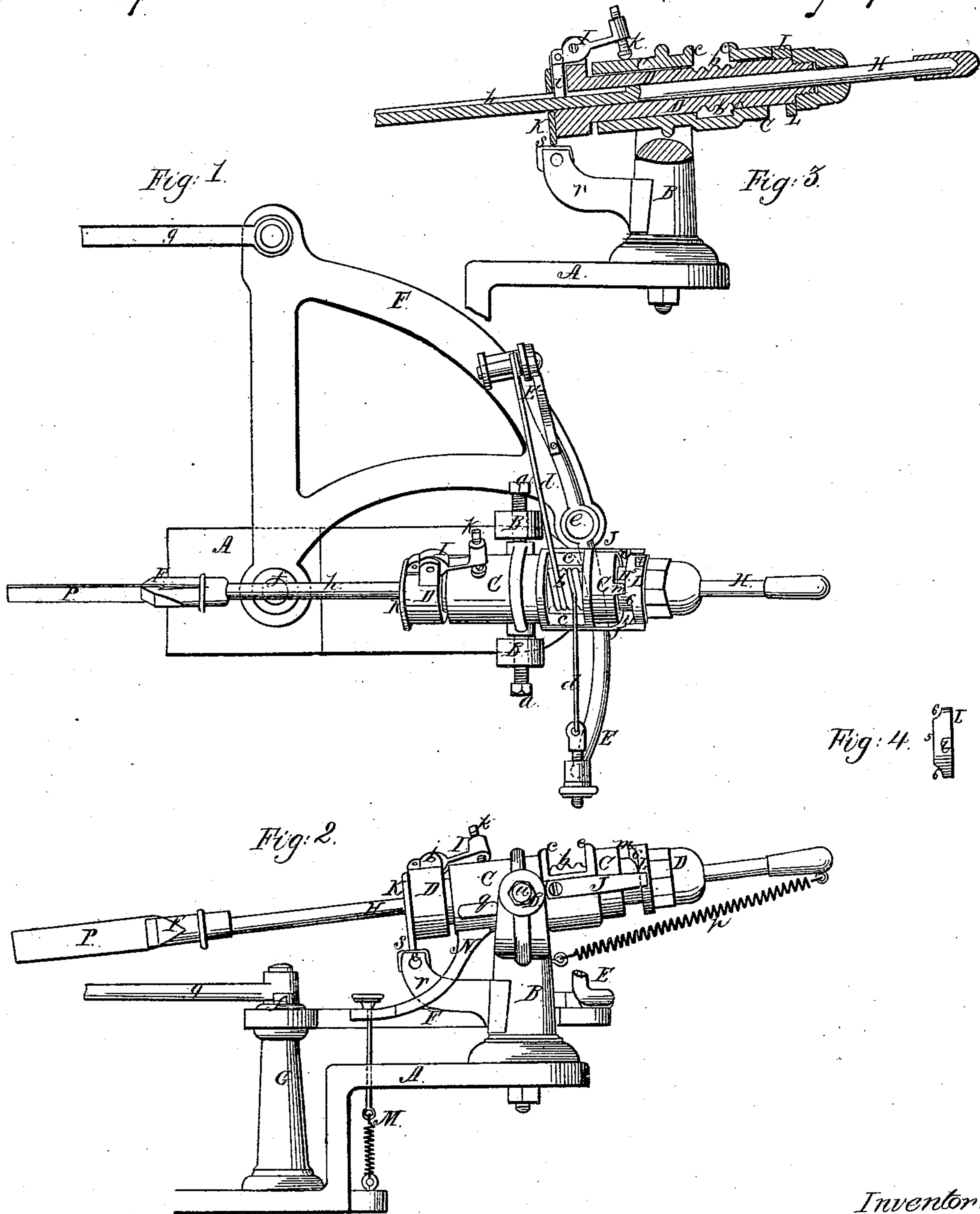


P. S. Bradford,
Making Cut Nails,
N^o 42,742. *Patented May. 17, 1864.*



Witnesses:
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UNITED STATES PATENT OFFICE.

PELEG S. BRADFORD, OF BRIDGEWATER, MASSACHUSETTS.

IMPROVEMENT IN NAIL-PLATE FEEDERS.

Specification forming part of Letters Patent No. 42,742, dated May 17, 1864.

To all whom it may concern:

Be it known that I, PELEG S. BRADFORD, of Bridgewater, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Nail-Plate Feeders; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan of a feeder with my improvements. Fig. 2 is a side view of the same. Fig. 3 is a longitudinal vertical section of the same. Fig. 4 is a view of the cam on the stock of the feeder.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in certain novel means of drawing back the tongs or their equivalent which hold the plates between the successive cutting operations; also, in certain novel means of holding back the tongs after they have been drawn back and until the proper time for moving them forward; also, in certain novel means of liberating the tongs to allow them to be moved forward by the weight or other means employed for the purpose after the turning has been completed; and, further, in certain novel means of operating the tongs to make them raise and lower the plate during the turning operation.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is the frame or bracket which supports the several parts of the feeder intended to be attached to the bed-plate or main framing of the nail-machine. B is a fixed standard erected upon the bracket A for the support of the oscillating carrier C, which is arranged to oscillate vertically between two horizontal center screws, *a a*, secured in the forked upper part of the said standard. This carrier C is bored cylindrically and longitudinally for the reception of the cylindrical stock D, which passes right through and is capable of sliding longitudinally as well as turning freely within it, and the said stock D is bored centrally throughout for the passage of the rod H, to which the tongs F are attached.

Around a portion of the exterior of the stock D there is cut a spiral groove, *b*, and in the

upper part of the carrier C there is an opening, *c*, to admit the band *d*, of gut or other material, which is coiled within the spiral groove *b* once or more times round the stock, and the ends of which are secured to the ends of an inverted bow, E, which is pivoted at *e* to a horizontally-moving bell-crank, F, which works on a fixed pivot, *f*, secured on the top of a standard, G, erected upon the bracket A. This bell-crank derives motion through a rod, *g*, from the main shaft of the nail-machine, and so gives the bow E a horizontal reciprocating movement transverse to the stock and carrier. This movement of the bow causes the band *d* to impart to the stock D a movement about its axis in opposite directions alternately, and the length of said movement of the bow is such that the stock makes exactly half a revolution in either direction, which is just sufficient to turn the nail-plate P.

The rod H, to which the tongs are rigidly attached, is grooved longitudinally, as shown at *h* in Figs. 1 and 3, for the reception of a key, *i*, which is inserted through one side of the stock D, near the front or lower end thereof. This key causes the said rod H and the tongs to turn with the stock, and also serves to prevent any longitudinal movement of the said rod within the stock, except at such time as is necessary, as will be hereinafter described. The said key is attached to the front end of a lever, I, which is attached by its fulcrum-pin *j* to the exterior of the stock, and which has screwed through it at its rear end a bearing-screw, *k*, which, by resting against the cylindrical exterior of the carrier, keeps the key *i* pressed against the bottom of the groove *h*, and so prevents the rod from moving longitudinally within the stock. The lever I should be slightly elastic to enable it to exert the necessary pressure on the key without being broken or strained.

On the back part of the stock, behind the carrier C, there is formed or secured a double cam, L, and by the action of this cam against a projection, *m*, upon the rear end of the carrier, as the stock D commences turning in either direction it is also drawn back, drawing back with it the rod H, the tongs, and the nail-plate. As, owing to the cam being double and requiring to act as it turns in either direction, the offset portion 5 between its two

inclined steps 6 6 cannot be made long enough to hold back the stock as long as is necessary, two spring catches, J J, are attached by their front ends to the back part of the carrier, one on each side, for the purpose of forming a bearing for the offset portion 5 of the cam after the said portion has entirely passed the projection *m* on the carrier in the turning of the stock in either direction, one of the said catches operating when the stock turns one way and the other when the stock turns the other way. These spring-catches consist each of a piece of spring-steel, having a stout shoulder, *n*, on its inner side near its rear end to form the bearing for the cam, and having the portion of the inner side in rear of the said shoulder rounded off toward the upper and lower edges, to be acted upon a wiper, *l*, provided on the outside of the cam L, for the purpose of pressing outward the said catches and so liberating the stock therefrom at the proper time for the latter to move forward—viz., as the turning movement of the stock in either direction is completed. The forward movement of the carrier is produced by the tension of the band *d*, which is arranged with a backward inclination from the ends of the bow E to the stock. The tension of the said band is increased by drawing back the stock so that on the latter being liberated it is moved forward very rapidly.

When the stock moves forward, the rod H and tongs F require to move forward a distance as much greater as the width of a nail than the distance moved by the stock, in order to give the plate the necessary forward feed. To permit this to be accomplished, the rod H must be liberated by the key *i*, so that it can be moved forward in the stock by the weighted cord ordinarily attached for the purpose to the rear end of the rod H. The drawing Fig. 2 represents a spring, *p*, applied in place of this weight. The liberation of the rod is effected by simply providing in each side of the carrier C a recess, *q*, opposite to which the end of the screw K is brought as the turning movement of the stock is nearly completed, and the said screw, being unsupported by the carrier, leaves the key *i* loose. The distance which the rod, tongs, and nail-plate move forward is regulated by the gage in the usual manner. The recesses *q* are not, however, deep enough to permit the key to be entirely withdrawn from the groove *h*, and to thereby permit the stock to turn without the rod H. When the stock has turned a very little way, the screw *k* has moved out of the recess *q*, and is again so supported by the cylindrical surface of the carrier as to cause the key *i* to press upon the bottom of the groove *h* and secure the rod H, so that it and the

tongs and plate will all come back with the stock.

K is an eccentric secured to or formed upon the front end of the stock D; and *s* is a bearing, in contact with which the said eccentric works, secured to a bracket, *r*, attached to the standard B. M is a spring connected with an arm, N, which is attached to the carrier, and serving to pull down the front end of the carrier as far as permitted by the bearing *s* or by the bed upon which the front end of the nail-plate is supported. The eccentric is so arranged that its most prominent point stands out horizontally from the axis of the carrier when the carrier is at either end of its turning movement and the nail-plate is flat upon the lower and fixed cutter of the nail-machine, and the bearing *s* is so arranged that the eccentric is at this time just out of contact with it, so that it will not interfere with the resting of the nail-plate fairly on the lower cutter at the time of cutting off the nail, which operation takes place at this stage of the operation of the feeder. As the stock begins to turn, the eccentric comes in contact with the bearing *s*, and by gradually presenting more and more prominent parts of its periphery to the said bearing lifts up the front ends of the stock and carrier, and so lifts up the tongs and nail-plate until the latter has been turned up on edge, after which, the most prominent part of the eccentric having passed the bearing *s*, the eccentric allows the spring M to gradually depress the stock and carrier, and to depress the stock and plate as the plate gradually comes to the flat position. The rising movement of the nail-plate produced by the eccentric is such that the plate will never be entirely lifted up from the bed of the nail-machine, but will turn on edge while resting thereon.

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

1. The combination of the cam L, attached to the turning stock D, with a fixed projection, *m*, or its equivalent, on the carrier C, substantially and for the purpose herein described.
2. The spring-catches J J, applied and operating in combination with the carrier C, turning-stock D, and cam L, substantially as and for the purpose herein set forth.
3. The combination, with the spring-catches J J, of a wiper, *l*, substantially as and for the purpose herein set forth.
4. The combination of the turning-stock D, eccentric K, fixed bearing *s*, arm N, and spring M, all as and for the purposes herein specified.

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