2 Sheets—Sheet 1.

J. E. KIMBALL.

Nailing-Machine for Boots and Shoes.

No. 205,652. **Patented July 2, 1878.**

Fig. 1.

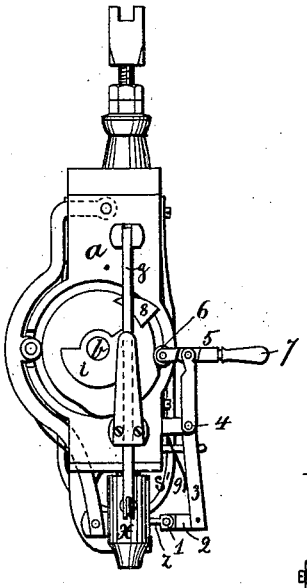


Fig. 2.

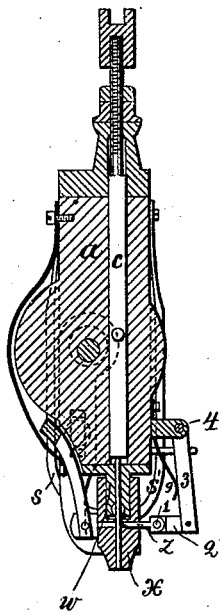
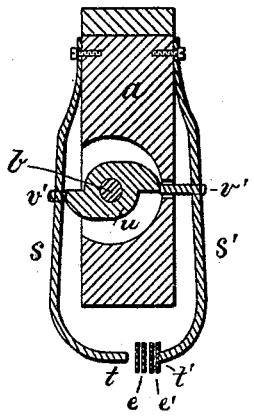


Fig. 5.



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Willis E. Flint.

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Fig. 3.

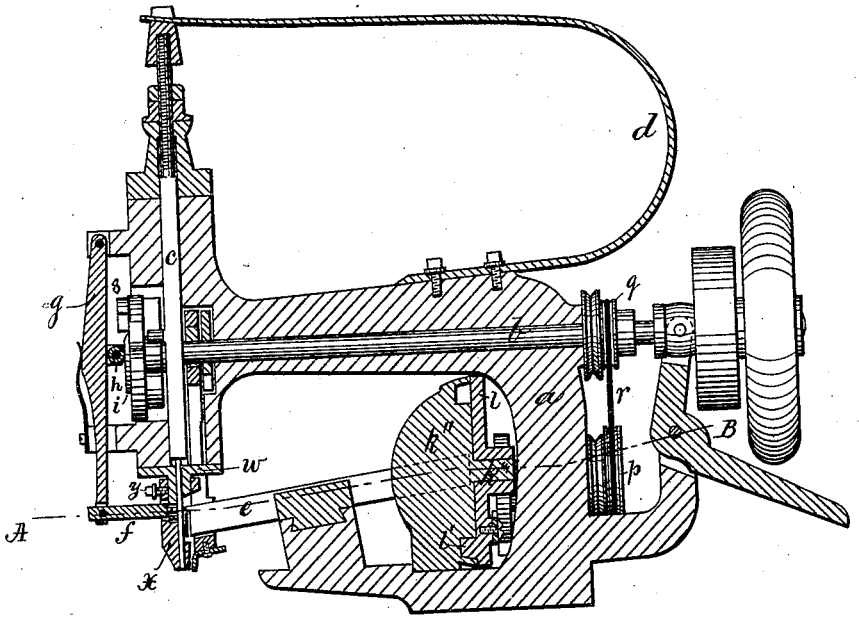
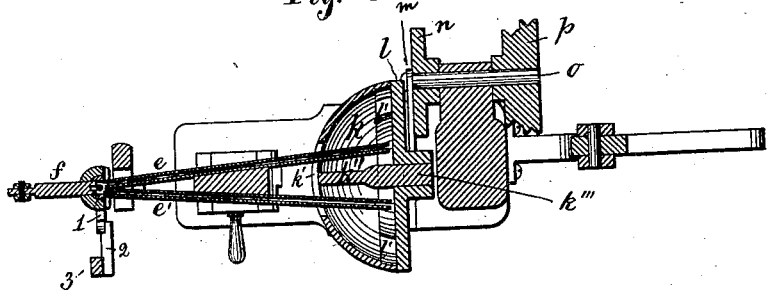


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOSEPH E. KIMBALL, OF ABINGTON, ASSIGNOR TO HENRY S. JENKINS, TRUSTEE, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN NAILING-MACHINES FOR BOOTS AND SHOES.

Specification forming part of Letters Patent No. **205,652**, dated July 2, 1878; application filed February 19, 1878.

To all whom it may concern:

Be it known that I, JOSEPH E. KIMBALL, of Abington, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Nailing-Machines for Boots and Shoes; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in nailing-machines for boots and shoes, and it is carried out as follows:

I use in this machine headed nails or tacks that are kept in a novel and peculiar hopper, from which they are automatically taken up and deposited in one or the other of the nailways to be conducted to the throat and its driver. This peculiar hopper consists of a stationary shell or receptacle, having an opening on its front, through which the nailways are inserted. On a stationary pivot, at the rear of the said shell or receptacle, is supported a rocking plate, that completely closes the rear of the said shell or receptacle. The interior face of said rocking plate is provided with a suitable number of lifters or projections, by which the nails in the hoppers are lifted and deposited in the nailways as the rocking plate is oscillated on its axis.

When two distinct nailways are used for different kinds or lengths of nails, I make a central division-wall in the shell or nail-receptacle, by which two separate and independent nail-receptacles are obtained, from which the nails are conveyed at the will of the operator to any one of the desired nailways.

In a nailing-machine in which only one single nailway is used I dispense with said division-wall, in which case the shell forms a single receptacle. The rocking plate that covers the back of the receptacle is set in a rocking motion around its axis by means of any suitable connecting mechanism from the driving-shaft.

In combination with two separate nailways for different kinds of nails, which nailways are capable of lateral adjustment, so as to place the lower end of the one from which the nails are taken opposite to the throat, where the nails are driven, I employ a pair of vibrating hammers, operated by means of a cam or eccentric on the driving-shaft in such a manner that only one hammer is operated at a time, so as to strike the nailway from which the nails are fed to the throat, for the purpose of automatically shaking downward such nails, and preventing their clogging up in the nailway.

In combination with the rotary driving-shaft and a cam or eccentric thereon and a horizontally-reciprocating cutter, located at the throat, for the purpose of cutting off the points of the nails, I interpose upon the upper end of the rocking lever, by which the said reciprocating cutter is operated, a hinged lever, having a pin and roll in its inner end, upon which the cam or eccentric on the driving-shaft acts during the operation of the reciprocating cutter-bar.

When the cutter-bar is not required to be in operation it is only necessary to turn the hinged lever, with its pin and roll, around its hinge-pin, when the cam or eccentric on the driving-shaft immediately ceases to operate upon it.

My invention further consists of the combination of a vertically-adjustable throat, concentric with the driver-bar, and a vertically-adjustable and laterally-reciprocating cutter-bar, by which the nail that is suspended in the throat can be cut off at any desired distance from its head, as may be desired for different kind of work.

My invention further consists of the combination, in a nailing-machine, of a nail-tube or throat and a reciprocating cutter, passing transversely through the said nail-tube for the purpose of shortening the nail while it is suspended in the throat or nail-tube pre-

vious to its being driven, by which arrangement the operator is enabled to shorten the nails at any time simply by moving a lever, or equivalent device, operated by the hand or foot, as may be desired, and by this arrangement one size of nails can be used for the different parts of a boot or shoe, as it can be made shorter or longer at the will of the operator.

This arrangement of locating the cutter directly in the throat or nail-tube is superior to that of locating it at a distance from such nail-tube, as in the nailways, for instance, in which latter case the nails that remain in the nailway between the cutter and the throat or nail-tube must first be fed and driven before the shortened nails can be used, whereas by my arrangement as soon as a nail is cut it is directly driven afterward.

On the accompanying drawings, Figure 1 represents a front elevation of the head of the nail-driving machine. Fig. 2 represents a longitudinal section of the same. Fig. 3 represents a central vertical section of the machine parallel with the driving-shaft. Fig. 4 represents a cross-section on the line A B shown in Fig. 3, and Fig. 5 represents a vertical cross-section through the vibrating hammers.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

a is the frame of the machine; *b*, its driving-shaft; *c*, its driver-bar; *d*, its elliptic spring; *e e'*, the laterally-adjustable nailways; and *f* is the laterally-movable forked bar, on which each nail is suspended in the throat previous to its being driven in the usual way. *g* is the lever, with its pin and roll *h*, for the operation of the forked support *f* in the ordinary manner. *i* is the cam or projection by which the lever *g* is operated, as usual. *k* is my improved hopper, having an opening, *k'*, in front, through which one or more of the nailways is inserted. *k''* is the stationary division or wall in the hopper *k*. *l* is the rear rocking plate, provided with suitable lifters or projections *l' l'*, for the purpose set forth, which plate is allowed to rock freely around the stationary pivot *k'''*, as shown in Figs. 3 and 4. The plate *l* is set in a rocking motion around the pivot *k'''* by means of the connecting-rod *m*, crank-wheel *n*, shaft *o*, cord-pulleys *p q*, cord *r*, and driving-shaft *b*, or their equivalent and well-known devices.

s s' represent the hammer-bars, secured in their upper ends to the head of the machine, and provided in their lower ends with the vibratory hammer-heads *t t'*. Said hammer-bars are operated from the driving-shaft *b* by means of the cam or eccentric *u*, acting upon the adjustable set-screws *v' v'* on the hammer-bars *s s'*, in such a manner that only one of said hammers is operated upon by the cam *u* at a time—that is, the hammer nearest to the nailway which is, for the time being, in a line with the throat or nail-tube, the other hammer-bar being moved out of the reach of the operating-cam by the nailway that is, for the time being, on one side of the throat or nail-tube. The object of such vibrating hammers is to gently shake the nails during their downward passage in the nailway, so as to prevent their being clogged up.

w represents the driving-tube, that is stationary, and attached to the lower end of the head of the machine, centrally beneath the driver-bar. Around said nail-tube is fitted the vertically-adjustable throat *x*, secured in its proper place by means of the set-screw *y* after being properly adjusted.

z represents the cutter-bar, moving through a perforation in the adjustable throat *x*, by which the said cutter-bar is made adjustable up and down with the throat *x*, according as the nails are to be cut off more or less. The outer end of the cutter-bar is hinged at 1 to a short connecting-link, 2, that is hinged in its other end to the rocking lever 3, which rocking lever is hung in a bearing, 4, as shown, and provided in its upper end with a hinged lever, 5, having a pin and roll, 6, in its inner end, and a handle, 7, in its outer end, as shown in Fig. 1.

8 is the cam or projection on the rotary driving-shaft *b*, by which a reciprocating motion is conveyed to the pin and roll 6 when the latter is kept in the position shown in Fig. 1.

9 represents a spring, acting upon the lower end of the rocking lever 3 to force it outward as soon as the cam or projection 8 ceases to act upon the pin and roll 6.

When it is desired not to use the cutter *z*, all that is necessary to do is to turn the handle 7 of the hinged lever 5 upward, so as to move the pin and roll 6 out of the contact with the cam or projection 8.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent, and claim—

1. In a nailing-machine, the herein-described hopper or nail-distributer, consisting of the stationary receptacle *k*, oscillating plate *l*, with its projections or lifters *l' l'*, as and for the purpose set forth.

2. In combination with the laterally-adjustable nailways *e' e'*, the vibrating hammers *s s' t t'* and the cam or eccentric *u*, by which one hammer only is worked at a time on the nailway in a line with the throat or nail-tube, as set forth and described.

3. In combination with a reciprocating cutter, *z*, and its connection to the rocking lever 3, the hinged lever 5 and cam or projection 8 on the driving-shaft *b*, as and for the purpose set forth and described.

4. In a nailing-machine, the combination of the vertically-adjustable throat *x*, stationary nail-tube *w*, and the vertically-adjustable and

horizontally-reciprocating cutter *z*, as and for the purpose set forth and described.

5. In a nailing-machine, the combination of a nail-tube or throat and a reciprocating cutter, *z*, located directly within said nail-tube or throat, and adapted to pass transversely through it, for the purpose of shortening the nail while suspended in such throat previous to its being driven, as set forth.

In testimony that I claim the foregoing as my own invention I have affixed my signature in presence of two witnesses.

JOSEPH E. KIMBALL.

Witnesses:
ALBAN ANDRÉN,
WILLIS E. FLINT.