H. P. FAIRFIELD.

NAILING MACHINE FOR BOOTS AND SHOES.

No. 189,850. Patented April 24, 1877.

Fig. 1.

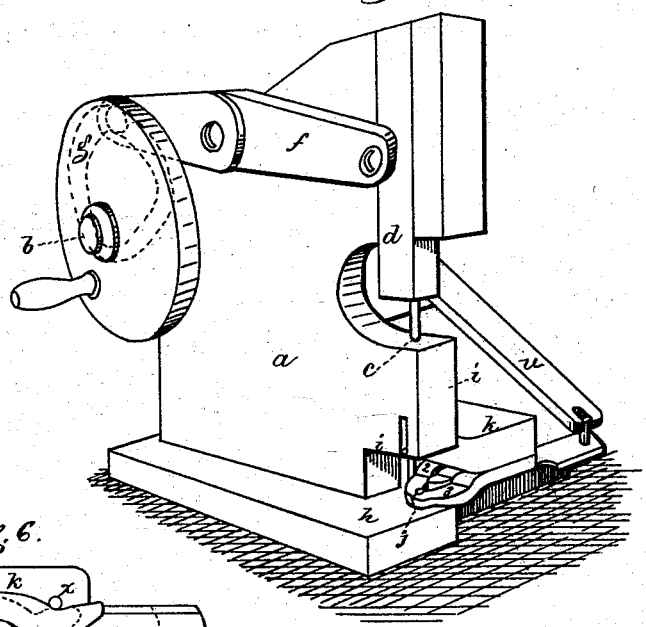


Fig. 6.

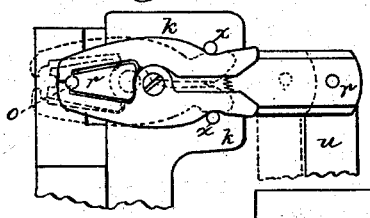


Fig. 2.

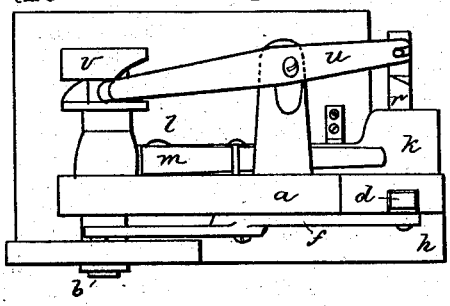


Fig. 4.

Fig. 5.

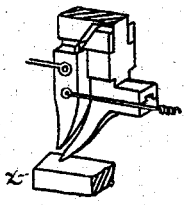
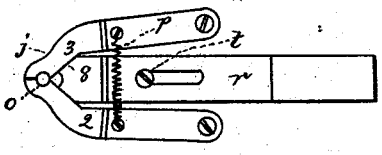


Fig. 3.



Witnesses
E. B. Perkins
W. J. Pratt,

Inventor.
Hadley P. Fairfield
per Crosby & Gregory
Attys.

UNITED STATES PATENT OFFICE.

HADLEY P. FAIRFIELD, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN NAILING-MACHINES FOR BOOTS AND SHOES.

Specification forming part of Letters Patent No. **189,850**, dated April 24, 1877; application filed December 28, 1876.

To all whom it may concern:

Be it known that I, HADLEY P. FAIRFIELD, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Nailing-Machine for Boots and Shoes, of which the following is a specification:

This invention relates to nailing-machines for boots and shoes, the mechanism to be described being specially adapted to partially drive nails or tacks into a piece or pieces of sole-leather to be subsequently used as an outer sole in the manufacture of boots and shoes, substantially in accordance with an invention of Lyman R. Blake, as described in an application filed in United States Patent Office May 5, 1876.

In this present invention a tack or nail suitably placed in a nail-tube is driven, by means of a nail-driver of any usual construction, into the piece of sole-leather, the nail on its passage from the end of the tube to the stock passing between jaws of an auxiliary nail-guide, adapted to guide the headed tack or other nail after its head or upper end is driven below the lower end of the nail-tube. When the nail is driven the desired distance into the sole the auxiliary guide is separated to release the partially-driven nail, and permit it to be moved laterally with the sole by means of a feeding device, preferably made to bear against the tack or nail last driven. The auxiliary nail-guide will preferably be arranged upon a pivoted lever or head, so as to render it self-adapting to the thickness of the stock.

Figure 1 represents, in side view, sufficient of a nailing-machine to illustrate this invention. Fig. 2 is a top view; Fig. 3, an under-side view of the guide and feeding device detached; Fig. 4, a piece of sole with tacks partially driven, as they will be left by the driver, their heads projecting above the sole; Fig. 5, a modification of the nail-guide, and Fig. 6 a modified form of feed.

The frame *a*, of suitable shape to support the working parts, has a driving-shaft, *b*, driven in any suitable manner. This shaft will be provided with cams or equivalents to properly operate the nail-driving bar, feeding device, awl, (if one is used,) and nail-selecting and presenting mechanism of any usual construction.

The nail-driver *c* is attached to the reciprocating bar *d*, connected with and actuated by a lever, *f*, operated by a cam, *g*. The material or stock *x* for the outer sole is supported upon a suitable supporting surface or anvil, *h*, preferably made adjustable, as to its height, for different lengths of nails. Between the handle and the lower end of the nail-tube *i* is placed the nail-guide *j*, composed, in this instance of this invention, of two pivoted jaws or arms, 2 3, sustained by a rising and falling, adjustable, or spring-held arm or lever, *k*, having its fulcrum at *l*, and held down toward the stock by a spring, *m*, or equivalent. Between the arms of the guide, at their forward ends, is a nail passage or way, *o*, in line with the nail-tube passage, so that a nail or tack, after emerging from the nail-tube, will enter the passage *o* in the nail-guide, it receiving the point of the tack or nail before the head thereof leaves the nail-tube, thereby directing the nail in a straight line, and preventing it from being overturned.

The nail-driver has only sufficient length of stroke to drive the tack or nail partially into the surface of or through the sole. Preferably, the points or lower ends of the nails *n* will be driven substantially flush with that surface of the sole *x* to be applied next to the inner sole and upper in the subsequent manufacture of a boot or shoe, such tacks or nails being then driven through the outer sole into the upper and inner sole, after the outer sole, studded with tacks or nails, is applied to a lasted shoe.

So long as the heads or upper ends of the tacks or nails are not driven down to the surface of the sole, the points may be driven partially into, or may be permitted to extend somewhat below, the sole, without departing from this invention. The tacks or nails will, however, be driven into the outer sole with sufficient firmness to prevent being dropped out when the sole is subsequently applied to the shoe.

It will be observed that the tacks or nails, driven as described, are left, by the driver,

with their heads above the outer face of the outer sole (see Fig. 4) and above the nail-guide *j*, the jaws of which are held together by a spring, *p*, or equivalent.

The feed device *r*, in this instance adapted to operate against a partially-driven tack, is located or supported with reference to the jaws 2 3 so as to be reciprocated between them, engage the tack, move the jaws laterally from engagement with the partially-driven tack or nail, and by pressure against such tack or nail, move the sole for the reception of a new tack or nail, the one last driven and so engaged by the feeding device being thereby moved laterally from the nail-guide through a side passage therein made by separating the guide. When the feeding device is retracted the jaws again close and form a guide for the next nail or tack to be driven.

The feeding device is made as a slotted bar, provided at its forward end with a notch to engage a partially-driven tack, and it is provided with inclines or equivalents 8, (see Fig. 3,) to open or spread the jaws. This feeder is held up, in this instance, by means of a headed screw or bolt, *t*, and is reciprocated by means of a lever, *u*, actuated by a cam, *v*. This feeder may be reciprocated between suitable guides.

A feeding device of any ordinary construction, either a rough surface or a point, as an awl, might engage the sole and move it for the reception of the tack. In such case the nail-guide or jaws might be separated or opened by any proper device for the purpose.

In nailing-machines, as ordinarily constructed, the lower end of the nail-tube rests upon the surface of the stock, but in this, my invention, the end of the tube terminates above, and does not bear upon, the stock. This shortened tube is made the subject of claim in another application (Case A) filed concurrently with this. That application also shows a tack or nail centering device connected therewith, and adapted to keep the point of the nail in correct position to penetrate the sole in a right line, or to enter a hole made in the sole by an awl.

In this present case, I may, if desired, employ a centering device to assist in directing the tack from the nail-tube into the nail-guide.

Instead of moving the stock by a feeding device, as described and shown in Fig. 3, the jaws themselves may be moved horizontally with the feeding device *r*, (see Fig. 6,) while holding the tack or nail, thereby producing the feed, and they may then be separated by pins *x x*, to release the tack before being returned to their original position.

The feeding movement of the stock may also be effected by devices substantially as represented in Fig. 5, at *e*, or as in United States Letters Patent No. 36,163, Fig. 1. The stock, in such event, will be held under pressure by a presser, *g'*, also as in such patent.

I claim—

1. The combination, with a nail tube and driver, of an auxiliary nail-guide, adapted to receive the nail from the nail-tube and permit its discharge laterally therefrom, substantially as described.

2. The combination, with a nail tube, driver, and work-support, of an auxiliary nail-guide, adapted to rise and fall according to the thickness of the stock, and to permit the movement of the partially-driven nail or tack laterally from the guide, substantially as described.

3. A driver, to partially drive a nail or tack, and an auxiliary nail-guide, in combination with a feeding device adapted to move the sole after each nail or tack is driven, and move a previously partially-driven nail or tack laterally from between the jaws of the guide, substantially as described.

4. The combination, with an auxiliary nail guide or holder for a partially-driven nail or tack, of a feeding device arranged to be reciprocated with relation to the jaws of the guide, and to engage a nail previously partially driven, and move it from between the jaws, thereby moving the sole for another nail, substantially as described.

5. The combination, with a nail or tack support and driver, of a vertically-yielding guide, constructed in two parts, adapted to be separated or parted to permit the passage laterally, from between the guide, of a tack or nail partially driven into a sole, substantially as described.

6. A nail-guide, in combination with a feeding device, adapted to enter between the spring-held jaws of the nail or tack guide, separate the guide, for the lateral movement of the partially-driven tack, and then to engage and move the sole, by pressure, against the driven nail or tack.

7. A separable tack or nail guide, arranged between the end of the nail-tube and the surface of the stock, to guide a tack or nail and permit its removal laterally therefrom before driving another nail, substantially as described.

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

HADLEY P. FAIRFIELD.

Witnesses:

G. W. GREGORY,

ELMER C. PERKINS.