

No. 622,643.

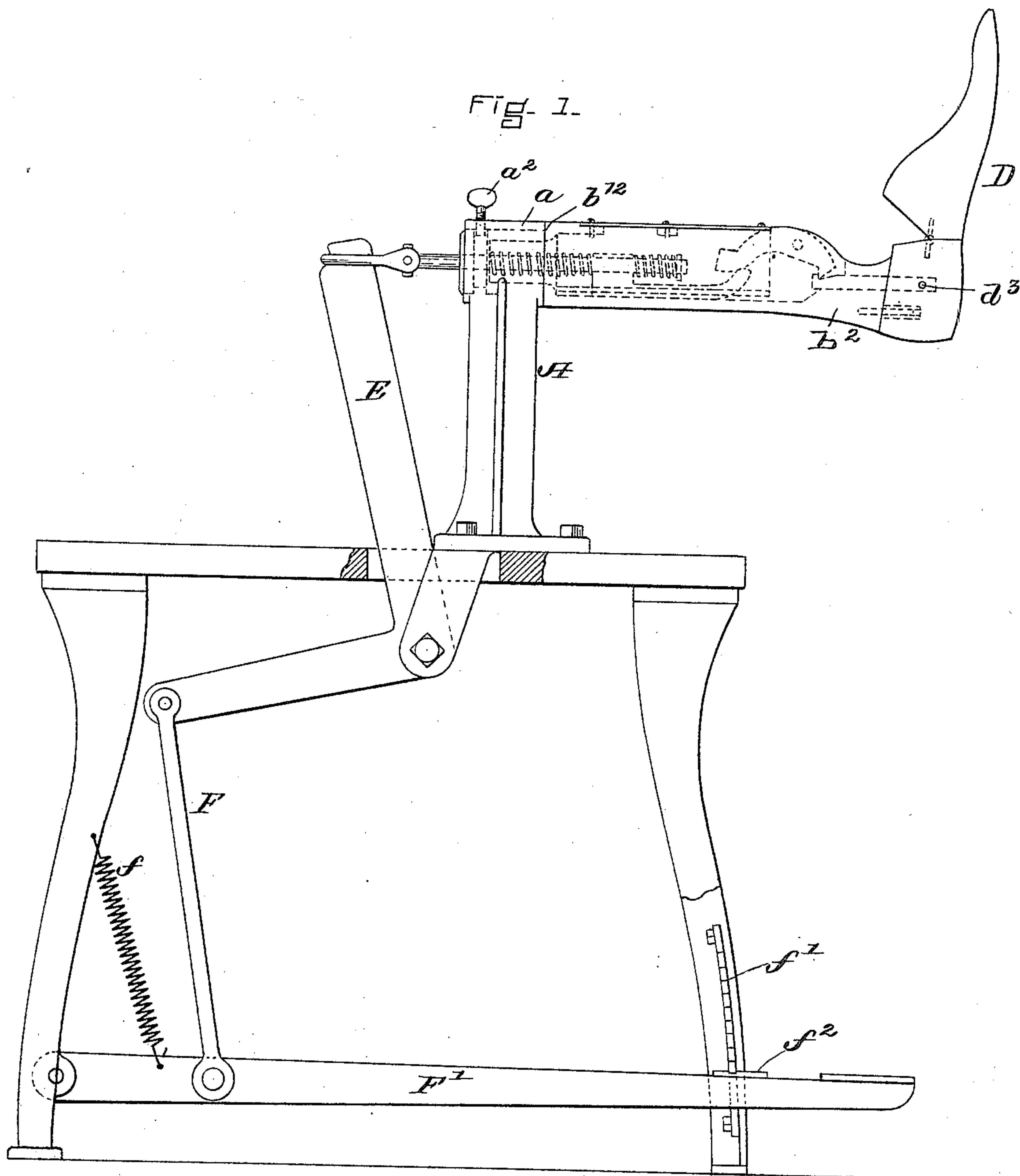
Patented Apr. 4, 1899.

A. D. TYLER, JR.
SHOE TREEING MACHINE.

(Application filed Sept. 2, 1897.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES.
A. D. GORR.
Fred S. Dorr.

INVENTOR.
Abel D. Tyler, Jr.
by his attorney,
Edw. S. Beach.

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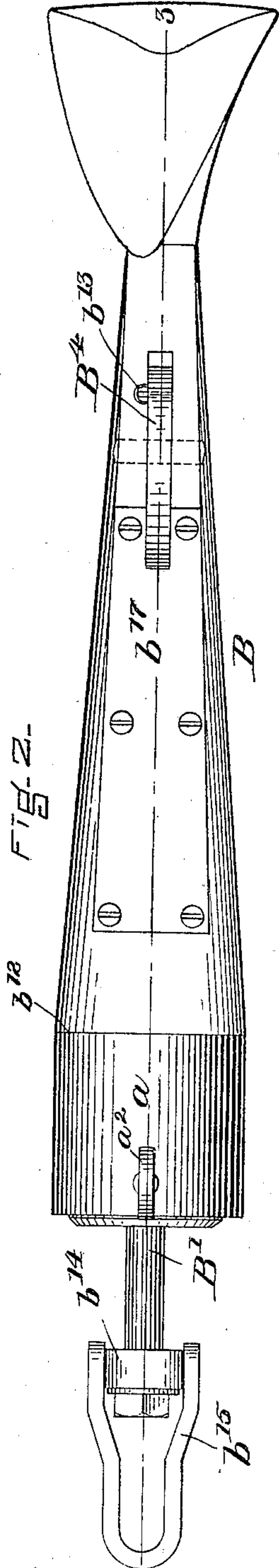


FIG. 2-

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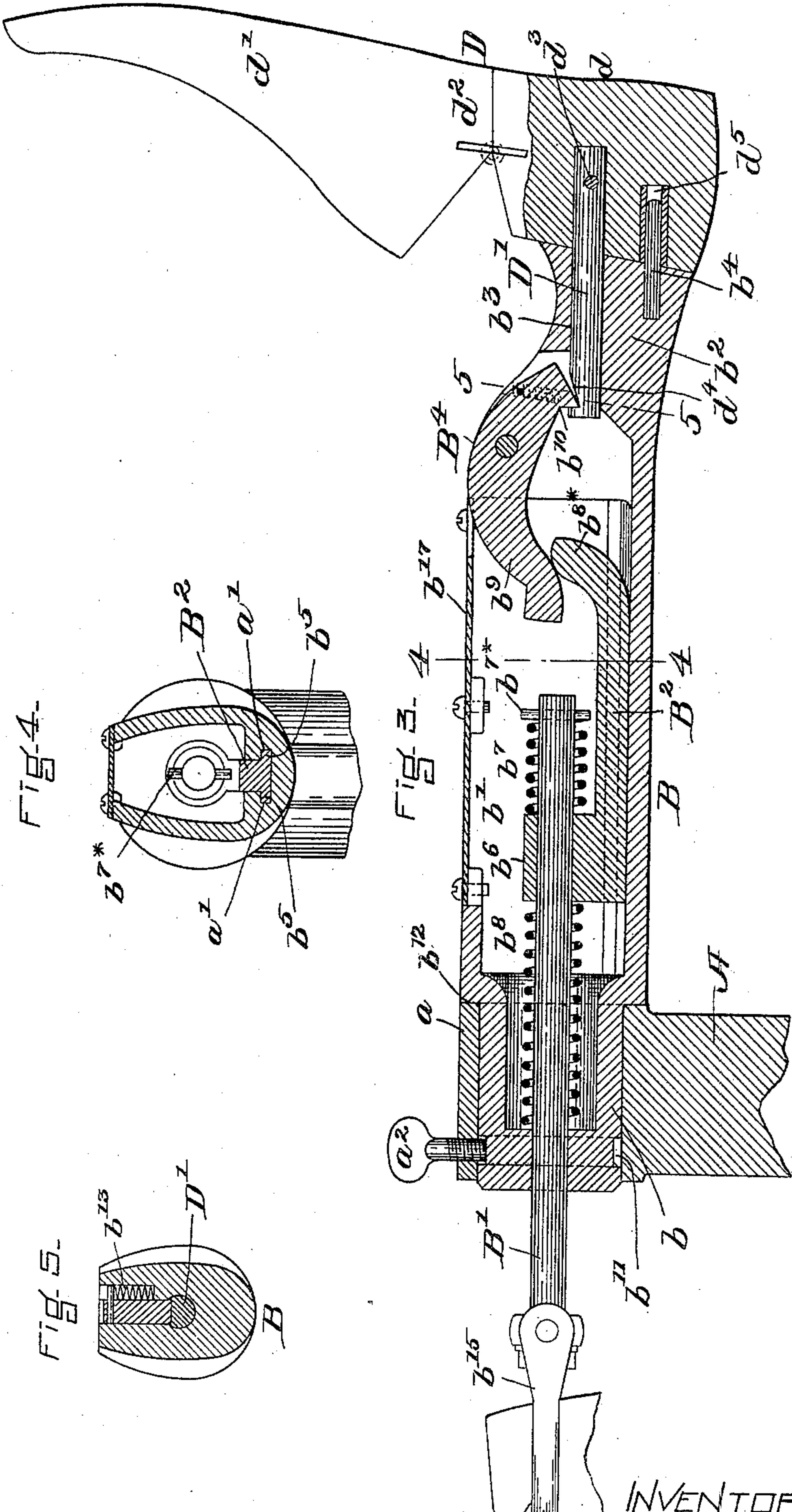


FIG. 4-

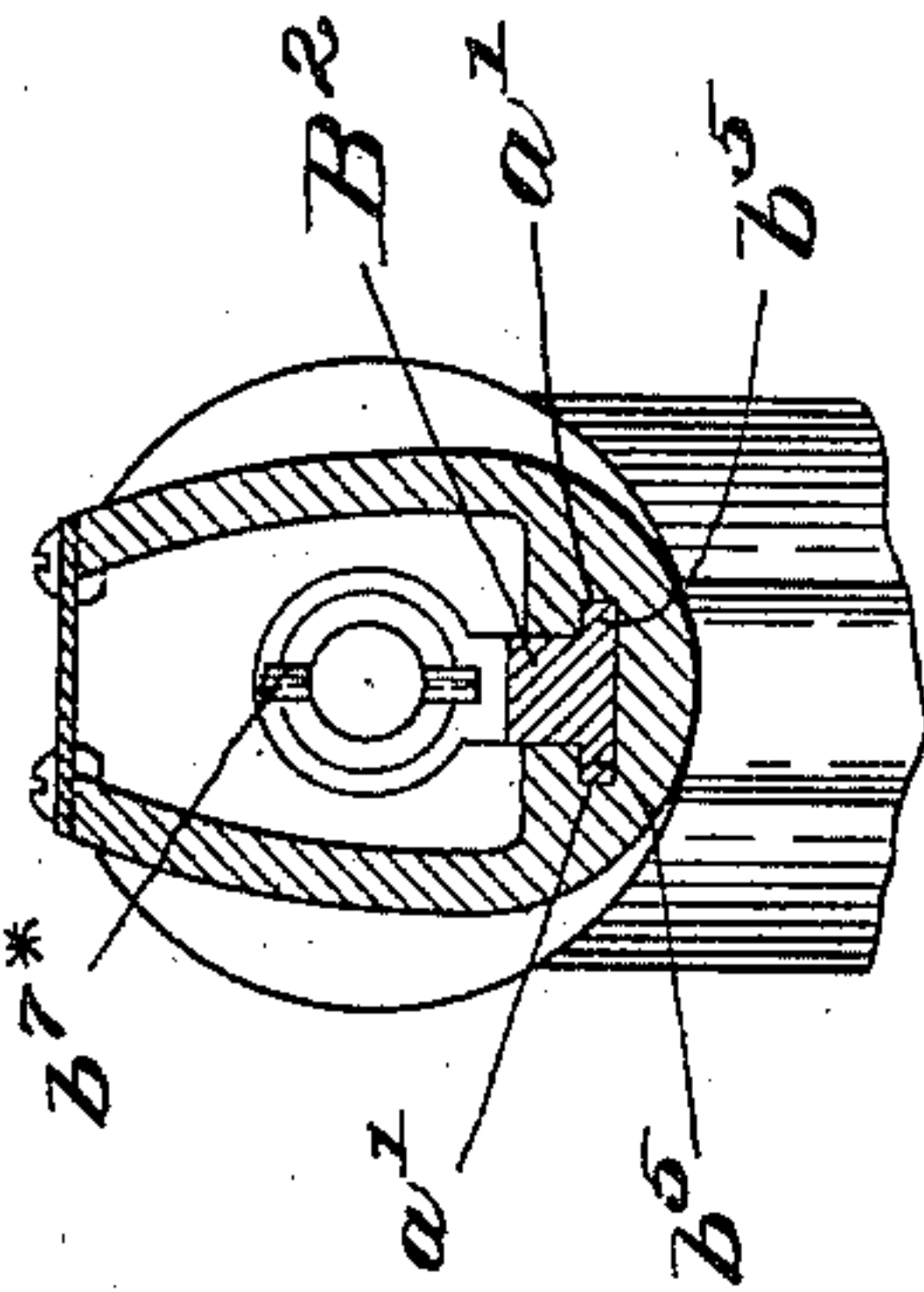
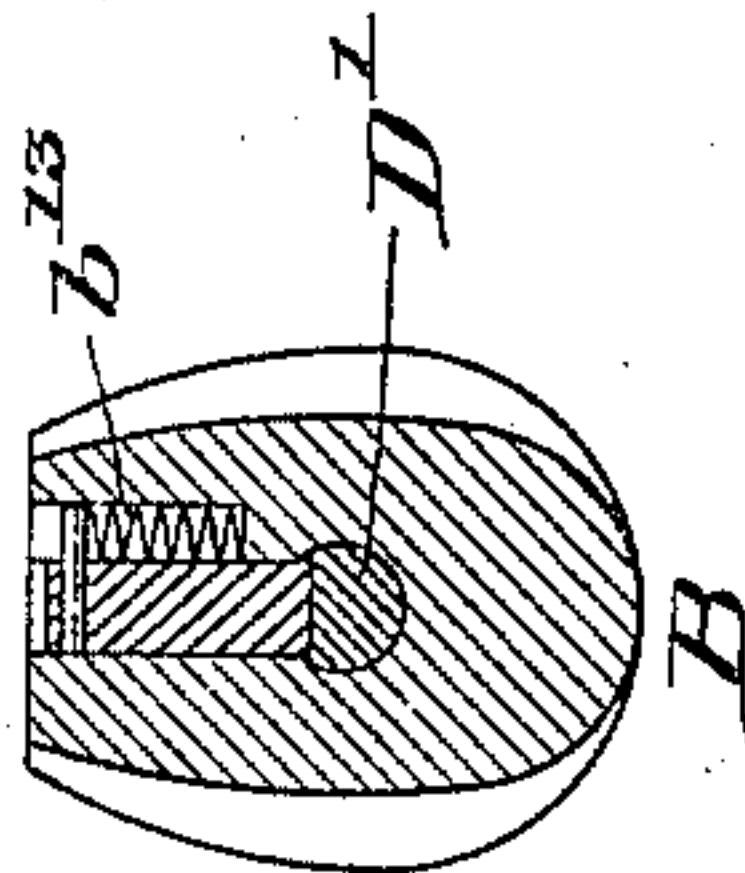


FIG. 5-



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UNITED STATES PATENT OFFICE.

ABEL D. TYLER, JR., OF BROCKTON, MASSACHUSETTS.

SHOE-TREEING MACHINE.

SPECIFICATION forming part of Letters Patent No. 622,643, dated April 4, 1899.

Application filed September 2, 1897. Serial No. 650,408. (No model.)

To all whom it may concern:

Be it known that I, ABEL D. TYLER, Jr., of Brockton, in the county of Plymouth and State of Massachusetts, have invented a new and Improved Shoe - Treeing Machine, of which the following is a specification.

Referring to the accompanying drawings, Figure 1 is a side elevation of my improved last-supporting device, showing the internal parts in dotted lines and the levers and treadles for operating the same. Fig. 2 represents a top view of my last-arm with a last attached thereto. Fig. 3 is a sectional elevation through line 3 3 in Fig. 2. Fig. 4 is a cross-section through line 4 4 in Fig. 3. Fig. 5 is a cross-section through line 5 5 in Fig. 3.

In the drawings illustrating the principle of my invention and the best mode now known to me of applying that principle, A is the last-arm support, which may be of the form shown or any other suitable form. B is the last-arm, D the last, here shown as a transversely-divided and hinged last, although it may be the ordinary block-last, if so desired, so far as the broader embodiment of my invention is concerned, and E is a lever which connects the clamping mechanism, hereinafter described, with the treadle-rod F and treadle F'.

The last-arm support A is formed with a suitable bearing *a* for the journal end *b* of the last-arm B, but may be otherwise of any suitable form or construction. Last-arm B is formed with a longitudinally-extending chamber *b'*, at the rear of which is the journal end *b*, and in front of which, in the solid flat end portion *b²*, is the spindle-recess *b³*, which opens on the front end wall of the arm and leads back into chamber *b'*. The front end of the arm is preferably flat and beveled upwardly and outwardly from the heel side toward the toe side, so as to keep the toe of the last tipped outwardly, so that the operator may work on the vamp with greater convenience and comfort, and is provided with an outwardly-projecting steady-pin *b⁴* near the outer mouth of the spindle-recess *b³*. The journal is bored lengthwise from end to end to receive the endwise-reciprocating rod B', one portion of which extends into chamber *b'* and the outer end of which projects from the rear end of

the last-arm. To the rod B' there is connected a slide-bar B², conveniently formed with side dovetails *b⁵*, which run in the lengthwise-extending dovetail grooves *a'* within chamber *b'*. The connection of rod B' and slide-bar B² is conveniently made by forming the bar B² with an ear *b⁶*, having an orifice through which the rod B' freely passes, a coiled spring *b⁷* being mounted between the outer end of ear *b⁶* and an abutment *b^{7*}*, fast on the inner end portion of the rod. A coiled spring *b⁸* is also mounted between ear *b⁶* and the rear end wall of chamber *b'*. Rod B' is a sliding fit in the orifice in the ear, as well as in its bearing in the journal end *b*. The front portion of the slide-bar is provided with a boss *b^{8*}*, upon which rests the tail *b⁹* of the pivoted clutch B⁴, the front end of which is formed with a hook *b¹⁰* and is in line with the spindle-recess *b³*.

Last D is preferably a transversely-divided and hinged last comprising the quarters-block *d* (or heel-piece) and the vamp-block *d'* (or fore part) and a suitable hinge *d²*, whereby the quarters-block and vamp-block are hinged together, and the last is shortened when the vamp-block is tipped forward and the removal of the shoe from the last greatly facilitated. In the quarters-block *d* there is rigidly secured a spindle D', projecting outwardly from the top thereof. The foot of spindle D' is inserted some distance into the quarters-block and there secured by a transverse fastener or rivet *d³*, so that the spindle and quarters-piece are rigidly connected. Spindle D' is provided with a notch *d⁴*, with which the hook *b¹⁰* engages when the last is secured on the last-arm. In the upper wall of the quarters-block there is also provided a recess *d⁵* to receive the steady-pin *b⁴*, the top of the quarters-block being preferably flat to fit smoothly and snugly against the preferably flat outer end of the last-arm. Journal end *b* of the last-arm is preferably formed with a circumferential groove *b¹¹* within the bearing *a*, and a screw *a²* is provided to turn through bearing *a* to engage with the bottom of the groove *b¹¹*. When journal end *b* of last-arm B is in place in its bearing *a*, the shoulder *b¹²* of the arm is against the inner side of the bearing *a*.

and the arm restrained from back motion when the reciprocating rod B^2 is pulled outwardly. Last-arm B, as shown, is rotatively mounted in the bearing a , though a rocking movement would suffice. The cooperating groove b^{11} and screw a^2 form a convenient means for preventing the last-arm B from being pulled forwardly in the bearing a . To mount the last on the last-arm, spindle D' is inserted in spindle-recess b^3 , the steady-pin b^4 then entering the recess d^5 in the quarters-block and the top of the quarters-block bearing against the outer end of the last-arm. When this insertion is made, slide-bar B^2 is in such a forward position that the clutch B^4 is free. By moving the rod B' outwardly the slide-bar B^2 is drawn toward and under the tail of clutch B^4 and the boss b^{8*} then pushing the tail b^9 of the clutch outwardly and moving the hook b^{10} of the clutch into engagement with the notch on the spindle and drawing the top of the quarters-block tight against the opposed end of the last-arm.

When the shoe is on the last, (and it is frequently made on the last,) the operator pushes or pulls the last, thereby rocking or rotating the last-arm and getting all parts of the vamp and quarters into convenient position for rubbing and smoothing or other desired treatment.

To move rod B' rearwardly to lock the spindle in the last-arm, a great variety of devices may be used; but I hereby show a treadle mechanism already described. A spring f is desirably employed to return the lever E, and a serrated vertical plate f' is shown for confining the treadle in a depressed position, the edge of plate f^2 on the treadle engaging with a tooth or plate f' to hold the treadle down. When the treadle is released, the springs b^7 and b^8 expand and throw boss b^{8*} forwardly out of engagement with the tail of the clutch, and the tail of the clutch then falls by gravity or the front end of it is lifted by the expansion of the spring b^{13} to throw the clutch out of engagement with the spindle. By this construction lasts with the shoes on them may be rapidly put on and taken off the machine.

It is sometimes desirable to put on or take off shoes from the lasts after they are locked on the last-arm, and while an ordinary block-last may be used, if desired, a transversely-divided hinged last is highly advantageous, as it greatly increases the speed of the operator in making the changes. As the heel part or quarters-block is rigidly clamped to the last-arm, a pull on the heel portion of the shoe will tend to tip the fore part over the last-arm, and thereby shorten the last, so that the shoe may be taken off easily and without distorting the shoe.

The machine shown and thus far described is especially adapted for use in treating the upper-leather of the shoe by operations which involve considerable pressure against the leather on the last, and it is desirable in these

operations that the last-arm should be horizontal; but features of my invention are capable of embodiment in various other forms and in machines adapted for presenting sole and heel edges and bottoms in various positions.

It will be plain to all skilled in the art that machines embodying the principle of my invention may be constructed in many different forms and that the last and rocking or rotating last-arm may be detachably clamped in many ways other than that shown without departure from my invention. The springs b^7 and b^8 give a resiliency to the action of the connected rod B' and slide-bar B^2 that is more desirable than a rigid connection between the two parts, and the use of the clutch-returning spring b^{13} is highly desirable, as the clutch is thereby lifted instantly the treadle is released whatever the position of the last-arm on the lengthwise axis. As the boss b^{8*} is drawn rearwardly against the under side of the tail b^9 of the pivoted clutch the latter draws the spindle D' inwardly, tightly locking the last in place on the last-arm. As shown in the drawings, the slide-bar B^2 and rod B' are at their extreme rearward positions and springs b^7 and b^8 are compressed. The rod B' rotates freely in the cross-piece b^{14} and the loop b^{15} , to which the lever E (or other power) is applied. A cover b^{17} is convenient for the opening into chamber b' .

What I claim is—

1. The combination with a last-arm and a transversely-divided, hinged last, the arm and heel part of the last being provided with cooperating locking members, of means for locking and unlocking said members, the fore part of the last being free for tilting.

2. The combination of a last-arm having in one end a tubular bearing for the spindle of a last; a last provided with a spindle; a steady-pin entered in the arm and last; a spindle-clutch; and means to actuate the clutch to lock and unlock the spindle in the arm; the steady-pin being rigidly secured at one end.

3. The combination of a last-arm support; a rocking last-arm journaled in said support; a spindle connecting the heel part of the last with the arm in the line of the length thereof; and a transversely-divided hinged last; the fore part of the last being free to tilt and the last being at an obtuse angle to the lengthwise axis of the arm.

4. A last-arm having a last-receiving surface inclined to the last; an inwardly-extending spindle-bearing opening on said inclined surface; a steady-pin projecting from said surface; and a spindle-clutching mechanism within the arm.

5. A last-arm having a last-receiving socket; a pivoted spindle-clutch; interior guideways for the endwise-reciprocating slide-bar; an endwise-reciprocating slide-bar having at one end a portion to engage the tail of the clutch; and at the other end an enlargement; an end-

wise-movable rod mounted in an opening through the rear of the arm and in a hole through said enlargement; a spring between said enlargement and the inner end of the rod;
5 a spring between said enlargement and an opposed portion of the arm.

In testimony whereof I have signed my

name to this specification, in the presence of two subscribing witnesses, on this 21st day of August, A. D. 1897.

ABEL D. TYLER, JR.

Witnesses:

E. A. ALLEN,

EDWARD S. BEACH.