B. F. RICE.

FEEDING MECHANISM FOR CUT NAIL MACHINES.

No. 190,251. Patented May 1, 1877.

Fig. 1.

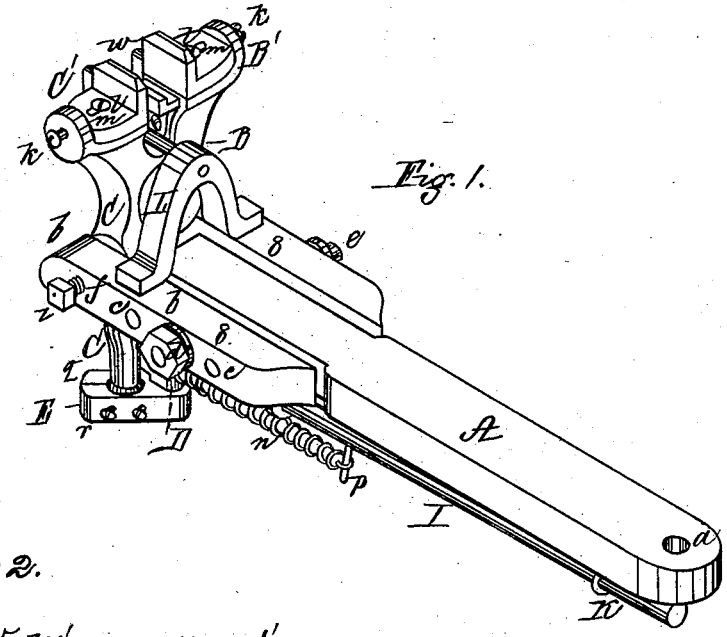


Fig. 2.

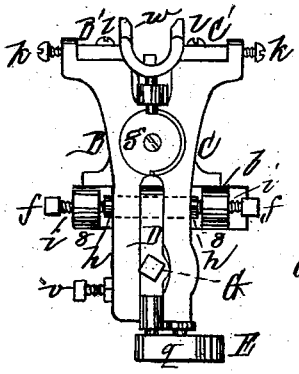


Fig. 3.

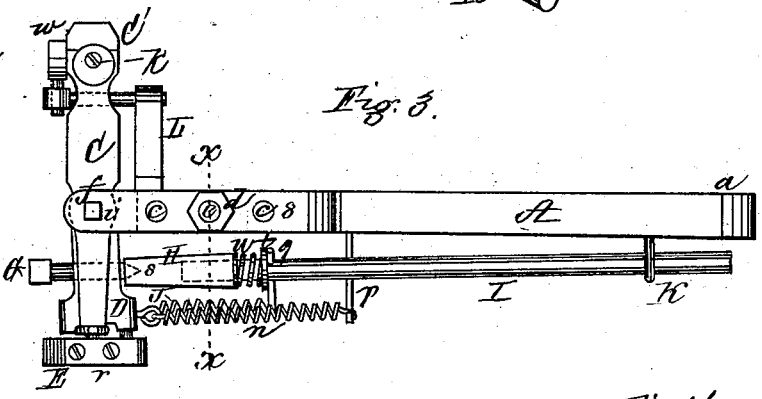


Fig. 7.

Fig. 4.

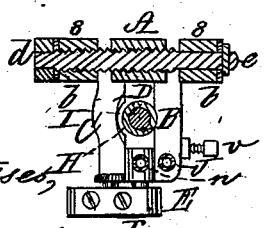


Fig. 5

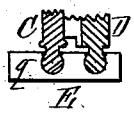
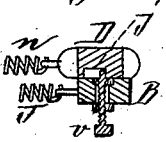


Fig. 6.



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UNITED STATES PATENT OFFICE.

BENJAMIN F. RICE, OF EAST WEYMOUTH, MASSACHUSETTS.

IMPROVEMENT IN FEEDING MECHANISMS FOR CUT-NAIL MACHINES.

Specification forming part of Letters Patent No. **190,251**, dated May 1, 1877; application filed February 12, 1877.

To all whom it may concern:

Be it known that I, BENJAMIN F. RICE, of East Weymouth, in the county of Norfolk, and State of Massachusetts, have invented certain Improvements in Feeding Devices for Cut-Nail Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of the feeding mechanism of a cut-nail machine constructed in accordance with my invention. Fig. 2 is a front elevation, and Fig. 3 a side elevation, of the same. Fig. 4 is a transverse section on the line *x x*, of Fig. 3; Figs. 5, 6, and 7, details in section.

My present invention relates to improvements in the feeding mechanism of cut-nail machines now in use, and more particularly to Letters Patent of the United States Nos. 119,228 and 120,190, granted to John C. Gould, September 26 and October 24, 1871. In said Patent No. 120,190 the movable jaw for griping the nipper-rod travels in a direction at a very slight angle thereto, almost approaching a line parallel with the direction of the feed, and the pressure exerted by this jaw on the nipper-rod holds it against the opposite jaw when the nail-plate is to be advanced, and when the time arrives for the jaws to release their hold on the nipper the movable jaw relaxes its hold to allow the plate to be turned, and delivered upon the stationary bed or cutter. In my invention a link connects the lever of the movable jaw with an arm operated by the push-rod, the said device being swung to one side when the feed takes place, by the push-pin being brought into contact with the machine, which operation first causes the movable jaw to approach the opposite jaw in a line at right angles to the direction of the feed, by which means the nipper-rod is more firmly grasped and held, after which the pair of jaws are advanced and the nail-plate reliably fed, as required, and immediately on the removal of the end of the push-rod from the machine the movable jaw recedes laterally from the opposite jaw in a direction at right angles thereto, thus instantly releasing the nipper-rod to allow of its being turned, both jaws being next returned by springs to their original position.

The second portion of my invention relates to the manner of regulating and changing the size or shape of the points of the nails.

In the above-named Patent No. 119,228, when the angle of the point is to be changed, the bar supporting the feed mechanism is pressed to one side so as to alter the direction of the feed relative to the cutters, said bar being secured to the stock in which the barrel and its nose-piece revolve, while in my invention the levers of the griping-jaws are pivoted in a frame made adjustable on and independently of the bar supporting the feed mechanism, by which construction the plate may be presented to the cutters at any desired angle with precision, and in a ready manner without the necessity of suspending the work.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A represents the bar supporting the feeding mechanism. This bar is intended to be secured at its inner end *a* to the stock in which turns the barrel and and its nose-piece. (Not shown.)

At the outer end of the bar A, and on opposite sides of the same, are parallel strips 8 connected by rods *c*, which pass through circular openings in the bar, the strips 8, with their rods *c*, constituting a frame, *b*, which is moved laterally to and from the bar by turning the head *d* of a screw-shaft, *e*, which passes entirely through both strips and the bar, the lateral movement of the frame being for a purpose to be hereinafter described.

The outer ends of the frame *b* project beyond the outer end of the bar and have pivoted thereto at *f* a pair of levers, B C, which are pivoted together at Z, at a point a short distance above the point *f*.

The pivot *f* consists of a transverse rod, *h*, provided with sockets at its opposite ends for the reception of the ends of two transverse screws, *i*, by which means the position of the levers may be adjusted laterally relative to the longitudinal center of the bar A, the direction of the screw G, to which the levers B C are pivoted being at right angles to the transverse rod *h*, by which they are pivoted to the frame *b*.

The upper ends of the levers B C are pro-

vided with jaws B′ C′, made adjustable by means of screws *k* to and from each other, being clamped in place when adjusted by screws *l* passing through slots *m*. Also pivoted to the transverse rod *h*, and interposed and projecting down between the lower ends of the levers B C, is an arm, D, to which is secured one end of a spiral spring, *n*, the other end of which is attached to a rod, *p*, extending down from the under side of the bar A.

The lower end of the arm D is of the form of a ball, and fits into a spherical cavity formed in and by the union of two horizontal blocks, *q r*, and the lower end of the lever C of the jaw C′ is also of spherical form, and fits into another cavity of corresponding form in the blocks *q r*, this pair of blocks serving as a connecting-link, E, to operate the lever C and its jaw C′ in a manner and for a purpose now to be explained.

Passing through the front of the arm D is a screw, G, the point of which is smooth and of conical form, fitting into a socket, S, in a sleeve, H, sliding over the outer end of a push-rod I, the inner end of which passes through a guide, K, projecting down from the under side of the bar A.

A pin, 9, passes through the push-rod near its outer end, and between this pin and the inner end of the sleeve is interposed a washer, *t*, and a short spiral spring, *u*, and through the connection of the parts described, when the feeder is in motion, or vibrated, the end of the push-rod is intermittently brought into contact with some portion of the machine, forcing the sleeve H against the point of the screw G with a steady pressure against the resistance of the spring *u*, by which means the arm D is made to move longitudinally in front, and the lower end of the lever C to be thrown out laterally, thus causing its jaw C′ to approach the jaw B′ in a direction at right angles thereto and gripe the nipper-rod, which carries forward the plate (not shown) to the cutters, to be severed into nails.

The lower end of the lever B, which carries the jaw B′, having no lateral movement, (after adjustment,) is connected by a screw, *v*, to the lower end of the arm D, the latter being provided with a slot or recess, *j*, Fig. 6, so that the arm may first move out in front independently of the jaw B′ to impart the required lateral movement to the jaw C′, after which the movement of the arm D is imparted to the jaw B′ to carry it forward in common with the jaw C′.

Immediately after the push-rod has vibrated the arm D to the front, and the jaw C′ simultaneously moved laterally toward the opposite jaw B′ to gripe the nipper-rod between them, the two jaws B′ C′ are advanced, carrying forward the nipper-rod and delivering the nail-plate on the stationary bed squarely against the gage, (not shown,) to be cut up as desired.

After a nail has been cut the retraction of the spring *n* carries the arm D back into its normal position and through the connections described, the jaw C′ moves squarely away from and releases its gripe on the nipper-rod, and the jaws then return, ready to take a new hold thereon, which is effected in the same manner as previously described.

J is a spiral spring for returning the jaw B′ to its normal position. L is a bridge-piece secured to and spanning over the frame *b*, and is provided with a yoke, *w*, which serves as a rest or support for the outer end of the nipper-rod.

The lateral adjustment of the jaws with the frame *b*, in which they are pivoted, as well as the lateral movement of the supporting-yoke *w*, is for the purpose of changing the angle of inclination of the nipper-rod, and consequently that of the nail-plate, to the cutters, when a change is required in the shape of the points of the nails; and this adjustment is effected with extreme facility without stopping the machine by simply turning the regulating screw-shaft *e*.

From the foregoing it will be seen that, as the jaw C moves in a direction at right angles to the jaw B′, it comes squarely into contact with the nipper-rod, and its action is reliable both in taking and keeping a firm hold of the rod when the feed is taking place, and prompt in releasing its hold thereof, and without clinging thereto when the rod is to be rotated to turn the plate, the consequence of which is the work is invariably performed in a perfectly satisfactory manner.

If desired, the link connecting the lever C with the arm D may be of the form shown in Fig. 7, the lower end of the lever and arm being provided with spherical sockets for the reception of the spherical ends of the link, and connected by a spiral spring, so as to bring back the parts to their original position.

It is evident that the jaw B′ may be moved laterally instead of the jaw C′ to gripe the nipper-rod by simply connecting the lower end of the lever B with the arm D instead of the lower end of the lever C, as shown, without departing from the spirit of my invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The lever C and arm D, connected by the link E, in combination with the lever B, push-rod I, and springs *n* J, constructed to operate substantially as and for the purpose set forth.

2. The levers B C, hung in a frame, *b*, in combination with the bar A and screw-shaft *e*, substantially as and for the purpose described.

Witness my hand this 3d day of February, 1877.

BENJAMIN F. RICE.

In presence of—

N. W. STEARNS,

W. J. CAMBRIDGE.