

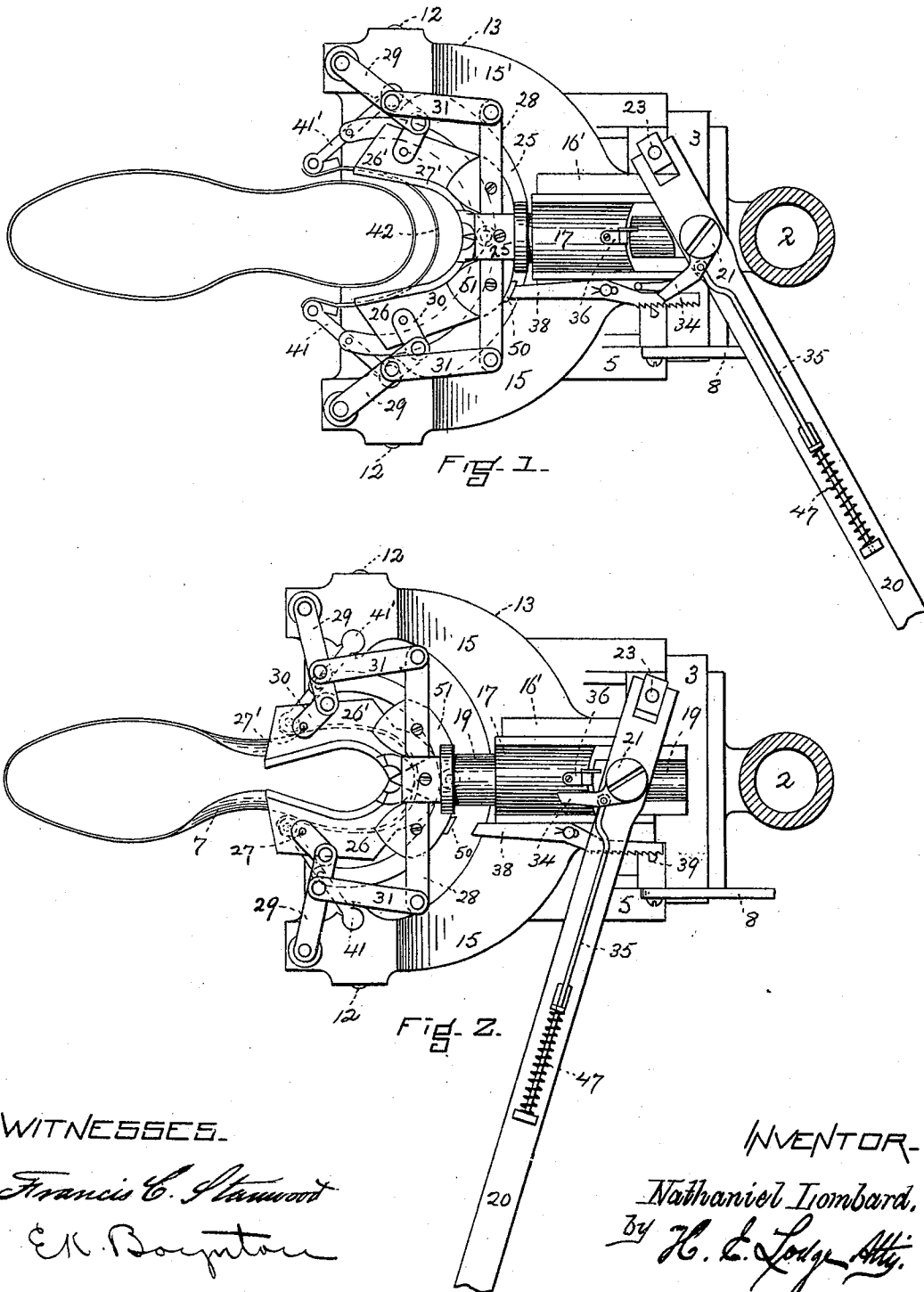
(No Model.)

3 Sheets—Sheet 1.

N. LOMBARD.
LASTING MACHINE.

No. 507,551.

Patented Oct. 31, 1893.



WITNESSES.

Francis C. Stanwood
Ex. Bayntun

INVENTOR.

Nathaniel Lombard.
by H. C. Lodge Atty.

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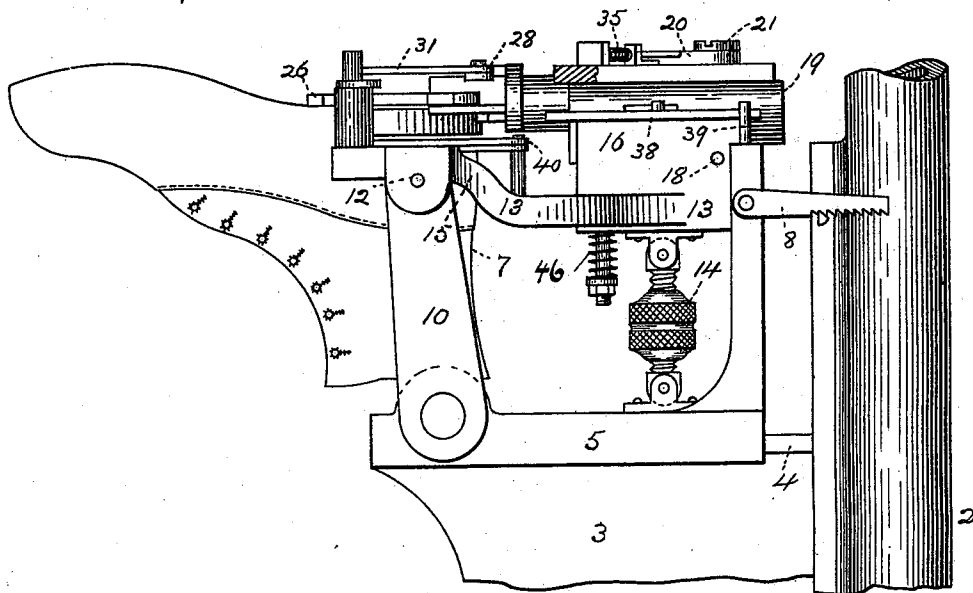


Fig. 3.

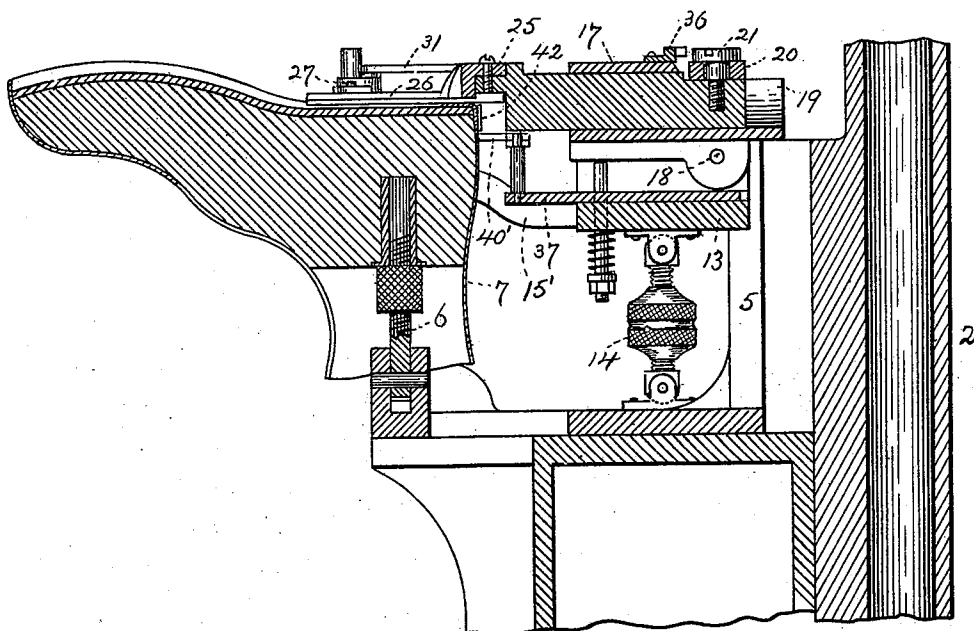


Fig. 4.

WITNESSES.

Francis C. Stanwood
E. K. Doughton

INVENTOR.

Nathaniel Lombard.
by H. E. Lodge Atty.

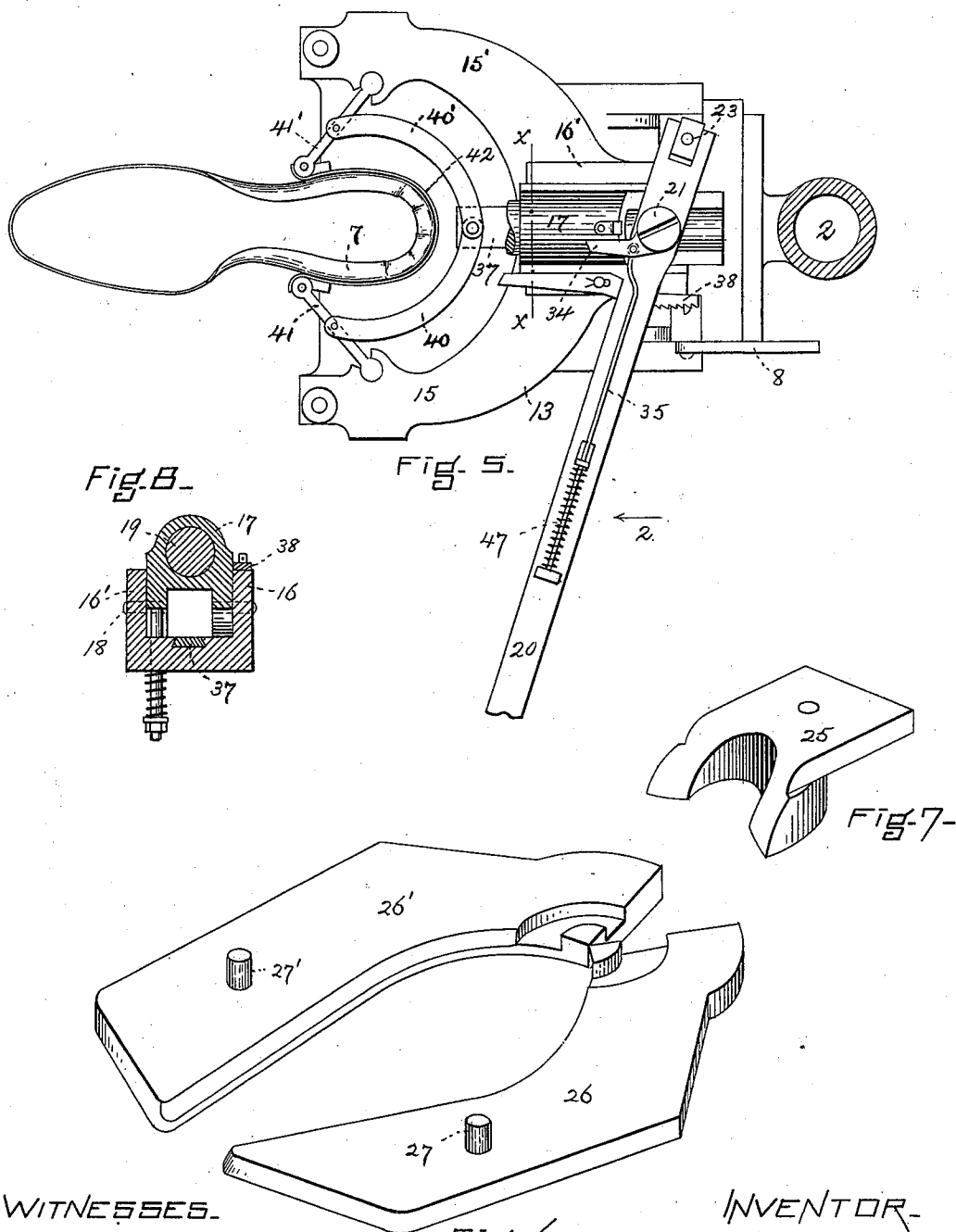
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Francis E. Stearns
E. K. Baynton

INVENTOR.

Nathaniel Lombard.
W. C. Lodge Atty.

UNITED STATES PATENT OFFICE.

NATHANIEL LOMBARD, OF BOSTON, MASSACHUSETTS.

LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 507,551, dated October 31, 1893.

Application filed June 15, 1893. Serial No. 477,641. (No model.)

To all whom it may concern:

Be it known that I, NATHANIEL LOMBARD, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Heel-Lasting Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to lasting machines, particularly to improvements in the mechanism by which the heel and toe portions of the upper are properly crimped and folded over upon the last at these particular portions.

The object of my invention is to simplify and reduce the various co-operating elements to a minimum, and further to enable the entire act of lasting, including the several steps of holding, crimping, drawing and folding of the upper about and over the last to be effected by a single lever, preferably hand operated.

In the description of my invention I have shown only such mechanism as would be required to last the heel portion of the upper, but as the mechanism for lasting the toe portion is merely a duplicate I have omitted all mention and description as likewise of such mechanism as is necessary to last the shank and side portions.

The drawings represent in Figure 1 a plan of heel lasting mechanism embodying my invention, showing the parts in their inactive positions and prior to the act of lasting. Fig. 2 is a plan showing the parts in their respective positions just as the act of lasting is completed. Fig. 3 is a side view in elevation of the machine. Fig. 4 is a longitudinal section of a heel lasting machine under my invention. Fig. 5 is likewise a plan showing the parts in position after the act of lasting, the wipers having been removed. Fig. 6 is a perspective view of the wipers enlarged. Fig. 7 is a similar view of the pivot of said wipers. Fig. 8 is a cross section of the piston and its cylinder on line X^x.

In said drawings I have indicated at 2 a

portion of an upright post supporting a platform 3, with guides 4 on which slides a carriage 5. Upon the latter is mounted the jack 6 with the last and upper 7, as also the lasting mechanism proper. The purpose of the sliding adjustment of the carriage is to enable the workman to place the last in the desired position with respect to the lasting mechanism, viz: the side, as well as the heel and toe, and to provide for long or short lasts. A toothed bar 8 adapted to engage the post 2 serves to lock the carriage and thus hold the last in any desired position with respect to the lasting mechanism, considered as a whole.

The lasting instrumentalities in my present invention consist primarily of a pair of independent rocker arms 10, pivotally attached to the front end of the carriage, while the upper extremities support upon the fulcrum points 12 a swinging semi-circular frame 13, which is upheld at the rear end by a screw-threaded sleeve 14 likewise provided with rocking movement. By turning this sleeve the rear end of the frame can be raised or lowered. This adjustment is intended to bring the wipers in such position as will enable them to pass over the heel of the last with a sliding movement. From the manner of mounting this frame 13 it will be understood that it is adapted to move in right line movement to and fro with respect to the last. This swinging frame as shown in plan view, Figs. 1, 2, 5, is made up of two curved arms 15 15' adapted to span the heel of the last. Furthermore upright plates 16, 16' (Fig. 3) serve to retain a cylinder 17 having a transverse pivot 18; within this cylinder, open at both ends, reciprocates a piston 19, which is adapted to be operated and controlled by a hand lever 20, pivoted at 21 with its fulcrum point at 23 upon the carriage. This fulcrum consists of a rectangular post, while the end of the lever is formed to engage it. Hence elevation or depression of the free end of said lever, permitted by the relation of the parts, will produce axial rocking of the piston, the lever being free to slide upon the fulcrum post.

The front end of the piston is shouldered to serve as a stop in its retreat movement, while a pivot plate 25, shown in detail in Fig. 7 is attached thereto. This pivot plate 25 acts as

the center about which the wipers, 26, 26' move after the manner of scissors and transversely across the heel of the last. Said wipers comprise two similar pieces of flat metal, curved on the edges adjacent to the last that they may conform approximately to the periphery of the latter. To actuate said wipers, studs 27, 27' are inserted in the upper side and connect with a compound leverage system, consisting of a primary lever 28, transversely of the end of piston and affixed thereto. A toggle made up of the arms 29, 30 and a connecting rod 31 from the extremity of the primary lever to the long arm 29 of the toggle complete the system, it being understood that one end of the toggle arm 29 is pivoted upon the arm 15 of the frame 13.

In connection with the hand lever 20 is a latch 34, controlled by a spring rod 35, and arranged to engage a lug 36 on the cylinder. Normally the spring 47 keeps the latch from engagement with the lug 36, so that the lever 20 may operate the wipers to move the latter, either longitudinally of the last or rock them transversely thereof, while the swinging frame, the cylinder and parts attached are permitted to remain stationary. When the latch 34 is forced into engagement with the lug, the frame 13, cylinder 17 and all the last-ing instrumentalities are compelled, by means of the lever, to advance in direction of the heel, while a toothed catch 38, which engages a post 39 placed on the carriage, serves to hold the frame 13 with its several instrumentalities in any position desired, and fixed with respect to the last.

In the process of lasting the heel, it is requisite that the upper should be firmly held against the last prior to active operation of the wipers in order to prevent the upper from moving when said wipers are drawing and crimping the upper over upon the last. To accomplish this I mount a plate 37 centrally in the frame 13, and affixed upon an upright pin in the end nearest the last are twin operating rods 40, 40', curved as shown: these rods are fastened to levers 41, 41', the fulcrum ends of the latter being pivotally mounted in the extremities of the frame 13, while the free ends support a flexible metallic clamping band 42. As shown in Figs. 3 and 4, the relative positions of the clamping band 42 and its operating parts are below the wipers and lasting elements proper, since the band is adapted to seize the upper and hold it firmly against the last prior to the act of lasting itself. In addition to this function of closing the ends of the clamping band 42 against the last, the operating rods 40, 40' serve to center said band, that is, to bring the middle of the band coincident with the central longitudinal axis of the last; hence the upright pin to which they are pivoted is likewise in said plane.

Having thus described the various instrumentalities, which as an assemblage, compose a heel lasting machine under my invention,

I will now proceed to explain several movements relatively in such mechanism and their manner of co-operation during the act of lasting. The several component parts are presumably as in Fig. 1; while the last with its upper has been placed upon the jack. On the supposition that the mechanism is not suitably positioned the carriage with all the apparatus upon it is either advanced or withdrawn until the last is properly situated, and the toothed bar 8 then holds said carriage firmly locked. This act completed, the screw-threaded sleeve 14 is moved to elevate or depress the frame 13 in order to properly position the wipers with respect to the top of the last. These adjustments completed the act proper of lasting is now in order; grasping the lever 20 the operator, by means of the rod 35 causes the latch 34 to engage the lug 36 on the cylinder. A movement of this lever in direction of arrow 2 compels the frame 13 to advance carrying with it the lasting appurtenances, together with the plate 39, the operating rods 40, 40' and the clamping band 42. As soon as the latter contacts against the upper and last, the central part is compelled to stop while slight farther advances of the frame actuates the levers 41, 41' and the extremities of said clamping band are forced inwardly against the last, binding the upper forcibly against said last. The frame 13 and the band are now held fixed and rigid by means of the tooth catch 38. The final step in the act of lasting now occurs; the operator releases the latch 34 from the cylinder, and continues to advance the lever 20 still farther in the direction of arrow 2. This movement results in leaving the frame and cylinder locked and stationary, as before stated, while the piston carrying the wipers advances toward the heel of the last. The wipers, as before premised by means of the adjustment effected by the sleeve 14, are approximately in position to pass over the heel, but to render this movement positive, the cylinder being independently pivoted at 18 allows them to pass over the heel of the last with a folding wiping action, while a spring 46 holds them down thereagainst and its pressure acts to press the edge of the upper snugly upon the top surface of the last. The forward movement of the lever continues, when by the action of the system of levers and pivot plate 25, the wipers are brought inwardly with a movement very similar to that effected by the hand, while at the same time an up and down rocking of the lever oscillates the piston and said wipers transversely across the heel to break the upper down upon the last. The lever may be retracted slightly and then advanced in order to repeat the step by which the crimping and folding down of the upper upon the last is produced in order to render it more effectual and complete. The edge of the upper is now tacked, and the process is fully completed, and this by means of a single lever in the hands of the operator. In order to

release the last with the upper, the lever 20 is reversed in its movement, and thereby the wipers are withdrawn from the last, while the retreat of the piston carries a boss 50, formed on a plate 51 which covers the rear of the wipers, against the smooth end of the toothed catch 38, to trip the latter when the swinging frame with the cylinder, its piston, the wipers, and the clamping band, are all moved back until they again assume the relative positions as shown in Fig. 1.

What I claim is—

1. In a lasting machine, a sliding carriage, a swinging frame thereupon, a pivotally mounted cylinder in said frame, and a flexible band to clamp the upper, combined with a piston, lasting instrumentalities carried by said piston, a single operating lever, and mechanism which interconnects the piston, cylinder, and lever, whereby said lever is adapted to advance the cylinder, and slide or oscillate the piston in the act of lasting, substantially as explained.

2. In a lasting machine, the combination with a sliding carriage, locking mechanism therefor, a tilting frame, rocker arms secured to the carriage and which support said frame, and a screw-threaded sleeve to adjust said frame, of a cylinder transversely pivoted upon the frame, a reciprocating piston, wipers carried by said piston, and means by which the wipers are simultaneously actuated upon reciprocations of the piston, substantially as specified.

3. In a lasting machine, the combination with a sliding carriage, its locking mechanism, an adjustably swinging frame, a lever for actuating said frame, a clamping band, and mechanism carried by said frame, to force the ends of the band simultaneously against the upper at the time the lever is operated to swing the frame, substantially as stated.

4. The combination with a sliding carriage, a swinging frame, and mechanism for locking the frame, of a cylinder pivotally mounted upon the frame, a piston adapted to slide or oscillate therein, lasting appurtenances carried by said piston a single operating lever, and means to cause said lever to engage with or be disengaged from said cylinder, substantially as set forth.

5. In combination with a flexible clamping band, mechanism for forcing said band against the upper, a pair of folding wipers, and a piston which carries said wipers, a tilting cylinder, means for supporting said cylinder, a single operating lever 20, mechanism for locking said lever with the cylinder to produce advance movement of the cylinder and closing together of the wipers, as likewise mechanism for freeing the lever from the cylinder to allow oscillations of the piston and wipers, substantially as and for purposes described.

6. In a lasting machine, the combination with a swinging frame, a sliding bar thereupon, and a flexible clamping band, of the equalizing levers which secure the extremities of said band to the swinging frame, the connecting levers which unite the sliding bar to the equalizing levers and means for producing movement of the frame to cause the flexible band to clasp the upper, substantially as stated.

7. In a lasting machine a swinging frame, a pivotal cylinder thereupon, a piston adapted to carry wipers, and a single operating lever 20 pivoted to the piston and having a fixed fulcrum point, combined with a latch to lock the lever with the cylinder to advance the latter and clamp the band, mechanism for holding the cylinder in a fixed position, and means for freeing the lever from the cylinder to permit independent movement of the piston and closing of the wipers by the aid of said lever 20, substantially as explained.

8. In a lasting machine a swinging frame, a pivotal cylinder, a piston, and a pair of wipers carried by said piston, combined with a single operating lever adapted to advance the frame, the cylinder, and piston as a unit, and mechanism to release the lever to allow the frame and cylinder to remain stationary but to permit reciprocations or oscillations of the piston, substantially as described and stated.

9. The combination with a fixed last, a swinging frame, and a piston, of a pair of wipers or lasting tools pivotally hung upon the piston, a toggle which unites the free ends of said wipers to the rocking frame, connecting rods from the piston to the toggle, and mechanism to actuate the piston to cause the wipers to close, or to close and oscillate, substantially as specified.

10. In a lasting machine a cylinder pivotally mounted upon a swinging frame, a piston loose in said cylinder and adapted to carry wipers or lasting tools, combined with a lever secured to the piston, and a fixed fulcrum point for said lever, the latter being loosely attached to said fulcrum and to allow the lever to swing in vertical or horizontal planes, substantially as set forth.

11. The combination with a swinging frame, a pivotal cylinder, and piston therein furnished with lasting appurtenances, of a lever secured to said piston and having a fixed fulcrum, a latch upon said lever, and mechanism to cause said latch to engage with or be disengaged from the cylinder, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

NATHANIEL LOMBARD.

Witnesses:

H. E. LODGE,
FRANCIS C. STANWOOD.