

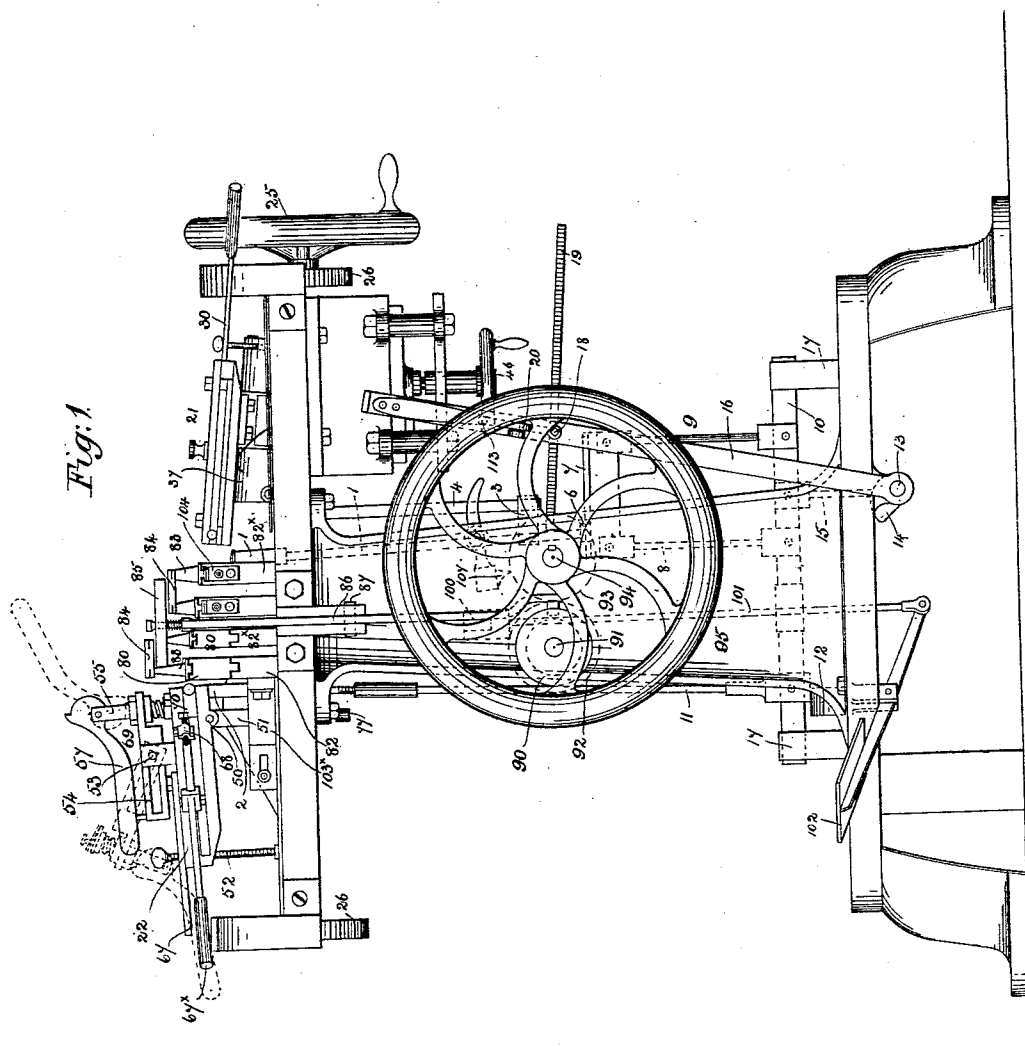
(No Model.)

7 Sheets—Sheet 1.

A. E. STIRCKLER.
LASTING MACHINE.

No. 477,788.

Patented June 28, 1892.



Witnesses:

Edgar A. Goddin
Frederick L. Emery-

Inventor.

Albert E. Stirckler,
by Geo. W. Gregory
att'y

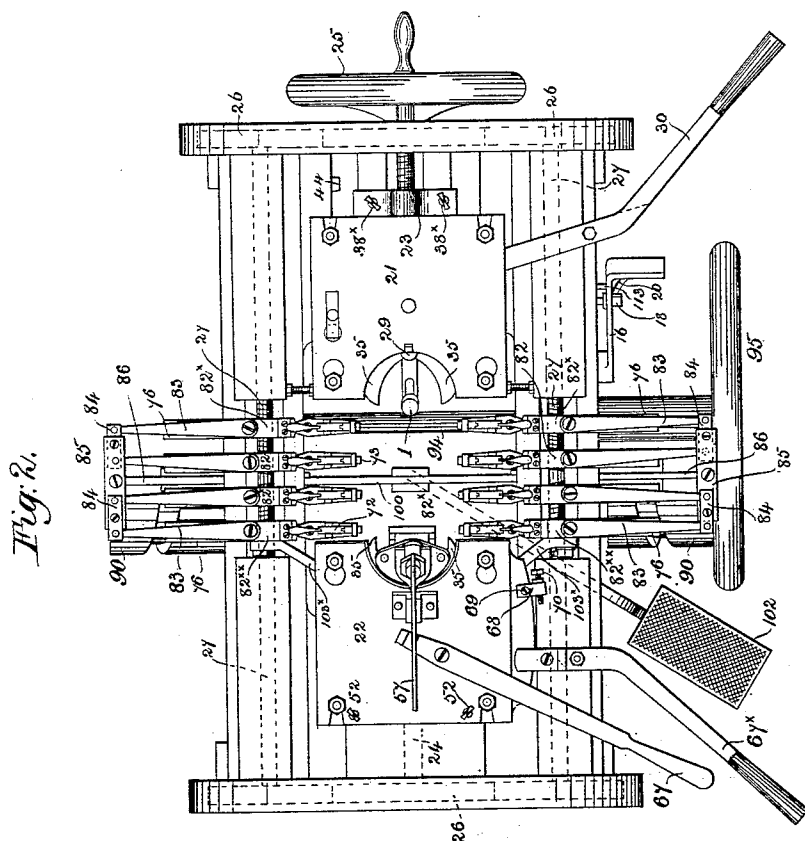
(No Model.)

7 Sheets—Sheet 2.

A. E. STIRCKLER.
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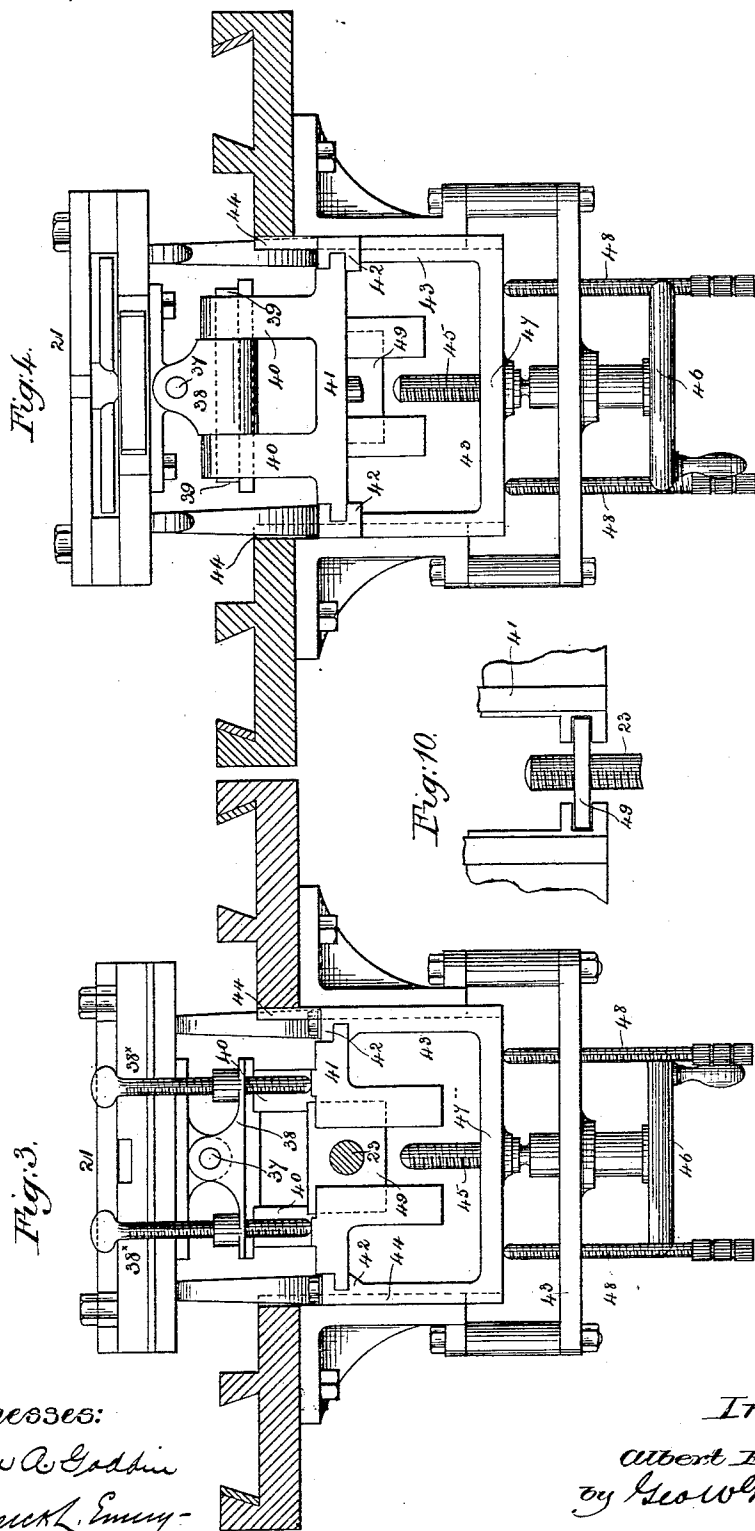
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7 Sheets—Sheet 3.

A. E. STIRCKLER.
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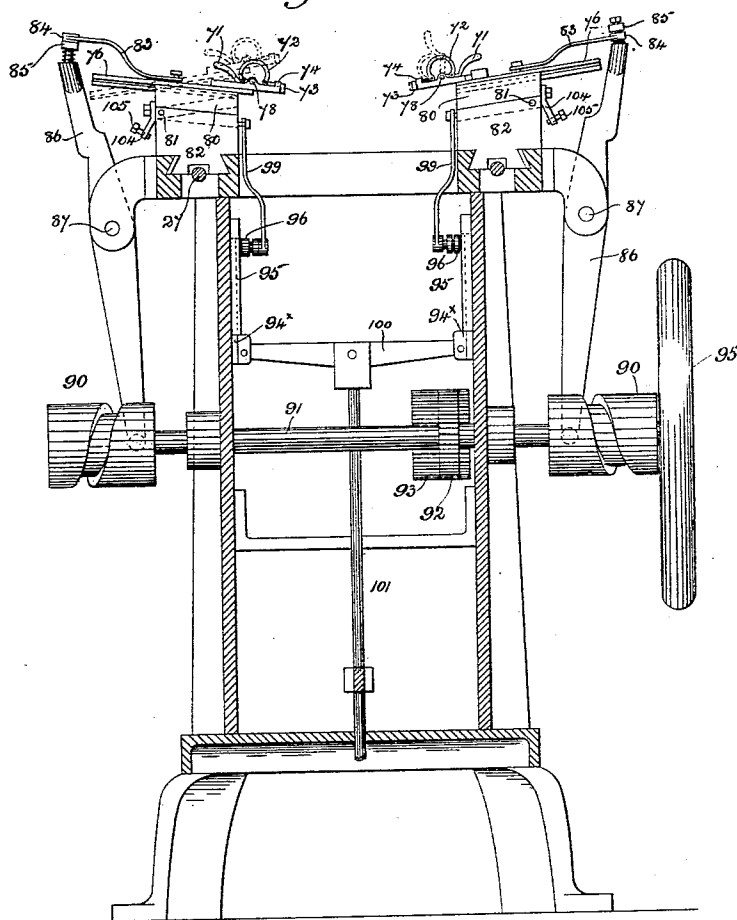
7 Sheets—Sheet 4.

A. E. STIRCKLER.
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Fig. 5.



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(No Model.)

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A. E. STIRCKLER.
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Fig. 13.

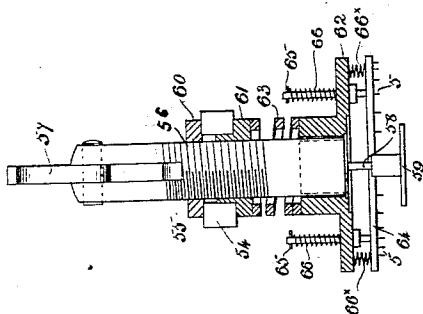


Fig. 14.

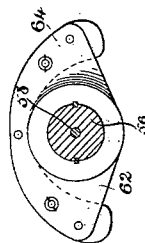
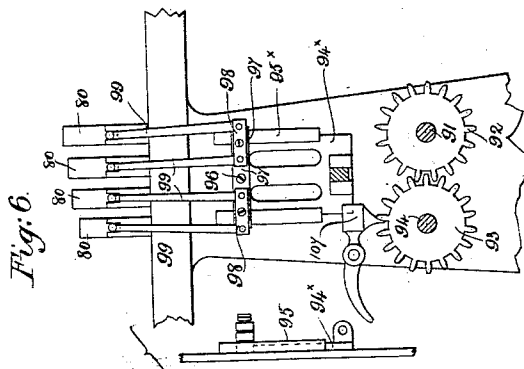


Fig. 6.



(No Model.)

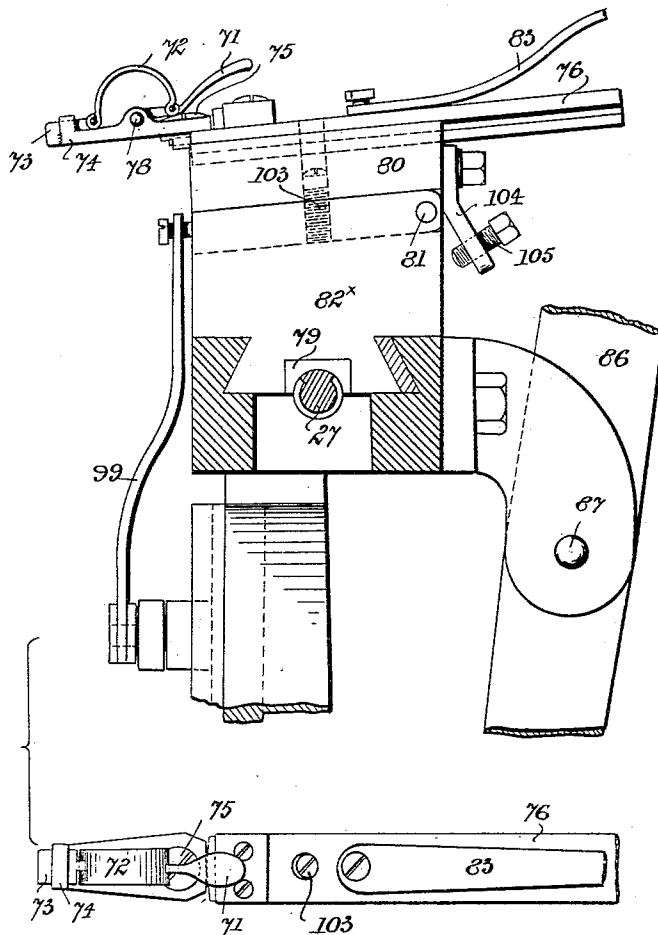
7 Sheets—Sheet 6.

A. E. STIRCKLER.
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Fig. 7.



Witnesses.

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(No Model.)

7 Sheets—Sheet 7.

A. E. STIRCKLER.
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Fig. 12

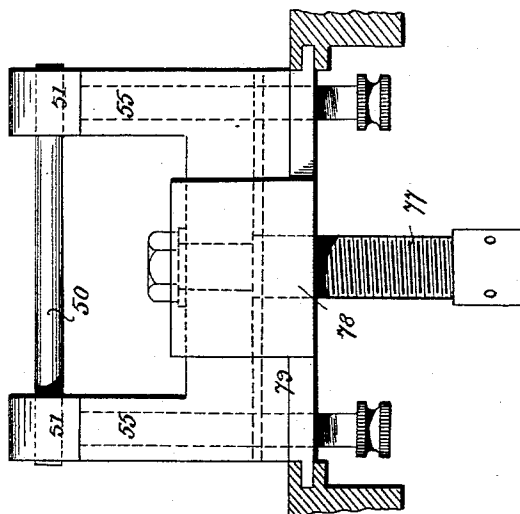
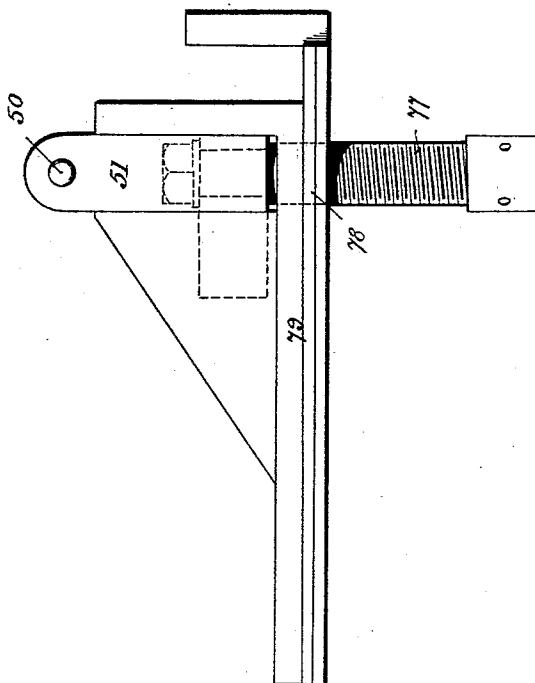


Fig. 11.



Witnesses.

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UNITED STATES PATENT OFFICE.

ALBERT EDWARD STIRCKLER, OF NORTHAMPTON, ENGLAND, ASSIGNOR, BY
MESNE ASSIGNMENTS, TO THE CHASE LASTING MACHINE COMPANY, OF
PORTLAND, MAINE.

LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 477,788, dated June 28, 1892.

Application filed November 1, 1889. Serial No. 328,905. (No model.) Patented in Germany March 13, 1886, No. 38,949, and January 8, 1888, No. 45,953; in France March 16, 1886, No. 174,797, and May 17, 1887, No. 183,641, and in England December 21, 1887, No. 17,581, and October 10, 1888, No. 14,586.

To all whom it may concern:

Be it known that I, ALBERT EDWARD STIRCKLER, engineer, a citizen of the United States, lately residing at Boston, Massachusetts, United States of America, but at present of 201 Kettering Road, Northampton, in the county of Northampton, England, have invented certain Improvements in Machines for Lasting the Uppers of Boots or Shoes, (for which I have, in conjunction with Orlando Ethelbert Lewis, of Boston, obtained a patent in Great Britain, No. 17,581, dated December 21, 1887, and for which applications have been made and patents granted, as follows: in Great Britain, No. 14,586, dated October 10, 1888, in France, No. 174,797, dated March 16, 1886, and No. 183,641, dated May 17, 1887, and in Germany, No. 38,949, dated March 13, 1886, and No. 45,953, dated January 8, 1888,) of which the following is a specification.

This invention has for its object to improve the construction of that class of lasting-machines represented by United States Patents No. 319,784, granted to F. Chase June 9, 1885, No. 363,283, dated May 17, 1887, and No. 364,088, dated May 31, 1887.

The particular features in which this invention consists will be hereinafter fully described, and pointed out in the claims at the end of the specification.

In the accompanying drawings the same numerals of reference indicate corresponding parts in all the figures.

Figures 1 and 2 represent in front elevation and plan, respectively, a machine constructed according to this invention, and Figs. 3 and 4 are sections of parts of the machine, showing the arrangement of the heel clamp or head. Fig. 5 is a transverse section showing the mechanism for operating the side nipper-wipers, and Fig. 6 is a front view of the same. Fig. 7 represents in elevation and plan one of the nipper-wipers and its adjustable stops drawn to a larger scale, and the remaining eight figures are details hereinafter referred to.

The essential parts of the machine, which I will describe in the order in which they are brought in action consist: first, of sup-

ports for the last with means for pressing and securing the last thereon; secondly, the heel and toe clamps by which the leather or upper is drawn over the heel and toe parts of the last, and, thirdly, the side nipper-wipers which are mainly instrumental in stretching or pulling the upper over the last.

The last is supported by two rods 1 and 2, Figs. 1 and 2, provided with suitably-formed heads for the reception of the heel and toe ends of the last, which heads are adjustable in height to suit lasts of different thickness or spring. The rod 1 for supporting the heel of the last works in a guide 3, connected by a rod 4 to the slide 41, (see Fig. 4,) carrying the heel clamp or head, and this guide is provided at its lower extremity with a block 6, arranged to slide in a guide 7, which is connected by rods 8 and 9 to a horizontal bar 10, to which is also pivoted the rod 11, carrying the rest or support 2 for the toe end of the last. Beneath the bar 10, near to which the supporting-rod 11 is pivoted, is a strong spring-elliptic 12, tending to maintain this end of the bar elevated and serving to hold the upper between the last and the folding-over plates, as hereinafter described.

On an axis 13, arranged beneath the base of the machine, is an eccentric or cam 14, upon which bears a rod 15, fast on the bar 10. On one end of this axis 13 a lever 16 is fixed, by means of which the cam 14 may be turned so as to raise and lower the bar 10, as required, to alter the elevation of the last resting on the supports 1 and 2. The extremities of the bar 10 being free to move in the guides 17, and the said bar being pivotally connected to the rods 8, 9, and 11, and the guide 7 being similarly connected to the rods 8 and 9, the pressure exerted on the last through the rod 11 and support 2 and through the head of the rod 1 is equalized, so that these two parts of the mechanism always remain in the required relative positions.

The lever 16 is provided with a guiding-piece at 18, fitted to slide on a rod 19, mounted on the shaft 94, hereinafter described, the said rod being provided with ratchet teeth or

notches, with which a spring-detent 20, carried on the lever 16, engages to retain the said lever in any desired position and prevent any accidental displacement of the cam 14.

5 The heel-clamp 21 and toe-clamp 22 are arranged, respectively, upon the screw-shafts 23 24, Figs. 2, 3, and 10, in such a manner that by turning the said shafts by means of a wheel 25 to the right or to the left, as the case may
10 be, they can be moved toward or from each other to accommodate lasts of different lengths, the motion from the shaft 23 being transmitted to the shaft 24 through the gearing 26 and shafts 27.

15 Figs. 8 and 9 are two plans of one of the clamps, containing the mechanism for wiping the upper over the heel and toe of the last, the cover-plate being removed to show the internal arrangement of the parts.

20 In a recess in the body 21 of the clamp two bars 28 and 29 are fitted to slide one over the other in the longitudinal direction of the last. A lever 30, pivoted to the heel-clamp at 31, is connected with the lower slide 28 by a pin on
25 the lever engaging with the slide in such a manner that when the lever is moved in the direction indicated by the arrow in Fig. 8 the slide 28 is moved longitudinally toward the center of the machine, and vice versa. Links 32 are jointed at one end to the rear end of
30 the slide 28, the other ends of these links being jointed to two curved slides or arms 33. The links 32 are also connected by two other links 34 to the bar 29, to the forward end of
35 which bar a pair of folding plates or wipers 35 are pivoted. These folding plates are each provided with a slot 36, in which works a pin projecting from the under side of the corresponding curved arm 33. When the lever 30
40 is moved in the direction indicated by the arrow in Fig. 8, the slide 28 is pushed forward in the same direction, thereby transmitting motion through the links 32 to the curved arms 33, and by these latter to the folding
45 plates 35, while at the same time the slide 29 will also be moved forward by the connecting-links 32 and 34, so that the plates 35 are not only caused to move toward one another on their pivot, but are also pushed bodily forward
50 from the position indicated in Fig. 8 to that indicated in Fig. 9, and thereby wipe the projecting edge of the upper-leather over the edge of the last, the said turned-over edge of the upper being then secured to the insole in
55 the ordinary manner. Owing to this double or compound action of the folding plates or wipers 35, the upper is drawn regularly over the end of the last.

60 The heel-clamp or head 21, as clearly shown in the enlarged views, Figs. 3 and 4, is hinged at 37 to a piece 38, so as to be capable of being inclined in a lateral direction to suit any lateral inclination of the heel of the last, and the piece 38 is centered at 39 to lug 40, so as
65 to be capable of tilting or of being inclined in a longitudinal direction by means of the screws 38^x to enable the wiper-plates in the

head to be brought into position to properly act on the upper whatever the shape or spring of the last may be. The lugs 40 are formed
70 on the frame 41, which slides longitudinally in guides 42 in the frame 43, the latter frame being fitted to slide vertically in guide 44 on the main frame of the machine.

The vertical adjustment of the clamp 21 is 75 effected by means of the screw 45, provided with a hand-wheel 46 and working in a nut at 47 in the frame 43. This clamp is maintained in its vertically-adjusted position by means of set-screws 48, and in addition to its
80 vertical adjustment is capable of being adjusted longitudinally, as hereinbefore described, by means of the screw 23. This screw works in a nut 49, supported between vertical guides in the frame 41, as shown in Figs. 85
3 and 10, so as to be capable of moving the said frame 41 longitudinally without interfering with its vertical movements.

The internal arrangement of the toe-clamp or head 22 is the same as that of the heel-clamp 21, so that the description of the internal mechanism of the one is sufficient to explain that of the other. The toe-clamp, however, is not supported in the same way as the heel-clamp, but is hinged, as shown at 50, 95
Figs. 1, 11, and 12, to the slide or frame 51, so as to be capable of being adjusted in a more or less inclined position by means of adjusting-screws 52, Figs. 1 and 2.

The longitudinal adjustment of the clamp 100 22 is effected by means of the screw-shaft 24, which works in a nut or internal screw-thread formed in the slide 51 and receives its motion from the wheel 25 through the gearing 26 and spindles 27, so that by turning this
105 screw 24 the slide 51, together with the clamp 22, will be moved in the direction of the length of the table simultaneously with the clamp 21.

The vertical adjustment of the toe-clamp or head 22 is effected by the screw 77 working in a nut or screw-thread at 78 in the sliding block 79, the end of the screw 77 bearing against or being connected to the frame 51. (See Figs. 1, 11, and 12.) The clamp or head 22 is hinged at 50 to the frame 51, so as to
110 permit of it being tilted or inclined in a longitudinal direction by the adjusting-screws 52 to bring the wiper-plates into position to suit the dip of the toe of the last to properly effect the wiping of the upper over the toe of
115 the last. It will thus be seen that the heel and toe clamps or heads may be adjusted to any desired position vertically and angularly to suit any form of last, so as to insure the proper action of the wiper-plates on the up-
120 per being lasted. Supported by two lugs on the top or covering plate of the clamp 22 is a bolt or pin 53, upon which is fitted to slide a slotted piece or link 54 to the front end of which link is connected a presser 55, the construction of which is shown more clearly in
125 Figs. 13 and 14. This presser consists of a hollow cylindrical piece 56, slotted at its upper end where it is provided with a cam-le-

ver 57. Inside this piece 56 is fitted to slide a rod 58, provided at its lower end with a disk 59, which when in operation is pressed down by the action of the cam 57 onto the insole placed on the last. The piece 56 is provided with an external screw-thread, on which two nuts 60 and 61 are screwed and between which nuts is engaged one end of the slotted piece 54. A plate 62 is fitted to slide up and down the lower end of the piece 56, but without rotating thereon. This plate is held down in its normal position (indicated in Fig. 13) by a spring 63 and is prevented from slipping off the end of the piece 56 by a projecting rim or flange, as shown in the drawing. A horseshoe-shaped or curved piece 64, provided with pin-points or projections 5, is connected by bolts or pins 65 and helical springs 66 to the plate 62, and is maintained at a certain distance therefrom by the springs 66^x.

On the cover-plate of the clamp 22 is centered a lever 67, provided at one end with a wedge-shaped projection, which (when the presser is turned into the position shown in Fig. 1) may, by turning the lever 67, be forced beneath the outer end of the slotted piece 54, and thereby press the plate 64 onto the projecting edge of the "upper" and hold it securely between the points 5 on the said plate and the upper surface of the folding-over plates or wipers 35 of the clamp 22, the springs 66^x permitting of the plate 64 accommodating itself to any inequalities in the thickness of the leather. By turning the cam 57 the disk 59 on the lower end of the rod 58 is pressed down onto the insole, the pressure thereby exerted forcing the last and the support 2 down against the resisting-power of the spring 12, arranged beneath the bar 10, hereinbefore described, and consequently drawing the upper (which is still retained between the plates 64 and 35) tightly above the edge of the toe of the last in readiness for the plates 35 to wipe or draw the said projecting edge over the said toe. To effect this wiping or folding-over of the upper, lever 67^x, Figs. 1 and 2, is turned so as to cause the plates 35 of the toe-clamp to advance, and simultaneously with the movement of the lever 67^x the pressure of the disk 59 is removed from the last by turning the lever 57, and lever 67 is turned so as to withdraw the wedge-piece from beneath the slotted piece 54, and the presser may then be turned on the pin 53 into the position shown by dotted lines in Fig. 1, and the wiping-over of the upper at the toe completed by the continued motion of the lever 67^x. At the front end of the clamp 22 there are pieces 109, Fig. 15, capable of being slid in guides by means of screws 110 and provided at their front ends with pivoted pieces or cheeks 111, which, when the last with the upper thereon is placed in the machine, press the upper firmly against the last and also adjust the position laterally of the toe of the last.

The distance to which the wiper-plates are

permitted to press over the toe of the last may be regulated by an adjustable stop 68, attached to the edge of the clamp or head by the screw 69, and provided with a screw 70, which for fine adjustment of the motion of the wiper-plates may be made to project more or less, as required. The lever 67^x, by which the wiper-plates are operated, is brought into contact with the end of the screw 70 when projecting the plates 35 over the last.

The grips or nipper-wipers which wipe the leather over the sides of the last are illustrated in Figs. 1, 2, 5, and 6, and in detached view, drawn to a larger scale, in Fig. 7. Each consists of a lever 71, a spring 72, and two jaws 73 and 74, the jaw 73 sliding in a guide on a jaw 74. The jaw 74 is connected at the slide 76, so as to be capable of turning horizontally thereon. It is also capable of turning in a vertical direction on a horizontal axis to admit of the jaws engaging the upper. The lever 71 is pivoted at 78 on the jaw 74 and is also connected by the spring 72 to the jaw 73. The front end of the jaw 73 is bent at right angles or provided with a lip which acts against the end of the jaw 74. When the lever 71 is raised into the position shown by dotted lines on the right-hand side of Fig. 5, the jaws separate, the jaw 73 moving in a direction parallel to the jaw 74, and when the said lever is turned down into the position shown by full lines the jaws are brought close together, so as to grip the leather placed between them. The slide 76, carrying the jaws 73 and 74, is capable of sliding in a direction transverse to the longitudinal axis of the last in guides provided in a block 80, which is pivoted at 81 to the block 82^x. The block 82^x, as shown in Fig. 7, is provided with a half-nut 79, engaging the screw-thread on the shaft 27, the said shaft being provided with a right-hand and a left-hand thread, so that when the two spindles 27 on the opposite sides of the last are rotated, which is effected through the gearing 26 when adjusting the heads 21 and 22, the nipper-wipers will be simultaneously moved in the direction of the axis of the last nearer to or farther from each other to suit different lengths of lasts. The slides 76 are connected in pairs by rods 83 to the opposite ends of plates or bars 84, (see Fig. 2,) the latter being pivoted to other bars or plates 85, carried on the upper ends of levers 86, fulcrumed at 87 on the frame of the machine, as shown in Figs. 1 and 5. The lower ends of the levers 86 are operated by cams 90 on a shaft 91, driven by gearing 92 93 from a shaft 94 by means of a hand-wheel 95. When the lower ends of the levers 86 are pushed outward by the cams 90, the upper ends thereof, together with the levers 84 and 85, are moved inward—that is to say, toward the longitudinal axis of the last—so that all the nipper-wipers connected thereto are simultaneously moved in the same direction, and it will be understood that if one of the nipper-wipers come into position to act before the other nipper-wiper,

which is connected to the same plate or bar 84, the latter, owing to its peculiar connection with the said plate, will continue to move onward until it likewise comes into position to act. It will be seen, also, that owing to the connection of the plates or bars 84 with the bars 85, as shown in Fig. 2, when the nipper-wipers connected to one of the bars or plates 84 comes into position to act before those do so which are connected with the other plate 84, the latter will not be prevented from continuing to move forward into position, this arrangement permitting the nipper-wipers to move independently of each other in order to accommodate themselves to the curves of the last. The two cams 90, which operate the levers 86 on opposite sides of the machine, are so shaped and arranged relatively to one another that the two levers 86 move inward and outward simultaneously.

To admit of the shaft 91 rotating after the nipper-wipers on one side of the last have been brought up to the last, and thus prevented from moving any farther in that direction before the nipper-wipers on the opposite side of the last have completed their motion, said shaft 91 is capable of sliding longitudinally in its bearings to a limited extent, so as to complete the motion of the said nipper-wipers. By this arrangement if the shaft 91 be rotated the nipper-wipers on both sides of the machine will be moved toward the center of the last, and assuming, for example, that those on the right-hand side of Fig. 5 arrive at the position of rest before those on the opposite side the lever 86, connected to the former, is prevented from moving any farther in this direction, and as the cam-shaft 91 continues to rotate the now stationary lever, acting on the incline of its cam 90, causes the shaft 91 to slide longitudinally in its bearings toward the left hand. This has the effect of causing the lever and the corresponding nipper-wiper on the left-hand side of the machine to advance at an accelerated rate toward the last. By these means, notwithstanding that both levers 86 are directly connected to one driving-shaft, the said shaft may be driven at a regular and constant speed and continues to act upon one lever, while the other lever remains stationary.

An arrangement of plates, rods, or levers similar to that described for adjusting the horizontal position of the nipper-wipers is employed for regulating the vertical position of the said nipper-wipers, as shown in Figs. 5 and 6. Plates 94^x are fitted to slide vertically in guides 95^x on the inner sides of the frame of the machine, and to the upper end of each plate 94^x is pivoted at 96, Fig. 6, a plate or bar 97, to the opposite ends of which bar are similarly pivoted two other plates or bars 98. The ends of the plates or bars 98 are connected by rods 99 with the hinged blocks 80, so that these blocks, together with the nipper-wipers attached thereto, can be raised vertically by raising the plates 94^x.

The two plates 94^x are connected to a transverse bar 100, which is connected by a rod 101 to a foot-lever or treadle 102, by which the blocks 80 and side nipper-wipers may be raised or lowered, as required. By reason of the jointed connection of the parts with one another, as described and shown, the several nipper-wipers are enabled to adjust themselves relatively to one another on opposite sides of the last as well as the varying curves of the last, and thus the pressure is equalized throughout. The blocks 80 or some of them are provided with means for adjusting them in height relatively to the slides 82, so as to conform to the line of the last. For this purpose, as shown in Fig. 7, a tapped hole is provided through the block 80, in which works a screw 103, the end of which bears upon the upper surface of the block 82^x, so that by turning this screw the block 80 may be raised or lowered, as required, a hole being provided through the slide 76, through which the instrument is passed to turn the screw 103.

The nipper-wiper blocks at 82^x on each side of the last are each provided with half-nuts working on right and left handed screws on shafts 27, so that by rotating the shafts the said slides may be made to approach nearer to or forced farther apart from each other, while the slides 82 have no motion in the longitudinal direction of the last, and the slides 82^x, which, being connected by pieces 103^x, Figs. 1 and 2, to the slide of the toe-clamp 22, partake of the movements of the said clamp.

In order to insure the proper draft on the upper being lasted, I provide the nipper-wiper blocks 80 or some of them with adjustable stops for the purpose of causing some of the said nipper-wipers to cease pulling on the upper, while the other nipper-wipers not thus stopped are permitted to continue pulling in the direction to insure the proper draft.

The means which I have shown in my drawings for effecting this object consists in attaching to the block 80 a projecting bracket 104, Fig. 7, fitted with a screw 105, the end of which screw, when the block 80 is raised, as hereinbefore described, will come into contact with the block 82 sooner or later, according to the extent to which the screw projects from the bracket 104.

The action of the machine is as follows: The last, with the insole and upper thereon, is placed on the supports 1 and 2, and the heel and toe clamps 21 and 22 are then brought up to the last by turning the hand-wheel 25, so that the projecting slide 29 of the heel-clamp 21 overlaps the heel of the last. The swiveling cheeks 111, carried at the front end of the toe-clamp 22, are then brought into contact with the sides of the toe of the last by turning the screws 110 so as to adjust the last in its true lateral position. The presser 55 is then turned from the position shown by dotted lines in Fig. 1 to that shown by full lines in Figs. 1 and 2, and the lever 67 is then turned on its center, so as to bring the wedge-shaped projection

on the end of the said lever beneath the slotted piece 54, thereby forcing the curved plate 64 down onto the edge of the upper, so as to securely hold the same between the said plate and the wiper-plates 35 of the clamp 22. The projecting edge of the upper on each side of the last is then clamped between the jaws 73 74 of the side nipper-wipers, and the adjustable stops 103 and 105 having been properly adjusted the foot of the operator is placed on the treadle 102, so as to elevate the said side wipers, some of the said nipper-wipers ceasing to pull by reason of the stops 105 coming against the blocks 82 or 82^x, while the other nipper-wipers not thus stopped continue to pull on the upper toward the toe of the last or in the direction to produce the proper draft. The wheel 95 is next rotated, so as to cause the nipper-wipers on opposite sides of the last to advance toward the longitudinal axis thereof, the said nipper-wipers adjusting themselves to the varying curves of the said last, as hereinbefore described. The lever 16 is next moved outward, so as to cause the cam 14 to elevate the supports 1 and 2 to the desired extent, after which the lever 57 is turned from the position shown by full lines in Fig. 1 into the position shown by dotted lines, thereby forcing the disk 59 down onto the last, the pressure being such as to force the last into the upper held between the plates 64 and 35 and the jaws 73 74 of nipper-wipers against the power of the spring 12, placed beneath the bar 10, carrying the toe-support 1, the pins or projections 5 on the plate 64 still engaging the upper. The lever 67^x is next turned so as to cause the wiper-plates 35 to advance slightly over the toe of the last and at the same time the lever 67 is turned back to its former position, so as to release the presser 55 and disengage the points or projections 5 from the upper, the said presser being then turned back into the position shown by dotted lines in Fig. 1 to admit of the forward movement by the lever 67^x of the wiper-plates 35, which as they advance draw the upper smoothly over the toe of the last, ready for fixing. The extent of forward motion of the lever 67^x being limited by the adjustable stop 68, so as to limit the distance to which the wiper-plates 35 shall pass over the toe of the last, the side nipper-wipers are prevented from receding from the position to which they are brought by rotating the wheel 95 by a spring detent or dog 107, engaging with the teeth of the pinion 93, by which motion is transmitted to the wipers, as shown in Fig. 6, the said dog admitting of the said wheel rotating in the direction for advancing the said nipper-wipers toward the center of the last, but preventing the said pinion from turning in the reverse direction. The upper being thus turned over the toe and sides of the last, the heel portion of the said upper is next drawn or wiped over the heel of the last by turning the lever 30 so as to cause the wiper-plates 35 in the clamp 21 to advance in a simi-

lar manner to that described with reference to the toe-clamp 22, and while the parts are in the position described the upper is secured to the insole by tacks or otherwise, after which the side nipper-wipers are opened out to release the upper and the other parts of the machine are returned to their former positions, and the last, with the upper thereon, removed in readiness for the reception of another last.

To admit of the side nipper-wipers being withdrawn from the last, the lever 16 is moved inward, so as to cause a projection 113 thereon to press on the tail of the detent or dog 107, and thereby disengage the said detent from the pinion 92.

I have herein shown and described nipper-wiper jaws of peculiar construction, and have also shown and described devices whereby the nipper-wipers may be operated in such manner that some of them are enabled to cease pulling upon the upper, while others continue to pull thereon until the strain is equalized.

I claim—

1. In a machine for lasting boots or shoes, the clamp or head 21, wiper-plates carried thereby, the horizontally-sliding frame 41, upon which it is pivoted, the vertically-sliding frame 43, which guides the frame 41, combined with a screw to adjust the frame 43 vertically, and means to sustain the said screw, substantially as described.

2. In a machine for lasting boots or shoes, the clamp or head 21, wiper-plates carried thereby, the horizontally-sliding frame 41, upon which it is pivoted, the vertically-sliding frame 43, which guides the frame 41, combined with a screw to adjust the frame 43 vertically and means to sustain the said screw, and adjustable stops 48 to determine the descent of the vertically-movable frame 43, substantially as described.

3. In a machine for lasting boots or shoes, the clamp or head 21, wiper-plates carried thereby, the horizontally-sliding frame 41, upon which it is pivoted, the vertically-sliding frame 43, which guides the frame 41, combined with a screw to adjust the frame 43 vertically and means to sustain the said screw, and the screw 23 and nut 49 to adjust the frame 41 longitudinally, substantially as described.

4. In a machine for lasting boots or shoes, the combination, with a last, supports therefor, and a toe clamp or head 22, of the spring 12 for forcing the last against the wiper-plates carried by the said clamp or head, and the presser having a yielding plate connected therewith and provided with points or projections 5 upon its under side to engage the edge of the upper being lasted, substantially as described.

5. In a machine for lasting boots or shoes, the following instrumentalities, viz: two pivoted blocks, supports therefor, a pivoted equalizer, connections extending from opposite sides the center of the equalizer to the said

pivoted blocks, two nipper-wipers carried by the said pivoted blocks, and an adjustable stop 105, co-operating with one of the said blocks, whereby one of the said nipper-wipers may be positively arrested in its upward movement in advance of the arrest of the other of the said nipper-wipers, as and for the purpose set forth.

6. In a lasting-machine, the shafts 91 and 94, gearing to connect them, and the dog or detent 107, combined with the lever 16, adapted to raise and lower the last-supporting rods, whereby when the said lever is turned to lower the last the said dog will be automatically released, substantially as described.

7. In a machine for lasting boots or shoes, the following instrumentalities, viz: two pivoted blocks, supports therefor, a pivoted equalizer, connections extending from opposite sides the center of the equalizer to the said pivoted blocks, two nipper-wipers carried by the said pivoted blocks, an adjustable stop 105, co-operating with one of the said blocks, whereby one of the said nipper-wipers may be positively arrested in its upward movement in advance of the arrest of the other of the said nipper-wipers, and the adjustable stop 103 to adjust the height of the nipper-wipers to conform to different-shaped lasts, as and for the purpose set forth.

8. In a lasting-machine for boots or shoes,

the vertically and horizontally adjustable toe clamp or head 22 and the toe-wipers carried thereby, means for actuating them, an upright mounted on the said clamp or head, a lever 54, a vertically-adjustable post 56, carried by the said lever, and an upper-clamping device to hold the toe of the upper, as described, combined with a lever 57, to operate substantially as set forth.

9. In a lasting-machine, a series of nipper-wipers and devices to move the same vertically, the said devices including an equalizer and connections from its opposite ends, combined with a positively-acting adjustable stop for arresting the vertical movement of one or more of the said nipper-wipers at a predetermined point while others continue to move, to thus limit the amount of draft or upward movement of any one or more of the nipper-wipers to particular parts of the upper, as required, substantially as described.

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

ALBERT EDWARD STIRCKLER.

Witnesses:

JOHN WM. JOHNSON,
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WM. BRAMLEY,
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