I. BRIGGS.

Nail-Plate Feeder.

No. 210,911. Patented Dec. 17, 1878.

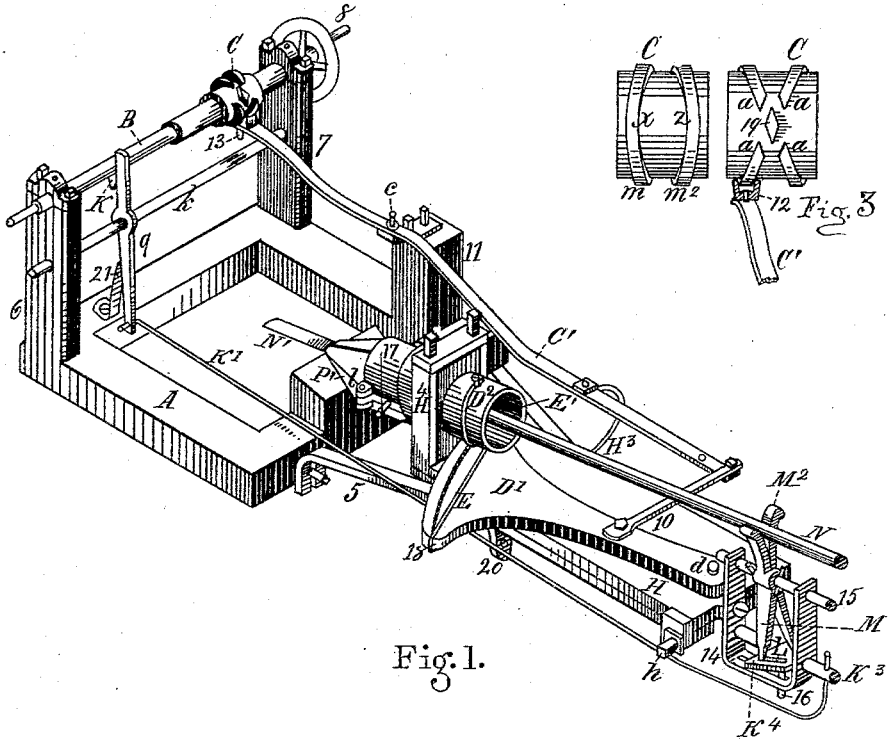

Fig. 1.

Fig. 3

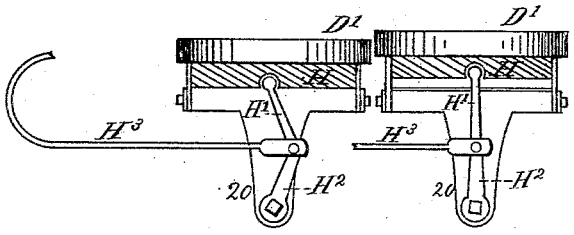

Fig. 2.

Witnesses:

H. E. Renick.

H. E. Metcalf.

Inventor:

Isaac Briggs.

Per C. Shaw,

Atty.

UNITED STATES PATENT OFFICE.

ISAAC BRIGGS, OF MIDDLEBOROUGH, MASSACHUSETTS.

IMPROVEMENT IN NAIL-PLATE FEEDERS.

Specification forming part of Letters Patent No. **210,911**, dated December 17, 1878; application filed April 18, 1878.

To all whom it may concern:

Be it known that I, ISAAC BRIGGS, of Middleborough, in the county of Plymouth, State of Massachusetts, have invented certain new and useful Improvements in Nail-Machines, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which my invention appertains to make and use the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is an isometrical projection; Fig. 2, a sectional view of the elevating mechanism, and Fig. 3 an enlarged view of the switch-cam.

Like letters of reference indicate corresponding parts in the different figures of the drawing.

My invention relates to that class of nail-machines which are provided with means for feeding the plate or rod to the cutters automatically; and consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and explained, by which a simpler, cheaper, and more effective device of this character is produced than is now in ordinary use.

In the drawing, A represents the main bed of the machine, and 5 the bracket or auxiliary bed, on which the principal working parts of the feed mechanism are mounted.

Projecting upwardly from the bed A are two standards, 6 7, carrying the horizontal shaft B, provided with the wheel 8.

Disposed on the shaft B there is a switch-cam, C, and immediately below this shaft, and in parallelism therewith, is a rocker-shaft, *k*, provided with the lever 9.

Pivoted at *h* to the bracket 5 there is a plate or vibratory bed, H, provided with the vertically-arranged head-stock H^4.

A lever, D^1, is pivoted at *d* to the plate H, and is connected, by the rod 10, to the lever C′. This lever, which is pivoted at *c* to the standard 11, carries at the end opposite the rod 10 a short bar or cam-shoe, 12, which is grooved on its upper side to receive the thread or screw of the cam C, as seen in Fig. 3. This bar has a downwardly-projecting stud, 13, which is fitted to work in a corresponding hole in the end of the lever C′.

Attached to the rear end of the plate H there is a U-shaped plate, 14, opening upwardly, and carrying the shafts K^3 and 15, which are arranged to slide horizontally in their bearings.

A pair of levers, $M M^2$, are disposed vertically on the shaft 15, being arranged to form a shear, having the shaft as a common fulcrum.

A plate, K^4, is secured in a horizontal position to the shaft K^3, and provided with diagonal twin slots L, (one not shown,) which converge near that side of the plate K^4 farthest from the plate H. The lower or long arms of the levers $M M^2$ are fitted to work in these slots in such a manner that when the shaft K^3 and plate K^4 are moved back and forth horizontally, the short or uppermost arms of the levers $M M^2$ will be opened or closed to grasp or release the nail-plate holder N, as the case may be.

The plate K^4 is kept in its horizontal position by the downwardly-projecting stud 16, which works in an elongated slot in the lower part of the bar 14, and is actuated by means of the rod K^1, connecting the shaft K^3 with the lower end of the lever 9.

A barrel, D^2, is fitted to be partially rotated in the head-stock H^4, said barrel being provided with an adjustable mouth-piece, P′, in two parts, the sections being respectively hinged as shown at *l*, each section being provided with an adjusting-screw, 17, and constructed to hold the plate N′ with a yielding pressure. A cord, E, is wrapped partially around the barrel D^2 and secured thereto, one of its ends being also secured to the outer edge of the plate D^1 at 18. A corresponding cord (not shown) is also wrapped partially around the barrel in an opposite direction and secured to that side of the plate D^1 opposite the part 18.

The formation of the switch-cam C is best shown in Fig. 3, the threads *m* m^2 being arranged in such a manner as to be widely separated at *x z*, and to converge on the opposite side of the shaft B. The threads do not cross, but spaces are left, as seen at *a a*; and disposed between the ends of the threads there is a lozenge-shaped stud, 19, arranged as shown. The spaces *a a* permit the grooved bar 12 to

cross from one thread to the other of the cam as the shaft B revolves, the stud 19 serving to insure the passage of the bar across the spaces in a proper direction.

I sometimes use a grooved cam having a fork or dog projecting into the groove, instead of the ribbed cam C, having the threads m m^2, for producing the requisite movements of the lever C′, and the mechanism for raising and turning the plate N′, it being obvious that the grooved cam may be substituted for the ribbed cam without departing from the spirit of my invention.

Projecting downwardly from the bracket 5 there is an arm, 20, to the lower end of which the lever H^2 is pivoted. This lever is also jointed to a companion lever, H^1, and to a bent rod, H^3, which connects with the lever C′. The upper end of the lever H^1 works in a groove or socket in the lower side of the plate H, and as the rod H^3 is moved back and forth horizontally, the toggle-levers H^1 H^2 act to alternately raise and depress the plate D^1 and barrel D^2, in a manner which will be readily obvious without a more explicit description.

In the use of my improvement power is applied to the wheel 8, causing the cam C to rotate and act to vibrate the lever C′, and through it the plate D^1. The barrel D^2, being attached to the plate by the cords E, will be caused to rotate partially on its axis, its rotary movement being reversed to correspond with the reciprocating lateral movements of the plate D^1.

A cam-tooth, K, projects from the shaft B, and acts upon the upper arm of the lever 9 as the shaft revolves, to force the lower arm of the lever against the spring 21, and thus, through the rod K^1, to slide the plate K^4 toward the plate H, by which the levers M M^2 are caused to grasp the nail-plate holder N, the spring 21 forcing the plate K^4 in the opposite direction and releasing the rod as the shaft B continues to revolve.

The nail-plate N′ is inserted by means of the holder N in the barrel D^2, being held by the yielding jaws P′, the advancement of the plate to the cutters (not shown) and its semi-rotary reverse movements being accomplished substantially as follows: The toggle-levers H^1 H^2 first raise the barrel D^2, and with it the nail-plate N′, from contact with the bed-cutter, while simultaneously the holder N is grasped by the levers M M^2 and advanced a sufficient distance for one nail.

The connecting-joint of the levers H^1 H^2 having now passed the center, the plate N′ falls upon the cutter, where the nail is cut, after which the plate is again raised by the toggle-levers. In the meantime the action of the lever C′ on the plate D^1 rotates the plate N′, and the levers M M^2 are caused to feed the same again to the cutters.

It will be understood that all parts of the mechanism must be so constructed and arranged, or "timed," that the nail-plate N′ will be raised, partially rotated, advanced, and lowered upon the cutter in a proper manner, which may be readily accomplished by the means described.

As the plate K^4 is advanced toward the plate H, when it arrives at that point where the short arms of the levers M M^2 are caused to firmly grasp the holder N, the same being unyielding, the plate K^4 will cause the shaft 15 to slide, thus forcing the plate N′ forward and consummating the feed, the levers M M^2 being prevented from sliding on the shaft by stay-pins on either side. The cam C has its screw-threads so formed and arranged as to act in the proper manner to control and manipulate the plate N′, as described.

In the operation of the feeding mechanism it will be observed that the slotted plate K^4, in acting upon the griping-levers M M^2, gives them positive movements in taking hold of and releasing the nipper-rod or holder N, which is very essential to the proper working of my machine.

I am aware that in the patent numbered 166,166, and dated July 25, 1875, for an improvement in screw-machines, a feeding device is shown in which there is a slotted plate or cam; but the same is essentially different in its application from my invention, and I therefore do not herein claim anything shown or described in said patent, when in and of itself considered; but,

Having thus explained my improvement, what I claim is—

1. The slotted plate K^4, sliding shaft K^3, and griping-levers M M^2, pivoted on the sliding shaft 15, in combination with the rod K^1, rocking lever 9, cam K, spring 21, and nipper-rod or holder N, substantially as set forth.

2. In a feeding mechanism for a nail-machine, the barrel D^2, plate D^1, plate H, cords E, rod H^3, levers H^1 H^2, rod 10, and rod C′, combined and arranged to operate substantially as and for the purpose set forth and specified.

3. In a feeding device for a nail-machine, the cam C, in combination with the shaft B, bar or dog 12, rod C′, barrel D^2, and mechanism, substantially as described, for raising and rotating said barrel, substantially as and for the purpose set forth.

ISAAC BRIGGS.

Witnesses:
IRA THOMAS,
JAMES B. TILLSON.