(No Model.)

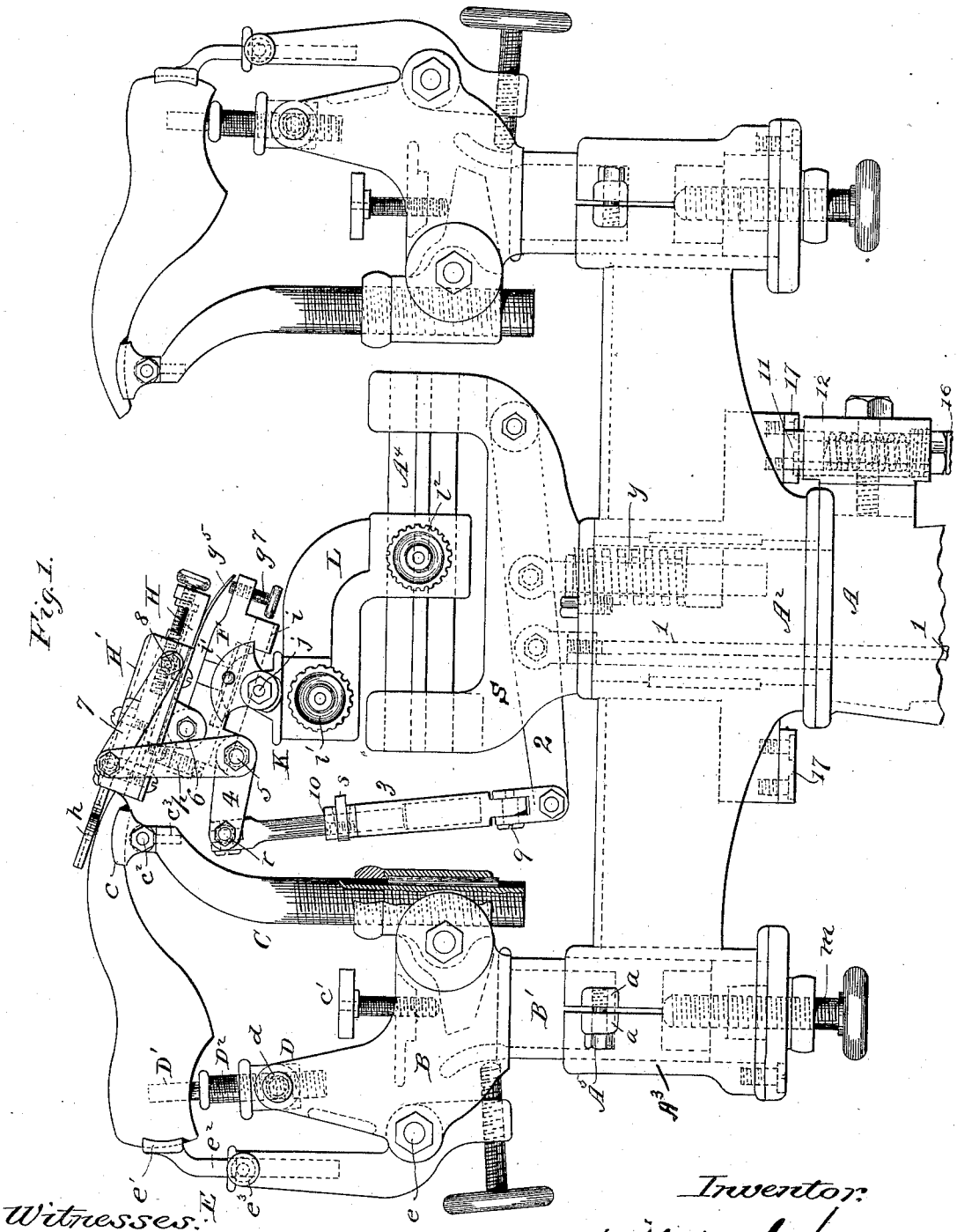
2 Sheets—Sheet 1.

W. C. CROSS.

LASTING MACHINE.

No. 344,725. Patented June 29, 1886.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

W. C. CROSS.

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Fig. 5.

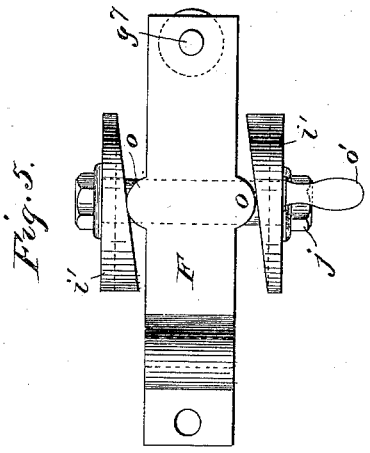


Fig. 6.

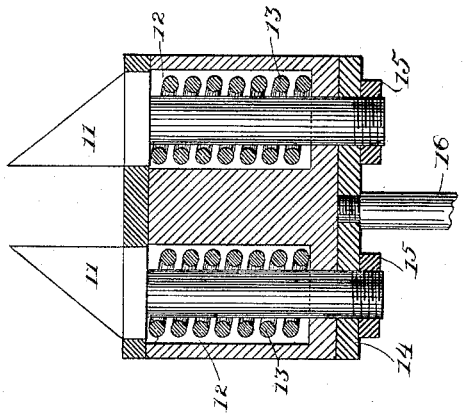


Fig. 4.

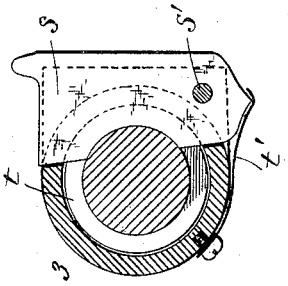


Fig. 2.

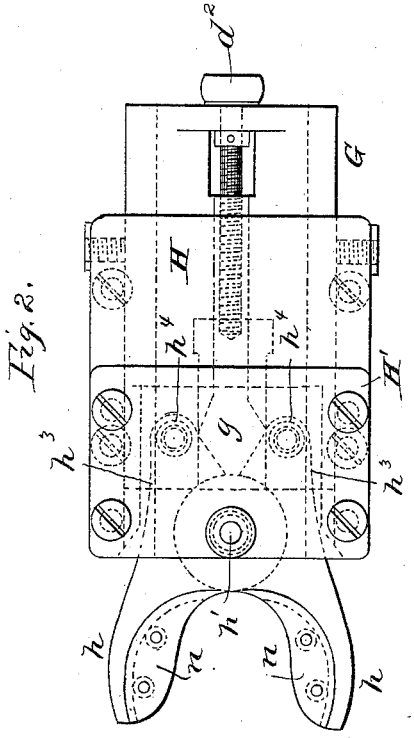
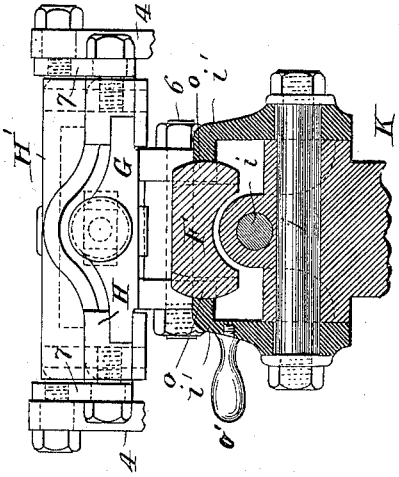


Fig. 3



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM C. CROSS, OF BOSTON, MASSACHUSETTS.

LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 344,725, dated June 29, 1886.

Application filed May 7, 1886. Serial No. 201,467. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. CROSS, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Lasting Boots and Shoes, of which the following is a specification.

My present improvements are the outgrowth of the invention shown and described in my application for Letters Patent filed December 23, 1885, Serial No. 186,553. The characteristic of said machine as a whole is that it comprises the combination, with the toe-wipers and mechanism for operating the same, of a lasting-jack pivoted to turn as a whole upon a vertical axis independently of said wipers, and the lasting-jack itself is characterized by the combination, with the heel-post and toe-rest, of a positively-actuated heel-clamp, which forms an integral part of the jack and takes the place and performs the office of the tack usually employed to hold the upper to the last at the heel, the preferred arrangement being to make the heel-post movable to and from the toe-rest, and to employ the clamp to bind not only the upper upon the heel of the last, but the last upon the toe-rest.

The improvements which I have devised have reference, mainly, to increasing the efficiency and working capacity of the machine, to which end I combine, with the wiping-jaws and mechanism for operating the same, a vertically-swiveled frame, on the opposite sides or ends of which are mounted lasting-jacks, one on each end, and each swiveled to the frame on a vertical axis, and with these instrumentalities I employ a spring or equivalently-controlled locking device and mechanism for retracting the same, the arrangement being such that the said device can be retracted by hand or power to permit the free rotation of the jack-carrying frame, but when released and in normal position will automatically arrest the jack-frame in a position in which one or the other of its two jacks will be brought into operative relation to the toe-wipers. In this way one set of wipers is made to serve for two jacks, and the parts are so arranged that while the laster is lasting the shoe on one jack a "helper" or boy can be jacking the shoe on the opposite jack, so that by the time the laster has finished his work there will be another upper jacked and ready for him, all that is needed to bring it into position to be operated on being to retract the locking mechanism and give a half turn or revolution to the jack-carrying frame. In this way the capacity of the machine is nearly if not quite doubled.

Other improvements which I have made are in the various adjustments of the working parts of the wiper mechanism and of the jack. All of these features, however, can best be explained and understood by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of the upper part or head of a lasting-machine embodying my improvements. Fig. 2 is a plan of the toe-wipers and carrying the same. Fig. 3 is a rear end elevation of wiper-slide H H′ and bed G, with the carrier F and support K in section. Fig. 4 is a cross-section, on enlarged scale, of the upper connecting-rod, 3, at the point where the latch with which it is provided is situated. Fig. 5 is a plan or top view of the cams or inclines for adjusting the lateral tilt or inclination of the toe-wipers. Fig. 6 is an enlarged sectional view of the double lock or latch for holding in place the swiveled or rotating jack-carrying frame.

I shall first give a general description of the machine, which in many particulars resembles the one described in my aforesaid application, Serial No. 186,553, and in the specification of my Letters Patent No. 343,440, of June 8, 1886, issued on said application, identifying corresponding parts in the two machines by the same letters of reference, and will then point out the improvements which are the subject of this application.

The several parts of the machine are all mounted on a hollow post, A, only the upper part of which is shown. Up through the post passes the connecting-rod 1, jointed at its lower end to a pivoted treadle (not shown) which, through rod 1, and other suitable intermediaries, actuates the wiper-slide. The spring, against the stress of which the treadle must be depressed, is indicated at *y*. To the top of the post is fixed the head S, which carries the wiper mechanism, and on the post, below the head S, is vertically swiveled the rotating frame A^2, which

at each of its diametrically-opposite ends carries a lasting-jack. To this end it is provided at each end with a vertically-split socket, A^3, (similar to socket A^3 in my aforesaid Letters Patent,) provided with ears *a*, through which passes the screw A^5, by which the socket may be tightened upon the stem B′ of the jack B, which swivels in said socket. The jack has the pivoted toe-rest standard or lever C, the adjusting-screw *c′* therefor, and the toe-rest proper, *c*, pivoted at c^2 on a horizontal transverse axis to vertically-swiveled stem c^3. It also carries the heel-post D D′ D^2, pivoted at *d*, and the heel-clamp E, pivoted at *e*, and having its presser or pad *e′* on a stem fitting and vertically adjustable in a socket in the clamp-stem E and held in place by set-screw e^3. Connecting-rod 1 is jointed at its upper end to lever 2, pivoted in head S, and having jointed to it a second connecting-rod, 3, hung at its upper end upon a cross-pin extending between the two angle or elbow levers 4, pivoted at 5 to opposite sides of carrier F, to which is hung on a cross-pivot, 6, the bed G of the wiper-carrying slide H. The upper arms of the elbow-levers 4 are jointed to connecting-rods 7 hung at their other ends on pins 8, projecting laterally from the slide. The wiper-jaws *h* are pivoted at *h′* to the cap H′ of the slide, and are normally spread apart by springs, as in my aforesaid Letters Patent, which press against the shanks h^3 of the jaws. Pins h^4, projecting downwardly from the shanks, bear on opposite sides of the cam-piece *g*, attached to the upper face of bed G and projecting into the interior of the slide. Carrier F is jointed to support K by a longitudinal joint-pin, *i*, on which it can tilt laterally. The stem of support K is vertically movable in a socket in a supporting-bracket, L, and is there held by a set-screw, *l′*. Bracket L is mounted upon the horizontal rod or stem A^4 of head S, on which it can slide back and forth, being held in adjusted position by a set-screw, l^2.

The machine, as far as described, does not differ materially (with the exception of having the rotating jack-carrying frame A^2) from the one described in my aforesaid Letters Patent, to which reference may be made for further details with respect to the arrangement and operation of the parts.

I now proceed to point out the several material features not found in my patented machine, and in which my present improvements are comprised.

The vertically-swiveled stem B′ of the jack is combined with a vertical lifting-screw, *m*, which screws through the base of frame A^2 up into the socket and against the bottom of the stem. In this way and by this means the jack, without having its swiveling action interfered with, can be bodily raised or lowered at pleasure, this being a desirable adjustment in order to readily and easily bring the jack and the work carried by it into proper position with respect to the wipers.

With a view to avoid the trouble and expense which attends changing one style of wipers for another, a thing that must frequently be done, I use the same wiper-bodies at all times, and provide them with fronts or acting portions *n*, removably connected to the wiper-bodies by screws, as shown, or otherwise, so that they may be taken off and others of different pattern substituted for them. In this way I not only save materially in expense, but I am also enabled to change the pattern very much more expeditiously and conveniently than is the case when the wipers must be bodily removed and replaced by others.

I note here a feature which, although described in my aforesaid Letters Patent, I have reserved to claim in this application. This feature is the longitudinally-adjustable cam *g* for the wipers. This cam is supported in longitudinal guideways in the bed G, and is adjusted back and forth by the adjusting-screw d^2, swiveled in the bed G and screwing from the rear into a longitudinal socket in the tail of the cam-piece. By this means I can effect the closing of the jaws sooner or later, as desired, during their forward motion, this result being obtained by a simple turn of the adjusting-screw without changing at all the position of the jaws or other part of the mechanism.

The provision for the lateral tilting requisite to adapt the wipers laterally to the plane of the sole of the last is accomplished, not by means of set-screws bearing from opposite sides against the laterally-rocking carrier F, as in my former application, but by means of two wedge or incline cam-plates, *i′*, bearing from opposite sides against the carrier, or against half-round projections *o* thereon, said plates being fixed to a horizontal cross-shaft, *j*, in support K, so as to move together, and one or both being provided on the outer face with a handle, *o′*. By turning these cam or incline plates the carrier can be tilted and held at any desired tilt easily, expeditiously, and securely.

The bed G is jointed to the carrier F on a horizontal cross-pivot, 6, and a spring, g^5, (controlled by an adjusting-screw, g^7,) tends to tilt the front of the bed downwardly, all as in my aforesaid Letters Patent; but I now employ at the front of the carrier an adjusting-screw, *p*, which screws upwardly through the carrier and bears against the under side of the front end of the bed. By this means the front of the bed can be upwardly tilted, as desired, and held so, the spring g^5 maintaining it firmly in its adjusted position, while at the same time giving it capacity to automatically yield, as before.

To permit the lateral tilting of the wipers without cramping the connecting-rod 3, its upper forked end is hung on gudgeons radially projecting from a cross-rod, *r*, of square section, extending between the lower arms of the angle-levers 4, and provided at the ends with cylindrical journals, which take their bearings in the said levers; and just above the point where the lower end of said rod 3 is connected

or pinned to the lever 2 it is divided, and its two parts are jointed by a horizontal pivot-pin, 9, at right angles to that which joins it to the lever 2. Thus at top and bottom the connecting-rod has practically a universal joint, or one which will permit it to adapt itself to the tilt of the wiper-slide, bed, and carrier without cramping.

Machines of this class are usually run or used industrially on a license at so much for each pair of uppers lasted, and consequently there is with each machine an indicator operated in my machine by the movement of the treadle or connecting-rods, through which the wipers are actuated, to register the number of uppers lasted. Inasmuch as the laster may at times desire to move and operate the wiper-jaws in order to adapt and adjust them to the particular kind of work he is about to do, it becomes desirable to provide some means by which he can conveniently sever and restore operative connection between the treadle mechanism and the wipers. This I find can easily and conveniently and efficiently be done by dividing the connecting-rod into two parts or sections, the one telescoping into the other, as indicated at 10, and combine with them a latch, *s*, pivoted at *s'* to the lower section, and through a slot in said section enters peripheral groove *t*, formed in the other part. The latch is spring controlled, a spring, *t'*, bearing on the butt of the latch, the arrangement being such that by the spring the latch will be held either open or closed. When it is open, the upper part of the connecting-rod can slide up and down freely in the socket in the lower part without communicating motion to the latter, and the elbow-levers 4 can then be moved by hand to actuate the wipers without moving in the least the treadle mechanism.

I pass now to a description of the remaining feature of my improvements. Swiveled vertically on the supporting part of the machine so as to revolve in a horizontal plane is the frame A^2, in each of the two opposite ends of which is vertically swiveled a jack, B, the two being on diametrically-opposite sides of the wipers, which latter face one of the jacks. Upon the post are two latches, 11, having their exterior opposite faces beveled, working in vertical sockets 12, and upwardly pressed each by its own coiled spring 13, which bears above against the shoulder on the latch and below against the bottom of the socket. The stems of the latches pass down loosely through openings in the bottom of their sockets and through a cross-bar, 14, below, being held thereto by nuts 15, which screw upon their ends, projecting below the cross-bar. At a point midway between the stems a connecting-rod, 16, is made fast to the cross-bar, and thence extends down, and is jointed to a pivoted treadle. (Not shown.) By depressing this treadle both latches will be pulled down out of the path of projections 17 on the under side of the revolving jack-carrying frame, one on each arm of the frame. Each projection is of a width equal to the distance which separates the two latches from each other, and is so placed that when it enters and is held between the two one of the jacks will be brought and held in operative position relatively to the toe-wipers. Each latch is beveled from the outer face upwardly, so that as the jack-carrying frame swings around, the projection 17, striking one or the other of the latches from the outside, will depress and ride over it, bringing up against the opposite one, while the one first depressed will again rise. The projections will thus be held between the two latches, and the frame will be locked tight in place until the latches are drawn down out of the path of the projection.

What I claim, and desire to secure by Letters Patent, is as follows:

1. The combination, with the wipers, of the jack, the base or supporting-frame in which its stem is vertically swiveled, and the lifting-screw *m*, substantially as and for the purposes hereinbefore set forth.

2. The combination of the pivoted wipers, the wiper-slide, the bed for said slide, and the cam *g*, attached to and adjustable lengthwise of the bed, as and for the purposes hereinbefore set forth.

3. The combination, with the laterally tilting or rocking carrier, of the pivoted wedge or incline cam-plates *i'*, bearing from opposite sides against said carrier, and connected together so as to move in unison, substantially as and for the purposes hereinbefore set forth.

4. The combination, with the carrier, the bed jointed thereto on a horizontal transverse pivot or hinge, and the spring g^5, of the adjusting-screw *p*, substantially as and for the purposes hereinbefore set forth.

5. The combination, with the wipers, the wiper-slide, the laterally-tilting frame supporting the same, and the angle or elbow levers 4, of the connecting-rod 3, connected to the said levers above and the treadle mechanism below by universal joints, as and for the purposes set forth.

6. The combination, with the wipers, wiper-slide, elbow-levers 4, and treadle mechanism, of the connecting-rod 3, connecting said levers and treadle mechanism, and composed of two telescoping sections detachably connected, substantially as and for the purposes hereinbefore set forth.

7. In a lasting-machine, the combination of a swiveled or rotating jack-carrying frame, jacks mounted thereon on opposite sides of the pivot or axis of the frame, toe-wipers centrally located and stationary with reference to said rotatable frame, and locking mechanism, whereby each jack successively may be arrested and held in operative position relatively to said toe-wipers, as and for the purposes hereinbefore set forth.

8. The combination of a rotating jack-carrying frame, jacks mounted thereon, so that by the rotation of the frame each may successively be brought into operative relation

to the wipers, toe-wipers centrally located and stationary with reference to said rotatable frame, and spring-controlled locking mechanism arranged and operating to automatically arrest the movement of and lock in place the frame at the appropriate point to bring one or the other of the jacks into operative position with respect to the wipers, substantially as and for the purposes set forth.

9. The combination of the rotating jack-carrying frame, the jacks mounted on said frame, the toe-wipers centrally located and stationary with reference to said rotatable frame, spring-controlled automatically-locking mechanism, and a treadle or pull for operating the locking mechanism to release said frame, as and for the purposes hereinbefore set forth.

In testimony whereof I have hereunto set my hand this 28th day of April, 1886.

W. C. CROSS.

Witnesses:
EWELL A. DICK,
MARVIN A. CUSTIS.