2 Sheets--Sheet 1.

L. SOULE.

Nail-Plate Feeder.

No. 165,693. Patented July 20, 1875.

Fig. 1.

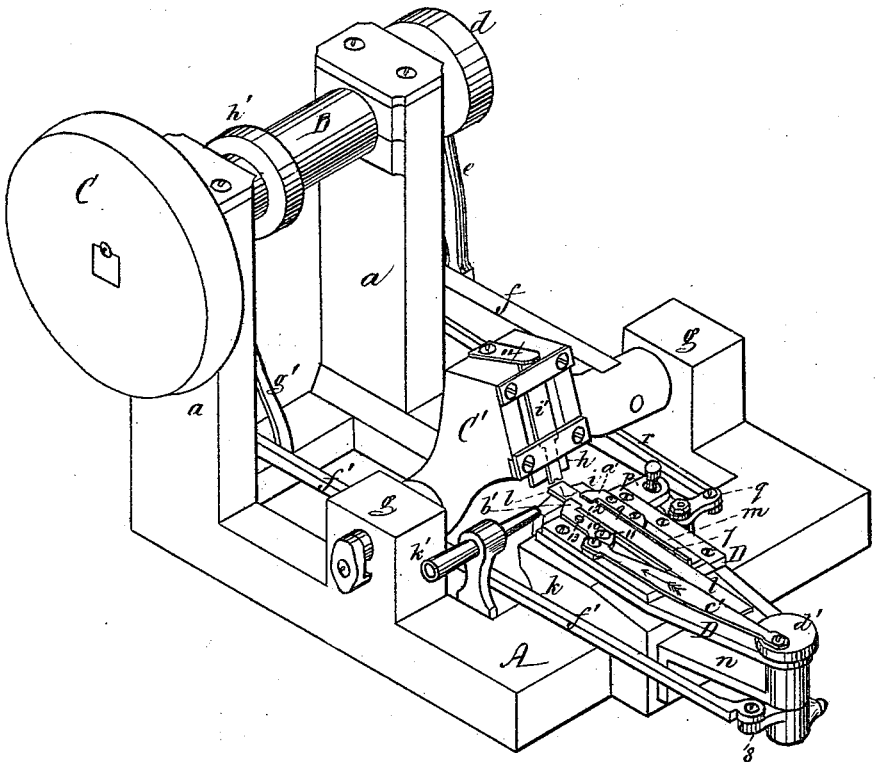
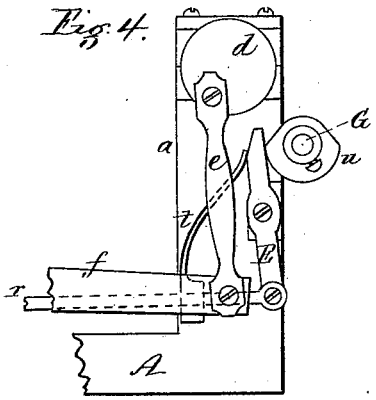


Fig. 4.



Witnesses,
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per Teschemacher & Stearns
Attys

2 Sheets--Sheet 2.

L. SOULE.

Nail-Plate Feeder

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Fig. 2.

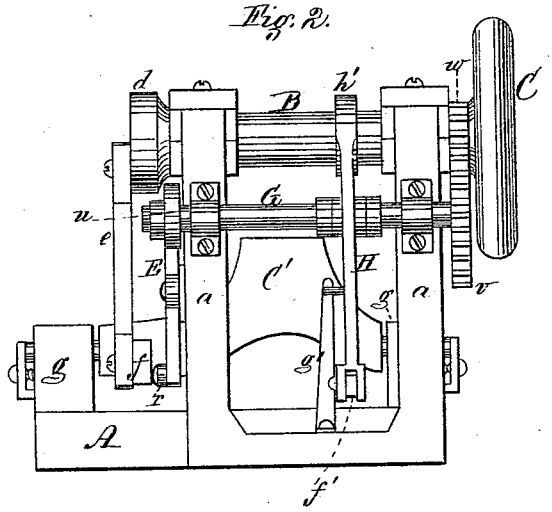


Fig. 3.

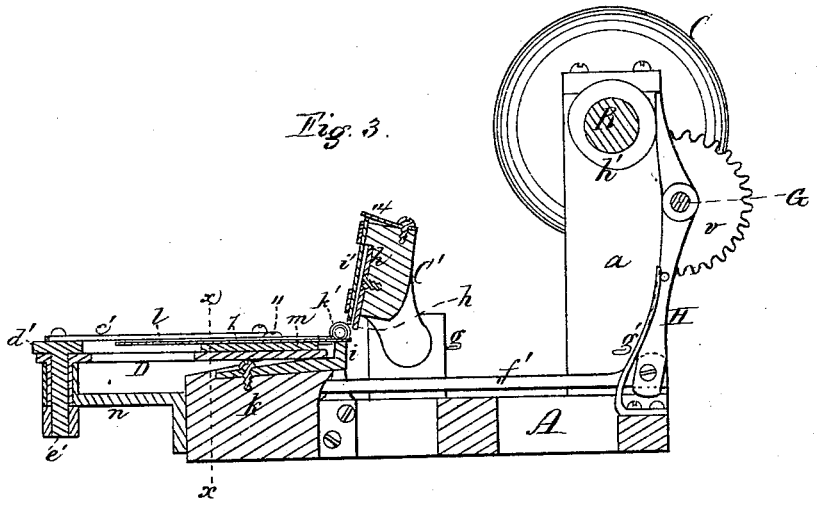


Fig. 5.

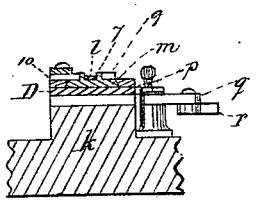
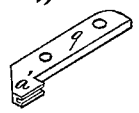


Fig. 6.



Witnesses,
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Attys

UNITED STATES PATENT OFFICE.

LEANDER SOULE, OF TAUNTON, MASSACHUSETTS.

IMPROVEMENT IN NAIL-PLATE FEEDERS.

Specification forming part of Letters Patent No. **165,693**, dated July 20, 1875; application filed May 6, 1875.

To all whom it may concern:

Be it known that I, LEANDER SOULE, of Taunton, in the county of Bristol and State of Massachusetts, have invented certain Improvements in Machines for Making Tacks and Nails, 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 a nail-machine having my improvements applied thereto. Fig. 2 is a rear elevation of the same. Fig. 3 is a vertical section through the center of the same. Fig. 4 is an elevation of a portion of one side of the same. Fig. 5 is a transverse vertical section on the line *x x* of Fig. 3; Fig. 6, detail, (enlarged.)

In machines for making tacks and nails, as heretofore constructed, the nail-plate is held between nippers, and passed through the nose-piece of the barrel, or a guide where no barrel is employed, the nippers with the plate being fed forward by a weight or other device applied to the nipper-rod at or near its rear end. This construction is, however, objectionable on account of the great waste of stock, the nose-piece or guide preventing the nippers from being brought up close to the cutters, and consequently after the last cut that portion of the plate held between the nippers, together with that extending from the end of the nippers to the edge of the bed-cutter, is wasted; and even where the nose-piece is double to allow the nippers to pass through it, so as to approach the cutters as near as is practicable, there is yet an unnecessary waste of stock on account of the end of the plate being held between the nippers. These machines are furthermore objectionable for the reason that after each plate has been cut up it becomes necessary to remove the nippers, with their rod, from the barrel, in order to take out the butt or waste piece, and substitute a fresh plate, and then replace the nippers and rod with the new plate within the barrel, which occasions much inconvenience and the loss of considerable time and labor.

My invention has for its object to enable me to dispense with the nippers and nipper-rod, and to cut the nail-plate much closer to its end than heretofore, thus effecting a great saving in stock, and also to avoid the loss of time and labor heretofore incurred in removing the waste ends and introducing fresh plates; and my invention consists in the several combinations of devices hereinafter described and claimed.

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 bed of the machine, from the rear end of which rise two standards, *a a*, in suitable bearings at the top of which runs the driving-shaft B, which carries at one end the fly-wheel C, and at the opposite end a disk, *d*, provided with a crank-pin, to which is secured the upper end of a connecting-rod, *e*, the lower end of which is pivoted to an arm, *f*, projecting from the upper cutter-lever C′, which is pivoted between short standards *g g*, and carries the upper cutter *h*, the lower or bed cutter *i* being secured to a block, *k*, at the front of the bed A. *l* is the nail-plate from which the tacks or nails are cut, this plate fitting into a shallow groove or guideway, 7, formed in the upper surface of a plate, *m*, which slides between dovetailed guides on a laterally-vibrating frame, D, one end of which rests on the block *k*, the other end being pivoted to the end of a horizontal stationary arm, *n*.

At the end of one side of the frame D is a lug, *p*, through a slot in which passes a pin secured to one arm of a bell-crank, *q*, to the other arm of which is pivoted one end of a rod, *r*, the opposite end of which is attached to a lever, E, which is moved against the resistance of a spring, *t*, by a cam, *u*, on a horizontal shaft, G, which is connected with the driving-shaft B by gears *v w*, and thus, as the lever E is vibrated, the frame D is moved from side to side, in order to bring the end of the nail-plate alternately over opposite sides

of the bed-cutter, which is of the ordinary angular form, as is also the upper cutter, so as to cut the blanks with their heads and points alternately on opposite sides of the plate, in a well-known manner.

I will now describe the griping mechanism, by which the nail-plate is seized and intermittingly fed forward to the cutters at the required times. *a' b'* are a pair of grooved jaws, one, *a'*, of which is formed at the end of a plate, 9, secured to the slide *m*, and the other, *b'*, at the end of a bent lever, 10, pivoted to the slide *m* at 11, the short arm of this lever being connected by a rod, *c'*, with a crank-pin projecting up from a disk, *d'*, secured to the upper end of a short vertical shaft, *e'*, which is rocked in a bearing at the outer end of the arm *n* by an arm, 8, which receives its motion from a rod, *f'*, pivoted thereto and to the lower end of a lever, H, which is pivoted loosely on the shaft G, and is moved against the resistance of a spring, *g'*, by a cam, *h'*, on the driving-shaft B. The shaft G rotates without imparting motion to the lever H, which is held in place by a collar on each side. The vibration of the lever 10 on its pivot is limited by a pin, 12, which fits into an aperture or slot, 13, the width of which is a little greater than the diameter of the pin, so as to allow the lever 10 to have sufficient movement only to enable it to gripe and release the nail-plate, which passes between the grooved jaws *a' b'*, by which it is fed forward at the required times. *i'* is a presser-bar or retainer, which slides in guides in the front of the lever C', and is held down by a spring, 14, bearing against its upper end, the downward movement of the bar being limited by shoulders, as seen in Fig. 1. This presser-bar or retainer is employed to hold the nail-plate while the griping mechanism is being drawn back to enable it to take a fresh hold, and also serves to confine the nail-plate securely and prevent it from moving while the blank is being cut therefrom.

It will be seen that the instant the rod *c'* commences to move forward in the direction of the arrow it will cause the lever 10 to gripe the nail-plate, after which the motion of the rod is communicated to the slide *m*, which, together with the jaws and nail-plate, is moved forward the required distance for a new blank. The upper cutter *h* is now brought down to sever the blank, and, at the same time, the lower end of the presser-bar or retainer *i'* is brought down into contact with the upper surface of the nail-plate, the spring 14 yielding as the lever C' continues to descend, and causing the presser-bar to hold the nail-plate securely in place.

Immediately after the descent of the presser-bar *i'*, and while the plate is still held thereby, the rod *c'* commences to move back, which first causes a slight movement of the lever 10, thereby releasing the nail-plate from the gripe of the jaws *a' b'*, which now slide back over the edges of the plate, as they are withdrawn with the slide *m* by the continued backward movement of the rod *c'*, and as soon as the jaws have been drawn back to their full extent, so as to take a new hold upon the nail-plate, the rod *c'* is advanced slightly, which causes the lever 10 to move sufficiently to gripe the nail-plate and thus hold it when released by the ascent of the retainer *i'*. The slide *m* now remains stationary until after the frame D has been vibrated and the cutter *h* commences to descend, when it is again advanced to feed forward the plate an amount sufficient for the next blank to be cut, the form of the cam *h'* being such as to produce the various movements of the griping mechanism and slide *m* at the precise times required.

By the employment of a griping mechanism, arranged to seize the nail-plate immediately in front of the edge of the bed-cutter *i*, as above described, instead of the nippers and nipper-rod heretofore used, I am enabled to cut up the nail-plate much closer to its end than heretofore, and thus effect a great saving in stock, as the jaws can be brought up very near to the edge of the bed-cutter *i*, and no portion of the nail-plate remains between the jaws of the griping mechanism when the latter is withdrawn after the last cut, the butt or waste piece, which is of very small size, being left by the jaws on the bed-cutter *i*, from which it is discharged into a suitable receptacle placed to receive it, by a blast of air issuing from the end of a tube, *k'*, or by any other suitable device.

When one plate has been used up it is merely necessary to slide a fresh one into the groove 7, and push it forward between the jaws *a' b'*, all of the time and labor heretofore required in removing the nippers from the barrel, taking out the butt, inserting a fresh plate, and replacing it, with the nippers, within the barrel being thus saved.

I do not confine myself to the particular griping mechanism shown, or the means by which it is operated, as they may be varied without departing from the spirit of my invention; and, instead of the presser-bar *i'*, any other equivalent device may be employed for holding or retaining the nail-plate while the griping mechanism is being drawn back for a fresh hold.

My invention may be used in connection with a turning barrel, in which case the griping mechanism would be connected directly with the barrel, so as to be turned therewith, the presser-bar or retainer being so constructed and operated as to be moved out of the way to allow of the nail-plate being turned; and, if desired, the plate may be withdrawn

slightly, by suitable mechanism, before being turned, to prevent it from coming in contact with the upper cutter.

What I claim as my invention, and desire to secure by Letters Patent, as an improvement in machines for making tacks and nails, is—

1. The jaw *a' b'*, secured to the sliding plate *m*, in combination with the vibrating frame D, cutter *h*, and presser-bar *i*, substantially as and for the purpose described.

2. The jaws *a' b'*, secured to the sliding plate *m*, vibrating frame D, bent lever 10, rod *c'*, shaft *e'*, arm 8, rod *f'*, and lever H, in combination with the presser-bar *i* and cutter *h*, all constructed to operate substantially as and for the purpose set forth.

Witness my hand this 30th day of April, A. D. 1875.

LEANDER SOULE.

In presence of—
P. E. TESCHEMACHER,
N. W. STEARNS.