L. R. BLAKE.

NAILING-MACHINE FOR BOOTS AND SHOES.

No. 189,836 Patented April 24, 1877.

Fig. 1.

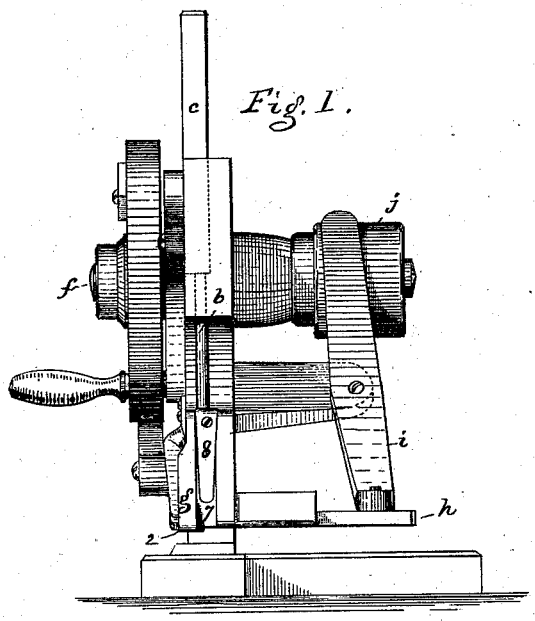


Fig. 3.

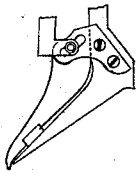
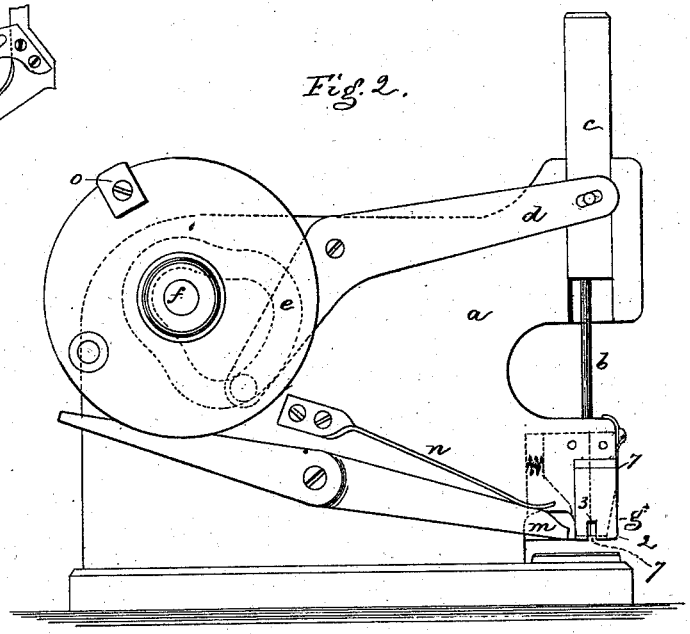


Fig. 2.



Witnesses.

C. H. Latimer.

E. G. Perkins.

Inventor

Lyman R. Blake

per Crosby & Gregory Attys

UNITED STATES PATENT OFFICE.

LYMAN R. BLAKE, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN NAILING-MACHINES FOR BOOTS AND SHOES.

Specification forming part of Letters Patent No. **189,836**, dated April 24, 1877; application filed December 28, 1876.

To all whom it may concern:

Be it known that I, LYMAN R. BLAKE, 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 especially adapted to partially drive tacks or nails into a piece or pieces of leather to be subsequently employed as an outer sole, the tacks or nails partially driven therein being afterward completely driven through the outer sole into an upper and inner sole of a shoe to which the outer sole is applied.

In another application made by me for Letters Patent, and filed May 5, 1876, I have shown and described a method of partially driving tacks or nails by permitting the support for the sole to yield after the nail enters the desired distance into the sole.

In another application to be filed the nail-tube, adapted to rest upon the stock, is lifted therefrom to uncover the head or upper end of the partially-driven tack or nail, thereby leaving the tack or nail free to be moved laterally with the stock preparatory to driving another tack or nail.

In this present invention the nail-tube rests upon the surface of the stock, as usual in nailing-machines, and the stock to be set or studded with partially-driven tacks or nails rests upon a rigid support or anvil, preferably made adjustable to permit the use of tacks or nails of different lengths. When a tack or nail is partially driven according to this invention, its head or upper end extends a certain distance, more or less, above the surface of the stock, and to permit the lateral movement of such partially-driven tack or nail from the tube in the direction of the movement of the sole this tube is provided with a slot at its side. With such a tube, if headed tacks are used, it is preferred to also employ tack-centering devices, adapted to guide the tacks in a straight line, so as to present them properly to the surface of the sole, or into the awl-holes made in the sole to receive and guide them.

Figure 1 represents, in side elevation, one form of nailing-machine, illustrating one application of this invention. Fig. 2 is a front view thereof; Fig. 3, a modified form of feed and presser.

The frame *a* may be of any usual form, as may also be the driver *b*, nail-tube, awl, presser, and tack or nail selecting and presenting mechanism. In the drawing, the driver-bar *c* is shown as reciprocated by a lever, *d*, operated by a cam, *e*, on a shaft, *f*. The nail-tube *g*, in practice, will be round, and its lower end 2 will rest upon the surface of the stock, as usual. This nail-tube is provided at one side with a passage, 3, for the lateral movement of the partially-driven nail therefrom in the direction of the feed of the stock.

In ordinary nailing-machines the driver descends sufficiently far at its down-thrust to drive the upper end of the tack or nail flush with, or below, the bottom of the nail-tube resting upon the stock.

In this invention the lower end of the driver at its lowest position stops at a distance above the lower end of the tube then resting upon the stock a distance equal to the distance it is intended to leave the heads or upper ends of the tacks or nails above the upper surface of the stock. In this way the upper ends or heads of the tacks or nails operated upon by the driver are left standing in the nail-tube, and as the sole is moved by the feeding device the head of that tack or nail in the tube is moved laterally through the slot or passage in the tube.

The feeding device, as at *h*, may operate against the tack or nail last driven, engaging it above the surface of the outer sole, the end of the feeding device passing through a slot in the tube opposite, and in line with, the direction of the movement of the feeder, and in line with the passage 3. (See Fig. 2.) The feeding device herein shown is reciprocated by a lever, *i*, actuated by a cam, *j*. Instead of this feed any other form of feed adapted to engage the stock may be used—as, for instance, such as represented in Fig. 3, where *k* represents the feeder, and *l* the presser, commonly used in the McKay machine. The presser herein shown at *m* is held down upon the stock by a spring, *n*, and released by a cam, *o*, when the stock is fed. In practice,

the tube and presser will be made automatically variable, in the usual way, to adapt themselves to the thickness of the stock.

The devices, substantially as so far described, will operate well to drive nails with small or no heads, such as are provided with corrugated or threaded shanks; but when using tacks having defined heads, it is preferred to employ in, or in connection with, the nail-tube suitable tack-centering devices adapted to bear against and guide the tack in a straight line, and present it properly to the sole, or into awl-holes made in the sole.

The centering device 7, herein shown, is composed of two jaws, (see dotted lines, Fig. 2,) held together or toward each other by suitable springs 8, preferably adjustable. These jaws have a central opening or passage between them for the tack or nail and driver, and yield to the tack and driver as they descend. The lower ends of the jaws of the centering device terminate at a point just above the end of the nail-tube, so that the jaws do not touch the stock, but are left free to be separated by the action of the tack or driver, to permit the feeding device to eject the tack or nail laterally therefrom and from the passage in the nail-tube. The jaws will preferably extend sufficiently near the lower end of the tube to hold or bear against the sides of the head of the nail after the driver shall have descended to its lowest position; but it is obvious that the jaws may be made a little shorter, so as to permit the passage of the head of the tack or nail completely below them as the driver reaches its lowest position, the lower end of the driver descending to a position substantially flush with the lower ends of the jaws. In either case the operation of the combination would be the same, and the projecting head of the tack or nail would pass from between or from below the jaws through the lateral or side slot in the tube.

The nail-tube, as so far described, has been mentioned as having a lateral passage for the head of the tack or nail, to permit the partially-driven tack or nail to be moved laterally with the sole. It is obvious that the lateral passage in the tube does not come into operation until after the nail is driven as far as it is to be driven by the driver; and, instead of the passage being always open, the nail-tube might be made in two parts, and be made separable in the direction of the feed.

Substantially such a nail-tube as is shown in my application filed May 15, 1876, or a nail-tube of any ordinary construction, might be divided vertically, and be separated in any suitable way after the nail is driven as far as desired, so as to make a lateral passage in the direction of the feed of sufficient width to permit the passage laterally from the tube, of the head or upper end of the partially-driven tack or nail.

I claim—

1. The combination, with the support for the stock, and the driver, of a nail-tube provided with a lateral passage for the head of a partially-driven tack or nail as the stock is moved, substantially as described.

2. The support for the stock, and a presser and driver, in combination with a tube adapted to bear upon the stock, and slotted at its side for the passage of a tack or nail, substantially as described.

3. The support for the stock, driver, and side-slotted nail-tube, in combination with a tack or nail centering device, adapted to operate substantially as described.

4. A nail-tube, and a driver adapted to rest, at its downstroke, above the lower end of a tack-centering device, in combination with a centering device connected with the nail-tube, and adapted to hold the head or upper end of the tack or nail after the driver reaches the limit of its downstroke, and then, by its separation, permit the lateral passage of the nail from the centering device, substantially as described.

5. A nail-tube adapted to permit the lateral passage from it of the head of a partially-driven tack or nail, and a support for the sole, in combination with a driver and mechanism to operate it to cause the driver to terminate its descent above the bottom of the nail-tube in accordance with the distance it is desired that the head of the tack or nail remain above the sole, substantially as described.

6. The combination of a stationary nail-tube, adapted to bear upon the surface of the stock, with a driver adapted to terminate its downstroke above the lower end of the nail-tube a distance corresponding with the distance it is desired the head of the tack or nail to project above the surface of the stock, substantially as described.

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

LYMAN R. BLAKE.

Witnesses:

G. W. GREGORY,

ELMER C. PERKINS.