

J. H. WALKER & J. McINTYRE.
Boot and Shoe Forming Machine.

No. 220,775.

Patented Oct. 21, 1879.

FIG. 2.

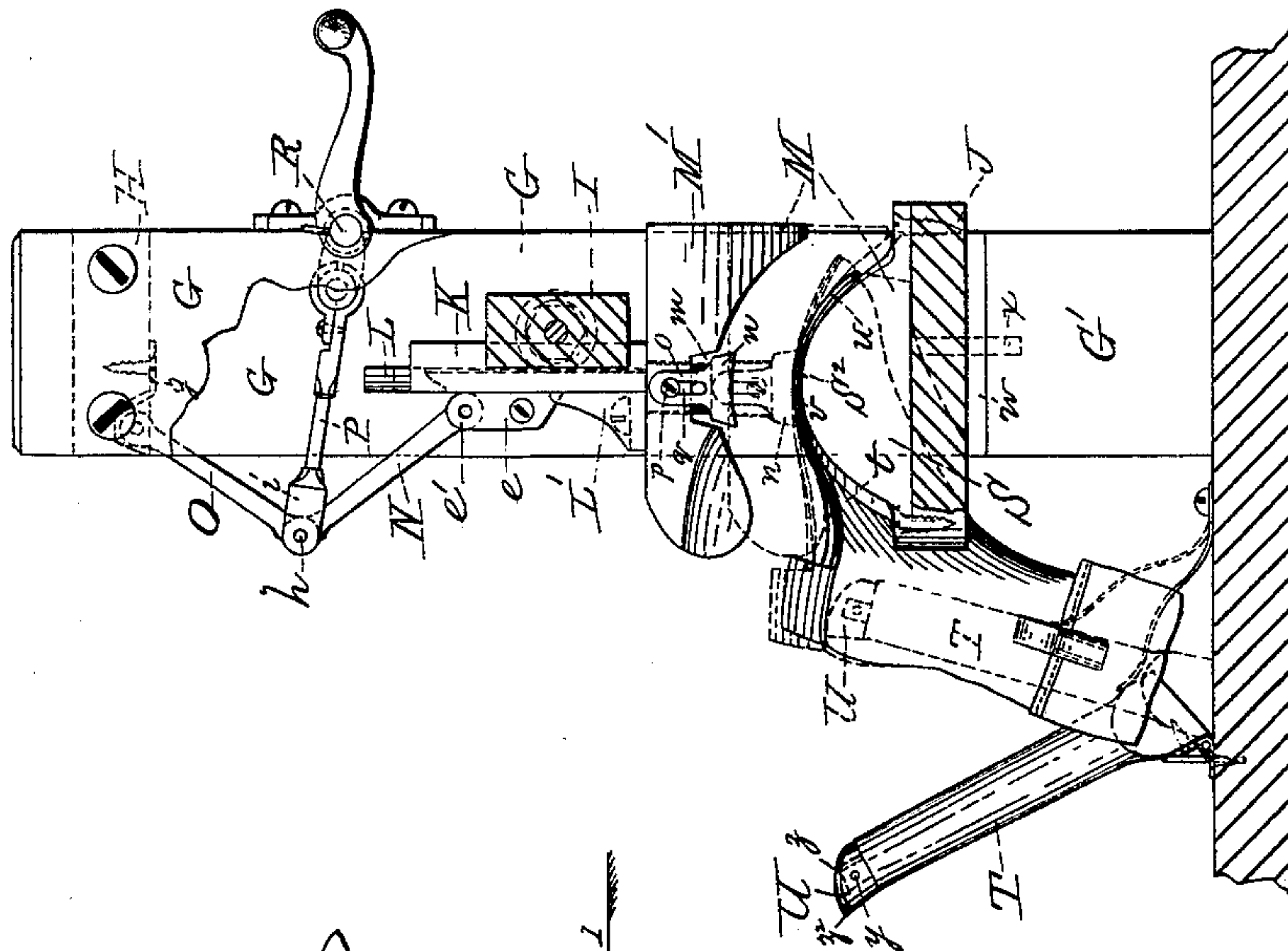
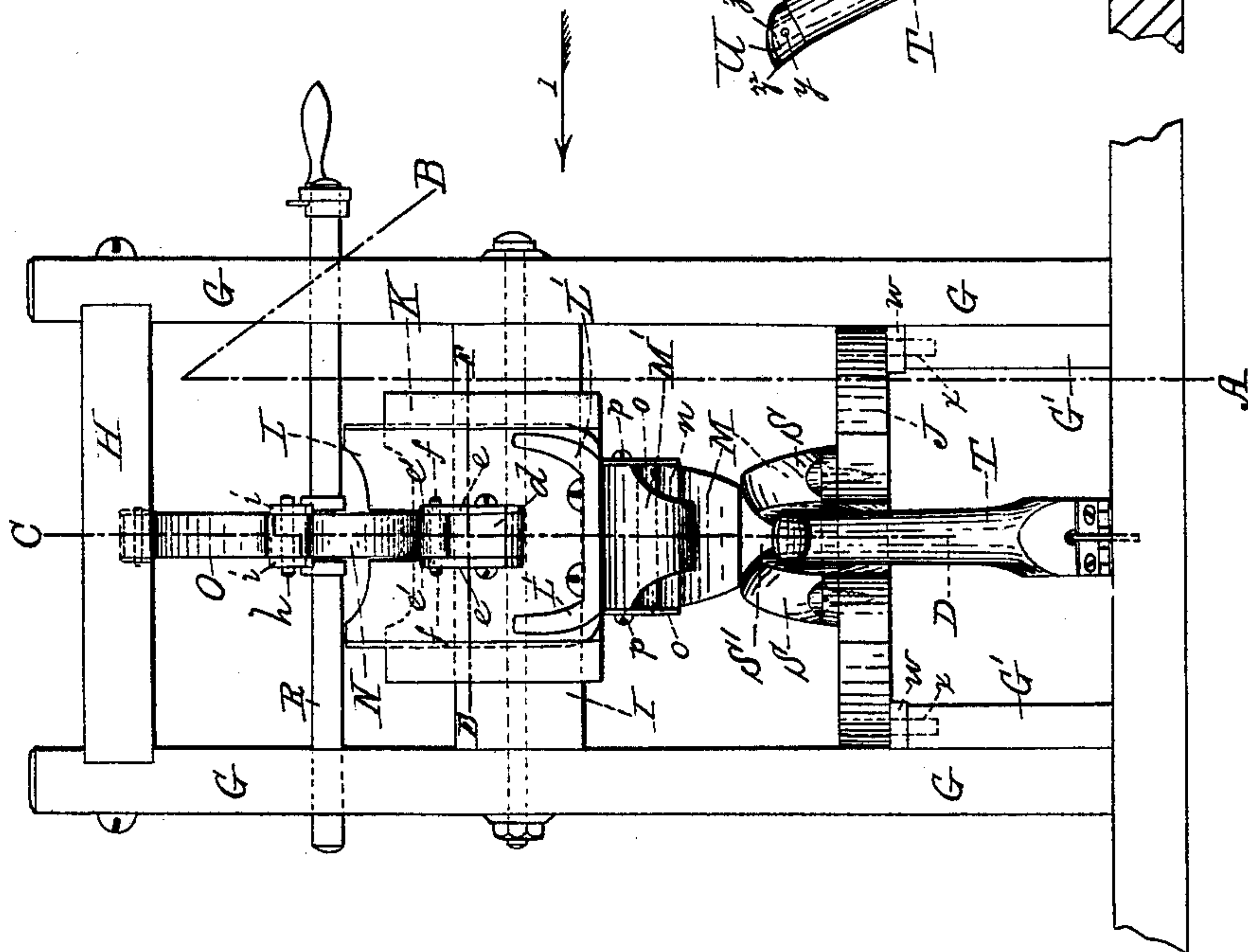


FIG. 1.



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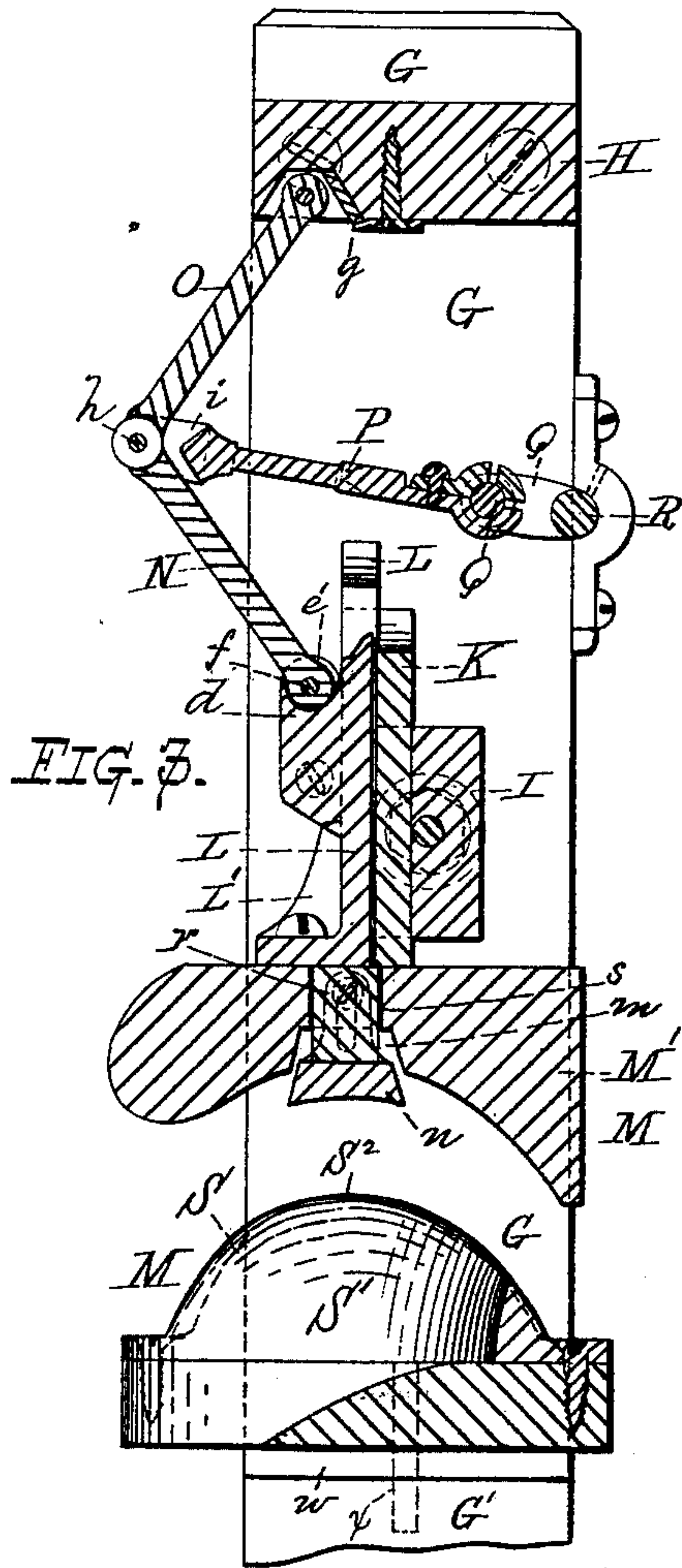


FIG. 3.

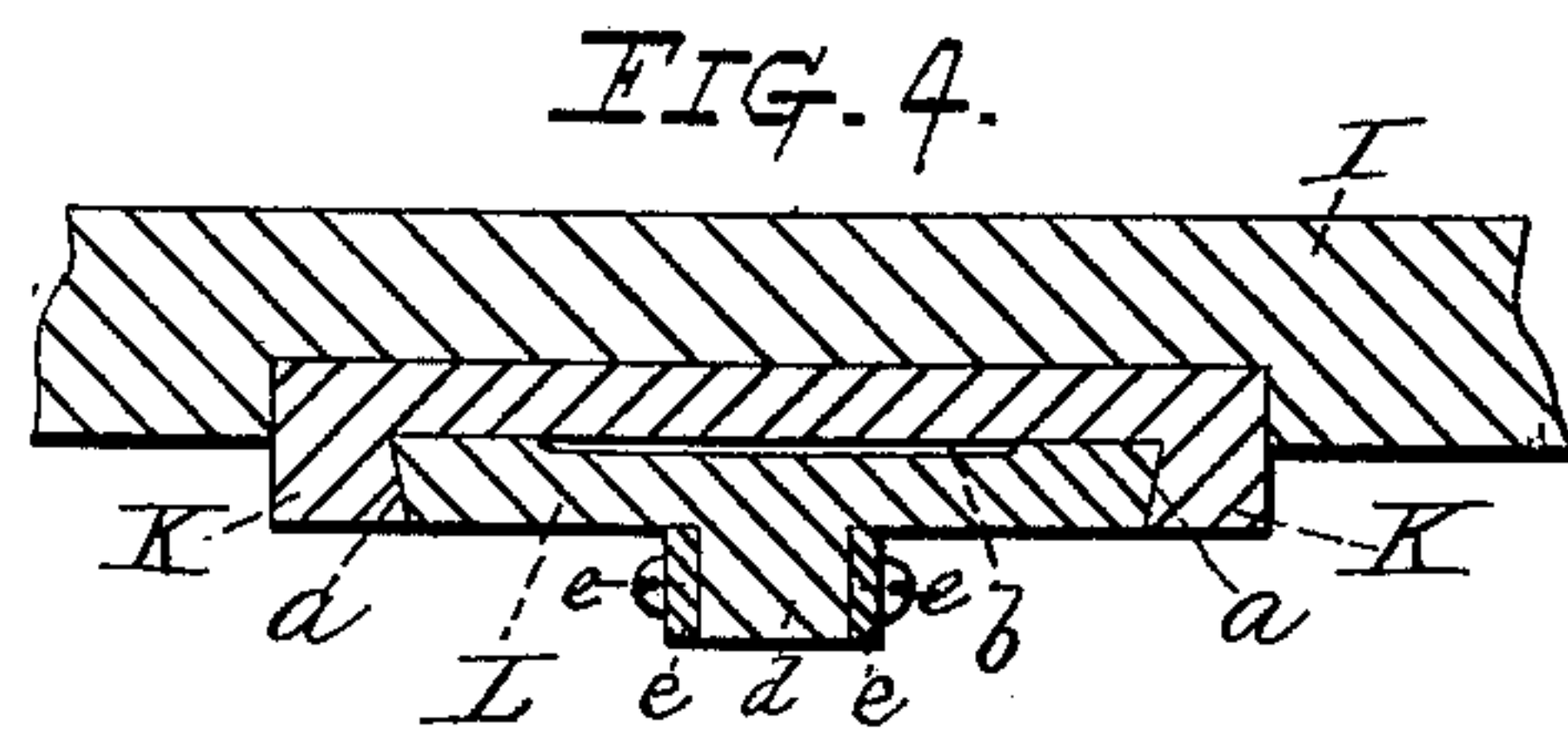


FIG. 4.

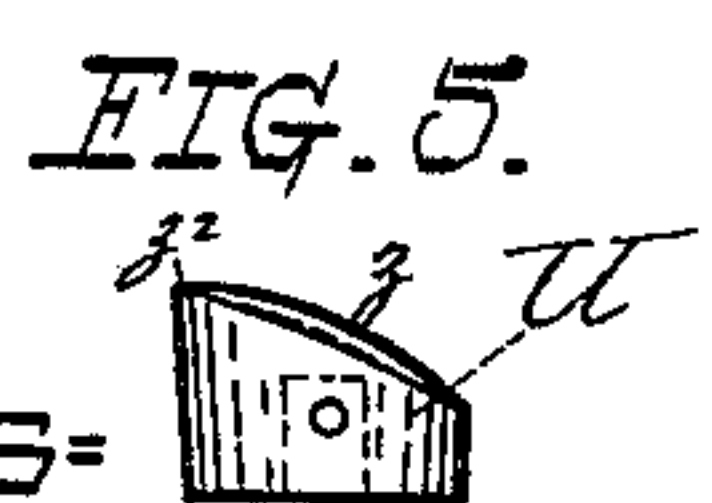


FIG. 5.

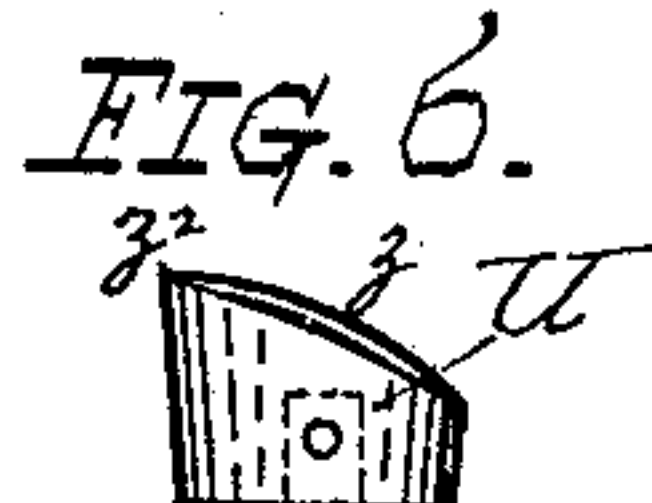


FIG. 6.

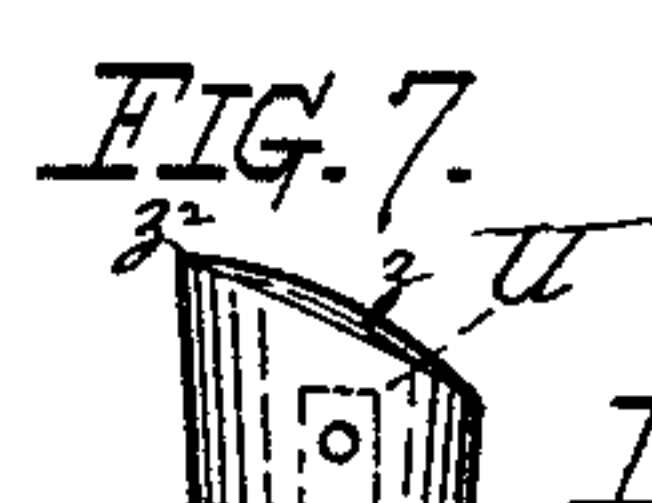


FIG. 7.

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UNITED STATES PATENT OFFICE.

JOSEPH H. WALKER AND JOHN MCINTYRE, OF WORCESTER, MASSACHUSETTS; SAID MCINTYRE ASSIGNOR TO SAID WALKER.

IMPROVEMENT IN BOOT AND SHOE FORMING MACHINES.

Specification forming part of Letters Patent No. 220,775, dated October 21, 1879; application filed June 28, 1879.

To all whom it may concern:

Be it known that we, JOSEPH H. WALKER and JOHN MCINTYRE, both of the city and county of Worcester, and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Boot and Shoe Springing or Forming Machines; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents a front view of one of our aforesaid improved boot and shoe springing or forming machines. Fig. 2 represents a part side view and part vertical section of the machine, the latter being taken on line A B, Fig. 1, looking in the direction indicated by arrow 1 of the same figure. Fig. 2 also represents a boot as it appears before and after being operated upon by the machine, as will be hereinafter more fully explained. Fig. 3 represents, upon an enlarged scale, a central vertical section through the machine, taken on line C D, Fig. 1, looking in the direction indicated by arrow 1 of the same figure. Fig. 4 represents, also upon an enlarged scale, a horizontal section through a portion of the machine, taken on line E F, Fig. 1; and Figs. 5, 6, and 7 represent, upon a still larger scale, side views of different sizes of detachable heel-blocks such as are employed upon the swinging boot and shoe support of the machine, as will be hereinafter more fully described.

To enable those skilled in the art to which our invention belongs to make and use the same, we will proceed to describe it more in detail.

In the drawings, G G represent the upright side-supporting frames of the machine, and H, I, and J the cross supports or beams upon which the machine is arranged and secured.

Upon the central cross-beam, I, is secured, in any suitable and permanent manner, the stationary part K, being framed into said cross-beam I in this instance, as represented in Fig. 4 of the drawings. The front side of said stationary piece K is cut out in dovetailed form, to receive the sliding part or carriage L, upon which is secured the upper half, M', of the springer or former M of the machine.

To secure sliding part or carriage L in its proper relative position in stationary part K, the ends *a* of the slot in said stationary part K are made beveling or in dovetailed shape, as before stated, and the outer edges of sliding part L beveled to fit upon said beveled surfaces, as fully represented in Fig. 4 of the drawings.

To avoid any undue friction of sliding part or carriage L upon stationary part K, the former is cut out upon the back side, as represented at *b*, Fig. 4, leaving only a small bearing or friction surface at each side of said sliding part L to bear upon stationary part K.

The upper half, M', of the boot and shoe springing or forming block M, which is secured to a projecting flange, L', formed or secured on sliding part L, is so shaped upon its under side that when applied to the bottom or sole of a boot or shoe, when the latter is placed between it and the top of the lower half, S, of the forming-block, which is correspondingly shaped upon said upper side, the sole will be sprung or bent into the proper form to fit the bottom of the foot, as will be hereinafter more fully described.

Sliding carriage L is operated or moved up and down in the slot formed in stationary part K, in this instance by means of a crank and toggle-joint device constructed and operating in the following manner: Upon sliding carriage L is formed a projection, *d*, to the sides of which are secured plates *e e*, which project above said projection *d*, so as to form ears or flanges *e' e'*. Between said flanges *e' e'* is hinged, upon a pin, *f*, passed through the former, the lower end of a link-piece, N. Another link-piece, O, is also hinged or suspended upon a socket-piece, *g*, secured to the under side of cross-beam H, while the lower end of said link-piece O and the upper end of link-piece N are hinged together at the point *h* to the slotted end *i* of connecting-arm P, while the other end of arm P is hinged to the crank Q of shaft R, which is supported and turns in suitable bearings secured to the side frame-pieces G G.

Thus it will be seen that by the rotation of driving-shaft R its crank Q forces forward and draws back link-pieces N and O, thereby

raising and lowering sliding carriage L and the parts connected thereto, for pressing the under curved side of the upper half, M', of the springing or forming block M down upon the bottom or sole of the boot or shoe placed under it, as fully indicated in dotted lines, Fig. 2, of the drawings.

Upon the lower cross-piece, J, is secured the lower half, S, of springing or forming block M, which is V-shaped, and is provided with a V-shaped slot, S', for the reception of the vamp of the boot or shoe when placed upon block S to be operated upon.

Slot S' not only converges to a point upon the sides from the front of the block to near its rear end, but also slopes slightly upward from front to rear of the block.

Cross-piece J is supported upon blocks G' G', which are secured to side standards or frames G G, and may be adjusted up or down by varying the thickness of blocks *cc*, placed under each end of said cross-piece upon the tops of supporting-blocks G' G'. Said blocks *cc* in this instance are composed of rubber, for the purpose of allowing cross-piece J and its block S to give slightly when pressed upon by block M', thus preventing breakage of those parts or other parts of the machine.

Cross-piece J is held in position by means of pins *xx*, secured in the same, which pass down through blocks *cc* and into supporting-blocks G' G', fitting loosely in the latter, and thus allowing of its easy adjustment up or down.

The upper half, M', of springing or forming block M is provided upon its under side with a beveled slot, *m*, extending from one side of said block to the other, into which a correspondingly beveled shaped piece, *n*, fits, the under side of the latter being made circling to correspond to the shape of the bottom of aforesaid block M'.

Each end of beveled piece *n* is provided with an upwardly-projecting slotted flange, *o*, by means of which said piece is suspended upon screws *pp* to block M', and allowed to move up and down on screws *pp* by means of slots *qq*.

A strong pressure is produced upon the upper side of beveled piece *n*, in this instance by means of a block of rubber, *r*, which is loosely fitted in a hole or opening, *s*, in block M', over the center of beveled piece *n*.

Instead of rubber being used, as in this instance, for pressing down beveled piece *n*, a strong spiral or other spring may be employed, if desired, for that purpose.

By the above-described arrangement a very strong and even pressure is produced upon the center of the sole of the boot or shoe, to hold the latter in position, and by obtaining such holding-pressure only at the center of the sole, the rest of said sole is allowed to yield to the pressure of the ends of block M' in springing or forming the bend in the shank *t* and forward part or toe *u* of said sole.

Beveled piece *n* not only holds the sole se-

curely at the center *v*, as aforesaid, but at the same time, by being curved upon its under side, as before explained, springs or bends the same at that point. Then again, said beveled piece *n* coming in contact with the sole at its center before the front and rear of the upper half, M', of the forming-block M does, it prevents the center of the sole from "huffing" up when caught by the two ends of said block M', as aforesaid.

T represents the swinging heel-support, upon which the boot or shoe is placed before inserting the foot of the same between the upper and lower halves, M' and S, of forming or springing block M. Upon the upper end of said swinging support T is secured a detachable heel-block, U, being so made detachable by means of a loosely-fitting dowel and pin, *y*.

The heel-block is curved upon its upper side, as represented at *z*, for the purpose of allowing the shank *t* to be sprung down, as represented in Fig. 2.

Different sizes and heights of heel-blocks may be employed, such as shown in Figs. 5, 6, and 7, the length of the heel-support T being thereby varied in length so as to hold the heel of the boot or shoe at the proper height to be operated upon by the forming-blocks M' and S, as before explained; or, if preferred the heel-support T may be made so it can be lengthened and shortened without removing or changing the heel-support U.

The operation of springing the sole of a boot may be briefly summed up thus: The leg of the boot is first placed over swinging support T, with the inside of the heel resting upon the upper point, *z*², of heel-block U, when the swinging support T, with the boot upon it, is then swung forward so as to bring the boot into the position shown by full and dotted lines, Fig. 2, with the vamp or top of the foot in slot S', and the outer sides of the sole, near the center, bearing upon the top S² of the lower half, S, of forming-block M, when the driving-power is then applied to the machine, and the upper half, M', of the forming-block M is forced down by means of the mechanism before described upon the bottom or sole of the boot, thereby pressing it down upon the lower half, S, of the forming-block M, (the upper surface of which is curved, as before stated, to correspond to the curve of the under side of the upper half, M', of forming-block M,) thus giving to it its proper shape to enable the boot or shoe to be worn with ease and comparative comfort while new.

Those skilled in the art to which our invention belongs will readily perceive and understand from the foregoing description the practical value and importance of our said invention, and will notice the marked and substantial difference between the construction and mode of operation of our said machine and the construction and mode of operation of those machines previously devised and made for shaping the soles of boots and shoes after their attachment to the uppers, while the wear-

ers of boots and shoes which have been sprung or formed by our invention, as hereinbefore described, will also appreciate the importance of the invention in a practical point of view.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination, with sliding carriage L and hinged boot-support T, of the parts M' and S, said parts being constructed and relatively arranged for joint operation, substantially as shown and described, and for the purposes set forth.

2. The combination, with the former M, consisting of the parts M' and S, of the foot-support T and the beveled yielding piece n, substantially as and for the purposes set forth.

3. The combination, with the part M', of the beveled piece n, for the purposes stated.

4. The combination, with the parts M' and S, of the yielding support or cross-piece J, beveled part n, sliding part L, and the mechanism for operating the same, said parts being constructed and combined together for joint operation substantially as and for the purposes set forth.

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Witnesses:

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