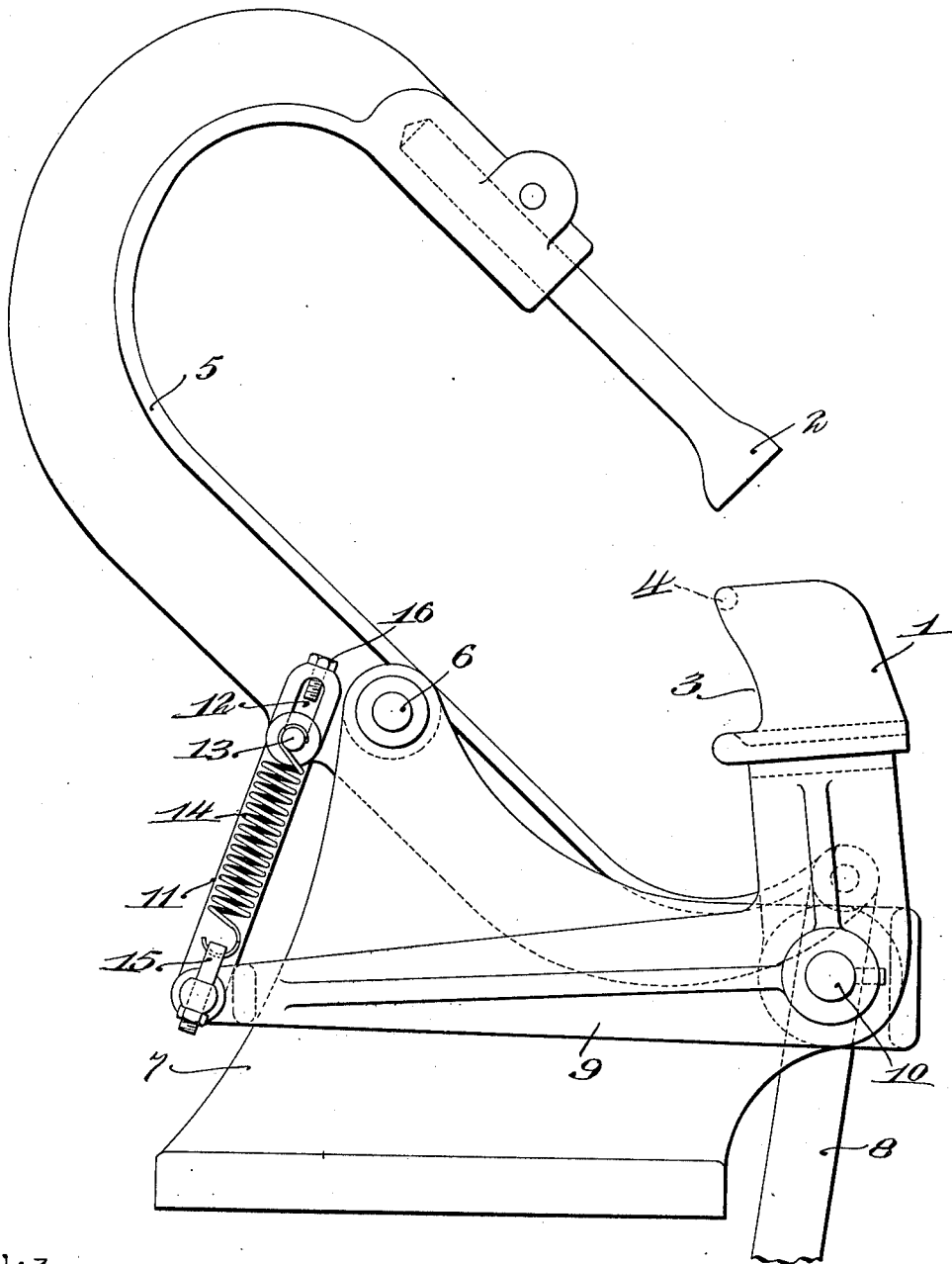


A. EPPLER.
SHOE TURNING MACHINE.
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Patented Mar. 19, 1912.



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UNITED STATES PATENT OFFICE.

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SHOE-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 Shoe-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.

This invention relates to shoe turning machines and more particularly to the type of machines for turning the rear, or counter portion, of a turn shoe which comprises a form and a plunger coöperating therewith. In the earlier forms of machines of this type a severe strain has been put upon the upper during the turning operation often causing the seam, or seams, at the back of the upper to gap, or rip, and otherwise injuring the shoe and marring its appearance. This was due to the binding of the upper on the form in being turned over the edge and pressed down inside the form. This difficulty has been obviated, largely, by providing a form and coöperating plunger which move laterally with relation to each other during the turning operation. The lateral movement is effected by moving the form toward the plunger thus easing the rear portion of the upper which is doubled over the edge of the form. When left too long after tempering, before being operated upon, and for other reasons well known to those skilled in the art, the work is frequently stiff and does not readily give up in turning. While the construction described effectually avoids a binding of the upper on the form, when the work is in proper temper, a strain, detrimental to the shoe, still occurs when the work is so stiff as to not readily give up in turning.

The object of the present invention is to provide a machine of the type described for turning the rear, or counter portion, of a turn shoe which will effectually prevent binding between the form and plunger, and its consequent detrimental effect on the shoe, both when the work is in proper temper and when it is stiff.

In accordance with this object a feature of the invention consists in the provision, in a machine of the type described, of means permitting an additional relative lateral movement between the plunger and form if,

during the turning operation, the normal relative movement is not adequate to prevent the upper from binding. In the best form of the invention at present known to the inventor, the additional movement is obtained by a further movement of the form relative to the plunger but in a direction away from the plunger. Preferably such additional movement is secured by a movement of the support for the form. This is accomplished by providing a yielding connection between the form support and the plunger operating means which connection is normally inactive but which is brought into operation to increase the lateral distance between the plunger and form whenever an excessive strain, caused by binding, is placed upon the work.

In addition to the feature of invention above referred to, the invention also consists in certain devices, arrangements and combinations of parts hereinafter described and claimed, the advantages of which will be obvious to those skilled in the art.

A shoe turning machine embodying the invention in its preferred form is illustrated in the accompanying drawing in which the machine is shown in side elevation.

In the embodiment of the machine illustrated in the drawing, 1 indicates the form over which the rear, or counter portion, of the shoe is turned, and 2 the plunger coöperating therewith. The form is of the same general shape as the form which has heretofore been used in machines of this type having its rear wall cut away below the upper edge to form a recess 3 into which the upper can bend during the turning operation. For a purpose well known to those skilled in the art, an anti-friction roll 4 may be, and preferably is, journaled in the form at its rear, upper edge. The shank of the plunger 2 is clamped in the overhanging end of a curved lever, or arm, 5 pivotally mounted at 6 between the side plates of the frame 7 which are bolted upon a work bench or other suitable support. The lever 5 is swung about its pivot to bring the plunger 2 into contact with the heel portion of the sole of a turn shoe upon the form 1, and to press such portion down into the form, by means of a rod 8 connected to the lower end of the lever 5 and to a suitable foot treadle (not shown).

In order to impart to the form and plun-

ger a relative lateral movement during the turning operation, to prevent binding of the upper on the form in being turned over the edge and pressed down inside the form, the machine is provided with means for moving the form laterally toward the plunger after the plunger has entered the form and before it has completed its downward movement. Such means consists of a bell-crank lever 9 pivoted at 10 to the frame 7, its vertical arm forming a support for the form 1 and its horizontal arm being connected to the plunger operating lever 5 by a link 11.

If the work is stiff and does not readily give up in turning, the space between the walls of the form and the plunger will not ordinarily be sufficient to permit such work to be properly operated upon without straining the stitching at the heel to a detrimental extent. To take care of work that is not in proper temper, or for some other reason is stiff, the link 11 is constructed and arranged to permit, during the turning operation, a lateral movement of the form in the vertical plane of the plunger movement to increase the distance between the form and plunger. The enlargement of the space between the form and plunger, thus obtained, is sufficient to permit the plunger to perform its work without placing an excessive strain upon the stitching at the heel. To accomplish this end the link 11 is provided with a slot 12 at its upper end through which is passed a pin 13 carried by the plunger operating lever 5. This pin is maintained, normally, at the lower end of its slot by means of a spring 14 secured at one end to the pin and at its other end to an eye 15 carried by a lug on the form-supporting bell-crank lever 9. An adjustment of the eye 15 will adjust the tension of the spring 14. A stop screw 16 is provided at the upper end of the link 11 to limit the movement of the link relative to the plunger operating lever 5.

In the construction just described additional space between the walls of the form and the plunger, to prevent a detrimental strain upon the shoe when stiff or other difficult work is being operated upon, is provided for by the yielding link 11 as this link will permit the form-supporting lever 9 to move the form as a whole inward, bodily, during the turning operation in response to the force exerted on the work by the plunger. The lateral distance between the walls of the form and the plunger having been increased sufficiently to relieve the strain upon the stitching, the turning operation is proceeded with without harm to the shoe. It will be noted that the construction and arrangement of the yielding link 11 is such that when shoes in proper temper are being operated upon the spring 14 is inactive and the spring is only brought

into operation whenever an excessive strain, caused by binding, is placed upon the work.

The nature and scope of the present invention having been indicated and the preferred embodiment of the invention having been specifically described, what is claimed as new is:—

1. A machine for turning the rear or counter portion of a turn shoe, having, in combination, a hollow form over which the shoe is turned, and a plunger movable into and out of the form, said form being yieldingly movable laterally away from the plunger as it passes within the form during the turning operation to relieve the strain on the upper, substantially as described.

2. A machine for turning the rear or counter portion of a turn shoe, having, in combination, a pivotally mounted support, a form thereon over which the shoe is turned, a plunger movable into and out of the form, a lever upon which the plunger is mounted, and a yielding link connecting the lever and the pivotally mounted form support, substantially as described.

3. A machine for turning the rear or counter portion of a turn shoe, having, in combination, a pivotally mounted support, a form thereon over which the shoe is turned, a plunger movable into and out of the form, a lever upon which the plunger is mounted, a yielding link connecting the lever and the pivotally mounted form support, and means to limit the amount of yielding movement, substantially as described.

4. A machine for turning the rear or counter portion of a turn shoe, having, in combination, a pivotally mounted support, a form mounted thereon over which the shoe is turned, a plunger movable into and out of the form, an operating lever for the plunger, and a link pivotally connected at one end to the form support and loosely connected at its other end to the operating lever, and yielding means normally holding the link in a position relative to the operating lever to at times permit a movement of the form away from the plunger, substantially as described.

5. A machine for turning the rear or counter portion of a turn shoe, having, in combination, a hollow form and a plunger coöperating with the walls thereof to turn the shoe, and means permitting a yielding, relative, lateral, bodily movement between the form as a whole and plunger, normally inactive and brought into operation only by a binding of the work upon the form, substantially as described.

6. A machine for turning the rear or counter portion of a turn shoe, having, in combination, a form over which the shoe is turned, a plunger movable into and out of the form, means for moving the form laterally toward the plunger during the turning

operation, and additional means permitting a movement of the form laterally away from the plunger during the turning operation, substantially as described.

- 5 7. A machine for turning the rear or counter portion of a turn shoe, having, in combination, a bell-crank lever, a form mounted on the vertical arm of said lever, a plunger cooperating with the form to turn a shoe, an operating lever for the plunger, a link having a slotted end connected by its solid end to the horizontal arm of said bell-crank lever and embracing with its slotted end a pin on the plunger operating lever, and a spring connecting the bell-crank lever and pin and acting to maintain the pin at
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- 15

the lower end of the slot, substantially as described.

8. A machine for turning the rear or counter portion of a turn shoe, having, in combination, a form and a plunger cooperating therewith, said form and plunger having a yielding relative lateral movement in the vertical plane of the plunger movement during the turning operation to relieve the strain on the upper, substantially as described.

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