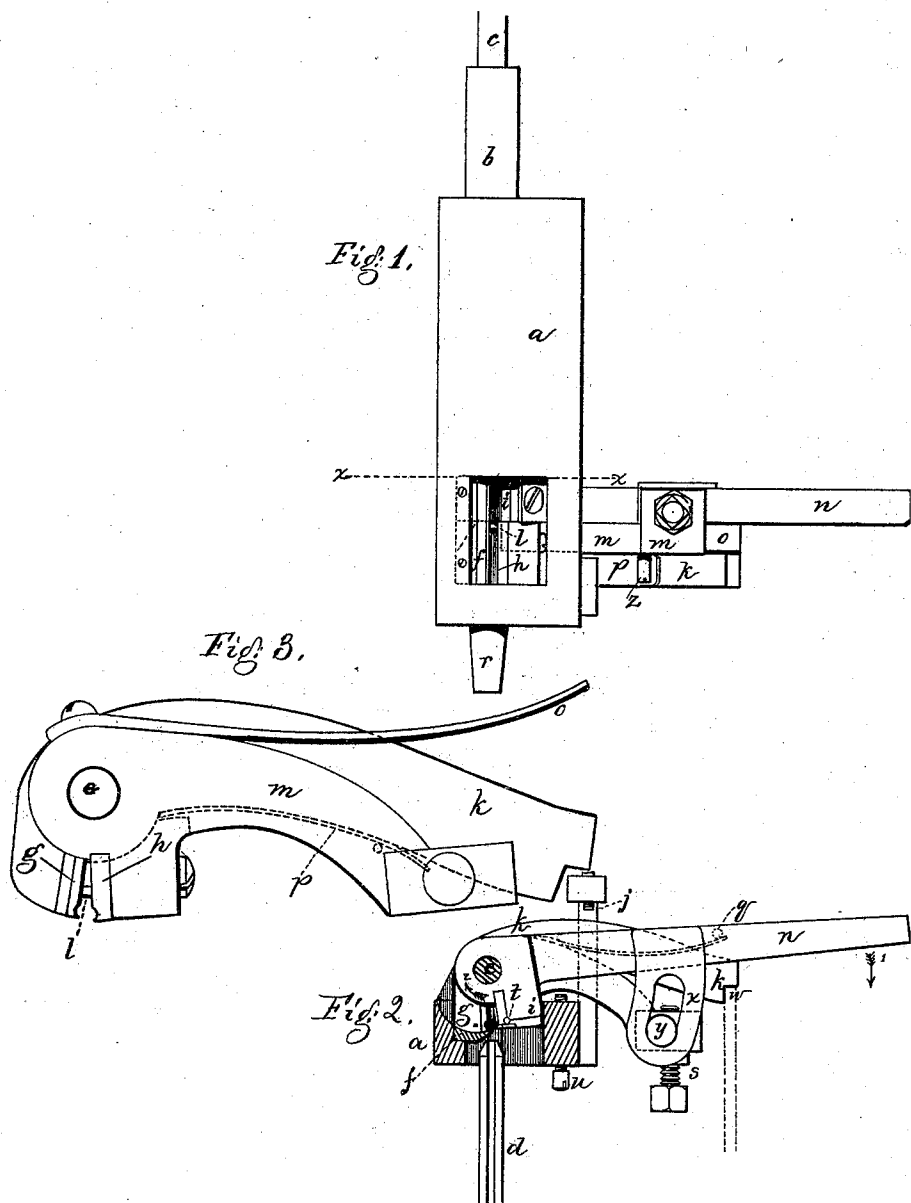


G. MCKAY & H. P. FAIRFIELD.

BOOT AND SHOE NAILING MACHINE.

No. 171,300.

Patented Dec. 21, 1875.



Witnesses.

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UNITED STATES PATENT OFFICE.

GORDON MCKAY, OF CAMBRIDGE, AND HADLEY P. FAIRFIELD, OF BOSTON,
MASSACHUSETTS.

IMPROVEMENT IN BOOT AND SHOE NAILING MACHINES.

Specification forming part of Letters Patent No. **171,300**, dated December 21, 1875; application filed
November 11, 1875.

To all whom it may concern:

Be it known that we, GORDON MCKAY, of Cambridge, Middlesex county, and HADLEY P. FAIRFIELD, of Boston, Suffolk county, all in the State of Massachusetts, have invented an Improved Nailing-Machine, of which the following is a specification:

This invention relates to improvements in nailing-machines for attaching the soles to the uppers in boots and shoes; and the invention consists in mechanism for cutting the nails successively from the nail-strip.

The cutting mechanism is composed of two jaws or cutters, that grasp the nail and move it past and beyond the cutting-edge of a third blade, thereby severing the nail smoothly with a shear-cut.

Figure 1 represents the nail-driver tube-bar of a nailing-machine with our nail-cutting mechanism attached, the view being from the back of the head. Fig. 2 is a cross-section taken on the line *x x*, Fig. 1; and Fig. 3 is a view of the cutters for severing and holding the nail, removed from the machine, and with the head-cutter omitted.

On the drawing, *a* denotes the tube-bar of a nailing or pegging machine, and *b* the guide in which the rod *c* of the driver moves, these parts being of any well-known or suitable construction.

The parts constituting this invention are to be applied to any well-known form of nailing-machine, preferably one using a horn, and a feeding mechanism to move the boot or shoe over the horn, for the reception of the nails or fastenings securing the sole to the upper.

The nails are cut from a strip carried in a strip-box, *d*, supported in any well-known way, and provided with a nail-strip-guiding groove or passage, and having working in connection therewith devices for moving the strip forward. An opening is formed in the bar *a*, to receive and to permit the passage of the end of the nail-strip to the cutting devices. The movable members of the cutting devices are pivoted at *e* on a stud carried by the bar *a*, and, in this instance of our invention, they move in an arc just back of the stationary cutter *f*, and just beyond the end of the strip-box. The end of the nail-strip is passed beyond

the edge of the stationary cutter *f*, and projected between the jaws *gh* of the devices for cutting and holding the nail, and between the edge of the head-cutter *i*, a portion of the stationary cutting-edge *f* also extending opposite the head-cutter, and the end of the nail-strip meeting a gage, *l*, (see Figs. 1 and 3,) which is, in this instance, a horizontal pin. The edge of the cutter carried by the member *g* is retained substantially in line with the edge of the stationary cutter *f*, when the members *gh* are opened for the reception of the end of the strip by a stop, (shown in dotted lines in Fig. 2,) which acts in the notch *w*, and which is actuated by a cam, so as to be thrown out of the notch at the proper time, so as to permit the end *g* of the arm *k* to pass by the stationary cutter *f*. The edge of the heading-cutter *i*, at the commencement of the cutting movement, is back of the edge of cutter *h*, and the arm *m* of cutter *h* and arm *n* of cutter *i* are held in the position shown in Fig. 2 by springs *op*, shown in full and dotted lines, Figs. 2 and 3. In this position, and with the end of the nail-strip between the jaws, the arm *n* of the head-cutting jaw *i* is moved positively in the direction of the arrow, Fig. 2, by suitable or well-known devices, operated by the mechanism of the nailing-machine, and the heading-cutter acts on the nail-strip held between it and the stationary cutter *f* and the cutter *g*, held by the stop, and a portion of the upper edge of the strip is cut out, the edge *f* and the vertical face of cutter *i* cutting the strip vertically, and the lower edge of *i* and the top of cutter *g* cutting the strip horizontally, the head-cutter severing from the upper edge of a strip a portion thereof equal to the excess of the length of the nail next to be cut and driven, the peg-tube *r* being arranged in any well-known way, or as represented in Patent No. 169,463, granted to us November 2, 1875, so as to rise and fall with reference to the strip-box, so as to govern the position of the head and cutters with relation to the thickness of the sole, a thin sole allowing the tube and cutters to descend lower than a thick sole, thereby permitting the head-cutter to cut off or remove more or less of the upper edge of the nail-strip, to cut the nail to correspond with the

thickness of the sole. By the time the head-cutter has, or substantially as it cuts the strip, to remove its surplus length, but, preferably, after the operation of the head-cutter on the strip, the arm *n* strikes the adjustable screw *s*, the stop-holding arm *k* being now released, and the arm *n* then moves the arm *m* of the movable cutter *h* positively, such cutter, up to this time, having been simply held firmly against the strip, and closes the member *h*, cutting the nail-strip held between it and the stationary cutter *f*, and the member *h* then moves past the cutter *f* and carries the nail past the edge of the cutter *f*, the two acting with a shear-like cut, smoothly and completely severing the strip, and obviating the fin-like edge often left by cutters which simply act as cutting-nippers. During the movement of the cutter *h*, and after the arm *k* is released, the member *g* is held toward the member *h* by the spring *p*, or equivalent, with sufficient force to retain the nail in a vertical position, and in the grooved portions of the cutters *g h*. The arm *n* of the head-cutter continues to move during the action of the member *h* of the cutters, and by the time the nail is severed from the strip (the nail so severed being yet held between the members *g h*, and in the grooves formed therein) the head-cutter *i* has moved so that the cutting-edge is beyond the head of the member *h*, and the arm *n* has moved far enough to bring the nail-driver guide-opening *t* (see Fig. 2) in line with the path of the driver, the arm *m* of the movable member *h* having been stopped by a screw, *u*, in the line of the movement of the driver, and in such position the driver descends and drives the nail from the members of the cutters into the sole, the nail passing through the tube *r*. As the arm *n* is moved backward opposite the direction of the arrow 1, the link *x* pulls on the stud *y* of the arm *m*, moving it, and the arm *m*, by its pin *z* acting on spring *p* of arm *k*,

moves it also; the spring-connection *p*, between the arms *m k*, permitting the arm *m* to move, at its extreme backward throw, more than arm *k*, and thereby separating the cutting-edges of the members of the cutters *g h*. All the cutting-edges are made removable from the jaws, to be sharpened and repaired.

The members *g h* of the cutters might be used to great advantage in connection with a cutting-edge, *f*, substantially as described, so as to smoothly cut off a nail from a nail-strip, in a nailing-machine in which one strip, or two strips of different widths, are used in a shifting strip-carrier, as represented in United States Patents already granted.

We claim—

1. In a machine for uniting soles to uppers, a stationary cutter and two movable cutters, adapted to sever the nail, and to hold and carry the nail beyond the stationary cutter, substantially as described.

2. The tube-bar of a nailing-machine, a strip-box, and a stationary cutter, in combination with two cutters to sever and move a nail past the stationary cutter and hold it, substantially as described.

3. The tube-bar of a nailing-machine and a stationary cutter, in combination with the movable nail severing and holding cutters and the head-cutter, substantially as described.

4. The head-cutter, in combination with a cutter adapted to be held in a fixed position during the action of the heading-cutters, and to be then released, substantially as and for the purpose set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GORDON MCKAY.

HADLEY P. FAIRFIELD.

Witnesses:

O. M. HOLMES,

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