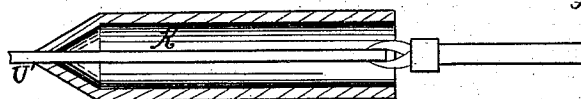
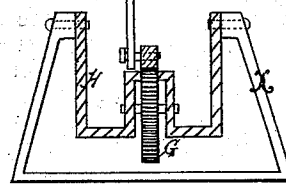
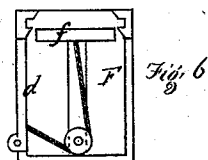
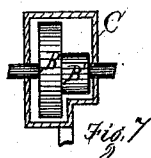
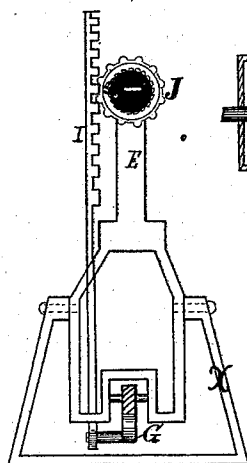
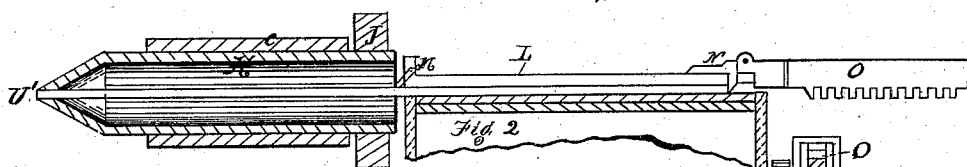
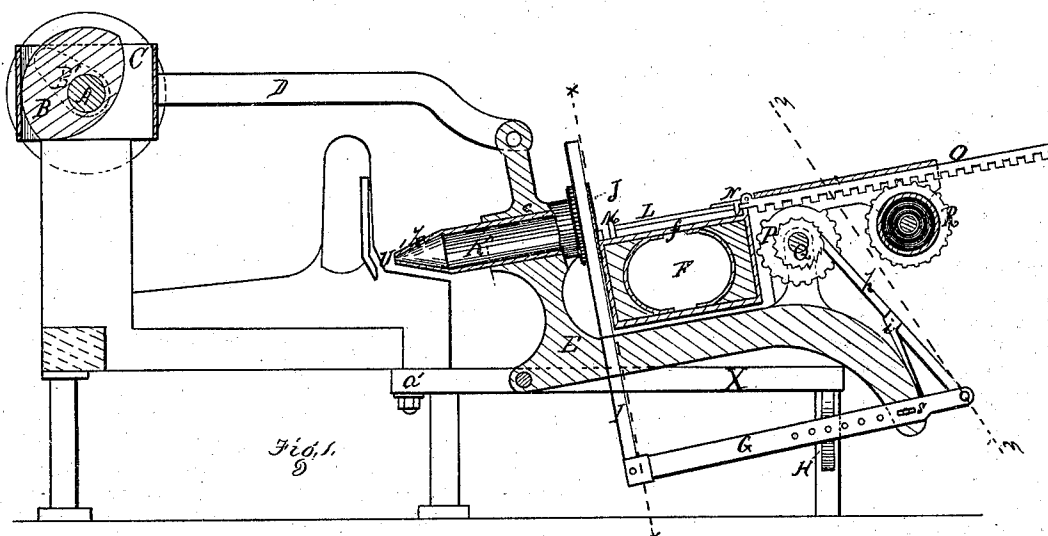


J. R. FINNEY.
NAIL-PLATE FEEDER.

No. 173,931.

Patented Feb. 22, 1876.



WITNESSES.

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UNITED STATES PATENT OFFICE.

JOSEPH R. FINNEY, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN NAIL-PLATE FEEDERS.

Specification forming part of Letters Patent No. **173,931**, dated February 22, 1876; application filed June 22, 1875.

To all whom it may concern :

Be it known that I, JOSEPH R. FINNEY, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Nail-Plate Feeders, and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing forming a part of this specification; in which—

Figure 1 is a vertical longitudinal section of my improved devices for feeding nail-plates, shown in connection with a nail-machine. Fig. 2 is an enlarged view of a portion of the devices. Fig. 3 is a transverse section on the line *xx*, Fig. 1. Fig. 4 is a transverse section on the line *yy*, Fig. 1. Fig. 5 is a section of the feeding-tube and a swiveled nipper. Fig. 6 is a transverse section of the plate-box. Fig. 7 is a detached view of the cams and cam-yokes.

Like letters refer to like parts wherever they occur.

My invention relates to automatic-feeding devices for nail-cutting machines, and is an improvement on the invention described in Letters Patent No. 148,200, granted to me March 3, 1874; and consists, first, in operating the moving-lever or oscillating-frame of the feed devices from the shaft of the nail-machine by means of a cam or cams and cam-yokes and suitable intermediate connections, whereby a positive feed is obtained independent of the cutting or heading devices; secondly, in combining with the feeding-tube a loose pinion and pawl and a rack or other suitable intermediate mechanism for operating the feeding-tube from the rocking-frame; thirdly, in combining with the feeding-plate or tongs a rack, mutilated feed pinion, and a retracting spring-pinion, or equivalent spring mechanism, for feeding the plate forward with a positive motion, and obtaining a rapid return-movement of the rack; fourthly, in combining with the oscillating-frame and the feeding-rack and its driving-pinion suitable intermediate mechanism for the purpose of operating the feeding-rack from the oscillating-frame; fifthly, in combining with the driving-pinion of the feeding-rack an adjustable pawl and rocking-lever, whereby the feed of the nail-plate may

be increased or decreased at pleasure; and, finally, in details of construction hereinafter specified.

The object of my invention is to automatically feed the nail-plates to nail-machines of the ordinary forms of construction, by a combination of mechanical devices which seize the plates, hold them safely in the proper position, rotate the plate being fed one-half turn for each downward movement of the cutting jaw, and feed it between the jaws the proper distance and at the proper angle for the manufacture of the size and shape of nail desired.

I will now proceed to specifically describe my invention, so that others skilled in the art to which it appertains may apply the same.

In the drawing, X indicates a laterally or horizontally adjustable frame, pivoted at its forward portion to the bed of a nail-machine, preferably directly under the cutter, as at *a'*, and within said frame is pivoted an oscillating-frame or moving-lever, E, which carries the operative device. Upon the shaft of an ordinary nail-cutting machine is secured a cam, B, having upon its side an auxiliary cam, B', the throw of the portion B operating upon the rear face of a yoke, C, while the throw of B' operates upon the opposite face of the cam-yoke, said yoke being connected, through the intermediate pitman D, with the oscillating-frame E. The cam B is of such form as to act upon the yoke during the greater part of the revolution of shaft A, so as to draw forward the feeding devices and hold the plate beneath the cutter until it has completed its stroke, thus insuring a positive and regular feed. As soon as cam B has ceased to operate upon the yoke, cam B' forces back the feeding devices during the rotation of the plate. On the forward part of the oscillating-frame E is a sleeve, C, for the reception of a feed or plate tube, K, and in rear thereof is a bracket for the feeding-rack and its pinion. K is a feed-tube constructed as at *k*, with inclines for guiding and steadying the nail-plate and directing it into slot U', and provided with a pinion, J, having a pawl which takes into a series of ratchets upon the exterior of tube K, permitting the pinion to move independently of the tube in one direction.

Upon the oscillating-frame, at a point between the tube K and the feeding mechanism, and in line therewith, is the plate-box F, within which is placed the spring platen or false bottom *f* for supporting the nail-plates. In the side of box F is a door, *d*, connected to the spring-bottom *f* by a chain or rope which passes around a sheave within the box, so that when the door *d* is opened the spring-bottom *f* is drawn down ready to receive the nail-plates, the springs close the door and carry the plates up against the feed plate or tongs L, which may be said to act as the cover of the feed-box. L is the feed-plate, fitted at its free extremity with a disk, M, the upper portion of which may be permanently attached to the plate, but the lower portion of M should be hinged so as to have a free latch-motion forward, that it may lift and pass over the plates in box F on the return-movement of plate L, and drop down when the forward movement of L commences. The rear end of the feed-plate is attached to a rack, O, and is at that point provided with a drop-latch, N, which works through a slot of the feed-plate, taking against the end of a plate at each forward movement and passing over the plates on the return-movement. O is a rack supported in a bracket or guide in the rear of the moving-lever or oscillating-frame E, and in line with the feeding-tube and plate-box. Meshing into rack O are two pinions, P and R, the pinion P provided with a ratchet-wheel, Q, operated by a pawl, *h*, pivoted to the extremity of a lever, G, and retained in place by a spring, *i*, made fast to the oscillating-frame E. This pinion is mutilated to allow the rack O to become disengaged upon the completion of the revolution of the pinion. The pinion R is provided with a coiled spring, one end of which is secured to the axis of the pinion and the other to the drum, so that the spring is wound up by the forward movement of the rack, and serves to reverse the pinion and retract the rack when the latter is released by the pinion P. G is a lever, adjustably pivoted in the rocking-frame H, which serves as a fulcrum therefor, and pivoted to the oscillating-frame E at *s*. This lever receives its motion from the frame E, and operates the rack I, which is pivoted to one end, and the pawl *h*, which is secured at or near its opposite end, thus serving to operate both the feed and plate-rotating devices. By adjusting lever G in rocking-frame H, the throw of pawl *h* and rack I may be varied to vary the feed according to the size of the plate and nail. The motion transmitted to the feeding devices may be regulated by changing the point of attachment between the moving-lever or oscillating-frame E and the connecting-rod D, and the amount of feed may be varied by adjusting the pawl *h* so as to increase or diminish its leverage.

The operation of these devices is as follows: The door of the plate-box is opened and draws down the false or spring bottom, upon which the

nail-plates are then placed, and the action of the spring closes the door and carries the plates up against the feed-plate L. The cam B, upon shaft A, acting on the rear face of the yoke, rocks the oscillating-frame or moving-lever E forward, bringing the plate-tube K down so as to present a plate to the cutter at the proper angle, and holding it in that position until the cutter has finished its stroke. This forward motion of the oscillating-frame E raises one arm of lever G, thereby depressing the other and drawing down rack I, revolving pinion J, upon feeding-tube K. As soon as cam B leaves the rear face of the cam-yoke, cam B' engages with the opposite face of the yoke, so as to rock the oscillating-frame E away from the nail-machine and raise the feeding-tube K, and this motion of frame E is transmitted by lever G to rack I, which causes the pinion J and (through its pawl) tube K to make one-half of a revolution, thus turning the nail-plate before it is again presented to the cutter. While the rack I has been operating the feed-tube K, the opposite end of lever G, in its downward movement, has caused the pawl *h* to change its position with relation to the ratchet Q, so that when cam B again rocks the frame E forward the pinion P will be turned so as to drive rack O forward, and with it the plate L, the latch N of which catches the outer end of the upper plate in box F; thus feeding down the nail-plate with the same motion that presents it to the cutter. When the mutilated portion of pinion P comes opposite the rack O, the rack is at once disengaged from the pinion and is retracted by the spring-pinion R, so as to be in position to feed down the next plate.

It is evident that the method adopted for rotating the plate may be employed with different feeding mechanism from that shown. Also, that the feeding mechanism (*i. e.* the rack and pinion feed as specified) may be used with the well-known nippers (as illustrated in Fig. 5) without departing from the spirit of my invention, as all that is necessary is to detach feeding-plate L and secure the nippers to rack O, the box F being likewise removed and the plate placed in the nippers in the ordinary way.

I do not claim broadly operating the feed mechanism from the main shaft, nor do I claim operating the feed mechanism from the main shaft by means of gearing and crank-arms, as I am aware such mechanism has heretofore been employed for the purpose specified; but,

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In combination, with the nail-machine shaft and cams thereon, the moving-lever or oscillating-frame, and suitable intermediate mechanism for operating the feed mechanism from the cams on the driving-shaft, substantially as specified.

2. The combination of the oscillating-frame, the plate or feed-tube, the loose pinion and

pawl, and the rack, substantially as and for the purpose specified.

3. The combination of the feeding-rack, the mutilated pinion for feeding the rack forward, and the pinion having a coiled spring for retracting the rack, substantially as and for the purpose specified.

4. The combination of the moving-lever or oscillating-frame, the feeding-rack and its driving-pinion, and suitable intermediate mechanism for operating the feeding-rack from the oscillating-frame, substantially as specified.

5. The combination of the feeding-rack and its driving-pinion, the adjustable pawl-lever and pawl, and the rocking-lever or oscillating-frame, substantially as and for the purposes specified.

6. The plate-box F, having the spring false bottom *f*, and a door, *d*, connected by a chain or similar means, substantially as described.

7. In combination with the feeding rack O, the feed-plate L, provided with drop-latches, substantially as and for the purpose specified.

8. The combination of the oscillating-frame E, the feed-tube K and its operating mechanism, the feed-rack O and its operating mechanism, and the plate-box F, substantially as and for the purpose specified.

In testimony whereof I, the said JOSEPH R. FINNEY, have hereunto set my hand.

JOSEPH R. FINNEY.

Witnesses:

T. B. KERR,
JAMES I. KAY.