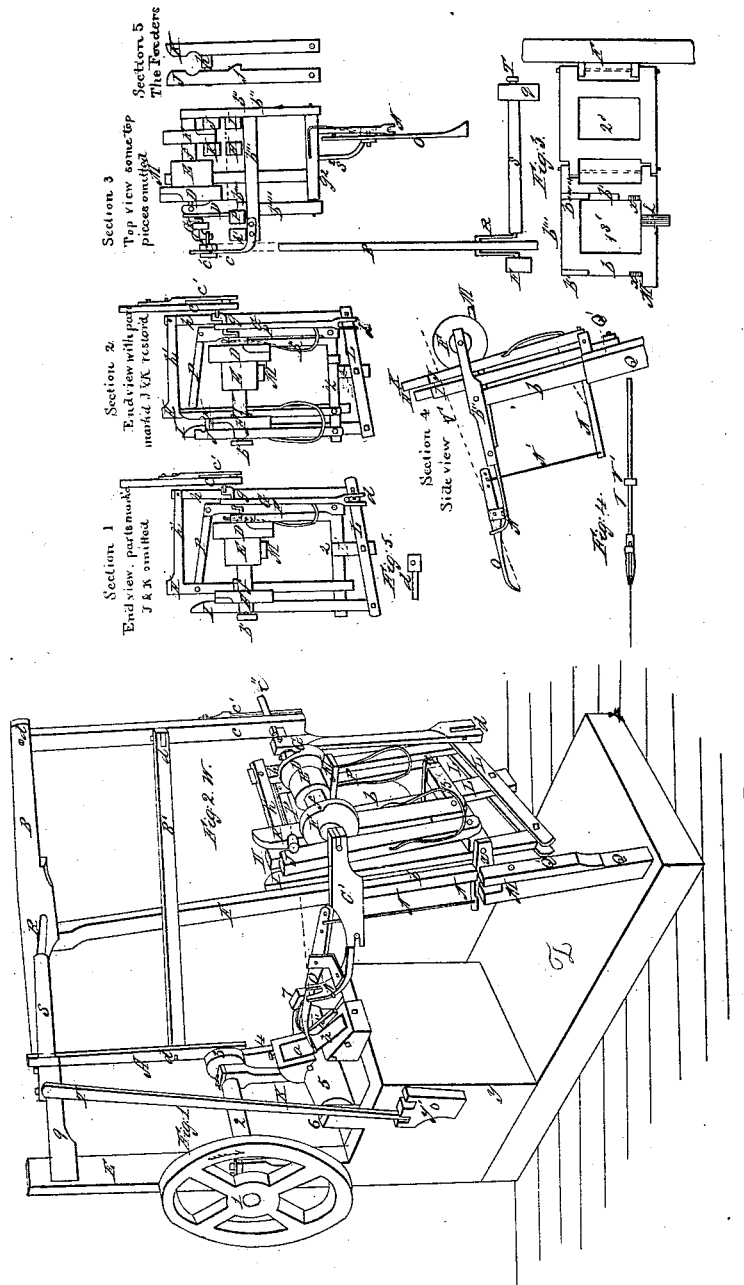


M. Otis,

Making Cut Nails,

N^o 7,812.

Patented Dec. 3, 1850.



UNITED STATES PATENT OFFICE.

MELVILLE OTIS, OF EAST BRIDGEWATER, MASSACHUSETTS.

NAIL-PLATE FEEDER AND TURNER.

Specification of Letters Patent No. 7,812, dated December 3, 1850.

To all whom it may concern:

Be it known that I, MELVILLE OTIS, of East Bridgewater, in the county of Plymouth and Commonwealth of Massachusetts, have invented a new and useful Machine for Turning Nail-Plates and Feeding Nail-Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification.

Like letters refer to like parts in all the drawings.

Figure 1 in said drawings is a perspective view, of the parts of a nail machine.

W, in Fig. 2, is a view of a machine to perform the operations commonly called turning a nail plate and feeding a nail machine. Y, on a flooring Z, is a foundation for the nail machine to sit upon. The parts of the nail machine necessary to be described in this specification are represented at the following numbers: At 1, the balance wheel; 2, the spindle; 3, a disk at one end of the spindle; 4, a crank-staff; 5, the cutting-jaw; 6 and 7, puppets and parts of the bed-frame—they contain the centers on which the cutting-jaw hangs—*a* in the cutting-jaw, and *a'* in the bed-frame are the knives which cut off the nail.

a'' at the side of the knife *a'* is a guard to which one edge of the plate is kept while the knives cut off the nail. The crank-staff 4, is connected to the disk 3 by a bolt, which performs the office of a crank and to an arm which extends from the cutting-jaw and passes under the disk:—this arm and its connection with the crank-staff, are not seen in the drawings.

A is a vertical rod connected to the disk 3 by the same bolt that connects the crank-staff 4; it is joined at its upper end to the vibrating beam B; the beam is hung at its center upon the crank R, which is best represented in section 3 top view. A journal of the crank is placed in the post F.

S is a shaft to which the crank R is fast.

T is a hand-poll, the lower end of which is placed in a cavity in the holdfast Y'. The shaft S is supported at its junction with the hand-poll T by the arm 9 which is fast in the post 8, and the post is fastened to the foundation Y, which supports the nail machine. C is a rod of the same length as A

joined to the opposite end of the beam B, by a bolt of the form represented in Fig. 5, at *d*. The cross-bar B' is connected to the rods A and C by similar bolts, and is of the same length of the beam B, and parallel to it. The center of the beam B is raised and lowered by moving the hand-poll T from one cavity in the hold-fast to the other, the hand-poll T and the crank R being united to the shaft S. The bearings for the shaft to which the crank *g*, seen in sections 1 and 2, is united are fixed in frame 1st, represented in Fig. 3. *b''''* and *b''* are sections of those bearings. In section 3, top view, *b'''* is the top of the frame 1st; on one side are these bearings *b''''* and *b''*, and on the other *b''''* and *b''* are the bearings for the shaft *g*². The crank *g* is driven around by a knob which projects from the rod C; this knob is represented bearing against the crank in sections 1st and 2d,—it is at the same distance from the beam B, with the bolt in the disk 3. *c'* on the rod C is a guard, and *c''* is a guide fastened to frame 1st, in section 3, top view represented betwixt the rod *c*, and the guard *c'*. The frames 1st and 2d, when in use, are at right angles to each other, therefore frame 2d is not seen in the perspective view, W, but in Fig. 3 they are in a line and the 1st is wholly supported by the 2d and that by the post F; in this situation the 1st with all its appurtenances is swung out of the way and permits free access to the nail machine; but when returned to their working position, frame 1st is held at the corner M, in a cavity in the post Q by a latch Q'; a bolt passes through the latch, and screws into the post; this bolt is much used and therefore requires a wrench or handle attached to it. The post Q is fast in the floor Z.

I and H are turners—they turn the nipper-rod between them. The nipper-rod, the nippers and the nail-plate are represented in Fig. 4 at V, and their position when in use in the perspective view W, and in section 4 by the dotted lines.

V' in Fig. 4 is a ring on the nipper-rod,—when it arrives at the fork N, will prevent the nippers from entering between the knives *a* and *a'* in the nail machine X. *h'* is an arm firmly fixed in the turner H and connected to the upright-rod *h* by a joint. L, L, are vibrating bars hung to the appendage L which is fast in the frame 1st. They

receive motion from the crank-staff G,—they are connected with it by a bolt of the form represented in Fig. 5,—they communicate motion to the turners I and H, to I by direct connection with it—and to H, by the intermediates *h* and *h'*. The turners move in reverse directions to each other. The nipper-rod is turned when the turner H is rising—this turner is drawn back when it descends. The cam D in section 3d top view, is thicker in one part than in the other, and while it revolves from the thin to the thick part, moves the latch D, back. This latch bears against the upright rod P, seen in section, and that by the intermediate bar P, seen in sections 1 and 2, top view, holds the turner H, from the nipper-rod, while the thick part of the cam D, is against the latch. A bow-spring, one end of which bears against the rod P, as seen in sections 1st and 2d, and the other end against a ledge *b* seen in section upon the frame 1st in Fig. 3, presses the turner H against the nipper-rod, when the thin part of cam D will allow of it. By moving the spring up or down the pressure may be made more or less.

J and K are feeders. K is fast in the shaft *z*, but J turns upon a pin which is fast in the shaft. The bearings which support the shaft *z* are fast to frame 1st, marked *w*, *w*. A stop *k*, seen in section 5, is fast in K, at the bottom of the curve, a tangent of which passes freely through a mortise in J, and by a shoulder stops the feeders at nearly the diameter of the nipper-rod apart, for the purpose of placing the nipper rod the more easily in its working position; it also serves to rest the nipper-rod upon, and prevents it from falling below the curves. Their grasp is by a bow spring which embraces them, and the cam F, which is similar to the cam D, by its wedge part against a small inclined-plane, which is fixed in the feeder J, opens the feeders—this plane is represented at *j* in section 5. The feeders are carried forward by the cam *f*, and returned by a spring fixed in K, and extended through the frame 1st between *b* and *b'*, see dotted line in section 4th, side view. The end may rest upon a movable stud, whereby it may be tightened.

In section 3d, top view, the cam E is shown, which depresses the arm M, that being fast in the shaft *g*², raises the crotched arm N, which enters a mortise and is pinned to shaft *g*². The follower O being connected to the arm N, is raised by it at the knives *a*, *a'* in the nail machine, and being held at the other end by the wire N' it rises faster than the nail plate, and will permit it to turn free. The wire N' is fastened to the arm N, which projects from the lower part of frame 1st as represented in section 4 side view.

In section 3d, top view, *s*², is a stop to the

arm N, a spring on the opposite side tends to keep the arm to the stop. The crotch on the arm guides the nipper-rod, and keeps one edge of the nail-plate to the guard *a''* at the nail machine, while the plate is in the knives.

The feeding and turning machine W, Fig. 2 is inclined toward the nail machine, to be at right angles with the nipper-rod.

The machines will be of various sizes, and the proportion of the parts, optional in a great degree. A good proportion of the crank *g* is to have it describe a circle of the same diameter, of that described by the bolt in the disk.

The distinguishing characteristics of this machine are 1st the application of alternating instruments to the nipper-rod, which by friction turn it and then leave it until the nail is cut off; and 2d the application of feeding instruments, which grasp the nipper-rod and thereby thrust the nail-plate between the knives of the nail machine as above described, and when a nail is cut off, release the nipper-rod from their grasp while it is turning; and 3d the nipper-rod the nippers and nail-plate are put into their places without being attached to any other instrument, and consequently nail machines may be more rapidly supplied with plates, than by any other machine in use for the same purpose.

The operation: When the nail machine is in operation the balance-wheel turns in the direction of the arrow, and if the turning and feeding machine is not in operation, the hand-poll T is in the cavity 2 in the hold-fast *y'*, and the center of the beam is raised, the rod A continuing in connection with the disk 3 and beam B, the knob in the rod C, in its circuit will pass over the crank G, and leave it in a vertical position; but put the nipper-rod into the turners and feeders, and into the crotch N, and with a nail-plate in the nippers, rest the plate upon the knife *a'* in the bed-frame, move the hand-poll into cavity 1, and the center of the beam will be lowered, and when the knob shall take against the crank G, the knives of the nail machine being apart, will receive the nail plate between them, by the action of the cam F against the feeders J and K; as soon as a nail is cut from the plate, the cam will begin to let the feeders recede with the plate; when it is drawn back far enough to turn freely from the knife *a*, in the cutting-jaw, the feeders will release the nipper rod, by the operation of the cam F, and will recede further to take another portion of the nipper-rod; when the feeders have thus left the nipper-rod, the turners grasp it and therewith turn the nail-plate up side down; in the mean time the crotch N, and follower, O, by the operation of the cam E, rise and fall to correspond with the mo-

tions of the nail-plate; the follower assists in making the entrance of the nail-plate, between the knives certain.

What I claim as my invention, and for which I ask Letters Patent, is—

1. Giving the alternating motion to the nipper-rod, by means of a pair of jaws actuated by the opposite ends of a vibrating beam, one of the jaws being provided with a spring and toggle, which causes it to grasp and release the nipper-rod, the whole operating substantially as described in the annexed specification and drawings.

2. I claim giving to the said rod its progressive advancing, and slightly retrograde motions by means of a pair of jaws actuated by a cam and an eccentric, and two springs, substantially as specified.

3. I claim operating the follower so that it is raised from the nail-plate, and the nail-plate from the lower cutting jaw of the ma-

chine, by means of a cam, a rock-shaft, and a radius bar connected to one end of the follower substantially as described.

4. I claim transmitting the motion from the nail machine to the feeding machine, by means of a lever beam, and connecting rods, when the lever beam is hung upon a cranked center, and the actuating connecting rod is provided with knob acting upon a flat crank pin substantially as described in the annexed specification and drawings; whereby I am enabled with facility to throw my feeding machinery in and out of gear.

But I do not intend hereby to confine myself to the particular forms and proportions herein described, provided I construct a machine substantially the same.

MELVILLE OTIS.

Witnesses:

BENJAMIN W. HARRIS,
WILLIAM YOUNG.