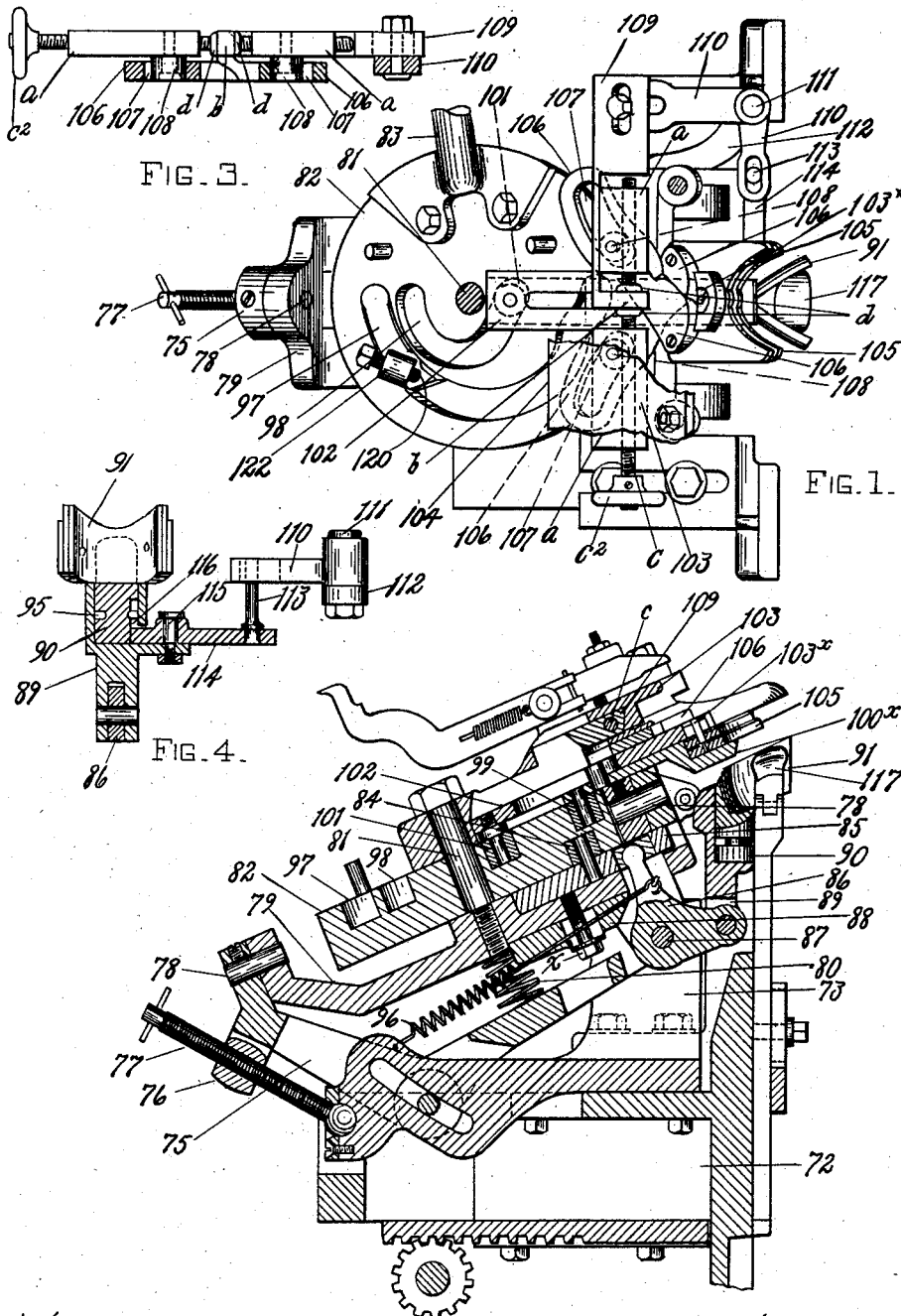


M. BROCK.
LASTING MACHINE.
APPLICATION FILED MAY 24, 1905.

1,021,860.

Patented Apr. 2, 1912.



WITNESSES.

Edith C. Halbrook
Arthur L. Russell.

FIG. 2.

INVENTOR.

Matthias Brock
By his Attorney,
Volsont & Howard

UNITED STATES PATENT OFFICE.

MATTHIAS BROCK, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

LASTING-MACHINE.

1,021,860.

Specification of Letters Patent.

Patented Apr. 2, 1912.

Application filed May 24, 1905. Serial No. 261,977.

To all whom it may concern:

Be it known that I, MATTHIAS BROCK, a citizen of the United States, residing at Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented certain Improvements in Lasting-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to lasting machines and particularly to mechanism for lasting the ends of shoes, and it has for its object to provide novel means for adjusting the end-lasting devices to adapt them to operate uniformly upon lasts of different widths.

The invention is herein shown and described as applied to the type of machines known as the "McKay and Copeland" lasting machines, but obviously it is applicable also to other lasting machines. The end-lasting mechanism of this type of machines comprises a pair of lasting-plates and actuating mechanism for moving the plates longitudinally with relation to the last and also transversely of the last toward each other as they advance over the last, thereby causing the plates to wipe the upper material from the end and adjacent side portions of the last inwardly toward the middle of the last. The position to which the lasting-plates are advanced longitudinally of the last for wiping the upper inwardly from the end of the last is substantially the same for all lasts of a given length regardless of their shape, but the position to which the lasting-plates require to be moved laterally toward each other for wiping the upper from the sides of the last toward the median line of the last varies according to the width of the last, as it is obvious that the lasting-plates must be moved to a position much nearer the median line for properly wiping the upper over a narrow last than is necessary for wiping the upper over a wide last, although substantially the same range of lateral movement is desirable for each last. In view of these conditions I have devised novel means by which the end-lasting mechanism of a lasting machine may be readily adjusted to cause the lasting-plates to operate uniformly upon wide and narrow lasts. This provision for adjust-

ment of the end-lasting mechanism to adapt the lasting-plates to act uniformly on different widths of lasts is of particular importance in lasting Goodyear or welt shoes, in which the innersole is provided at a short distance inwardly from the edge with an upstanding rib or lip against which the upper material is required to be fitted accurately by the lasting-plates in order that it may be secured to said lip in a subsequent operation. It is, therefore, very essential for the best results in lasting this class of shoes that the machine be so organized that the lasting-plates, when actuated over the bottom of the last, may be caused to occupy substantially the same final inward position relatively to the last in operating upon lasts of different widths. To this end provision is made, according to this invention, for adjusting the lasting-plates so that they shall be moved inwardly the same distance over the bottoms of lasts of different widths and the same length while being moved to the same positions with reference to the length of said lasts, whereby the upper may be wiped over uniformly against the lip of the innersole of shoes of different widths and the same length. Preferably, and as herein shown, means is provided for effecting an adjustment of both the lasting-plates simultaneously and for insuring the same adjustment for both lasting-plates or any predetermined adjustment for each lasting-plate.

In the machine herein shown to which the invention has been applied the lasting-plates are actuated longitudinally of the last by one means and are actuated laterally toward and from each other by other means controlled by the same operating cam. In this embodiment of the invention the actuating means for moving the lasting-plates laterally is arranged for adjustment relatively to the actuating means for moving the plates longitudinally. In this adjustment, as herein shown, the initial lateral positions of the lasting-plates with relation to the median line of the machine and last are changed.

I have shown my invention as applied to mechanism for lasting the toe ends of shoes, but it may of course be applied also to heel-lasting mechanism.

A further feature of my invention consists in providing a stop for limiting the dis-

tance which the lasting-plates may be actuated over the last bottom. The stop is preferably adjustable and arranged to be engaged by a member of the actuating mechanism for the plates, herein shown as a hand operated lever. The stop provides an abutment against which the operator may move the lever at each operation for causing the lasting-plates to force the upper the required distance over the last bottom.

Another feature of the invention consists in the combination with means for varying the movements of the lasting plates whereby they may be made to operate in substantially the same way on lasts of different widths, of means for adjusting the lasting-plates into alinement with the portion of the last to be acted upon. This permits the lasting-plates to act in substantially the same way upon right and left lasts or upon lasts otherwise shaped to present at their ends different lines or inclinations, as, for example, differences in swing. This adjustment of the lasting-plates into alinement with the portion of the last to be acted upon may be effected by any desired means and may be accomplished either automatically or otherwise. I have herein shown a convenient mechanism for automatically adjusting the plates into alinement with the portion of the last to be embraced by them. This combination of lasting-plates having provision for adjustment into alinement with the end of the last presented to them, and means for varying the movements of the lasting-plates whereby they may be made to act uniformly upon lasts of different widths is a very important feature of my invention for it enables the same machine to operate properly upon lasts of widely different shape.

Other features of the invention, including certain details of construction and combinations of parts, will be hereinafter described and pointed out in the claims.

Figure 1 of the drawings shows a plan view of a toe-lasting mechanism with my improvement applied thereto. Fig. 2 is a central longitudinal section of Fig. 1. Fig. 3 is a front elevation of the adjusting mechanism, the slotted cam plates of the mechanism for laterally moving the wiper plates being shown in section. Fig. 4 is a detail view of means for adjusting the lasting mechanism into alinement with the last.

The lasting mechanism to which I have shown my invention as applied is the same in most respects as the toe-lasting mechanism shown in my prior United States Letters Patent No. 601,933, of April 5, 1898, to which reference may be had for a more complete description of this mechanism and for a full understanding of the entire lasting machine.

The end-lasting mechanism is supported upon a base 72 provided with standards 73,

between which is mounted upon trunnions, not shown, the tipping-plate holder 75 provided at its rear end with a swivel-nut 76 in which is threaded the adjusting screw 77. The screw is held at its lower end in the base 72 and may be operated for tipping the plate holder 75 about its connection with the standards 73 to accommodate the end-lasting mechanism to the varying degrees of longitudinal curvature of the bottom of lasts. The plate holder has at its front and rear ends upstanding arms provided with pivot studs 78 upon which the tipping-plate 79 is mounted. The tipping-plate rests at opposite sides of its longitudinal axis upon springs 80, one of which is shown in Fig. 2, and which act yieldingly to hold the tipping-plate normally in a balanced position but permit it to be tipped or rocked laterally by the operator as the work presented may require.

The tipping-plate has an upstanding boss upon which rests the operating cam 82, shown as disk-like in form, and movable about the pivot pin 81 by means of a handle 83. At its under side the cam 82 is provided with a groove which receives a roller stud 84 on the longitudinally sliding block 85. The block 85 is slotted at its right-hand end to receive the vertical arm of an elbow lever 86 which is pivoted at 87 in the depending fork of a plate 88 secured in adjusted position by a bolt *x* on the under side of the tipping-plate 79. The horizontal arm of said elbow lever 86 is connected to the lower end of a post 89, shown as socketed at its upper end to receive rotatably the shank 90 of the U-shaped spring clasp or end-wiper 91, which through the described connections is raised by the operating cam to wipe the upper material upwardly along the toe portion of the last as will be more fully explained. A spring 96 is connected at its forward end to the vertical arm of the elbow lever 86 and at its other end is secured to the base 72 and tends to hold the lever and end-wiper normally in the position shown in Fig. 2. The operating cam 82 is further provided on its upper side with two cam grooves 97 and 98, the groove 97 receiving the roller stud 99 on the lower side of a thin slide, the forward or right-hand end of which constitutes an abutment 100^x against which the toe of the shoe is positioned preparatory to its being lasted. This abutment is retracted by the operating cam 82 as said cam is turned for lifting the end-wiper 91 and actuating the lasting-plates, thus withdrawing the abutment from the path of the end-wiper as the latter is raised. The inner cam groove 98 receives the roller stud 101 on the under side of the slide 102, which is arranged in suitable guideways on the under side of the cover plate 103, shown in Fig. 2 but omitted from Fig. 1 in order better to disclose other

parts. To the front or right-hand end of the slide 102 are pivoted at 103* the lasting-plates 105, which are thus advanced longitudinally of a last in the machine when the cam disk is turned by the handle 83.

The lasting-plates 105 have rigidly secured to their upper sides cam plates 106 which cross each other, as shown in Fig. 1, and are diagonally slotted or grooved at 107 to receive roller studs 108 depending from blocks *a, a* carried by a bar 109. The roller studs 108 are normally stationary and constitute actuating means coöperating with the cam grooves as the lasting-plates are advanced, for moving the lasting-plates laterally toward each other. This lateral movement of the lasting-plates is produced by turning them angularly about their pivot 103* and causes said plates to wipe the upper material toward the median line of the last. It will thus be seen that the lasting-plates are actuated both longitudinally and transversely of the last for wiping the upper from the end and sides of the toe or heel portion of a last toward the middle of the last. As herein shown, the bar 109 is arranged for movement transversely of the machine in a guideway in the cover plate 103, and one end of said bar is connected with the slotted end of one arm of a bell-crank lever 110 pivoted at 111 to a bracket 112 on the tipping-plate 79. The other arm of this lever 110 is slotted to receive a stud 113 fast on the outer arm of a lever 114, fulcrumed at 115 on a laterally extended arm of the post 89 in which the end-wiper is socketed. The other arm of the lever 114 is engaged in a vertical slot 116 in the side of the shank 90 of the end-wiper 91. This arrangement is such that any turning movement of the end-wiper 91 communicates to the transversely sliding bar 109 an endwise movement and, through the depending studs 108 standing in the grooves of the cam plates 106, shifts the cam plates and the attached lasting-plates 105 together about their pivotal connection 103* with the operating slide 102. These connections are so arranged and proportioned that the lasting-plates will be moved together, by means of the end-wiper, about their pivot 103* in the same direction and substantially to the same extent that the end-wiper is moved, so that the lasting-plates are shifted automatically into alinement with the portions of the last embraced by the end-wiper. The shoe is supported with its toe end resting on toe pad 117 and positioned against the abutment 100*. The groove 84 in the operating cam 82 is shaped to retract the slide 85 and rock the elbow lever 86 in the direction to raise the end-wiper against and along the toe end of the shoe for wiping the upper material smoothly about the edge of the toe portion of the last at the same time that the

lasting-plates are advanced and turned for forcing the upper over the edge of the last and inwardly toward the middle of the last bottom. If the last is so shaped that the outline or contour of its toe portion does not correspond in its alinement or position with the alinement or position of the end-wiper 91 as the latter is raised, then said end-wiper as it rises will, when it contacts with the shoe, turn to the right or the left to adapt itself to the position of the end of the last. In so doing the end-wiper acts through the levers 114 and 110 to move the transversely sliding bar for shifting the lasting-plates 105 about their pivot 103* together in the same direction into such positions that the working edges of said lasting-plates are in substantial alinement with the sides of the end of the last.

The mechanism above described constitutes one means for effecting a relative adjustment between the lasting-plates and the adjacent end of the last to bring said lasting-plates into alinement with the end of the last. Any other suitable means may be employed for moving the lasting-plates into alinement with the portion of the last to be acted upon by them. The portions of the end lasting mechanism thus far described are substantially the same as are shown in said prior patent with the exception of the particular construction of the bar 109 and blocks *a, a*.

In that embodiment of the present invention which is herein shown the adjustment of the end lasting mechanism to adapt it for wide and narrow lasts is effected by changing the relative positions of the blocks *a, a* and thereby shifting the roller studs 108 in the cam grooves 107 and so adjusting the lasting-plates 105 angularly about their pivot 103*. To this end the bar 109 is formed with a bearing *b*, see Figs. 1 and 3, to receive the smooth portion of a rod *c* which is held against longitudinal movement in said bearing by collars *d, d*. The rod *c* is oppositely screw-threaded upon its end portions to receive the blocks *a, a* and adjust said blocks simultaneously in opposite directions. The rod is provided on one end with a small hand wheel *c*² by which it may be readily turned for adjusting the blocks *a, a* and the studs 108. Movement of the studs toward each other acts through the cam slots 107 in the lasting-plates to turn the plates about their pivot 103* thereby adjusting said lasting-plates angularly toward each other to adapt them to operate upon a relatively narrow last. Movement of the studs in the reverse direction turns the lasting-plates for adjusting them angularly away from one another to enlarge the space between the acting edges for accommodating a wider last. Preferably the screw threads on the two ends of the rod will be of

the same pitch whereby the blocks and their studs will be moved through the same distances for adjusting the lasting-plates equally; but obviously the screw threads might be of different pitch if found desirable and then the lasting-plates would be adjusted thereby to predetermined different degrees.

It will be understood that while the adjustment of the lasting-plates by means of the rod *c* moves them angularly about the pivot 103^x toward or from each other to vary their relation to the median line of the last, this adjustment does not disturb their connection, at the pivot 103^x, with their operating slide 102 and the operating cam 82. The pivot 103^x and the lasting-plates will therefore be advanced by said operating means through the same distance and to the same point for wiping the upper longitudinally backward from the end of the last, whatever may be the angular adjustment of said plates. The cam slots 107 present approximately regular curves, and inasmuch as the longitudinal or advance movement of the lasting-plates relatively to the cam slots remains the same, as above stated, the range or extent of the turning movement of the plates is always substantially the same for wiping the upper inwardly from the sides toward the median line of the last. This turning movement, however, takes place between different limits and these limits may be accurately determined for any width of last so that the upper will be wiped over the last bottom the desired distance, this distance being the same at the end as at the sides of the last or different, as may be found best adapted for the class of work being lasted.

It is desirable to provide means for limiting the movement of the lasting-plates over the last bottom and I have herein shown the operating cam 82 as provided with a stop 120 which is adjustably mounted in a boss 122 on the cam in position to engage a face 104 on the cover plate 103 when the operating handle and cam have been turned far enough to move the lasting-plates over the last the desired distance. When the stop is properly set for a given size of shoe the operator may turn the cam until the stop strikes the face 104 at each operation of the machine and is relieved of the necessity for exercising judgment as to the extent of turning movement required for properly wiping the upper over on each shoe.

In the operation of the machine herein shown as embodying the invention the shoe to be lasted is supported with its forepart upon the toe rest 117. The operator observes the shape of the last and if it is a style having a different width from that of the last for which the lasting-plates are set,

he adjusts said plates toward or from each other, according as the last is narrower or wider than that for which the plates were set. The adjustment is effected by manipulating the screw *c*, which, by moving the cam studs 108 in opposite directions in the cam slots 107, effects an angular movement of the lasting-plates about their pivotal connection at 103^x with the slide 102. The operating cam 82 is now turned by means of the handle 83 and the end-wiper 91 is lifted to embrace the end of the last and is turned by the shoe about the axis of its stem 90 according to the direction in which the end of the shoe faces. The end-wiper acts through the levers 114 and 110 to shift the studs 108 together in the same direction in the cam slots 107 and thereby turn the lasting-plates into alinement with the end of the last. Simultaneously with the lifting of the end-wiper the lasting-plates begin to be moved by their actuating mechanism, which includes the operating cam 82 and the slide 102 by which the advance movement of the plates longitudinally of the last is effected, and the stud 108 and slotted cam plates 106, by which the turning movement of the plates transversely of the last is simultaneously effected. The lasting-plates are actuated forwardly and laterally toward each other at the same time and wipe the upper materials inwardly over the edge of the last and toward the middle of its bottom face into position to be secured to the innersole on the last bottom by any usual manner. If the shoe being lasted is a Goodyear shoe the upper materials will be pressed by the lasting-plates against the upstanding lip of the innersole and said plates will have been adjusted so that when in their advanced and closed position they will press the upper firmly against the rib at the sides and at the end of the innersole without overriding the rib at any point. The several parts of the mechanism will be restored to their starting position by a reverse movement of the operating cam.

Having disclosed the nature of my invention and fully described a preferred construction embodying the several features thereof, I claim as new and desire to secure by Letters Patent of the United States:—

1. In a lasting machine, the combination of lasting plates movable over the bottom of the last and arranged for movement relatively to the last to adapt themselves to the swing of a right or a left last, with means for actuating said plates longitudinally and transversely of the last, including cam arms connected to the lasting plates and rolls for controlling the positions of the cam arms, and means by which one of said last mentioned movements can be varied without necessarily varying the other movement.

2. In a lasting machine, the combination

with lasting-plates movable into alinement with the portion of the last to be acted upon, and actuating mechanism including cams and coöperating rolls for moving said plates inwardly over the bottom of a last, of adjusting means for the rolls for causing said plates to occupy substantially the same final inward position relatively to the last in operating upon lasts of different widths and the same lengths.

3. In a lasting machine, the combination with lasting-plates for wiping upper material from the opposite sides of an end portion of a last longitudinally and transversely toward the middle of the last, and means for actuating said lasting-plates, of a stop arranged for adjustment for variably limiting the movement of said actuating means to arrest the lasting plates in predetermined relation to the edge of shoes of different sizes.

4. In a lasting machine, the combination with lasting-plates for wiping upper material from the opposite sides of an end portion of a last longitudinally and transversely toward the middle of the last, actuating means for the lasting-plates, and means for limiting the movement of said actuating means, of adjusting means for varying the initial positions of the lasting-plates whereby they will be moved inwardly to different positions by said actuating means.

5. In a lasting machine, the combination with lasting-plates, a mechanism including cams connected with the lasting plates and coöperating cam rolls for actuating said plates longitudinally of the last and transversely toward the median line of the last, of means for varying the limits of the last-mentioned movement without substantially changing the movement longitudinally of the last.

6. In a lasting machine, the combination with a pair of pivoted lasting-plates for wiping the upper material over the end portion of a last, means for moving said plates in the same direction about their pivots into alinement with the end portion of the last, and means for actuating said plates over the last, of other means for adjusting said lasting-plates about their pivots in opposite directions to adapt them to the width of the last while the position of the plates lengthwise of the last remains substantially unchanged.

7. In a lasting machine, the combination with lasting-plates and actuating mechanism therefor comprising an operating cam and intermediate connections for advancing the lasting-plates longitudinally of the last, and cam plates and studs for turning the lasting-plates as they are advanced; of means to adjust said cam plates and studs relatively for initially positioning said last-

ing-plates at varying distances apart to accommodate lasts of different widths.

8. In a lasting machine, the combination with a pair of pivotally mounted lasting-plates and actuating means therefor comprising a pair of cam plates and a pair of coöperating cam studs, of means for relatively adjusting said cam plates and studs for varying the angular positions to which the lasting-plates will be moved thereby.

9. A lasting machine having, in combination, lasting plates, arms connected with said plates and provided with cam slots, cam rolls arranged in said slots, and means connected with said cam rolls and arranged for simultaneous adjustment of the cam rolls in opposite directions to position the wiper plates for operating upon wide and narrow shoes.

10. A lasting machine having, in combination, the wiper plates pivotally connected and having rearwardly extending crossed arms provided with oppositely inclined cam slots, rolls arranged in said slots, the supports upon which the rolls are mounted for simultaneous adjustment in opposite directions, and the screw shaft for effecting such adjustment.

11. A heel lasting machine having, in combination, wiper plates connected together and to an actuator at a common center, means by which said actuator may be moved to advance the wipers, additional means for closing the wipers and adjusting devices coöperating with said additional means for initially positioning the wipers apart in accordance with the width of the shoe to be lasted.

12. A heel lasting machine having, in combination, wiper plates connected together and to an actuator at a common center, means by which said actuator may be moved to advance the wipers, additional means including rearwardly extending arms having cam surfaces and rolls coöperating with said cam surfaces for closing the wipers, and means for simultaneously adjusting said additional means to position the wipers for operating on shoes of different widths.

13. A lasting machine, comprising wipers and means for actuating them transversely of the last, combined with means for adjusting the actuating means to position the wipers initially at different distances apart and other means for operating the wipers, said machine having provision for arresting the movement of the wipers effected by their operating means at a predetermined point which may be varied independently of said adjustment.

14. In a lasting machine, the combination with lasting plates for wiping upper materials inwardly from the opposite sides of an end portion of a last, a cam disk opera-

tively connected with said lasting plates, a lug formed on the cam disk, and a stop adjustably mounted in said lug for limiting the movement which may be imparted to the
5 lasting plates over the last.

15 15. A lasting machine having, in combination, a toe pad or clasp and toe wipers, means for relatively positioning the pad and wipers for operation on a shoe, operating means for
10 moving the pad and wipers together to effect a lasting operation, and means controlled by the movement of said operating means for releasing the pad from engagement with the shoe.

15 16. A lasting machine having wiper plates, operating means therefor, a pad adapted to be clasped about one end of a shoe, means additional to the wiper operating means for relatively shifting the pad
20 and wipers, and means controlled by movement of the wiper operating means for releasing the pad from engagement with the shoe.

25 17. A lasting machine having wiper plates, operating means therefor, a pad adapted to be clasped about one end of the shoe, means additional to the wiper operating means for relatively shifting the pad and wipers, and means controlled by the move-
30 ment of the wiper operating means for releasing the pad from engagement with the shoe.

35 18. A lasting machine having wiper plates, a carrier for each plate, actuating devices to impart to said plates a combined forward and closing movement, said machine having provision for effecting adjustment of the wiper plates independently of the normal operating movements and including po-
40 sition controlling pins and means for mov-

ing said pins to adjust the plates for wide and narrow lasts.

19. A lasting machine having wiper plates, means for imparting to said plates a forward movement combined with a closing
45 movement about a center located adjacent to their acting edge, and means for adjusting said plates about said center independently of their forward movement and comprising position controlling pins coöperating
50 with each plate, and means for adjusting said pins.

20. In a bed lasting machine, the combination with wiper carriers, of wiper plates thereon, means including pin and curved
55 slot connections for locating said plates, actuating means for imparting a combined closing and advancing movement to the wipers, and additional means for effecting relative adjustment of the pin and the
60 slotted member to position the wiper plates without advancing them.

21. A lasting machine having wiper plates, means for imparting to said plates a forward movement combined with a closing
65 movement about a center located adjacent to their acting edge, and means for adjusting said plates about said center independently of their forward movement and comprising position controlling pins coöperating
70 with each plate, and means for adjusting said pins.

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

MATTHIAS BROCK.

Witnesses:

ARTHUR L. RUSSELL,
WELLS L. CHURCH.