

G. H. CLARK.
LASTING MACHINE.
APPLICATION FILED JUNE 28, 1912.

Patented Apr. 1, 1913.
3 SHEETS—SHEET 1.

1,057,804.

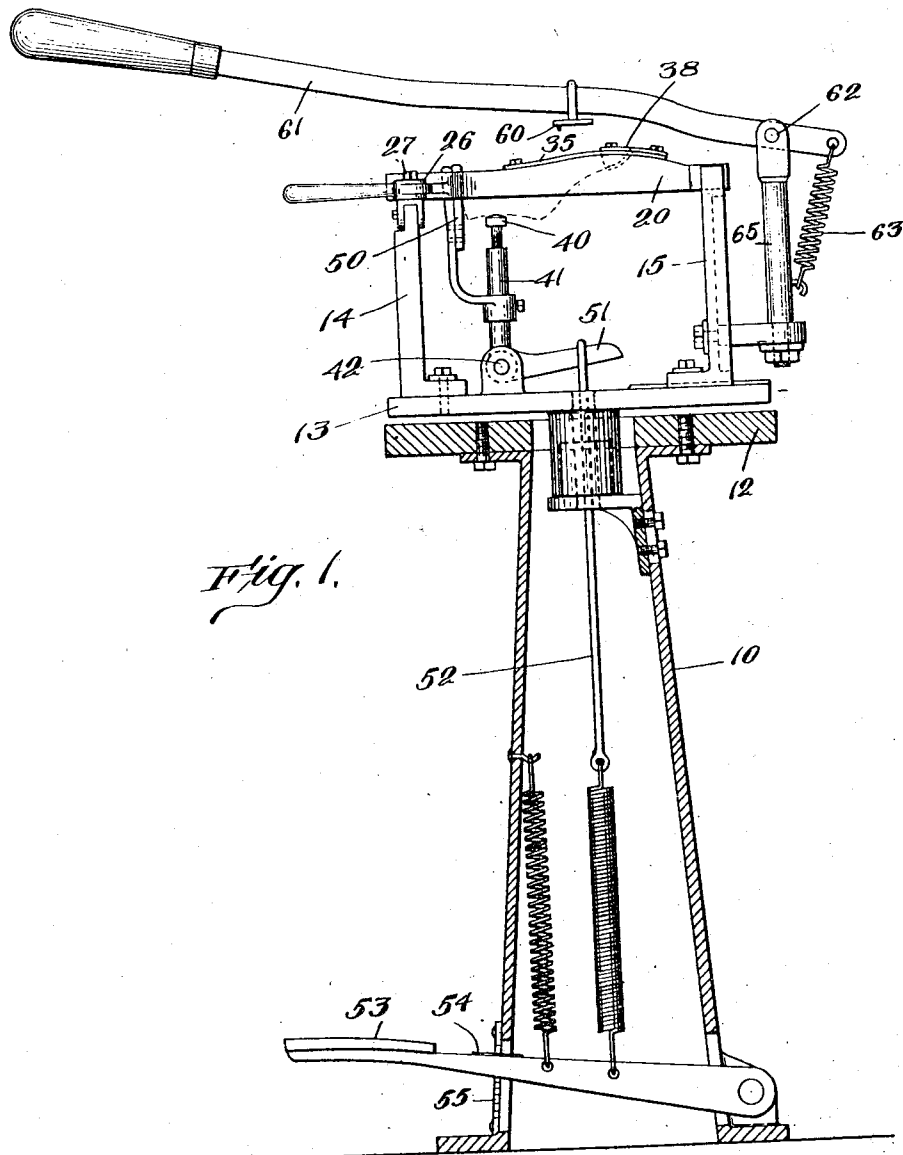


Fig. 1.

Witnesses:

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C. Doyle

Inventor:

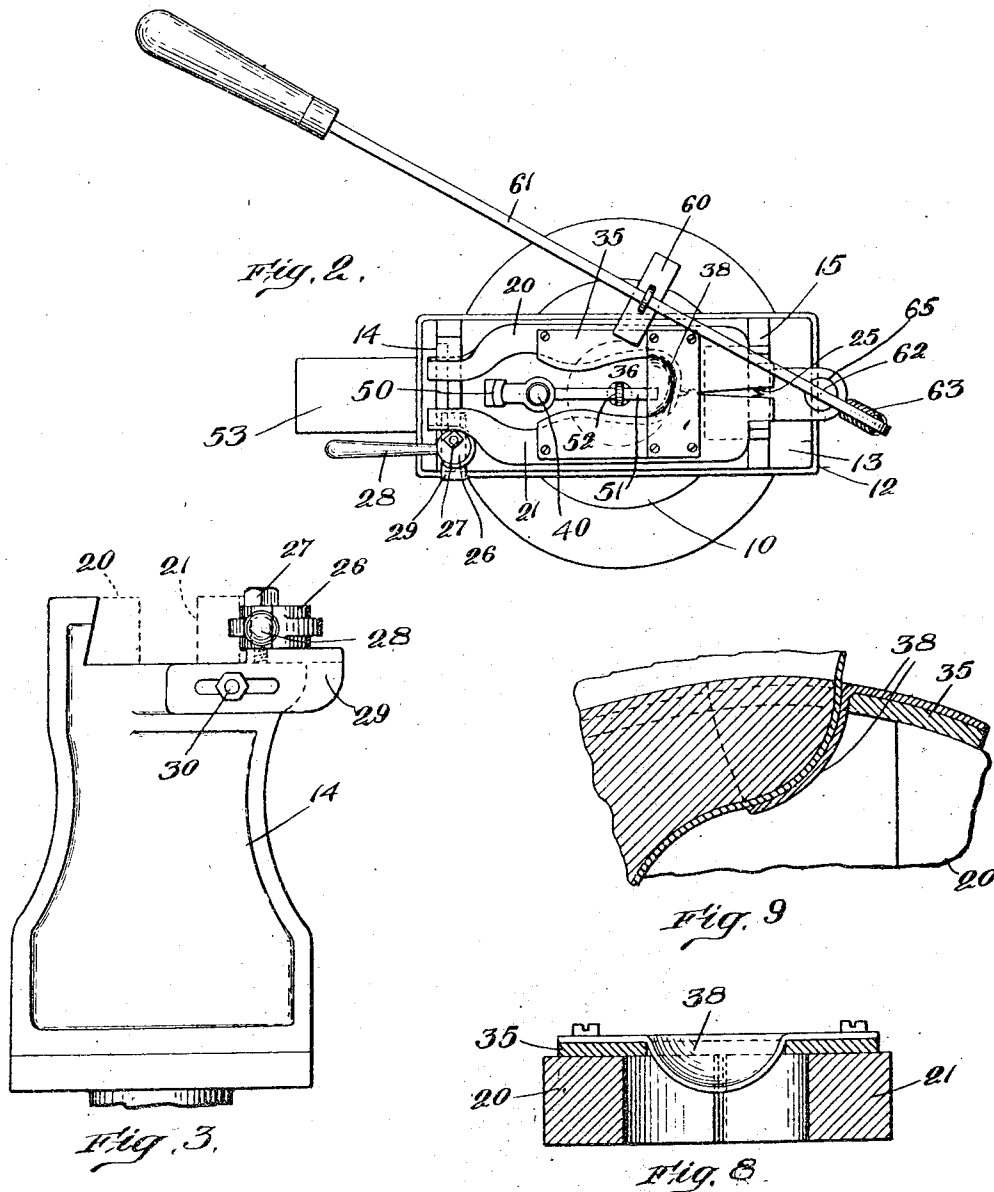
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3 SHEETS-SHEET 2.



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3 SHEETS—SHEET 3.

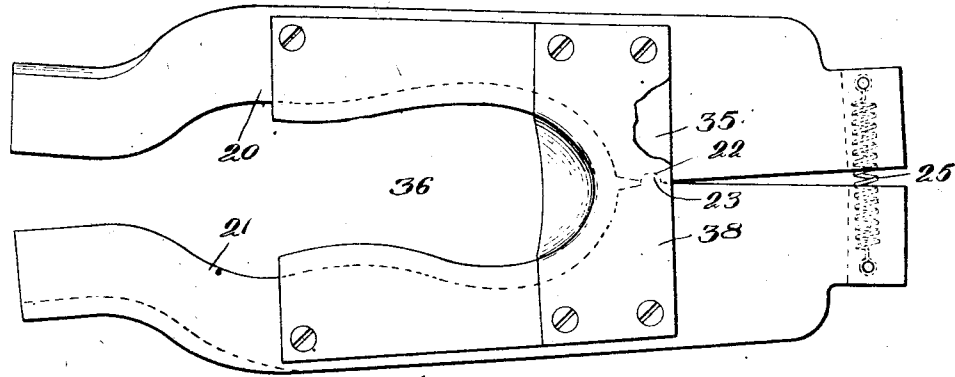


Fig. 4.

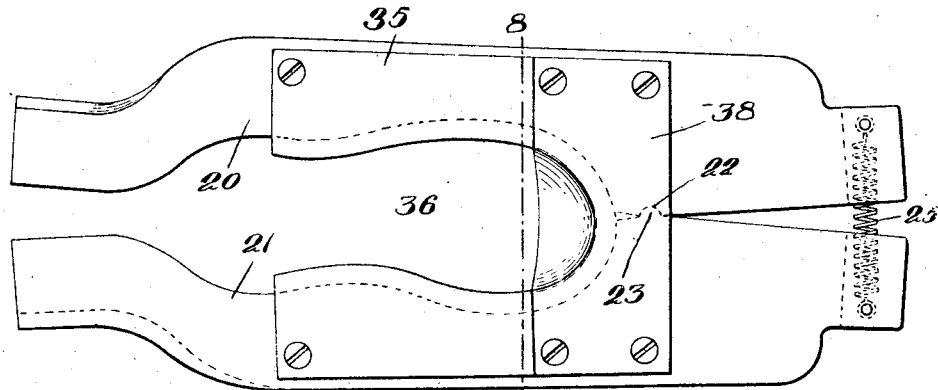


Fig. 5.

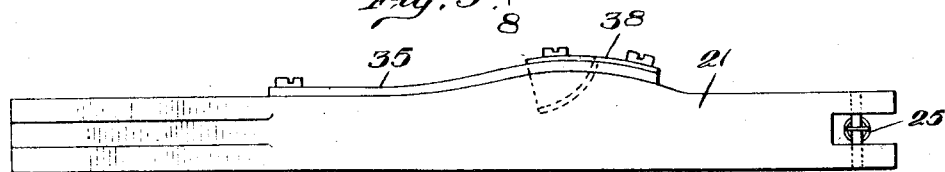


Fig. 6.

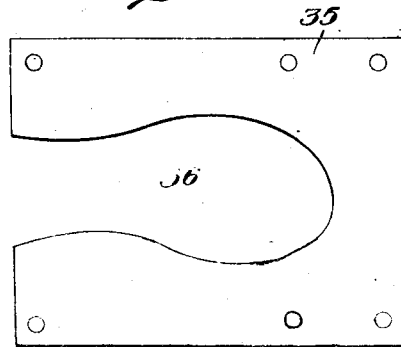


Fig. 7.

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UNITED STATES PATENT OFFICE.

GEORGE H. CLARK, OF WINTHROP, MASSACHUSETTS, ASSIGNOR TO JOHN J. BURNS,
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LASTING-MACHINE.

1,057,804.

Specification of Letters Patent

Patented Apr. 1, 1913.

Application filed June 28, 1912. Serial No. 706,371.

To all whom it may concern:

Be it known that I, GEORGE H. CLARK, a citizen of the United States, residing at Winthrop, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Lasting-Machines, of which the following is a specification.

This invention relates to lasting-machines for boots and shoes, and involves means for shaping the uppers on the lasts preparatory to applying the soles.

The invention has for its object the production of a clamping-form comprising an upper forming plate having a recess corresponding to the shape of the fore-part and shank-portion of a last, and made yielding to admit of its being deflected to snugly engage the upper on the last and cause it to conform to the shape of the last; and also comprising a flexible toe-forming plate for causing the upper to conform to the toe-portion of the last, said toe-forming plate also serving as a rest for the toe-portion of the last; and also comprising laterally movable supporting-members for said plates, and means to move them to deflect the plates.

The invention also comprehends means to thrust the last with upper thereon forward or in a direction toward the toe; and also means to depress the toe-portion of the last with upper thereon, thereby to force said toe-portion of the last snugly into engagement with the forming-plates.

Figure 1 is a side elevation of a lasting-machine embodying this invention. Fig. 2 is a plan view of the lasting-machine shown in Fig. 1. Fig. 3 is an enlarged end view of the means to operate the clamping-form. Fig. 4 is an enlarged plan view of the clamping-form in open position. Fig. 5 is a similar view of the clamping-form in closed position. Fig. 6 is an edge view of the clamping-form. Fig. 7 is a plan view of the upper-forming plate detached from its supporting-members. Fig. 8 is a transverse vertical section of the clamping-form taken on the dotted line 8-8 Fig. 5. Fig. 9 is a longitudinal sectional detail illustrating the toe-portion of a last with upper thereon in engagement with the yielding upper-forming plate and flexible toe-forming plate.

10 represents an upright standard or support for the operating parts; 12 a table

thereon; 13 a rotatable base; 14 and 15 upright posts erected on said base each formed at its upper end with a recess to receive the ends of the supporting-members 20, 21 of the clamping-form and thereby removably supporting said form. The supporting-members 20 and 21 are here shown as blocks which are longer than the last and made as opposites and inclose a sole-shaped recess of larger dimensions than the last and said members are adapted for lateral movement one with relation to the other or with respect to each other, the recesses at the upper ends of the upright posts being made wide enough to admit of lateral movement of the ends of the blocks. The members 20 and 21 are arranged in a horizontal plane and extended lengthwise the block and at one end of the last they are arranged for rocking engagement, and, as here shown, the member 20 has a recess 22 on its side adjacent the member 21 to receive a knuckle 23 on said member 21, thereby to permit of a rocking movement of the member 21 on and with respect to the member 20, and thus provide for lateral movement of the member 21 with respect to the member 20. The forward ends of said members outside of their engaging points are connected together by a spring 25, which acts, when permitted, to draw said ends together and thereby to separate the opposite ends of said members to open the form and to hold the end of the member 20 against one end wall of the recess in the upright post 14 and the corresponding end of the member 21 in engagement with the means employed for moving said member 21 laterally. As a means to move said member 21 laterally a cam 26 is here shown, which is pivoted at 27 and has a hand-lever 28 for turning it. The pivot of said cam is adjustably supported, so that the position of the cam relative to the member 21 may be changed, and for this purpose a block 29 is adjustably secured to the upright post 14 by a bolt 30. The cam enters a groove formed in the member 21 and when turned acts to move said member and also to hold it in any position it may be set. As the cam is turned on its pivot in one direction the end of the member 21 is moved inward causing said member to rock on its engaging point with the member 20 and its opposite or forward end to engage one end wall of

the recess in the upright post 15, and as said end wall serves as an abutment which resists further movement of said forward end of the member 21 upon further inward movement of the rear end of said member 21, the forward end of the member 20 will be moved in a direction toward the other end wall of the recess in the post 15 while the rear end of said member 20 continues to bear against the end wall of the recess in the post 14 which serves as an abutment therefor. Thus, as here shown, both members are movable laterally, but it will be understood that in case the extent of movement required is very slight it may happen that movement of the member 21 only may be sufficient.

In lieu of providing supporting-members, as here shown, other supporting-means may be provided adapted for lateral movement to deflect the forming-plates which they are adapted to support, to cause said plates to snugly engage the upper on the last and cause said upper to correctly conform to the shape of the last.

An upper-forming plate 35 is arranged on said supporting-members 20, 21, or other supports which may be provided therefor, said plate having a recess 36, corresponding to the shape of the fore-part and shank-portion of a last; and said plate, at the edge of said recess, extends over the edges of the supporting-members, as shown in Fig. 4, so as to engage the upper on the last while the supporting-members are remotely disposed with respect thereto. Said plate is composed of material which is slightly yielding, such for instance, as sole-leather, so that it may be deflected, and its side portions caused to snugly engage the upper all around the fore-part and shank-portion of the last, thereby to cause said upper to conform to the shape of the last. Said plate is detachably connected with its supporting-members by means of screws or otherwise, so that plates having recesses of different shapes and sizes for different styles and sizes of boots and shoes may be employed. It will be noted that the upper-forming plate is composed of a single piece of leather or other equivalent material, so that there is no joint at the toe, and is, therefore, to be contrasted with a form having laterally movable clamping-members. Said upper-forming plate also serves as an additional means to connect together the two supporting-members 20, 21.

At the toe-end of the upper-forming plate 35 a toe-forming plate 38 is arranged, which is also detachably connected with the supporting-members, usually by the same screws employed for detachably connecting the upper-forming plate therewith, and said toe-forming plate extends over the toe-portion of the upper-forming plate and is made

of flexible material, such for instance, as upper-leather, so that at the toe-portion of the upper-forming plate it may be formed with a recess or cavity to receive the toe-portion of the last. The toe-forming plate, when thus formed, fits the toe-portion of the last with upper thereon, and causes the upper at such point to tightly engage and accurately conform to the shape of the last.

The last, with upper thereon, when placed in the form, reposes on a suitable rest, here shown as the head 40, of an adjusting-screw, arranged at the top of an upright arm 41, pivoted at 42, to an ear on the base 13. Said rest is located beneath the heel-portion of the last and limits downward movement of the last, and is made adjustable for lasts of different heights.

As a means to thrust the last, with upper thereon, forward, or in a direction toward the toe, an upright arm 50 is arranged at the heel-end of the last which is attached to the pivoted post or rest-support 41, being adjustably arranged thereon, and said rest-support 41 has an arm 51 extended from it, at right angles to it, which is engaged by the upper end of a treadle-rod 52, so that upon depression of a treadle 53 to which the lower end of the treadle-rod is connected, said rest-support 41 and arm 50 will be moved and the last thrust forward, and the toe-portion thereof caused to snugly engage the flexible toe-forming plate 38. Said treadle has a projection 54 to engage any one of the teeth 55 of a plate which is secured to the standard 10, thereby to lock the treadle when depressed, and also lock the last, with upper thereon, in its forward position.

As a means to force the toe-portion of the last with upper thereon down into the clamping-form, so as to snugly engage the upper-forming plate and toe-forming plate, a plunger 60, made as a plate and attached to a hand-lever 61, is arranged above the ball of the last, or thereabout, and said hand-lever is pivoted at 62, to a swiveled post 65, and is normally held with the plunger in elevated position by a spring 63, and is normally swung to one side, (see Fig. 2). Downward movement of the hand-lever acts to move the plunger into engagement with the ball of the last and to depress the toe-portion of the last until it snugly engages the flexible toe-forming plate.

The three operations, namely, clamping the upper on the last, thrusting the last with upper thereon forward, and thrusting the toe-portion of the last downward, may be carried on in any desired order, and when completed the sole may be applied in any usual or suitable manner, or in case an inner-sole is employed, said inner-sole may be applied to the last before it is placed in the form and finally the outer-sole applied.

One method of operating the machine is as follows:—The last with upper thereon is placed in the machine with its toe end resting on the flexible toe plate and its heel end engaging the rest: then the clamping form is operated to engage the upper and cause it to conform to the last: then the last with upper thereon is thrust forward and then the toe portion of the last is thrust downward. As the recess in the clamping form is usually made to conform to the shape of the last, but a slight yielding movement only is required except to compensate for different sizes, and it will be understood that each upper-forming plate will be employed for but a few sizes, it being readily detached to enable other forming plates to be employed. The forward and downward movements are also slight and may be made easily after the clamping form has been operated.

I claim:—

1. In a lasting-machine, the combination of an upper forming plate having a recess corresponding to the shape of the fore-part and shank-portion of a last, to engage the upper continuously all around the fore-part and shank-portions of the last, said plate being made yielding to admit of its being deflected to snugly engage the upper on the last, two laterally movable supporting-members to which said yielding plate is attached, which extend lengthwise the last and beyond each end thereof, and means to move said members laterally to deflect the plate, substantially as described.

2. In a lasting-machine, the combination of an upper forming plate having a recess corresponding to the shape of the fore-part and shank-portion of a last, to engage the upper continuously all around the fore-part and shank-portions of the last, said plate being made yielding to admit of its being deflected to snugly engage the upper on the last, two laterally movable supporting-members to which said yielding plate is attached, which extend lengthwise the last and beyond each end thereof and engage each other at the toe end of the last, and means to move said members to deflect the plate, substantially as described.

3. In a lasting-machine, the combination of an upper forming plate having a recess corresponding to the shape of the fore-part and shank-portion of a last, to engage the upper continuously all around the fore-part and shank-portions of the last, said plate being made yielding to admit of its being deflected to snugly engage the upper on the last, two laterally movable supporting-members to which said yielding plate is attached, which extend lengthwise the last and beyond each end thereof, end supports for said members which admit of a lateral movement thereof, and means to move said mem-

bers laterally to deflect the plate, substantially as described.

4. In a lasting-machine, the combination of an upper forming plate having a recess corresponding to the shape of the fore-part and shank-portion of a last, to engage the upper continuously all around the fore-part and shank-portions of the last, said plate being made yielding to admit of its being deflected to snugly engage the upper on the last, two laterally movable supporting-members to which said yielding plate is attached, which extend lengthwise the last and beyond each end thereof, end supports for said members having recesses to receive the ends of the members and permit a limited relative lateral movement thereof, and means to move said members laterally to deflect the plate, substantially as described.

5. In a lasting-machine, the combination of an upper forming plate having a recess corresponding to the shape of the fore-part and shank-portion of a last, to engage the upper continuously all around the fore-part and shank-portions of the last, said plate being made yielding to admit of its being deflected to snugly engage the upper on the last, two laterally movable supporting-members to which said yielding plate is attached, which extend lengthwise the last and beyond each end thereof, end supports on which said members are removably placed, and means to move said members, substantially as described.

6. In a lasting-machine, the combination of an upper forming plate having a recess corresponding to the shape of the fore-part and shank-portion of a last, to engage the upper continuously all around the fore-part and shank-portions of the last, said plate being made yielding to admit of its being deflected to snugly engage the upper on the last, two laterally movable supporting-members to which said yielding plate is attached, which extend lengthwise the last and beyond each end thereof, end supports for said members which admit of a limited relative lateral movement thereof, and means engaging one end of one of the members which acts to move said member laterally and in turn to move the other member, substantially as described.

7. In a lasting-machine, the combination of an upper forming plate having a recess corresponding to the shape of the fore-part and shank-portion of a last, to engage the upper continuously all around the fore-part and shank-portions of the last, said plate being made yielding to admit of its being deflected to snugly engage the upper on the last, two laterally movable supporting-members to which said yielding plate is attached, which extend lengthwise the last and beyond each end thereof, a spring arranged between the ends of the members at the toe

end of the last for separating the members, and means to move said members laterally against the action of said spring to cause the plate to snugly engage the upper on the last, substantially as described.

5 8. In a lasting-machine, the combination of an upper-forming plate having a recess corresponding to the shape of the fore-part and shank-portion of a last and made yield-
10 ing to admit of its being deflected to snugly engage the upper on the last, a flexible toe-forming plate extended over the toe-portion of said upper-forming plate, and movable supporting-means, both of said plates being
15 detachably connected with said supporting-means, substantially as described.

9. In a lasting-machine, the combination of an upper-forming plate having a recess corresponding to the shape of the fore-part
20 and shank-portion of a last and made yielding to admit of its being deflected to snugly engage the upper on the last, a flexible toe-forming plate, movable supporting-members for said plates, and means for moving said
25 members, substantially as described.

10. In a lasting-machine, the combination of an upper-forming plate having a recess corresponding to the shape of the fore-part
30 and shank-portion of a last and made yielding to admit of its being deflected to snugly engage the upper on the last, a flexible toe-forming plate, laterally movable supporting-members for said plates, means to detach-
35 ably connect said plates with said members, and means for moving said members, substantially as described.

11. In a lasting-machine, the combination of an upper-forming plate having a recess corresponding to the shape of the fore-part
40 and shank-portion of a last and made yielding to admit of its being deflected to snugly engage the upper on the last, a flexible toe-forming plate extended over the toe-portion of said upper-forming plate, movable
45 supporting-members for said plates including a recess larger than the recess in the upper-forming plate, and means to move said members to deflect said plate, substantially
50 as described.

12. In a lasting-machine, the combination of an upper-forming plate having a recess corresponding to the shape of the fore-part
55 and shank-portion of a last and made yielding to admit of its being deflected to snugly engage the upper on the last, a pair of supporting-members for said plate inclosing a
60 recess larger than the recess in the upper-forming plate, over the edge of which said upper-forming plate extends, said supporting-members engaging each other at the toe-
65 end of the upper-forming plate, permitting movement of one member with relation to the other to deflect the upper-forming plate, and means for moving said member, substantially as described.

13. In a lasting-machine, the combination of an upper-forming plate having a recess corresponding to the shape of the fore-part and shank-portion of a last and made yield-
70 ing to admit of its being deflected to snugly engage the upper on the last, a pair of supporting-members arranged in a horizontal plane to which said plate is connected, said
75 members inclosing a recess larger than the recess in the plate and said plate serving as the means to connect said members together, means to move said members in one
80 direction to cause the plate to yieldingly engage the upper on the last, and means to move said members in the opposite direction, substantially as described.

14. In a lasting-machine, the combination of an upper-forming plate having a recess corresponding to the shape of the fore-part
85 and shank-portion of a last and made yielding to admit of its being deflected to snugly engage the upper on the last, a pair of supporting-members for said plate inclosing a
90 recess larger than the recess in the upper-forming plate, one adapted to rock upon the other, and means for rocking said member to deflect the upper-forming plate, substantially as described.

15. In a lasting-machine, the combination of an upper-forming plate having a recess
95 corresponding to the shape of the fore-part and shank-portion of a last and made yielding to admit of its being deflected to snugly engage the upper on the last, two support-
100 ing-members to which said plate is connected, which incloses a recess larger than the recess in the upper-forming plate over the edge of which said plate extends, support-
105 ing-means for said members which admit of movement of one member with respect to the other to deflect the upper-forming plate, and means to move said member which
acts to hold it in any position it may be set, substantially as described.

16. In a lasting-machine, the combination of an upper-forming plate having a recess
110 corresponding to the shape of the fore-part and shank-portion of a last and made yielding to admit of its being deflected to snugly engage the upper on the last, laterally mov-
115 able supporting-members for said plate, means for moving said members, a rest for the last with upper thereon, and movable means to engage the heel-end of the last and thrust it forward, substantially as described.

17. In a lasting-machine, the combination of an upper-forming plate having a recess
120 corresponding to the shape of the fore-part and shank-portion of a last and made yielding to admit of its being deflected to snugly engage the upper on the last, laterally mov-
125 able supporting-members for said plate, means for moving said members, a rest for the last with upper thereon, movable means to engage the heel-end of the last and thrust
130

it forward, and means to lock said movable-means with the last in its forward position, substantially as described.

18. In a lasting-machine, the combination
5 of an upper-forming plate having a recess corresponding to the shape of the fore-part and shank-portion of a last and made yielding to admit of its being deflected to snugly engage the upper on the last, laterally movable supporting-members for said plate,
10 means for moving said members, a rest for the last with upper thereon, a plunger for engaging the ball of the last to depress the toe-portion thereof, a hand-lever to which
15 said plunger is attached, which acts to move the plunger into engagement with the ball of the last and to depress the toe-portion thereof, and a swiveled support for said hand-lever, substantially as described.

19. In a lasting-machine, the combination
20 of an upper-forming plate having a recess corresponding to the shape of the fore-part and shank-portion of a last and made yielding to admit of its being deflected to snugly engage the upper on the last, a flexible toe-forming plate, laterally movable supporting-members for said plates, means for moving
25 said members, a rest for the last with upper thereon, and movable means to engage the ball of the last and depress it and cause its toe-portion to snugly engage the toe-forming plate, substantially as described.

20. In a lasting-machine, the combination
35 of an upper-forming plate having a recess corresponding to the shape of the fore-part and shank-portion of a last and made yielding to admit of its being deflected to snugly engage the upper on the last, a flexible toe-forming plate, laterally movable supporting-members for said plates, means for moving
40 said members, a rest for the last with upper thereon, and movable means to engage the heel-end of the last and thrust it forward and cause its toe-portion to snugly engage the toe-forming plate, substantially as described.

21. In a lasting-machine, the combination
50 of an upper-forming plate having a recess corresponding to the shape of the fore-part and shank-portion of a last and made yielding to admit of its being deflected to snugly engage the upper on the last, a flexible toe-forming plate, laterally movable supporting-members for said plates, means for moving
55 said members, a rest for the last with upper thereon, movable means to engage the heel-end of the last and thrust it forward, and

movable means to engage the ball of the last and depress the toe-portion thereof, substantially as described.

22. In a lasting-machine, the combination
60 of an upper-forming plate having a recess corresponding to the shape of the fore-part and shank-portion of a last and made yielding to admit of its being deflected to snugly engage the upper on the last, laterally movable supporting-members for said plate, and
65 means for moving said members, a rest for the last with upper thereon, a pivoted support therefor, an upright-arm attached to the rest-support for engagement with the heel-end of the last, and means to move said rest-support and arm to move the last in a forward direction, substantially as described.

23. In a lasting-machine, the combination
75 of a yielding upper-forming plate having a recess corresponding to the shape of the fore-part and shank-portion of the last, a pair of laterally movable supporting-members inclosing a sole-shaped recess, said recess being of larger-dimensions than the
80 recess in the upper-forming plate whereby the edge of said plate about the recess extends over the recess inclosed by the supporting-members, hand-operated means to
85 move said supporting-members and cause the upper-forming plate to engage the upper on the last which acts to hold said members in any position they may be set, and means, operating to separate said members when
90 permitted to act, substantially as described.

24. In a lasting-machine, the combination
95 of a yielding upper-forming plate having a recess corresponding to the shape of the fore-part and shank-portion of the last, a pair of laterally movable supporting-members inclosing a sole-shaped recess, said recess being of larger dimensions than the
100 recess in the upper-forming plate whereby the edge of said plate about the recess extends over the recess inclosed by the supporting-members, a cam engaging one of said supporting-members to move it toward the other member having means for operating it, and means, operating to separate
105 said supporting-members when permitted to act, substantially as described.

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,
H. B. DAVIS.