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PATENTED AUG. 22, 1905.

G. B. GARDNER.  
SHOE TURNING MACHINE.  
APPLICATION FILED MAY 27, 1904.

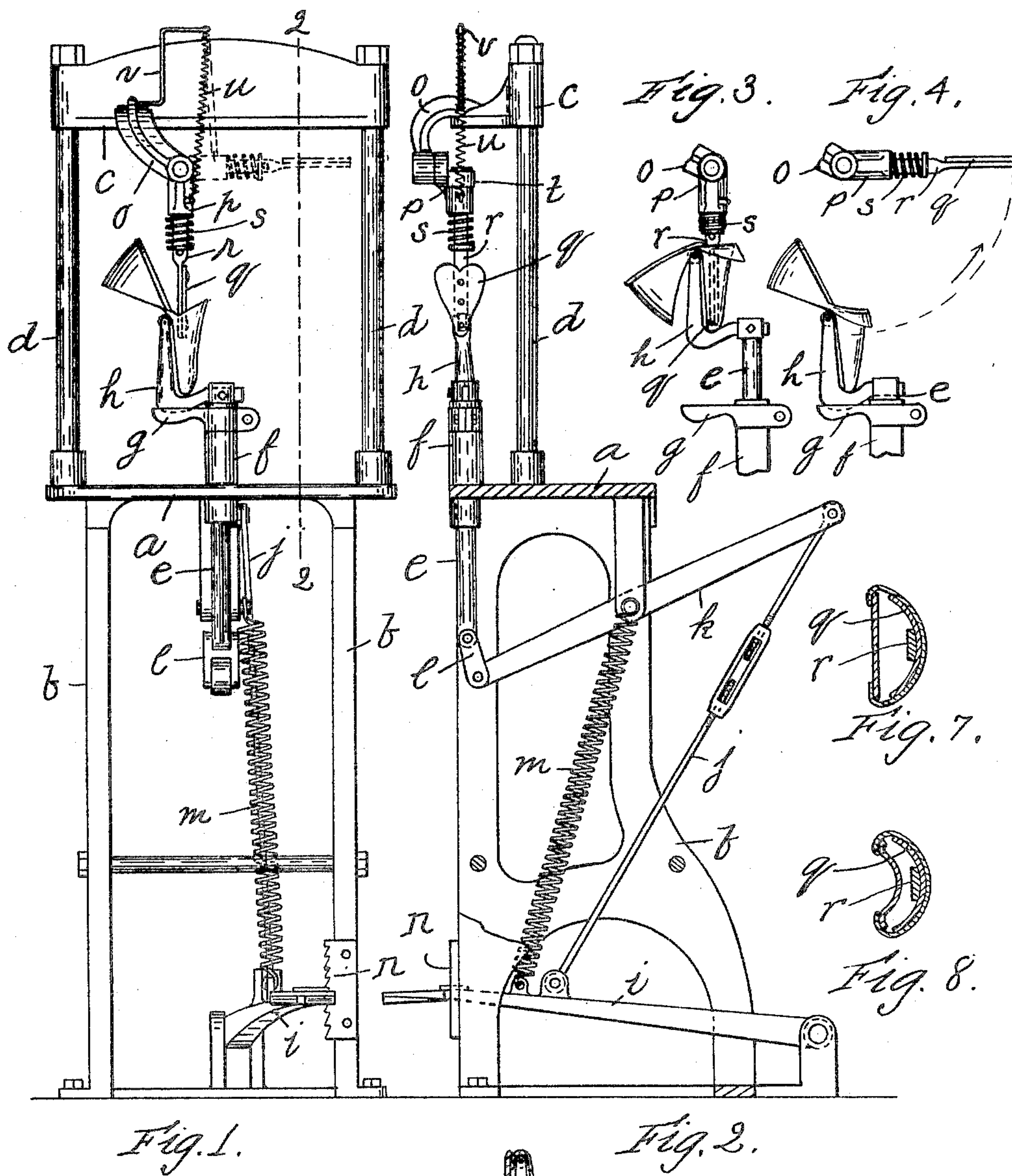


Fig. 5.  
Witnesses:  
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Fig. 6.

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# UNITED STATES PATENT OFFICE.

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## SHOE-TURNING MACHINE.

No. 797,803.

Specification of Letters Patent.

Patented Aug. 22, 1905.

Application filed May 27, 1904. Serial No. 210,008.

*To all whom it may concern:*

Be it known that I, GEORGE B. GARDNER, of Haverhill, county of Essex, State of Massachusetts, have invented an Improvement in Shoe-Turning Machines, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to certain improvements in the shoe-turning device described in my prior patent, No. 675,725, dated June 4, 1901, said device being especially designed and adapted to turn shoes which are not sewed about the heel before they are turned, which portion of the shoe, therefore, may be easily turned by hand without the use of any instrument, said device comprising, essentially, a horizontally-disposed heel-holding arm and a vertically-disposed and longitudinally-movable turning-finger at the upper side of said arm.

Before a shoe can be turned the sole must be bent or "broken" at or just back of the ball, and the upper must be turned over the ball or past the widest part thereof by hand before the machine can be employed to turn the rest of the fore part. This is usually done on the upright turning-finger, the sole of the shoe being held with one hand against the end of said finger while the upper is turned over with the other hand. As the operator thus only has one hand to work with in turning the upper, he can only manipulate one side of the shoe at a time, so that he must work or pull the upper down a short distance first on one side and then on the other until the turning operation has been carried forward far enough so that it may be completed by a machine in the manner described in said patent.

The object of my invention is to provide means which are adapted to be inserted in the fore part of shoes of different sizes and to hold a shoe in position against the turning-finger, so that the operator may employ both hands simultaneously in turning the upper over the ball, and, further, which is adapted to spread out the upper, so that it will be held in such a position that it may be turned over the ball with increased facility. I accomplish this object by the means disclosed in the accompanying drawings, in which—

Figure 1 is a front elevation of a shoe-turn-

ing machine made according to my invention. Fig. 2 is a sectional view on the line 2 2 of Fig. 1. Figs. 3, 4, 5, 6, 7, and 8 are detail views showing positions in the turning operation.

The frame of the machine comprises a table *a*, supported by legs *b* and carrying a cross-head *c*, which is held on suitable standards *d*. A vertical rod *e* is reciprocally mounted in the table near its front edge, said rod passing through a boss *f*, formed integral with the table. The upper end of said boss *f* is provided with a horizontally-disposed heel-holding arm *g*, which is rigidly secured thereto. A turning-finger *h* is secured to the upper end of the rod *e*, said finger comprising a horizontal portion the upper side of which is made slightly concave, as shown, and the vertical finger portion which extends from a point adjacent the end of the arm *g*, the general construction and arrangement of said finger being similar to that of the corresponding parts in said prior patent.

A foot-lever *i* is pivoted to the base of the machine and is connected by a link *j* to the rear end of a lever *k*, the front end of said lever *k* being pivotally connected to the lower end of the rod *e* by a short link *l*, whereby said rod *e* may be lifted when the foot-lever is depressed. A spring *m* acts to hold the foot-lever *i* in an elevated position, and a rack *n* is secured to one of the legs *b* and is adapted to be engaged by a tooth on the lever *i*, so that said lever and said rod *e* may be held in different positions.

An arm *o* is rigidly secured to the cross-head *c*, and a socket *p* is pivotally connected to the end of said arm. A flat or approximately heart-shaped form *q*, made of stiff flexible material, preferably sole-leather, is secured at its longitudinal central portion and throughout its length to the lower end portion of a rigid supporting-arm *r*, said lower end portion of said arm being flat and relatively narrow and of approximately the same width as the narrow end portion of said form, so that said form is longitudinally rigid and transversely flexible. The upper end portion of said arm is made square and slidably mounted within a correspondingly-shaped socket *p*, so that said arm is held from turning. A spring *s* is interposed between a pin on the arm *r* and the socket *p*, so



that said spring normally forces said arm outwardly from the socket, the upper end of said arm being provided with a suitable stop-collar *t* to limit the longitudinal movement thereof by the spring *s*. A spring *u* is connected to the socket *p* and to an arm *v*, said spring acting normally to hold the form in the dotted-line position of Fig. 1.

The operation of turning the shoe with this device is as follows: The heel portion of the shoe having been turned by hand, the shoe is placed thereon and the flexible form *q* is swung downwardly into a position closely adjacent and approximately parallel to finger *h*, with the sole of the shoe next said finger, the narrow end of the form being passed into the toe of the shoe. The form *q* is made nearly as wide as the widest shoe to be turned, and as it is transversely flexible it may be bent into an approximately semicylindrical form, as shown in Fig. 7, so that it may be passed into a shoe which is but little wider than its supporting-arm *r* it acting in all instances to spread out the upper to or beyond the edge of the sole of the shoe. The treadle is then depressed, lifting the finger *h* so that the toe of the shoe is pressed against the abutment formed by the bottom of the concave recess in the upper side of the horizontal portion of finger *h* by the form *q*, as shown in Fig. 3, said form thus being held at both ends and the shoe being held thereby in a vertical position with its sole against the side of finger *h*. The length of the vertical portion of finger *h* should be such that when the shoe is held in the position of Fig. 3 the end of the finger will bear against the sole at the point at which it must be broken before beginning the turning operation. The finger *h* is made in different sizes and is readily removable from the rod *e*, so that the length thereof may be conveniently varied. However, the fact that the form *q* is spring-pressed and may move vertically when in the position of Fig. 3 and that the rack *n* is adapted to hold the finger *h* in different positions renders the use of more than two or three fingers of different length unnecessary. Before beginning to turn the upper the sole is bent so that it is concaved longitudinally, the form *q* being also bent, as shown in Fig. 8. The operator then bends the sole over the end of the finger *h* and then grasps the upper at opposite sides and turns or draws it down until the shoe is turned past the ball. As the shoe is held by the form with its sole pressed against the finger, the operator thus has the free use of both hands to turn the shoe at each side simultaneously, so that he may accomplish this part of the operation with much greater ease and facility than if he were obliged to hold the shoe with one hand and turn it partially first on one side and then on the other with the other hand. While the tension of the spring *f* is sufficient to hold the shoe in place against the

finger *h*, it is not sufficient to injure the shoe, and the upward movement of the rod *e* is limited, so that it is not possible to lift the finger so high that the toe of the shoe will be clamped between the end of the form and the abutment at the base of the finger with any greater force than that which is applied by the spring *s*. The shoe having been turned over the ball, the finger *h* is lowered, permitting the form to be withdrawn from the shoe, and when it is withdrawn therefrom the spring *u* will lift it to the dotted-line position of Fig. 1. The heel portion of the shoe, which was previously turned, is then caught over the end of the arm *g*, the treadle is again depressed, and the turning operation of the fore part is finished in the same manner as that described in my said previous patent and as illustrated in Figs. 5 and 6.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a shoe-turning machine, a turning-finger, and a transversely-flexible form constructed to enter the fore part of the shoe and disposed adjacent the end of said finger, substantially as described.
2. In a shoe-turning machine, a turning-finger, a longitudinally-rigid, transversely-flexible form constructed to enter the fore part of a shoe, and disposed adjacent said finger, substantially as described.
3. In a shoe-turning machine, a longitudinally-rigid, transversely-flexible form adapted to enter the fore part of the shoe, and means for temporarily holding said form at each end, substantially as described.
4. In a shoe-turning machine, a turning-finger, a longitudinally-rigid, transversely-flexible form adapted to enter the fore part of the shoe, an abutment at the base of said finger and means for pressing the end of said form against said abutment in a position approximately parallel to said finger, substantially as described.
5. In a shoe-turning machine, a finger, a flat, transversely-flexible form adapted to enter the fore part of the shoe, and a relatively rigid, centrally-arranged, longitudinal support for said form, adapted to hold the same adjacent said finger, substantially as described.
6. In a shoe-turning machine, a longitudinally-movable turning-finger having an abutment at its base movable therewith, a shoe-holding form and means for holding the same adjacent said finger and approximately parallel thereto, said means permitting longitudinal movement of said form, and means for yieldingly pressing the toe end of said form against said abutment, substantially as described.
7. A shoe-turning machine comprising a stationary heel-holding arm, a turning-finger, means for moving said finger longitudinally away from said arm and for locking said fin-

ger in different positions with relation thereto, a shoe-holding form and means for supporting the same adjacent said finger, said supporting means permitting longitudinal movement thereof with relation to said finger, and means for yieldingly pressing the end of said form against the said finger adjacent its base, substantially as described.

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

GEO. B. GARDNER.

Witnesses:

L. H. HARRIMAN,  
H. B. DAVIS.