2 Sheets—Sheet 1.

H. G. THOMPSON.

LASTING AND TACKING MACHINES FOR BOOTS AND SHOES.

No. 193,466. Patented July 24, 1877.

Fig. 1.

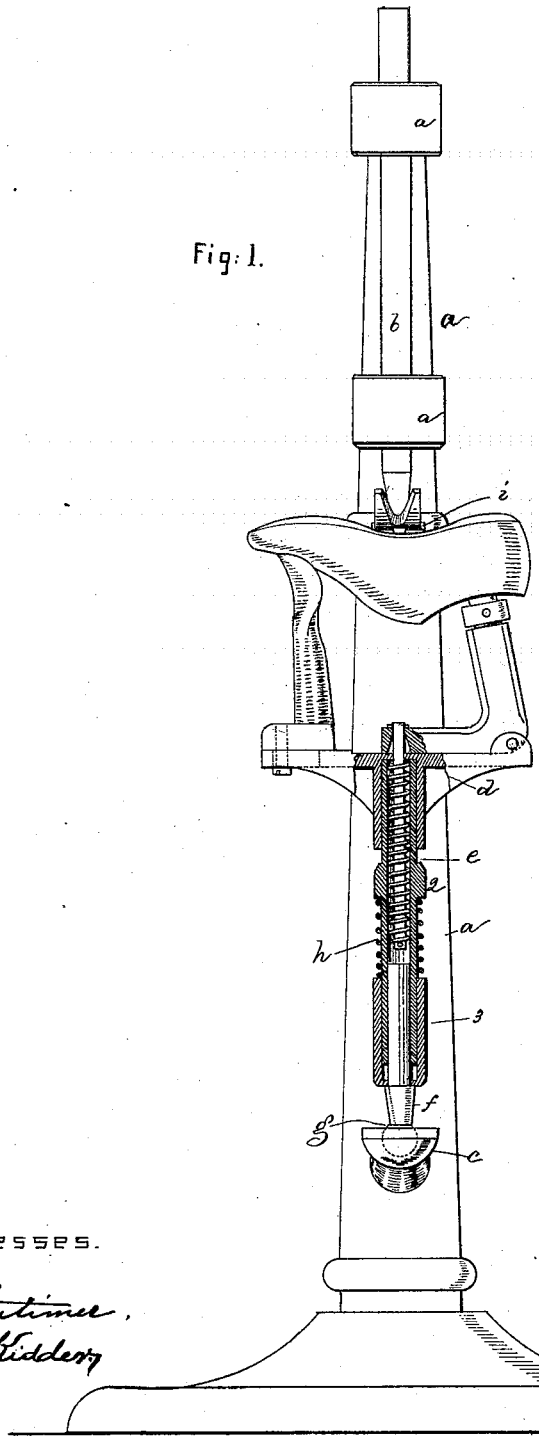
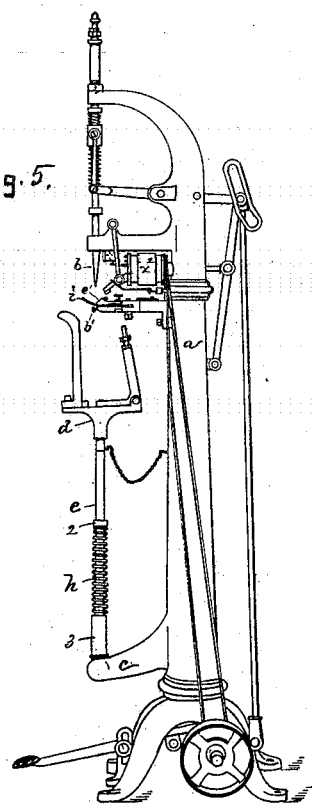


Fig. 5.



Witnesses.

L. A. Latimer,

S. B. Kidderly

Inventor.

Henry G. Thompson

per Crosby & Gregory Attys.

2 Sheets—Sheet 2.

H. G. THOMPSON.

LASTING AND TACKING MACHINES FOR BOOTS AND SHOES.

No. 193,466. Patented July 24, 1877.

Fig. 2.

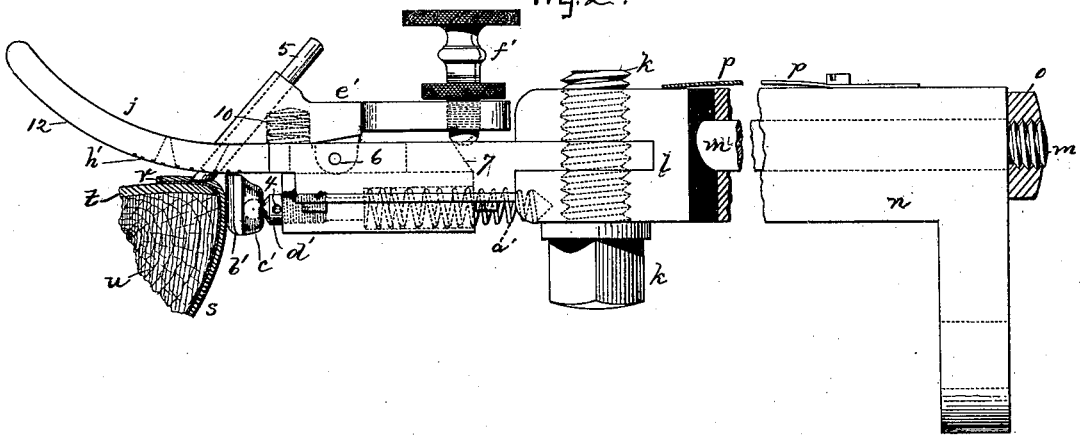


Fig. 3.

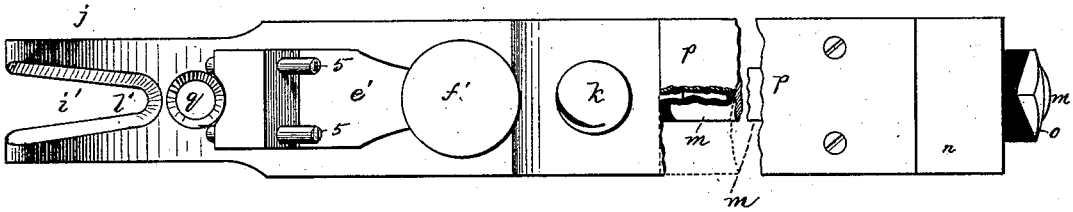


Fig. 4.

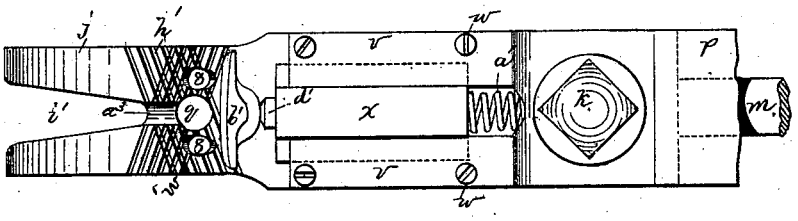


Fig. 6.

Witnesses.
C. H. Latimer.
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per Crosby & Gregory Attys.

UNITED STATES PATENT OFFICE.

HENRY G. THOMPSON, OF MILFORD, CONNECTICUT.

IMPROVEMENT IN LASTING AND TACKING MACHINES FOR BOOTS AND SHOES.

Specification forming part of Letters Patent No. **193,466**, dated July 24, 1877; application filed December 15, 1876.

To all whom it may concern:

Be it known that I, HENRY G. THOMPSON, of Milford, in the county of New Haven and State of Connecticut, have invented Improvements in Lasting and Tacking Machines, of which the following is a specification:

This invention has reference to a machine to pull the upper over the insole in the manufacture of a boot or shoe, and to then tack it, thereby lasting the shoe.

The shoe to be lasted is placed upon a last at the upper end of a swiveling-jack, acted upon by a spring or equivalent, adapted to press the jack upward with a yielding pressure, so as to force or retain the edge of the upper held upon the last against a plaiting-fork or presser-foot, that engages and holds the upper while the tack is being driven.

The plaiting-fork holds the upper in position on the inner sole and last while a tack is driven through an opening in the plaiting-fork by a magnetic or other hammer or nail-driving rod.

The invention relates to the combination, with the plaiting-fork or presser-foot, of an upwardly-pressed jack, to operate substantially as herein set forth; also, in a plaiting-fork or presser-foot curved upward at its forward end, and provided with an opening, through which a nail or tack may be driven; also, in a plaiting-fork or presser-foot, roughened on its under side to engage the upper, and provided with an opening for the passage of tacks; also, in a plaiting-fork or presser, swiveled or pivoted substantially as described, to permit the fork to adapt itself to the irregularities of the last; also, in the combination with the plaiting-fork, of a pin or pins, or equivalents, adapted to be projected through such fork to engage and hold the upper, so that it may be drawn tight about the last; also, in a plaiting-fork or presser-foot, in combination with a yielding edge-rest, against which the shoe-upper is pressed when the upper is being drawn over the inner sole.

This my present invention is adapted to be used in connection with magnetic tacking-machines, substantially such as represented in United States Letters Patent Nos. 143,388, 152,927, and 156,047, to which reference may be had.

Figure 1 represents, in front view, sufficient of a tacking-machine to illustrate how my invention may be applied thereto; Fig. 2, a side view of the plaiting-fork or presser-foot, a portion of a shoe being also shown; Fig. 3, a top view; Fig. 4, a partial under-side view thereof; Fig. 5, a side view, representing the plaiter or presser applied to a magnetic tacking-machine; and Fig. 6, a modified form of device to penetrate the upper, instead of the pin 5.

The tacking devices employed in a machine embodying this my invention will preferably be substantially like those represented in the patents referred to, and as contained in the well-known magnetic tacking-machine, as usually made by me, each tack or nail being driven singly by a magnetized driver; but it will be obvious that other well-known forms of driving devices might be employed to drive a nail into the upper held by the fork or presser-foot, as hereinafter described.

In the drawing, (Fig. 1,) *a* represents the standard, *b* the magnetic tack-driving bar, and *c* the post-rest, of the magnetic tacking-machine. The feeding-cylinder, (shown in Fig. 5,) the nail or tack presenting mechanism, and the devices for operating the driving-bar are, in construction and operation, too well known to need detailed description.

The jack *d*, upon which the last containing the upper and inner sole is mounted, is arranged to rotate upon the jack-rod, (shown as divided into two parts, *e f*,) the jack-rod being supported at its lower end by a globe or ball like termination, *g*, that permits the jack-rod to swivel or turn in any desired direction with relation to the fork or foot *i*.

One portion, *e*, of the jack-rod is herein shown as surrounding the other portion, *f*, and a spring, *h*, bearing against the collar 2, and a sleeve, 3, acts to press the jack and last upward against a plaiting-fork or presser-foot, *i*, attached to the vertical standard *a* of the machine just below the usual tack-assorting cylinder, (see x^2, Fig. 5,) that insures the correct presentation of the tacks to the magnetic tack-driving rod.

The jack-rod might be mounted upon a pivoted lever, and be pressed upward by means of a weight, as usual, instead of by a spring; but the spring is preferred.

The jack and last to be operative in this my present invention must be held pressed upward against the fork or presser by a yielding pressure. Such a jack I denominate an "upwardly-pressed jack."

The forward end *j* of the plaiting-fork is pronged, as shown at Figs. 3, 4, and turned upward, as shown at Fig. 2. The back end of the fork is attached by a bolt, *k*, to, or it may form part of, a block, *l*, having a pin or rod, *m*, extended into a bracket, *n*, to be attached to the upright frame *a*, the rod *m*, in this instance, being free to turn in the bracket *n*. The nut *o* holds the fork and block *l* from longitudinal motion, but allows them to turn a little on the rod *m* as a center, to permit the under side of the fork or foot to adapt itself to the irregularities of the last and upper.

An adjustable flat spring, *p*, bears upon and acts to restore the foot or fork to its true horizontal position when the latter is not obstructed by the work. The fork or foot has an opening, *q*, for the passage of nails or tacks held on the end of the magnetic driving-rod *b* into the edge *r* of the upper *s*, and into the inner sole *t* on the last *u*.

Pieces *v v*, held by screws *w w*, Fig. 4, form guideways for the shank *x* of a slide-bar pressed outward toward the opening *q* by a spring, a^1. An edge-rest, *b'*, is connected with the ball-like termination *c'* of a rod, *d'*, screwed into the slide-bar *x*, and made adjustable longitudinally therein by turning the rod out or in, or in any other proper or usual way. This adjustment regulates the extent to which the upper shall be pulled over the edge of the last under the action of the pins or awls 5, or equivalents, (one or more,) of an upper-engaging dog, *e'*, pivoted to the foot or fork at 6, and provided at its end with an adjusting device *f'*, (in this instance a screw,) adapted to be acted upon by the incline 7 (see dotted lines, Fig. 2) upon the back end of the slide-rod.

The pins, pointed or roughened at their lower ends, (as the dog is acted upon by the slides,) are projected through the openings 8 in the foot or fork, so as to engage the edge of the upper; but at all other times the dog is acted upon by a spring, 10, (shown in dotted lines, Fig. 2,) that elevates the pins above the under side of the foot. The under side of the foot is roughened, as shown at *h'*, Fig. 4. This roughened surface assists the pins in engaging and drawing over the upper.

In serge or cloth work the pins may be omitted, as the roughened surface will alone work well to draw over the upper. In working about the curved portions of the last the edge of the upper is, in a measure, plaited or crimped as it is folded over the inner sole. The space *i'* between the branches of the fork permits the formation of the folds or plaits; but, owing to the portion *l'* between the base of the fork-opening *i'* and the opening *q*, such plaits or ridges are not permitted to extend back and form under the opening *q* sufficiently to interfere with the proper driving of the tacks by the magnetic driver.

In operation the upper and inner sole are placed upon the last in the usual way. The upwardly-pressed jack is then taken hold of by the operator, and the upper and jack are pushed back against the plaiting-fork or presser-foot *i*, meeting its under side at about the point 12, Fig. 2. Further movement of the jack toward the edge-rest *b'* (the jack being constantly pressed upward, by its spring or equivalent, against *i*) causes the upper as it is moved along down the under side of *i*, to be wiped or bent over and about the edge of the last, as shown in Fig. 2. When the upper and last strike the edge-rest *b'* the slide-bar is moved backward, so that its inclined end 7 tips the dog *e'*, causing the pins 5 to descend through the openings 8, enter the edge of the upper just beyond the edge of the last and inner sole toward the center of the last-bottom, and hold such edge, and draw it closely about the last and inner sole, as shown in Fig. 2, in which position a nail is driven through the opening *q* into the upper held by the pins projecting below the fork or foot. The operator repeats this operation of pushing the jack with its upper down under and along the under side of the foot or fork at the points where it is desired to have a nail driven, one nail being driven at the completion of each backward movement of the edge-rest under the action of the last and upper against it. By adjusting the screw *f* the pins may be made to engage and penetrate the upper more or less.

The pins may be made to engage the upper for a greater or less time during the time the operator moves the jack and edge-rest backward, thereby drawing in the edge more or less in a horizontal direction, or parallel with the surface of the inner sole.

This device has been found very efficient for lasting the sides and shanks of shoes, and it works well for the heels and toes.

It is preferable to use the plaiting-fork with its opening *i'*; but instead thereof the under side of the fork might be grooved to permit the formation of a crimp within the groove. In some instances the opening and groove might be omitted altogether, and then the under side of the fork *i* would act as a surface, against which to press the upper and inner sole held upon the jack. It would then be a foot to resist the upward pressure of the jack and shoe.

A groove, a^3, extended along the under side of the plaiting-fork from the opening *i'* to the tack-opening *q*, to receive the plait formed in the work by the plaiter, and the under side of the fork is thereby permitted to rest evenly upon the work at each side the opening through which the tack is being driven.

The pin 5, instead of having a single point,

as in Fig. 2, may have several sharp points, as in Fig. 6, wherein the pin is shown square or round.

I claim—

1. The combination, with an upwardly-pressed jack, of a plaiting-fork or presser-foot, adapted to operate together substantially as described.

2. The plaiting-fork or presser-foot, curved upward at its front end, and provided with an opening, through which a tack or nail may be driven by a driving-rod, substantially as described.

3. The plaiting-fork, curved upward at its forward end, and roughened upon its under surface to engage the upper upon the last, in combination with an upwardly-pressed jack, substantially as described.

4. The pivoted plaiting-fork or presser-foot, substantially as described, in combination with the bracket *n* and a spring, to permit the foot to adapt itself to the inequalities of the last.

5. A plaiting-fork or presser-foot, in combination with an upper-holding dog, provided with pins or equivalents, to enter and engage the upper and hold it while being drawn over the last, as described, preparatory to driving a tack, substantially as set forth.

6. The fork or presser-foot and upper-holding dog and pins, or equivalents, in combination with means to adjust the dog to permit the pins to penetrate the upper more or less, to adapt the dog to the various fabrics from which shoes are made.

7. The plaiting-fork or presser-foot, in combination with the horizontally-movable edge-rest, substantially as described.

8. The fork or foot and edge-rest, in combination with the slide-bar and the pin and ball-joint, to sustain and adjust the edge-rest to adapt the plaiting-fork or presser-foot to pull or lap the upper more or less over the inner sole.

9. The plaiting-fork or presser, in combination with the horizontally-moving and swiveling edge-rest, substantially as described.

10. The plaiting-fork or presser-foot and the upper-holding dog, provided with pins or equivalents, in combination with the slide-bar to operate the dog, substantially as described.

11. The fork or presser-foot, holding-dog, and pins, or equivalents, and adjusting device, in combination with the slide-bar and edge-rest, substantially as described.

12. An upwardly-pressed jack and plaiting-fork or presser-foot, in combination with a sliding edge-rest and an upper-holding dog, provided with pins or equivalents, to operate substantially as described.

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

HENRY G. THOMPSON.

Witnesses:

FRANK L. ALLIS,

R. L. BREWER.