forepart spreader in an inclined position with respect to the path of movement of the post, means for locking the forepart spreader in proximity to the post and substantially parallel thereto, and connections between the locking means and actuating mechanism for releasing the forepart spreader at the completion of the turning operation.

6. A shoe turning machine comprising a head, two arms pivotally connected with the head, means for simultaneously adjusting the arms toward and from one another, two spreader fingers each having an arcuate slot formed therein, and means for connecting each spreader finger to one of the arms in a manner to permit adjustment of the finger about its end with relation to the arm through the provision of the slot.

7. A shoe turning machine comprising a supporting yoke, a head pivotally mounted between the arms of the yoke and adapted to normally move into an inclined position, spreader fingers connected with the head, and a locking detent slidably supported in the yoke and adapted to engage with the head and restrain the latter against movement into an inclined position.

8. A shoe turning machine having, in combination, a turning post, separate members including a forepart spreader engaging with the shoe upon opposite sides of the post to retain the shoe bent over the post, mechanism for moving one of the members, together with the post, to turn the shoe thereover, and means for locking the spreader member in position adjacent the post adapted when released to permit movement of the member away from the post to permit removal of the shoe therefrom.

9. A shoe turning machine having, in combination, a turning post, a forepart spreader member at one side of the post, a pair of heel clamping members upon the opposite side of the post, mechanism for first closing the heel clamping members, and for thereafter actuating both heel clamping members and the turning post to turn the shoe thereover, and means connected with the actuating mechanism for locking the forepart spreader in operative position during the turning operation, and for automatically releasing the forepart spreader mem-

ber at the completion of the movement of the heel clamping members and turning post.

10. A shoe turning machine comprising a turning post, a forepart spreader member, 5 a pivoted head supporting the member, a heel clamping member, an arm for actuating the heel clamping member, a member for normally locking the pivoted head, and a releasing member connected to the arm and 10 adapted to disengage the locking member when the turning movement of the heel clamping member is substantially completed.

11. A shoe turning machine comprising 15 a turning post, a forepart spreader member, a pivoted head supporting the member, a sliding detent for normally locking the pivoted head, a bell crank lever having one arm connected with the detent, and a releasing bar loosely connected with the bell crank 20 lever to actuate the latter and disengage the detent at the completion of the movement of the releasing bar in one direction.

12. A shoe-turning machine comprising,

in combination, means to turn a shoe including a sole support and means to move the shoe longitudinally with respect thereto to turn it, auxiliary means to cooperate in holding the shoe bent over the support, and a connection from the shoe-moving means to 30 release the auxiliary means for engagement with the shoe.

13. A shoe-turning machine comprising, in combination, means including a toe support for holding and turning a shoe, and 35 treadle-controlled means for turning the toe support to an idle position at the conclusion of the turning operation to facilitate removal of the turned shoe.

14. A shoe-turning machine comprising, 40 in combination, shoe-turning means including relatively adjustable tiltable members for spreading the toe portion of a shoe, and treadle-controlled means for tilting said 45 members at the conclusion of the turning operation.

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