

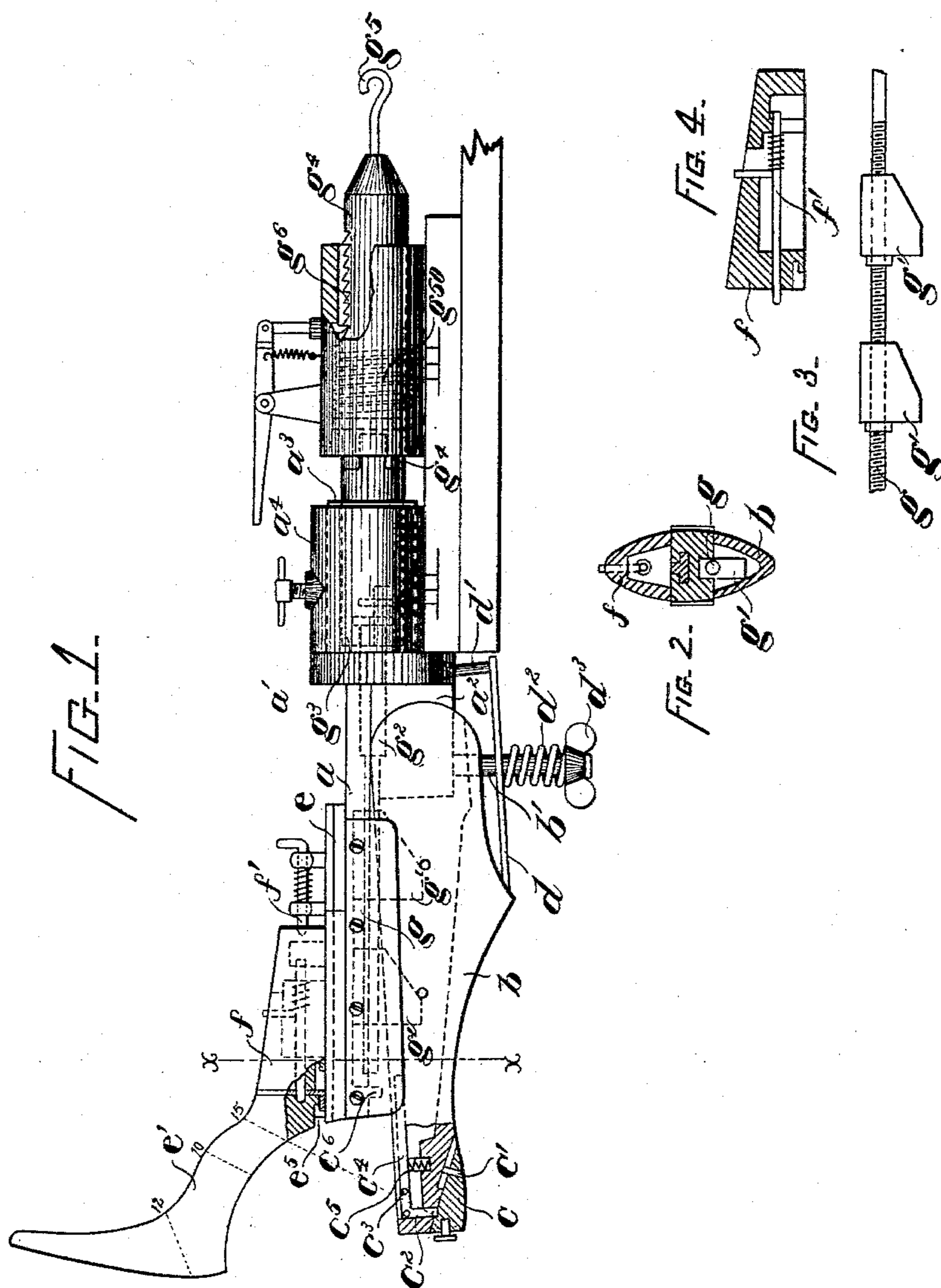
(No Model.)

G. H. CLARK.

SHAPING OR TREEING MACHINE FOR BOOTS OR SHOES.

No. 589,696.

Patented Sept. 7, 1897.



WITNESSES.
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UNITED STATES PATENT OFFICE.

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SHAPING OR TREEING MACHINE FOR BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 589,696, dated September 7, 1897.

Application filed July 8, 1896. Serial No. 598,381. (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 Shaping or Treeing Machines for Boots or Shoes, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

So far as I am aware it is now customary in shaping button boots and shoes to introduce a follower into the unbuttoned boot or to draw the unbuttoned boot onto a form to give shape to the fore part and after cleaning or in any other way treating the boot to remove the follower or withdraw it from the form and then button the boot. Neither of these processes gives shape to the ankle and top portions of the boot or shoe. The boot, however, may be buttoned after it has been drawn onto the form and then shaped and at such time the ankle and top portions will be shaped, but it must be unbuttoned before it can be withdrawn from the form and afterward buttoned for shipment, and such shape as may be given to it by so buttoning the boot while on the form and then shaping it is practically destroyed by unbuttoning the boot, then withdrawing it from the form, and finally buttoning it again. The result is that in such case much time is consumed in buttoning and unbuttoning the boots or shoes and the ankle and top portions are not then shaped.

This invention has for its object to so construct a shoe shaping or treeing form or shaping-machine that a button-boot while buttoned may be drawn onto the form and held with the upper drawn taut from top to toe, and after it has been shaped and cleaned or treated in any other desirable way it may be withdrawn from said form without being unbuttoned, thereby greatly facilitating the work and also enabling the shape which may be given to its ankle and top portions to be retained.

In order that a buttoned boot may be drawn onto and off of a form, the circumferential

measurements of all parts of said form below the ankle must be reducible to the size of the ankle or most contracted part of the top of the boot or shoe; and my invention consists in so constructing a shoe shaping or treeing form that all of its circumferential measurements below the ankle are reducible to the ankle measurement of the boot or shoe.

The shoe shaping or treeing form comprehending this invention comprises, essentially, a back part and a fore part, the latter being detachable in order that fore parts of different shapes and sizes for different shapes and sizes of boots and shoes may be employed, and as the ball and ankle measurements of a boot or shoe are usually substantially equal I find that by reducing the instep measurement of the fore part of the form to the ankle measurement of the shoe and also by reducing the heel measurement of the form to said ankle measurement of the shoe the circumferential measurements of all parts of said form below the ankle will be no greater than said ankle measurement of the shoe.

By the term "ankle measurement of the shoe" I mean the ankle measurement of a button-boot or other boot or shoe—as, for instance, a lace-shoe or Congress boot—having its ankle and ball measurements substantially equal, the ankle measurement being taken in the case of a button-boot with the boot buttoned and in the case of a lace-shoe with the shoe laced, or in the case of a Congress boot with its gores unstretched.

The instep measurement of the fore part may be reduced to the ankle measurement of the shoe by cutting away the shank of said fore part to a considerable extent, and the heel measurement of the form may be reduced to the ankle measurement of the shoe by making the parts thereof movable one with relation to the other—that is to say, the two essential parts of the form may be arranged to slide in and out one with relation to the other—thereby extending or lengthening the form or tree, and said parts also may be moved toward and from each other a certain extent, so that said parts have two movements one with re-

lation to the other—viz., a movement toward and from each other and a movement in and out—and the reduced heel measurement of the form above referred to is or may be taken with the parts closed together and drawn out.

The reduction of the instep measurement of the fore part and of the heel measurement of the form to the ankle measurement of the shoe is necessary, as before stated, in order that the boot or shoe may be drawn onto and off the form, but it is obvious that such measurements may be not only reduced to the ankle measurement of the shoe, but preferably will be still further reduced for greater ease in drawing the boot or shoe onto and off of the form, and hence I desire it to be understood that such further reduction in the instep measurement of the fore part and heel measurement of the form comes within the spirit and scope of this invention.

For separating the essential parts of the form or tree an expanding device of any usual construction may be employed.

The fore parts of the form may be attached to or connected with independent detachable shin-pieces, and several different sizes of shin-pieces may be used to which the fore parts are graduated, substantially as shown in my application, Serial No. 570,604, filed November 30, 1895, to which reference may be had, and, furthermore, the back part of the form may have an oblique sliding heel or heel-piece to facilitate withdrawal of the boot, substantially as shown in said application, if desired. Figure 1 shows in side elevation a machine for shaping boots and shoes embodying my invention; Fig. 2, a cross-section of the machine shown in Fig. 1, taken on the dotted line xx ; Fig. 3, a detail of the expanding device, and Fig. 4 a detail of the detachable shin-piece.

The central support or frame of the shoe-shaping or treeing form or tree consists of a frame-bar a of a width corresponding to the width of the form or tree and extending from end to end of said form or tree and having at its upper or knee end a circular flange a' and an ear or equivalent a^2 , formed adjacent to it, and a cylindrical hub a^3 , which enters and is adapted to revolve in a bearing-box a^4 , stationarily supported on a bench or other suitable frame.

On the under side of the central frame or support a the back leg portion b is mounted, which, as herein shown, constitutes the back part of the form, and said part b is hollowed out or recessed and has at its upper or knee end two ears which receive between them the ear a^2 of the frame-bar a , and has at its lower or opposite end a heel-piece c , yet said back part of the form may be constructed in many different ways, all of which would present a suitable back part for the form, and hence would be included in this invention. A pin b' projects from the ear a^2 , which passes through a hole at the upper end of the back

leg part b , and thence through a plate d , one end of which bears upon or against the back leg portion and the other end of which has a pin d' , which enters a hole formed in the circular flange a' . A strong spiral spring d^2 encircles the pin b' , which presses against the plate d , and a thumb-nut d^3 is turned onto the pin b' , which acts upon the spring. By means of this device for connecting the upper or knee end of the back leg portion b with the central or main frame it will be seen that said back leg portion b is bodily movable toward and from said central portion a to a certain extent.

The heel-piece c is cut off obliquely and adapted to slide obliquely with relation to the part to which it is connected, and it has a dovetailed projection which enters and slides freely in a groove formed to receive it in the heel end of the back leg part b .

The obliquely-sliding heel-piece c has a pin c' , which enters a slot formed in the part to which it is connected, which limits the sliding motion of said heel-piece.

When the parts of the form or tree are separated, it is necessary, or at least very desirable, that the sliding heel-piece should be locked in position and when the parts close together that said heel-piece shall be free to slide in order that the advantages sought for may be gained. Therefore an automatic locking device is provided which consists of a detent c^2 , pivoted at c^3 in a suitable recess formed in the heel end of the back leg part b , which is adapted to enter a hole formed in the sliding heel-piece c when said heel-piece is in its normal position, and the hole therein is thus brought into position beneath the detent. The pivoted detent has a projection or extension c^4 , which is acted upon by a spring c^5 , the tendency of which is to press the detent into engagement with the sliding heel-piece when it is permitted to act. A projection or lug c^6 (see dotted lines, Fig. 1) is arranged on the under side of the central portion or frame-bar just above the extension c^4 of the detent, and when the parts of the form or tree close together this lug engages said extension and by depressing it raises the detent out of engagement with the sliding heel-piece. Thus this locking device is automatic in its action to both lock and unlock the sliding heel-piece.

The upper face of the frame-bar a is formed with a T-groove, which receives a T-shaped slide e ; and the fore part e' is formed to fit the fore part of the boot or shoe, but is cut away at its shank adjacent the heel to diminish the measurement at the instep, making it equal or less than the ankle measurement of the boot or shoe which is adapted to be placed upon it, and said fore part is connected by any suitable fastening to a shin-piece f , which is detachably connected with the slide e by means of a spring-actuated pin f' or other suitable fastening at one end and a headed

stud e^5 at the other end. The reduced instep measurement of said fore part is represented by the dotted line 10.

The expanding device for the parts of the tree is herein shown as consisting of a screw-rod g , having thereon two wedges g' g' , which may be adjusted along said rod, said wedges entering and sliding in a groove formed in the under side of the central portion a of the form and bearing upon rolls journaled in the back leg portion b . This screw-rod g passes through a hole made in the knee end of the frame-bar a and is attached to a rod g^2 , swiveled to a block g^3 , having its bearings in the rotating hub a^3 of the tree. The block g^3 is connected to a sliding block g^4 , having its bearings in a suitable stationarily-supported frame, which block has at its rear end a hook g^5 , to which a cord is attached which passes over a suitable pulley and thence to a treadle, by means of which the parts are drawn rearwardly and the form or tree expanded. A spring g^{50} is provided for retracting the parts. The block g^4 is provided with a series of notches g^6 , which are engaged by a spring-pressed pawl to lock the expanding device in whatever position it may be set, said pawl having a hand engaging portion, by means of which it is operated to release the expanding device.

So far as this invention is concerned any other suitable expanding device may be employed.

By referring to Fig. 1 of the drawings, 12 represents the ball measurement of the fore part, and in ordinary boots and shoes this measurement is substantially equal to the ankle measurement of the boot or shoe which is adapted to be placed on said fore part, and 10, as before stated, is the reduced instep measurement of said fore part, and with a fore part so constructed or formed all of its measurements will be equal or less than the ankle measurement of the shoe, yet I desire to include within the spirit and scope of this invention any other form or construction of fore part whereby its instep measurement is no greater than its ball measurement and consequently no greater than the ankle measurement of the shoe. It will also be observed that the heel measurement of the form represented by dotted line 15 is reducible to the ankle measurement of the boot or shoe by closing the parts of said form together and drawing out the fore part; but I do not desire to limit my invention to thus reducing the heel measurement of the form, and, furthermore, I desire it to be understood that I include within the spirit and scope of this invention any construction or arrangement of parts of the form whereby all of its circumferential measurements below the ankle are reducible to the ankle measurement of the boot or shoe.

The form or shaping machine herein described is especially designed for button boots or shoes, but it is obvious that it is of equal

utility in shaping lace boots and shoes, which are laced up in order that the ankle and top portion may be shaped, and also in shaping Congress boots and shoes where it is desirable not to stretch the gores.

I claim—

1. A shoe shaping or treeing form composed essentially of a back part, and a fore part, movable one with relation to the other to extend the form, comprising means whereby all the circumferential measurements of said form below the ankle are reducible to the ankle measurement of the shoe when the parts of said form are extended, substantially as described.

2. A shoe shaping or treeing form consisting essentially of a back part and a fore part constructed to slide longitudinally one with relation to the other, and having means whereby all the measurements below the ankle are reducible to less than the ankle measurement of the shoe when the parts of said form are extended to draw on and off the shoe, and an expanding device for spreading the parts of said form, substantially as described.

3. An expansible shoe shaping or treeing form adapted for shaping a shoe having its ankle and ball measurements approximately equal, said form comprising means for reducing it whereby said shoe, with its top or ankle portion closed, may be drawn off said form, substantially as described.

4. In a shaping or treeing machine for boots and shoes, the combination of a back part and a fore part, the shank of which adjacent the heel is removed, reducing the instep measurement of said fore part to the ankle measurement of the shoe, one of said parts being movable in and out with relation to the other part to reduce the heel measurement of the form to said ankle measurement of the shoe, substantially as described.

5. In a shaping or treeing machine for boots and shoes, the combination of a back part and a fore part, the instep measurement of which is no greater than the ankle measurement of the shoe, said parts being movable one with relation to the other to reduce the heel measurement of the form to said ankle measurement of the shoe, substantially as described.

6. A shoe shaping or treeing form adapted for shaping a shoe, the ankle measurement of which is less than its heel or instep measurement, said form having means for expanding it whereby the shoe is shaped, and having means for reducing it, whereby said shoe, with its top or ankle portion closed may be drawn off said form, substantially as described.

7. A shoe shaping or treeing form composed essentially of a back part and a fore part, the instep measurement of which is no greater than the ankle measurement of the shoe, said parts being movable toward and from each other and also in and out with relation to each other, the heel measurement of the form being reduced to the ankle measurement of the

shoe when the parts thereof are closed together and extended, substantially as described.

8. In a shaping-machine for boots and shoes, a form having a heel, and a fore part the shank of which adjacent the heel is removed, one of said parts being movable with relation to the other, to reduce the heel measurement of the form to the ankle measurement of the shoe, and means for expanding said form, substantially as described.

9. In a shaping-machine for boots and shoes, the combination of a back leg portion having a heel, and a sliding fore part the shank of which adjacent the heel is removed, diminishing the thickness of the instep, substantially as described.

10. In a shaping-machine for boots and shoes, the combination of a back leg portion having a heel, and a sliding fore part the shank of which adjacent the heel is cut off obliquely, thereby diminishing the thickness at the instep, substantially as described.

11. In a shaping-machine for boots and shoes, the combination of a back leg portion having a heel, a fore part, the shank of which adjacent the heel is removed, and a slide to which said fore part is detachably connected, substantially as described.

12. In a shaping-machine for boots and shoes, the combination of a back leg portion having a heel, and a sliding fore part the shank of which adjacent the heel is removed, said heel and fore part gradually approaching each other as the boot or shoe is withdrawn, substantially as described.

13. In a shaping-machine for boots and shoes, the combination of a back leg portion having a sliding heel-piece, and a sliding fore part the shank of which adjacent the heel is removed, substantially as described.

14. In a shaping-machine for boots and shoes, the combination of a back leg portion

having a sliding heel-piece, and a fore part the shank of which adjacent the heel is removed, a slide to which it is connected, and a shin-piece connected with said slide, substantially as described.

15. In a shaping-machine for boots and shoes, the combination of a back leg portion having an oblique sliding heel-piece and a sliding fore part, the shank of which adjacent the heel is removed, substantially as described.

16. In a shaping-machine for boots and shoes, the combination of a back leg portion having an oblique sliding heel-piece, a frame having a slide, a shin-piece detachably connected thereto, and a fore part connected to said shin-piece, the shank of which is removed adjacent the heel, substantially as described.

17. In a shaping-machine for boots and shoes, the combination of a back leg portion having a heel, a sliding fore part the shank of which adjacent the heel is removed, a support for said sliding fore part, and an expanding device for spreading the parts, substantially as described.

18. In a shaping-machine for boots and shoes, the combination of a back leg portion having an oblique sliding heel-piece, a frame carrying a slide, a detachable shin-piece connected thereto, a fore part connected to said shin-piece, the shank of which is removed adjacent the heel, and an expanding device for spreading the parts, substantially as described.

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

GEO. H. CLARK.

Witnesses:

B. J. NOYES,
EDW. C. STORROW,
F. H. DAVIS.