

UNITED STATES PATENT OFFICE.

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NAIL-PLATE FEEDER.

Specification of Letters Patent No. 21,222, dated August 17, 1858.

To all whom it may concern:

Be it known that I, JAMES H. SWETT, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Nail-Plate Feeders; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, represents the entire machine, in perspective, and Figs. 2, 3, and 4, represent in perspective, broken portions, not distinctly seen in Fig. 1.

Similar letters of reference where they occur in the several figures, denote like parts of the apparatus in all of them.

The nature of my invention relates to a nail plate feeder which performs its several functions of turning the nail plate; advancing it to the gage, partly by a positive motion, and partly by its own momentum, after it is released from its positive motion; and opening the jaws that grip the nail plate to release the end of the plate, and be ready to receive another plate, automatically, and by an arrangement, or combination of devices that will be hereafter described.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A, represents a bed, upon which is placed two pillow blocks B, C, one at each of its ends. Upon the pillow block B, is arranged a box or bearing D, through which a long sleeve or tube E, may work, said sleeve or tube being prevented from turning in its box, by means of a feather on its under side, which traverses through a groove or slot cut in the box. Through this sleeve or tube, the rear end of the rod F, that carries the nail plate nippers passes, the front end of said rod passing through and turning in a box G, arranged on the other pillow block C, at the opposite end of the bed plate A. The rear end of the sleeve or tube E, has two cam slots *a, a*, cut in it, which slots unite at the rear end of the tube, and diverge therefrom to diametrically opposite sides of said sleeve, and in these slots, works a switch *b*, which is pivoted at *c*, to the rod F. That part or portion of the tube E, at the rear of where the two cam slots *a* unite, is so formed, as seen at *d*, as to receive the corners *e* of the

pivoted switch *b*, as it is drawn back by the rod F, and partially turn said switch, so that it shall alternately pass down the grooves *a a*, and thus turn the rod half around in one direction by one of its movements forward, and on its next movement forward be turned half around in the opposite direction, for the purpose of presenting the nail plate to the shears "head and point," as it is termed.

To the forward end of the rod F, is affixed a bar *f*, which carries a cross head *g*, at its forward end; and to this cross head are pivoted the two jaws H, H, that grip the nail plate. These jaws have shanks I, I, upon them, which extend backward, and are bent or curved at their extreme rear ends as seen at *h, h*, to form shoulders, for a purpose that will be hereafter described, and the shanks I, of the jaws H, are forced apart by springs *i, i*, pressing against them, the effect of which is to force the jaws together.

Between two fixed ferrules J, J, on the rod F, there is a loose sleeve or boss K, to which boss is connected, by the rods L, L, a plate M, so that unless controlled by other devices, as it is, the said plate might swing on said rod; a stud or pin *j*, however in said plate, which traverses on one side or the other of a ledge or fence N, permanently attached to the bed plate A, regulates the swinging of the plate M, while it traverses with the rod F.

The ledge N, is cut through at the points *k, l*; and springs *m, n*, are so arranged at the points *k, l*, respectively, as that at proper times during the feeding up of one nail plate, and the inserting of another, the stud *j*, shall be driven through said openings *k, l*, as the case may be, and cause the plate M, to swing on the rod F, which not only, in one case stops the feeding up of the nail plate, but causes the jaws to open, and drop the remaining end of the nail plate thus fed up, but be ready to receive another, which will be explained in connection with the operation of the machine.

At the front end of the bed plate A, are two uprights O, O, which support a shaft P, through which shaft motion may be communicated to the nail plate feeder, by belt, crank, or otherwise, from any first moving power. On one of the ends of this shaft P, there is a crank Q, to a wrist pin in which is connected one end of a pitman R, the other end of said pitman, being attached to

an arm S, as seen in Fig. 3, which arm is pivoted at *o*, to the top of a supporting piece T, connected to the bed plate A. The lower end of the arm S, is slotted at *p*, and through this slot passes a screw *q* which enters a crosshead U, that moves in ways or guides *r, r*, at the base of the supporting piece T, as seen in Fig. 2.

On the cross head U, are pivoted at the points *s, s*, two bent levers V, V, which have projecting portions *u, u*, of their ends *t, t*, covered with any elastic material, that will not readily slip upon anything which they may be caused to grip. These two ends *t, t*, of the bent levers V, are forced apart or from each other by springs *v, v*; the other ends *w, w*, of these levers V, approach each other like a pair of nippers, being forced together by the springs *v, v*, that separate the opposite ends *t, t*, thereof.

A cam wedge W, is permanently fixed to the support T, and between the ends *w, w*, of the levers V, so that as the levers go forward past said cam wedge the forward ends *w, w* thereof may come together by the action of the springs *v, v*, in forcing apart the opposite ends *t, t*. But when the levers make their backward movement, the cam wedge W, forces apart the ends *w, w*, and closes the other ends *t, t*, causing the parts *u, u*, to act as grippers in holding anything between them. The movement of the cross head V, and the levers upon it, is so arranged that the part *u, u*, when open pass on each side of the portion *x* of the swinging plate M, and just before or at the end of their movement the parts *u, u*, are closed upon said portion *x*, by the action of the wedge W, and hold it tightly—said portion *x*, being properly roughened for that purpose. Now as the cross head returns, it carries the plate M, with it, and consequently the rod F, to which said plate is connected, until the ends *w, w* of said levers pass beyond the inclined planes of the wedge, and then they close, and in so doing release the parts *u, u*, from the plate M. By the time this releasement is effected, the plate and rod have momentum enough to carry the nail plate clear up to the gage, so that the traverse of the rod F, forward, is partially positive, and partially by its own momentum; and there is nothing to restrain it until the nail plate comes up to the gage. It is impractical to feed up a nail plate by rack and pinion, ratchet, or any let off motion, that regulates the distance that the nail plate can move at each feed. The gage, as in hand feeding, is the only reliable stop, and the nail plate must be stopped by the gage only, to produce accurate work. For this purpose I get up the momentum necessary to carry the nail plate to the gage, but at regular intervals, so as to keep pace with the shears, grippers, and heading tool.

While the nail plate is being fed up, the stud *j*, in the plate M, is upon that side of the ledge N, as shown in Fig. 1. And when the nail plate is so used up as to allow the stud *j*, to come opposite the opening *k* in said ledge, then a cam *y*, on the under front end of the plate M, takes against a spring *m*, and by said spring the stud is forced through *k*—the plate swinging on the rod F, to admit of it, and just as the stud comes through, it is caught by a projection Z, which is on a sliding piece X, as seen in Fig. 4, and is moved up on the opposite side of the ledge N, and swinging the part *x*, of the plate M, out of reach of the grippers *u, u*, so that the levers V, may continue their motion, but without affecting the plate M, and the rod F. The plate and rod F, for they are connected together, being thus carried back by the projection Z, the shoulders *h, h*, in the shanks I are brought against the spring dogs Y; the rod continuing to move in a backward direction by the means just stated, the spring dogs Y, force the shanks I, of the nail plate gripper together, which opens the jaws H, H, and allows the remaining end of the nail plate to drop out, the jaws remaining open for the receipt of another nail plate.

When the stud *j*, is on that side of the ledge N, shown in Fig. 4, and is still being drawn backward by the projection *z*, said stud passes behind the point of a spring *n*, and this spring keeps the stud pressed close up against the ledge, until the stud arrives at the opening *l* through the ledge, and then the spring forces the stud through said opening, swinging the plate M, on the rod F back to its former position behind the ledge, whence by a slight motion forward, its portion *x*, comes within the reach of the grippers *u, u*, and the feeding up of the nail plate commences again, continues, and terminates as above described.

On the shaft P, through which motion is communicated to the several parts of the feeder, there is a pulley Z, around which, and around a large band wheel 2, at the rear of the bed plate A, passes an endless belt, band, or chain 3; the difference in the diameters of the pulley Z, and the band wheel 2, causing the former to make several revolutions, to one of the latter. The band wheel 2 is hung on a crank shaft 1, that is supported in suitable bearings 4, underneath the rear portion of the bed plate A, and to the crank 5, on this shaft which travels through a slot cut through the bed plate is fastened one end of a connecting rod or pitman 6, the other end of which is attached to the sliding piece X, carrying the projection Z, as heretofore described. The projection Z, is so rounded off, on that part of it which would first come in contact with the stud, that it will pass by the stud in

going forward, but in returning it will catch and carry back with it the stud, and plate to which it is attached. As at present arranged the piece X, is traversing during the entire feeding up of the nail plate, but if found essential a shipper may be so connected with the band 3, and a loose pulley on the shaft P, as that the sliding piece X, may be at rest until the nail plate is nearly fed up, and then the shipper may be automatically worked to throw the piece X in motion, just in time to catch the stud as it is forced through the opening *k*.

Having thus fully described the nature and object of my invention what I claim therein as new and desire to secure by Letters Patent is—

1. In combination with sleeve E, and rod F, the cam slots *a, a*, and pivoted switch *b*, for automatically turning said rod, first in one direction, and then in the opposite one, for the purpose set forth.

2. I also claim giving the rod and nail plate a positive movement during the first of its forward motion by means of the crank Q, pitman R, arm S, cross head U, levers V, and their projecting portions *u*, which are

then forced apart by the cam wedge W, and then releasing them by the action of the springs *v* when in motion so that their momentum will carry the nail plate up to the gage, substantially as described.

3. I also claim in combination with the nail plate grippers, the spring dogs, for automatically opening said grippers to drop the end of the nail plate, and be ready to receive another one as set forth.

4. I also claim in combination with the rod F, and swinging plate M with its stud *j*, the ledge N, with its openings, for automatically throwing the feed motion, out of gear, when the nail plate is used up, and into gear again when a fresh plate is supplied, substantially as set forth.

5. I also claim in combination with the plate M the traversing projection Z, for catching and drawing back said plate, when the nail plate is used up, substantially as set forth.

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Witnesses:

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