(No Model.)

B. J. NOYES.

SHAPING OR TREEING MACHINE.

No. 589,744. Patented Sept. 7, 1897.

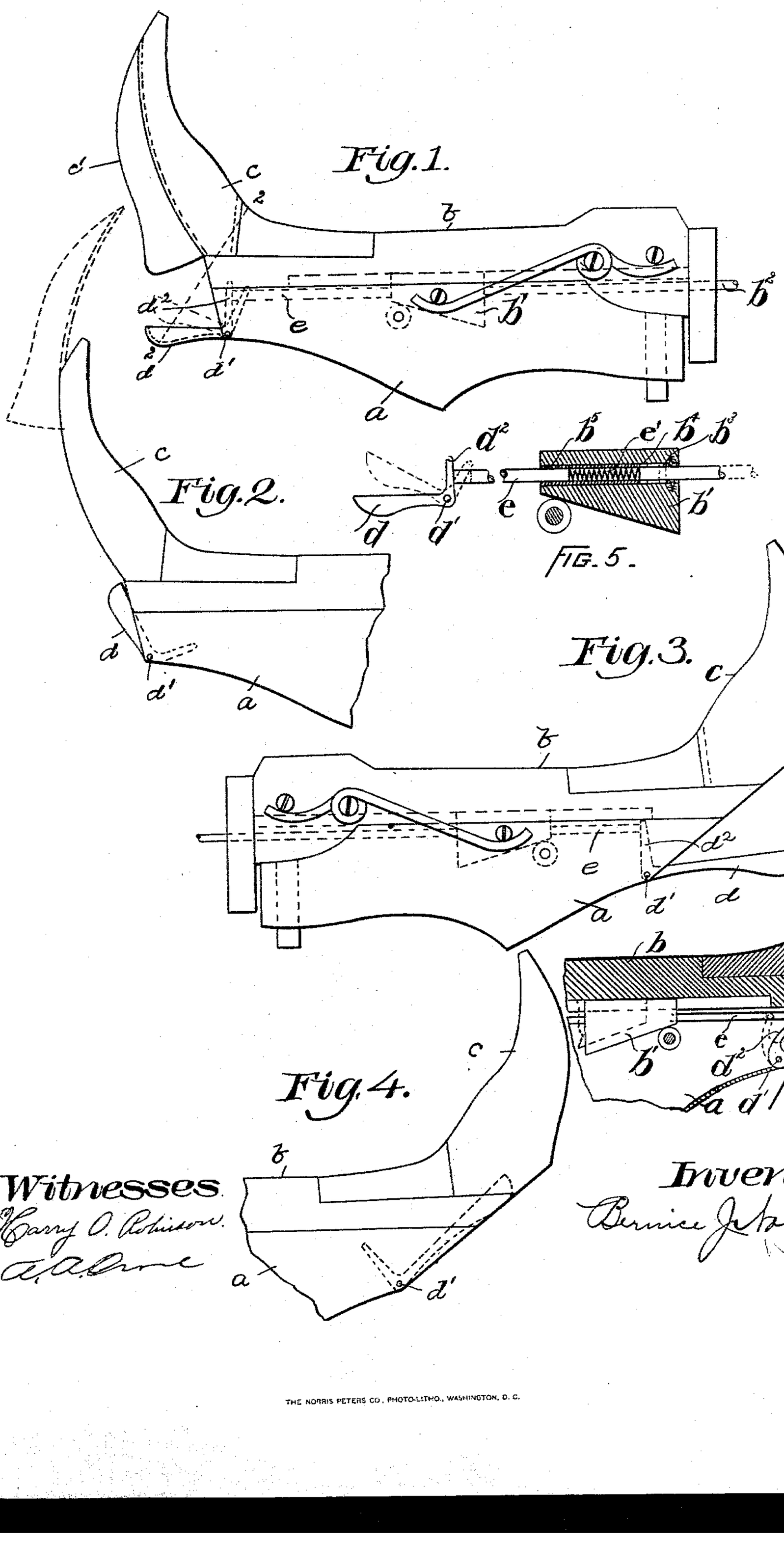

Fig. 1.

Fig. 2.

FIG. 5.

Fig. 3.

Fig. 4.

FIG. 6.

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SHAPING OR TREEING MACHINE.

SPECIFICATION forming part of Letters Patent No. 589,744, dated September 7, 1897.

Application filed July 18, 1896. Serial No. 599,635. (No model.)

To all whom it may concern:

Be it known that I, BERNICE J. NOYES, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Shaping or Treeing Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to construct a machine for shaping or treeing boots and shoes, it being especially designed for shaping women's boots and shoes, and more particularly for shaping women's button-boots, as it is so constructed and arranged that a button-boot may be drawn onto and off the form while buttoned, and after said boot has been shaped or treed or treated in any desirable way it may be withdrawn from said form without unbuttoning, thereby greatly facilitating the work, and also giving shape to the ankle and top portion at the same time that the fore part is shaped. The machine, however, is equally as well adapted for shaping lace boots and shoes which are laced up, and also for shaping Congress boots and shoes where it is not desired to stretch the gores.

In order that a button-boot may be drawn onto and off of a form while buttoned, the measurement of all parts of said form must be reducible to and preferably less than the ankle measurement of the boot or shoe, and as the ball and ankle measurements of a boot or shoe are substantially equal it is only necessary to reduce the heel and instep measurements of the form to the ball measurement to enable the results above mentioned to be accomplished.

By the term "ankle measurement of the boot or 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 laced shoe with the shoe laced or in the case of a Congress boot with its gores unstretched.

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.

To reduce the normal heel and instep measurements of the form to the ankle measurement of the boot or shoe, I take any ordinary or well-known construction of expansible form or tree and cut off or remove the heel or heel portion, preferably on an oblique line, to such an extent that the heel measurement of the form is reduced to the ankle measurement of the boot or shoe or to the ball measurement of the form. In thus cutting off the heel end or portion of the form the line of severance begins well up on the back leg portion and continuing obliquely passes onto and crosses the fore part, thus not only removing the lower part or heel end of the back leg portion, but also removing the shank portion of the fore part or a part thereof, reducing the instep measurement to the ankle measurement of the boot or shoe. The particular location of this line of severance may be varied somewhat, but in any event the recess formed at the heel end of the form will be such that the form when collapsed or closed up will have all of its circumferential measurements below the ankle no greater than the ankle measurement of the boot or shoe. In shaping boots and shoes it is not necessary to completely or even partially fill this gap or recess for the reason that the particular parts of the boot or shoe which it is desired to shape are the fore part and top portion, the usual counter giving shape to the heel; but in order that the fore part of the form may be thrust forward into the boot or shoe a point of resistance is necessary at the heel, and so I have provided a heel-piece which may be made and operated in many ways, it being herein shown as a plate or tongue pivoted to the back leg portion and adapted to be thrust out into position to subserve the above-mentioned purpose or to lie flat against the oblique face of the recess formed at the heel end of the form, or it may enter a recess formed in said oblique face which may be provided especially for it. The operating device of said heel piece may for simplicity be connected with the expanding device of the form, although it is obvious that it may be made as an independent device.

If it should be desired to fill the gap or re-

cess along the shank portion of the fore part, a sliding shank-piece or shank portion may be provided at such points, which may be drawn out as the boot or shoe is withdrawn, and said shank-piece may extend toward the heel a short distance beyond the rear end of the fore part, if desired.

Figure 1 shows in side elevation a shaping or treeing machine embodying this invention; Fig. 2, a similar view showing the sliding shank-piece of the fore part of the form withdrawn and the heel-piece closed up, such position of the parts permitting a boot or shoe to be drawn onto the form; Fig. 3, a side view of a modified construction of form; Fig. 4, a similar view of the modified construction shown in Fig. 3, the heel-piece being closed up to enable a boot or shoe to be drawn onto and off the form; Fig. 5, a detail showing a yielding actuating device for the heel-piece, and Fig. 6 a detail showing a modified construction of actuating device for the heel-piece.

While I desire it to be understood that the particular novel features of this invention are applicable to any usual or suitable construction of form or tree, a simple construction of form is herein shown merely to illustrate the invention.

a represents the back leg portion or back part of the form or tree, *b* the front leg portion, and *c* a fore part, which may be made detachable in any usual or suitable manner. The form or tree is provided with any usual or suitable expanding device by means of which the parts *a* and *b* are or may be spread, it being herein represented as a wedge *b'*, (see dotted lines, Fig. 1,) attached to a rod or bar b^2. This form or tree is cut off at the heel to a considerable extent or a recess formed at such part of the form or tree of such shape and size that the heel measurement of the form (represented by the dotted line 2) is reduced to the ankle measurement of the boot or shoe or to less than said measurement.

The heel end portion of the form or tree is herein shown as cut off on an oblique line, which not only crosses the back leg part *a*, but also crosses the fore part *c*, removing the shank thereof or a portion of it. The instep measurement of the fore part *c* is thus also reduced to the ankle measurement of the boot or shoe. The gap or recess thus formed is quite large, but for shaping and cleaning boots and shoes a form or tree thus made fulfils all the ordinary requirements, as it enables the fore part and top of the boot or shoe to be shaped, the usual counter of the boot or shoe giving shape to the heel end thereof.

In cutting off the form the particular location of the line of severance of course may be somewhat varied, but it should begin well up on the back leg portion *a* and extend across the fore part, so that all of the measurements of the form below the ankle will be no greater than the ankle measurement of the boot or shoe.

To facilitate thrusting the fore part *c* into the boot or shoe—that is to say, to provide a point of resistance or support at the heel—I have provided a heel-piece *d*, which may be made as a plate or tongue of any suitable length and width, and said plate or tongue is pivoted at *d'* to the back leg part *a*, and a short arm d^2 is formed integral with or secured to said plate or tongue *d*, extending in a more or less right-angular direction, like unto a bell-crank lever, and said arm d^2 is adapted to be engaged by a rod *e*, attached to and projecting from the wedge *b'*, and as said rod *e* is thrust longitudinally in the direction of the arrow, Fig. 1, said heel-piece *d* d^2 will be thrust out into the position shown in Fig. 1 to bear upon the interior of the heel end of the boot or shoe, thereby assisting in thrusting forward the fore part *c* by providing a resistance at such point. When the rod *e* is withdrawn, the heel-piece *d* d^2 will be free to fold up against the oblique face of the recess formed by cutting off the heel end of the form, or it may enter a supplementary recess therein, if such a recess should be provided for it.

It will be seen that as the rod *e* is attached to the expanding-wedge *b'* it will be moved conjunctively with said wedge, and hence the heel-piece will be operated conjunctively with the expanding device; but I find that it is desirable to first operate the heel-piece and after it has been thrust forward or into the position shown in Fig. 1 to then expand the form, and in order that these results may be successively accomplished and both the heel-piece and expanding device operated by the same actuating mechanism to thereby simplify the construction I have attached the rod *e* to the expanding device in a yielding manner. As, for instance, by referring to Fig. 5 it will be seen that the wedge *b'* has a hole bored through it longitudinally from end to end, and the rod *e* enters the hole at one end of said wedge, while the rod b^2 enters said hole at the opposite end of the wedge, and a strong spiral spring *e'* is placed in the hole in the wedge between said rods *e* and b^2, and the rod b^2 has a transverse pin b^3 projecting from it working in suitable guide-slots, which when the rod b^2 is thrust forward a short distance comes against a shoulder b^4, formed within the wedge—as, for instance, said shoulder may be the inner end of a ferrule b^5, which may be driven into the hole in the wedge. As the wedge b^2 is thus thrust forward until its transverse pin b^3 strikes the inner end of the ferrule b^5 the spring *e'* is advanced bodily and in turn advances the rod *e* to operate the heel-piece, but as soon as said pin b^3 strikes the inner end of the ferrule b^5 any further advance of the rod b^2 will cause a corresponding movement of the wedge *b'* to thus expand the form or tree, while the

spring e' will be more or less compressed during such further movement. It will be seen that the heel-piece $d\ d^2$ is thus not only operated in advance of the expanding device, but is also held in a more or less yielding manner, and as a consequence too great strain on the stitches will be prevented as the boot or shoe is stretched by the expansible action of the form. I do not, however, desire to limit my invention to any particular way of thus operating the heel-piece $d\ d^2$ independently of the expanding device, yet by the same actuating mechanism, as it is obvious that the results herein shown may be obtained in many different ways which come within the spirit and scope of this invention, nor do I desire to limit my invention to operating the heel-piece by any mechanism connected with the expanding device, as it may be operated separately.

Referring to Fig. 6, a modified form or construction of actuating device for the heel-piece $d\ d^2$ is shown, wherein the rod e is rigidly secured to the wedge b', and as it is thrust forward it engages the short arm d^2 of said heel-piece, and when it has moved said heel-piece a certain distance said rod e passes or slides by or over the end of said short arm d^2, and while thus holding said heel-piece in a more or less fixed position the expanding-wedge may be moved as much as desired.

Referring to Fig. 1, the heel end of the back leg part of the form is cut off obliquely and the shank of the fore part is cut away to a point nearly to the toe of the fore part, while by referring to Fig. 3 said parts are cut away on a straight line. It will be noted that with the form so cut away its heel and instep measurements are normally reduced to the ankle measurement of the boot or shoe, and consequently it is not necessary to withdraw the fore part or slide it out with relation to the back part to thus reduce the heel measurement, and herein said fore part, while detachably connected to the front leg part b, is not adapted to slide in and out.

In some particular cases it may be desirable to partially fill the gap or recess provided or formed at the heel end of the form, and in such case a shank piece or portion c' may be provided which will be connected by any suitable sliding connection with the fore part c, whereby it may be slid along the bottom of said fore part as the boot or shoe is drawn onto and off the form, such a sliding shank piece or portion being shown in Figs. 1 and 2; but in most cases such a sliding shank piece or portion may be omitted, as shown in Figs. 3 and 4.

I do not desire to limit my invention to any particular construction of the several parts of the form or tree, as it is desired to broadly include within the spirit and scope of this invention the novel features hereinafter claimed.

I do not broadly claim a form having a fore part with a sliding shank-piece whereby the instep measurement may be reduced to the ankle measurement of the boot or shoe, nor to a form wherein all of its circumferential measurements below the ankle are reducible to the ankle measurement of the boot or shoe; but my invention is limited to a positively-movable heel-piece working in a recess at the heel end of the form, which form is reducible to the ankle measurement of the boot or shoe to be shaped on it.

I claim—

1. In a machine for shaping or treeing boots and shoes, an expansible form comprising essentially a back leg part, a front leg part, and a detachable fore part, and having a recess at the heel, a heel-piece pivoted to said back leg part, and means for operating it, and an expanding device for the form, substantially as described.

2. In a machine for shaping or treeing boots and shoes, an expansible form comprising essentially a back leg part, a front leg part, and a detachable fore part, said back and front leg parts being cut away at the heel portion of the form, a heel-piece pivotally connected to said back leg part, means for operating it, and an expanding device for said form, substantially as described.

3. An expansible shoe shaping or treeing form comprising essentially a back leg part, a front leg part, and a detachable fore part, and having its heel portion removed to reduce its heel and instep measurements to the ankle measurement of the boot or shoe to be shaped thereon, a heel-piece working in the recess thus formed, an operating device for it, and an expanding device for the form, substantially as described.

4. In a machine for shaping and treeing boots and shoes, a form comprising essentially a back leg part, a front leg part, and a detachable fore part, said form having its heel portion removed to reduce its heel and instep measurements to the ankle measurement of the boot or shoe to be shaped thereon, combined with a heel-piece working in the recess thus formed, and an operating device for it, substantially as described.

5. In a machine for shaping and treeing boots and shoes, a form comprising essentially a back leg part, a front leg part and a detachable fore part, said form having its heel portion removed to reduce its heel and instep measurements to the ankle measurement of the boot or shoe to be shaped thereon, combined with a heel-piece working in the recess thus formed, and a yielding operating device for it, substantially as described.

6. In a machine for shaping and treeing boots and shoes, an expansible form comprising essentially a back leg part, a front leg part, and a detachable fore part, said form having its heel portion removed to reduce the heel and instep measurements to the ankle measurement of the boot or shoe to be shaped thereon, combined with a heel-piece working in the recess thus formed, an expanding de-

vice for the form, and an actuating device for both the expanding device and heel-piece adapted to operate them successively, substantially as described.

7. In a machine for shaping and treeing boots and shoes, an expansible form comprising essentially a back leg part, a front leg part, and a detachable fore part, said form having its heel portion removed to reduce its heel and instep measurements to the ankle measurement of the boot or shoe to be shaped thereon, a heel-piece working in the recess thus formed, an expanding device for the form, and an operating device for said heel-piece connected with said expanding device, substantially as described.

8. In a machine for shaping and treeing boots and shoes, a form comprising a back leg part and a detachable fore part, the heel end of said form being removed to reduce the heel and instep measurements to the ankle measurement of the boot or shoe, the line of severance crossing both the back leg portion and the fore part, and a heel-piece, substantially as described.

9. In a machine for shaping and treeing boots and shoes, a form comprising a back part having a retreating heel-piece, and a fore part having a sliding shank-piece, substantially as described.

10. In a machine for shaping and treeing boots and shoes, a form comprising a back part having a retreating heel-piece, and a fore part having a movable shank-piece, substantially as described.

11. In a machine for shaping and treeing boots and shoes, a form comprising a back part having a pivoted heel-piece, and a fore part having a movable shank-piece, substantially as described.

12. In a machine for shaping and treeing boots and shoes, a form comprising a back part having a retreating heel-piece, a fore part having a movable shank-piece, and an expanding device for spreading the parts, substantially as described.

13. In a machine for shaping and treeing boots and shoes, a form comprising a back part having a retreating heel-piece, a fore part having a movable shank-piece, and means for operating said heel-piece and for expanding the form, substantially as described.

14. In a machine for shaping and treeing boots and shoes, a form comprising a back part having a retreating heel-piece whereby the heel measurement may be reduced to the ankle measurement of the boot or shoe, and a fore part having a movable shank-piece whereby the instep measurement may be reduced to said ankle measurement of the boot or shoe, and an expanding device for the form, substantially as described.

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

BERNICE J. NOYES.

Witnesses:
F. H. DAVIS,
HARRY V. ROBINSON.