

(No Model.)

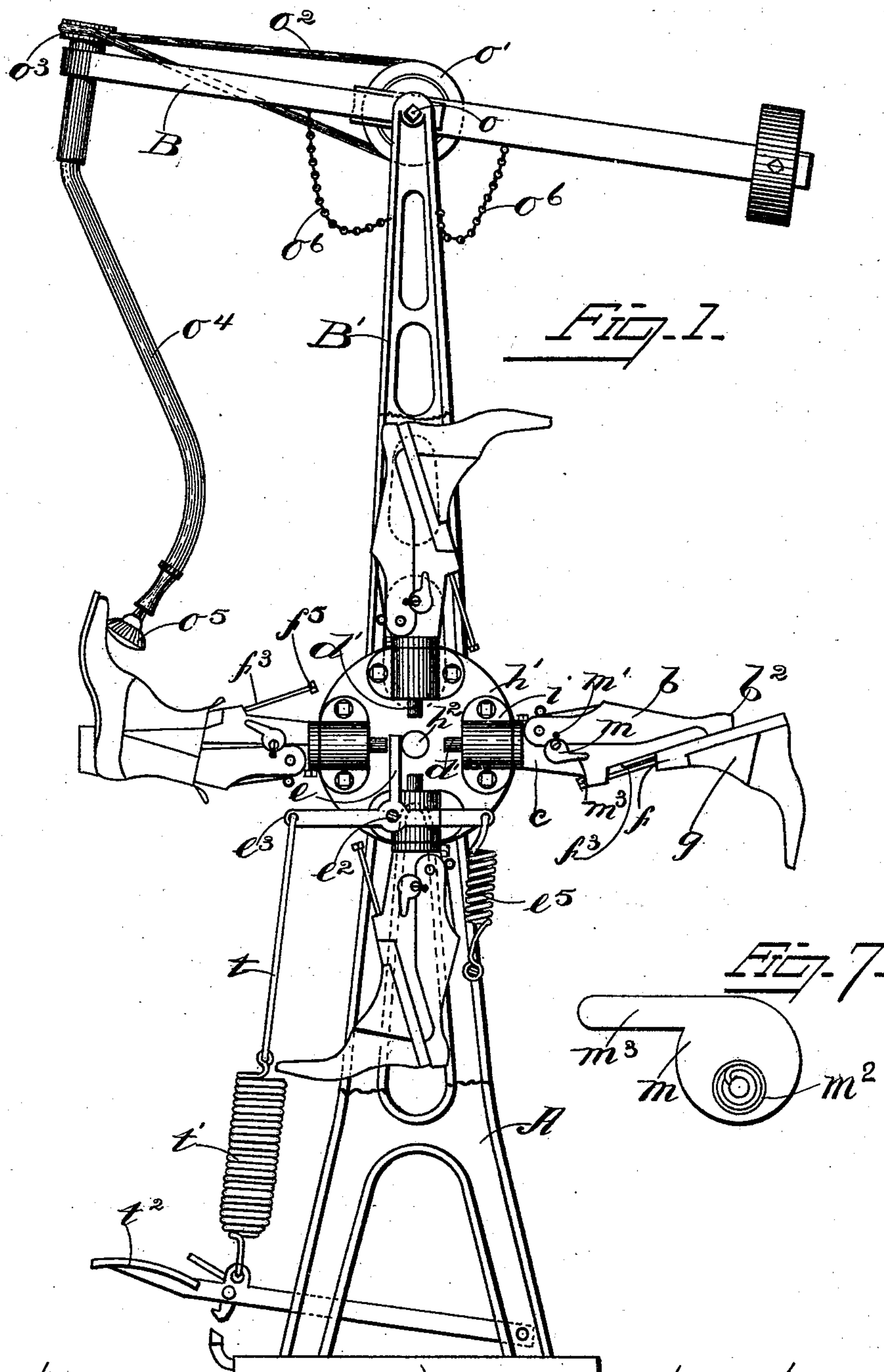
2 Sheets—Sheet 1.

G. H. CLARK.

MACHINE FOR HOLDING BOOTS OR SHOES WHILE BEING OPERATED UPON.

No. 543,147.

Patented July 23, 1895.



WITNESSES.  
Florence Davis  
Charles B. Crocker.

INVENTOR.  
George H. Clark,  
by B. J. Hayes, atty.

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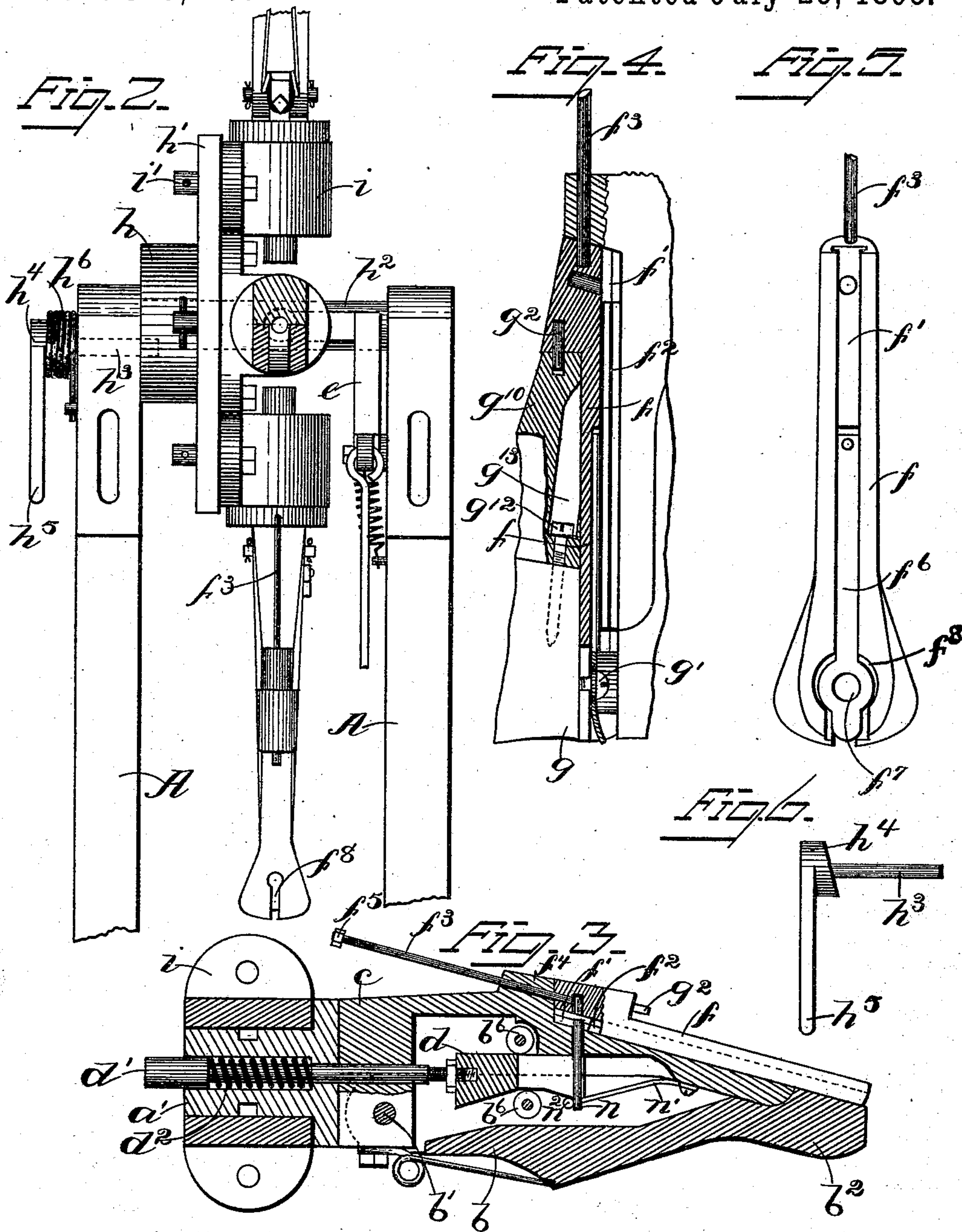
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# UNITED STATES PATENT OFFICE.

GEORGE H. CLARK, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE CLARK MANUFACTURING COMPANY, OF SAME PLACE.

MACHINE FOR HOLDING BOOTS OR SHOES WHILE BEING OPERATED UPON.

SPECIFICATION forming part of Letters Patent No. 543,147, dated July 23, 1895.

Application filed May 10, 1894. Serial No. 510,742. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE H. CLARK, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Machines for Holding Boots or Shoes While Being Operated Upon, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 In United States Letters Patent No. 417,148, dated December 10, 1889, a jack for holding boots and shoes while being operated upon is shown, comprising a rotatable holder having two separable members, one of which is provided with an inclined face and the other with a heel-piece, and a removable fore part is connected with a sliding block which has an inclined bottom and is arranged to slide upon the inclined face of that member of the holder having an inclined face, the inclination being such as to enable the foot—i. e., the combined heel and fore part—to shorten lengthwise as the boot or shoe is withdrawn therefrom or preparatory to applying the boot or shoe thereto, and this invention has for its object to improve the construction of the machine therein shown, to increase its capacity, and also to enlarge its sphere of usefulness. The machine is now designed to be used to hold boots and shoes while being treed, or burnished, or shaped, or finished in any desirable way, and by any means which may be selected.

The machine herein shown and in which my present invention is embodied comprises several separable rotatable holders, trees, or jacks supported by or upon a hub having suitable bearings, and the holders, trees, or jacks are adapted to be brought into position before the operator as desired by taking hold of one of the trees, and thereby rotating the hub, or the hub may be otherwise turned for this purpose. Each tree is provided with a wedge or other means by which the parts thereof may be separated, and means are provided, operated by a treadle, for moving the separating-wedge or for operating the separating device of any tree which may be brought into co-operative action therewith, and a locking device is provided for or in connection with each tree, or is so constructed

as to hold the parts of the trees separated when the separating device is removed from co-operative relation with the treadle mechanism. The holders, trees, or jacks are or may be made alike, consisting each of two essential parts or members, one of which has a heel-piece, which if desired may be formed integral with it, and the other of which has an inclined or diagonal face, and a slide-block is supported upon said inclined or diagonal face, extending over or upon the heel-piece, which likewise has an inclined or diagonal face in continuation of the aforesaid inclined or diagonal face, and a locking device is preferably provided for said slide-block, which is or may be operated by the means employed for separating the parts of the tree, and the fore part of the foot is made removable and adapted to be connected with the slide-block by a spring-actuated latch or other securing device and thereby supported.

Figure 1 shows in side elevation a jack embodying this invention for holding boots and shoes while being operated upon, a portion of the framework being broken away; Fig. 2, a front elevation on a larger scale of a portion of the machine shown in Fig. 1; Fig. 3, a longitudinal sectional detail of one of the trees, the fore part being removed; Fig. 4, a detail showing particularly a longitudinal section of the slide-block; Fig. 5, an under side view of the slide-block; Fig. 6, a detail of one of the locking devices which may be employed for locking the tree-supporting hub, and Fig. 7 a detail showing one of the locking devices which may be employed for retaining the parts or members of the tree separated.

The main frame which supports the operating mechanism comprises essentially two upright standards A rising from a base A'. A hub *h*, having formed as a part of or secured to it a disk or flange *h'*, is secured to a short shaft or journal *h*<sup>2</sup>, having its bearings at the upper end of the standard A. Upon one face of the hub *h* several holes are formed, four being herein shown, (see dotted lines, Fig. 2,) any one of which receives a pin *h*<sup>3</sup>, (see Fig. 6,) projecting through the standard A, and having a hub *h*<sup>4</sup> with a cam-face, which is adapted to bear upon a similarly cam-faced boss fixed on the standard A, and a hand-piece



$h^5$  is provided for turning said hub  $h^4$ , and by so doing its cam-face, acting upon the cam-faced boss, withdraws the pin  $h^3$  from its engagement with the hub  $h$ , permitting said hub  $h$  to be turned. A spring  $h^6$  is provided for restoring the hub  $h^4$  to its normal position and thereby moving the pin  $h^3$  inwardly. The disk  $h'$  of the hub  $h$  has bolted or otherwise secured to the exposed face thereof several boxes  $i$ , four being herein shown, having circular openings or sockets radial to the axis of the hub.

The holders, trees, or jacks, four of which are also herein shown, each have cylindrical end pieces  $a'$ , fitting the sockets of the boxes  $i$ , yet turning freely therein. The trees radiate from the hub  $h$  and turn in the boxes  $i$  on axes radial to the axis of the hub  $h$ . Set-screws  $i'$  pass through the disk  $h'$ , entering circumferential grooves in the cylindrical end pieces of the trees, and by turning them up tightly said trees will be secured in whatever axial position they may be set.

The trees, as herein shown, each consist of two essential parts or members  $b$   $c$ , one of which, as  $c$ , is secured to or formed integral with the cylindrical end pieces and the other of which, as  $b$ , is pivotally connected to the part  $c$  at  $b'$ . These parts or members are hollowed out interiorly or recessed, as will be observed in Figs. 2 and 3. Between said parts or members  $b$   $c$ , and working within the interior recesses thereof, is a wedge-block  $d$ , adjustably or otherwise secured to a pin  $d'$ , which extends through the part  $c$  and end piece  $a'$  axially, and said wedge-block bears upon or against or co-operates with two friction-rolls  $b^6$ , one above and the other below, and mounted upon transverse pins or studs secured to the parts  $b$   $c$ . As said wedge-block is moved toward the extremity of the tree, or toward the operator, by means to be hereinafter described, the parts  $b$   $c$  will be separated, and when said wedge-block is restored to its normal condition, as it will be by means of the spring  $d^2$ , said parts will close together. The part  $b$  has a heel-piece  $b^2$ , which may be formed integral with it, or secured to it as desired, and one face of said heel-piece as well as a portion of one side of the part  $c$ , (see Fig. 3,) is made inclined or formed diagonally, and in order that the continuity of the inclined faces may be maintained the part  $b$  is recessed to receive the outer end of the part  $c$ . A slide-block  $f$  is mounted upon the inclined face of the part  $c$  and heel-piece  $b^2$ , extending over both parts and terminating substantially flush with the outer end of the heel-piece  $b^2$ , it having upon its under side a T-slot or dovetailed groove  $f'$ , which receives a correspondingly-shaped guide-rib  $f^2$  upon the inclined face of the part  $c$ , said rib serving as a guide for the block  $f$  as it is moved longitudinally over the inclined face. A rod  $f^3$  is attached to the upper end of the slide-block  $f$ , extending through a boss or projection  $f^4$  on the part  $c$  and in alignment with the direction of movement of the

slide-block, at or near the extremity of which is adjustably secured a nut  $f^5$ , which, by striking against said projection  $f^4$ , limits the movement of the slide-block outwardly. A vertical pin  $n$  is secured to a spring  $n'$ , attached to the part  $c$  at a point near its outer end, and within the interior recess thereof, said pin extending up through a hole in said part  $c$  and adapted when projected outwardly to enter a hole formed in the slide-block, thereby serving as a locking device for said slide-block.

The tendency of the spring  $n'$  is to raise the pin  $n$ , and a cross-piece  $n^2$  is secured to the inner end of the spring, which bears against the under side of the wedge-block  $d$  at its forward end, said block having an inclined face at this end in addition to the inclined face employed for supporting the parts  $b$   $c$ , although the inclination is in a different radial direction. As the wedge-block is pushed forward to separate the parts  $b$   $c$ , the cross-piece  $n^2$  follows along the inclined under side of the block, and the pin  $n$  is therefore permitted to rise.

The forward end of the wedge-block is slotted or bifurcated to straddle the pin  $n$ .

The slide-block  $f$  is cut away upon its under side to receive a flat spring-acting tongue  $f^6$ , the outer end of which is slightly turned down, forming a bevel, and has formed in it a hole  $f^7$ , and at the outer end of the slide-block  $f$  a keyhole-slot  $f^8$  is formed just back of the perforated portion of the spring-acting tongue.

The fore part  $g$ , different sizes of which will be employed, and hence, of necessity, must be made removable, has, as herein shown, an inclined or oblique rear end, which rests upon the upper or outer face of the slide-block  $f$ , and upon said inclined or oblique rear end at or near the sole face of said fore part  $g$  a headed stud or screw  $g'$  is secured, which, as the fore part is placed in position on the slide-block, enters the keyhole-slot  $f^8$ , slightly depressing the spring-tongue  $f^6$  until its headed portion enters the hole  $f^7$  in said tongue, at which time said fore part becomes locked in place.

To the upper face of the fore part  $g$  (see Fig. 4) a metallic top piece  $g^{10}$ , herein termed the "shin-piece," is secured by means of a screw  $g^{12}$ , the head of which is confined within a recess  $g^{13}$  next the sliding block  $f$ , and said shin-piece  $g^{10}$  is connected with a shoulder on said slide-block by means of a dowel  $g^2$ . This shin piece is preferably made of metal and shaped to form a proper continuation or extension above the fore part, and it will be seen that as constructed and arranged it is readily removable with the fore part, to which it is attached, and also readily detachable from said fore part. When it is desired to apply a boot or shoe to this tree, the fore part, together with the slide-block  $f$ , is drawn outward its full distance, or until the nut  $f^5$  strikes the projection  $f^4$ , and with the parts in this position it will be observed that the heel  $b^2$  is withdrawn, and during the process of applying



the boot or shoe the fore part, together with the slide-block, will be pushed back. Thus a boot or shoe may be applied more easily than would be the case if the said parts were not disposed on a diagonal line. The wedge-block may be pushed outward, separating the parts *b c*, and thereby stretching the boot or shoe as much as desired, and when the parts *b c* are separated the pin *n* will project sufficiently to lock the slide-block *f*. The boot or shoe thus applied to the tree may be operated upon in any desirable way and with any desirable tools, and when it is desired to pull off the boot or shoe the wedge-block is permitted to retreat, the parts *b c* close together, and the slide-block *f* is released, and as the boot or shoe is then pulled off the fore part, together with the slide-block, will be drawn out, thereby withdrawing the heel-piece from the boot or shoe, and afterward enabling the boot or shoe to be removed from the fore part easily.

As a means of moving the wedge-blocks to separate the parts *b c*, I have herein provided a bell-crank lever pivoted at *e*<sup>2</sup> to a stud on the framework, one arm, as *e*, of which is made angular and extends inward into position to act upon any one of the projecting pins *d'*, which may be brought into proper position, and the other arm *e*<sup>3</sup> of which is connected to the upper end of a treadle-rod *t*, the lower end of which is connected by a spring *t'* with a treadle *t*<sup>2</sup>. The treadle *t*<sup>2</sup> is normally held in its elevated position by a spring *e*<sup>5</sup>, one end of which is attached to the framework and the other end to an arm projecting from the bell-crank lever. Thus as the hub *h* is turned and the trees successively brought into position before the operator the pins *d'* will be brought into proper position to be engaged by the treadle mechanism.

The parts *b c* having been separated by the treadle mechanism, it is desirable to secure said parts in their separated positions in order that the boots or shoes may be held stretched while the successive boots or shoes are being operated upon. This is particularly desirable when shaping or treeing the boots or shoes, and to accomplish this result I have pivoted a cam *m* on one of the parts—as *c*, for instance—which acts upon a pin *m'*, projecting from the other part, and as the parts are separated this cam turns and thereby holds the parts in whatever position they may be set by the wedge-block. A spring *m*<sup>2</sup> is connected with the cam *m*, so that it will be turned by the action thereof as the parts are separated, and a hand-piece *m*<sup>3</sup> projects from the cam *m*, which enables it to be restored manually.

To turn the tree-supporting hub *h* the pin *h*<sup>3</sup> will be withdrawn by turning its hand-piece *h*<sup>5</sup>, and then taking hold of one of the trees and advancing it the next tree will be brought into position, and the correct position may be determined by the pin *h*<sup>3</sup> entering the next hole.

The machine is herein shown in connection

with a tool or brush for finishing the boot or shoe. This contrivance consists of a counterbalanced arm *B*, having its bearings at the upper end of two uprights *B'*, erected upon the standards *A*, and a driving belt-pulley is mounted upon the shaft *o*, which is connected with a belt *o'*, over which passes a belt *o*<sup>2</sup>, which passes around a belt-pulley *o*<sup>3</sup>, secured to a short upright shaft having its bearings at one end of the counterbalanced arm, and to said shaft a flexible shaft *o*<sup>4</sup>, herein shown as covered with rubber tubing, is connected, and to the lower end of this flexible shaft a rotary brush *o*<sup>5</sup> is attached. To limit the movement of the counterbalanced arm *B* in each direction chains *o*<sup>6</sup> are attached at one end to the arm and at the other end to the standards *B'*. This tool is adapted to perform a part of the work which is now commonly done by hand.

I claim—

1. In a machine for holding boots and shoes while being operated upon, the combination of two or more separable rotatable holders or trees, a rotatable hub supporting them, a separating wedge for the parts of each tree, a treadle, and means operated by it for moving any one of the wedges that may be brought into engagement therewith, and an independent locking device for each tree, which holds the parts separated when moved out of co-operative relation with the treadle mechanism, said locking device having a hand engaging portion, substantially as described.

2. In a machine for holding boots and shoes while being operated upon, the combination of two or more separable rotatable holders or trees, a rotatable hub supporting them, a separating wedge for the parts of each tree, a treadle, and means operated by it for moving any one of the wedges that may be brought into engagement therewith, and a locking device upon each tree, for retaining the parts thereof separated when moved out of co-operative relation with the treadle mechanism, said locking devices each consisting of a spring actuated cam having a hand piece, substantially as described.

3. In a machine for holding boots and shoes while being operated upon, the combination of several rotatable holders or trees, a rotatable hub supporting them, a wedge block for each tree for separating the parts thereof, a pin connected to each block and projecting axially through and beyond the inner end of the tree, a bell-crank lever pivoted to the frame and having an intumed end which acts upon any pin that may be brought into engagement therewith, a treadle, and treadle rod connected with said bell-crank lever, substantially as described.

4. In a machine for holding boots and shoes while being operated upon, the combination of a tree comprising two separable members, movable one with relation to the other, one of which has a heel piece, a block sliding longitudinally upon the other member, a fore



part detachably connected with and supported by said slide block, and a spring-actuated locking device for said slide block, substantially as described.

5 5. In a machine for holding boots and shoes while being operated upon, the combination of a tree comprising two separable members, movable one with relation to the other, one of which has a heel piece, a slide block supported upon the other member, a removable fore part adapted to be connected with and supported by said slide block, and a spring-actuated locking device for said slide block, operated by the means employed for separating the members of the holder, substantially as described.

6. In a machine for holding boots and shoes while being operated upon, the combination of a tree comprising two separable members, movable one with relation to the other, one of which has a heel piece, a block sliding longitudinally upon the other member, a fore part, and a spring-actuated locking device detachably connecting it with said slide block, substantially as described.

7. In a machine for holding boots and shoes while being operated upon, the combination of a tree comprising two separable members, movable one with relation to the other, one of which has an inclined face, a heel piece upon the other member having an inclined face in continuation of the inclined face of the aforesaid member, a slide block extending over said inclined faces, a guide therefor, and a pin connected thereto passing through a projection on one of the members for limiting its withdrawal, and a removable fore part likewise having an inclined face adapted to be connected with and supported by said slide block, substantially as described.

8. In a machine for holding boots and shoes while being operated upon, the combination of a tree comprising two separable members, movable one with relation to the other, one of which has an inclined face, a heel piece upon the other member likewise having an inclined face in continuation of the inclined face of the aforesaid member, a slide block extending over both of said inclined faces, a guide therefor, and a removable fore part likewise having an inclined face and adapted to be connected with and supported solely by and therefore movable with said slide block, substantially as described.

9. A boot or shoe tree having a recessed back leg part *b* with a heel *b*<sup>2</sup>, and front leg part *c*, entering the recess in the back leg part, a slid-

ing block *f*, supported by and movable upon the part *c*, and fore-part detachably connected thereto.

10. The tree herein described comprising two separable parts, a block mounted upon one of said parts and movable longitudinally in a diagonal direction, a spring acting tongue having a perforated end, a removable fore part having a headed stud to engage said spring acting tongue, substantially as described.

11. The tree herein described comprising two separable parts, a sliding block mounted upon one of said parts, adjacent the heel of the tree, and movable longitudinally in a diagonal direction, a removable fore part *g* having attached to its upper end a shin piece *g*<sup>10</sup>, means for attaching it to and preventing it from twisting upon said sliding block.

12. The removable fore part *g* herein described having attached to its upper face the shin piece *g*<sup>10</sup>, shaped substantially as shown, and having projecting from its rear end the headed stud *g*<sup>1</sup>.

13. The removable fore part *g* herein described having attached to its upper face the shin piece *g*<sup>10</sup>, shaped substantially as shown, and having projecting from its rear end the headed stud *g*<sup>1</sup>, combined with the shouldered slide block *f*, located adjacent to the heel and supporting said fore part, substantially as described.

14. The removable fore part *g*, and the shin piece *g*<sup>10</sup> recessed at its rear side, as at *g*<sup>13</sup>, and attached to the upper face of the fore part *g* by screw *g*<sup>12</sup>, the head of which is confined within said recess.

15. The removable fore part *g*, having an oblique rear end, and having attached to its upper face the shin piece *g*<sup>10</sup>, also having an oblique rear side, in continuation of the oblique rear end of the part *g*.

16. The removable fore part *g* herein described having attached to its upper face the shin piece *g*<sup>10</sup>, shaped substantially as shown, and having projecting from its rear end the headed stud *g*<sup>1</sup>, combined with the shouldered slide block *f*, having a socket near its outer end for the headed stud, and means for connecting the upper end of the shin piece with the shoulder of said block *f*.

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

GEORGE H. CLARK.

Witnesses:

B. J. NOYES,  
C. B. CROCKER.