2 Sheets—Sheet 1.

J. E. KIMBALL.

NAIL-DRIVING MACHINERY.

No. 195,022. Patented Sept. 11, 1877.

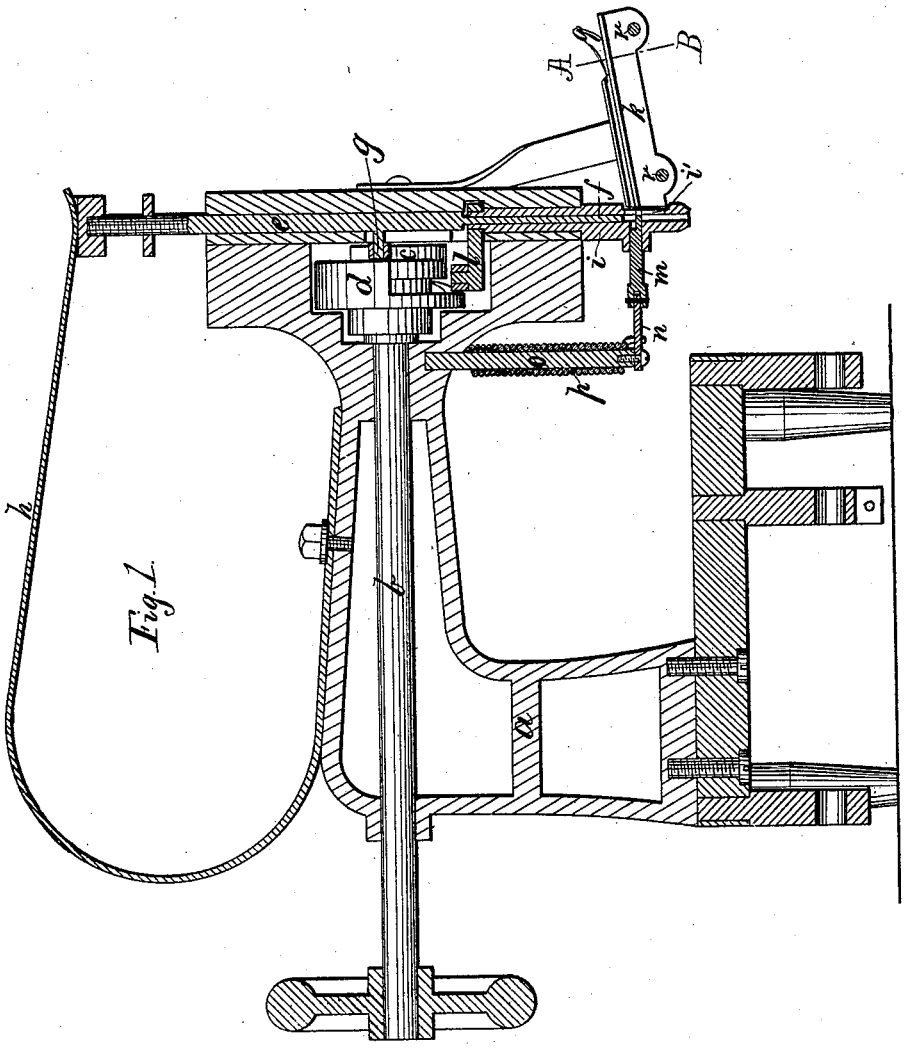

Fig. 1.

Witnesses:

Henry Chadbourn.

H. A. Allen.

Inventor:

Joseph E. Kimball

by

Alban Endrén

his atty.

2 Sheets—Sheet 2

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Fig. 2.

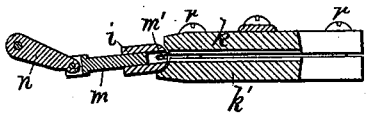


Fig. 3.

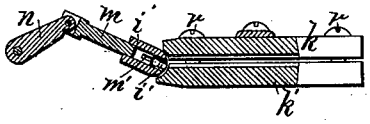
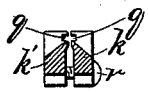


Fig. 4.



Witnesses:
Henry Chadbourn.
F. Allen.

Inventor:
Joseph E. Kimball
by Alban Andrew.
his atty

UNITED STATES PATENT OFFICE.

JOSEPH E. KIMBALL, OF ABINGTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF HIS RIGHT TO EDWARD MERRITT, OF SAME PLACE.

IMPROVEMENT IN NAIL-DRIVING MACHINERY.

Specification forming part of Letters Patent No. **195,022**, dated September 11, 1877; application filed July 10, 1877.

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 Nail-Driving Machines; 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 nail-driving machines; and consists of an oscillating nail-tube, movable around its own axis, and having a side opening near its lower end for the reception of the nails, by which arrangement I dispense with an additional picker to separate the nails and push them one by one into the nail-tube. The picking or separating the nails one by one into the nail-tube is done in my present invention by the oscillating nail-tube itself, which, when turned around its axis a little, forms a complete closed tube, the side opening through which the nail has entered being covered by the end of the stationary nailway.

My invention also relates to a reciprocating barb or rest, made to slide laterally through an opening in the lower end of the nail-tube in a line with the nailway, of which the said barb or rest forms a continuation. The end of said barb or rest is forked or slotted, so as to allow the shank of the nail to pass in between the said fork or slot, and the head of the nail resting upon the upper side of said barb or rest.

The object of this part of my invention is to dispense with the usual spring-dies, and to form a support for the nail directly within the nail-tube, which support is in a line with the nail track or way when the nail enters the nail-tube. The nail is resting on said support till it is ready to be driven, when the support or barb is automatically moved laterally, allowing the nail to drop down and rest upon the work, after which the driver-bar descends and drives it into the work, in the usual manner. After the nail is driven the driver-bar is moved upward, and the nail-tube is turned on its axis so that its side opening comes directly opposite the nailway, and at the same time the barb or support is automatically moved into the nail-tube and in a line with the nailway, so as to allow the next nail to enter the nail-tube and to rest upon the barb or support previous to being driven.

The nailways are, as usual, made in two halves, and are adjustable to and from each other by means of set-screws, in the usual manner.

Any ordinary feeding and supporting mechanism may be used in connection with the above-named improvements.

On the accompanying drawings, Figure 1 represents a central longitudinal section of my improved nail-driving machine. Fig. 2 represents a plan view of the oscillating nail-tube, its reciprocating barb, and nailways in a position for receiving a nail into the nail-tube. Fig. 3 represents a plan view of the said parts, in which the nail-tube is oscillated so as to close the entrance to it from the nailway, and in which the reciprocating barb or support is moved backward so as to allow the driver-bar to descend and drive the nail. Fig. 4 represents a cross-section of the nailways on the line A B, shown in Fig. 1.

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

a represents the frame of an ordinary nail-driving machine, of which *b* is the rotary driving-shaft, with its cams *c d*, as shown in Fig. 1. *e* is the driver-bar, and *f* is the driver, as usual.

The driver-bar *e* is raised upward by means of the cam *c* and pin and roll *g*, and forced downward by means of the spring *h*, as usual.

i represents the oscillating nail-tube, movable around its own axis, and having a side opening, *i'*, near its lower end, for the admission of the nails from the nailways *k k'*.

The nail-tube *i* is swung around its axis by means of the cam *d* acting upon a crank-lever, *l*, secured to the said nail-tube, as shown in Fig. 1.

I do not confine myself to this exact mechanism for oscillating the said nail-tube, as it

may be done to equal advantage by other and well-known mechanism.

Fig. 2 shows the position of the nail-tube at the time the nail enters the same through the opening *i'* from the nail-ways *k k'*; and Fig. 3 shows the position of the said nail-tube *i* when it is oscillated to one side around its axis, so that the opening *i'* is covered by the end of the nailway *k'*, by which arrangement the nail that has entered the said nail-tube is entirely isolated from the other nails, and the nail-tube forms in this latter position, as it were, a closed receptacle for the nail that is to be driven. *m* represents the reciprocating barb or support for the nail, which barb is provided with a slotted or forked inner end, *m'*, (shown in Figs. 2 and 3,) onto which the nail that is to be driven is conducted from the nailways *k k'*. This said barb passes in and out through an opening in the nail-tube, as shown in Fig. 1, and a reciprocating motion is imparted to it by the rotation of the nail-tube around its axis.

The rear of the barb *m* is shown as being jointed to a link, *n*, that is jointed in its rear end to the stationary support *o*. *p* represents a coiled spring, for the purpose of automatically forcing the barb *m* into its proper position within the nail-tube, for the purpose of receiving from the nailways the nail that is to be driven, and also for the purpose of turning the nail-tube to its position for feed.

My invention consists of the reciprocating barb, independent of the mechanism by which it is reciprocated; and I do not wish to confine myself to the employment of the link *n*, support *o*, and spring *p*, as I can to equal advantage operate the said barb in other and as simple ways without departing from the spirit of my invention.

q q represent the grooves made for the reception of the heads of the nails in the nailways *k k'*, by which arrangement an additional cover on the top of the nailways is entirely dispensed with; and in this manner the nailway and its cover is made in one and the same piece. The nailways *k k'* may be adjusted to and from each other, according to the size of the nails, by means of set-screws *r r*, in the usual manner.

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

1. The oscillating nail-tube *i*, having a side opening adapted to receive the nails singly from the nailway, in combination with the nailway which closes the nail-tube opening at each partial rotation of the tube, all substantially as set forth, for the purpose stated.

2. The reciprocating barb or rest *m*, arranged and operated to enter the nail-tube, and to receive the nail previous to its being driven, as herein described.

3. In combination, the oscillating nail-tube *i*, the reciprocating barb or rest *m*, and the driver *f*, as and for the purpose 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,

HENRY CHADBOURN.