(No Model.)

A. H. TYRRELL.

NAIL PLATE FEEDER.

No. 381,599. Patented Apr. 24, 1888.

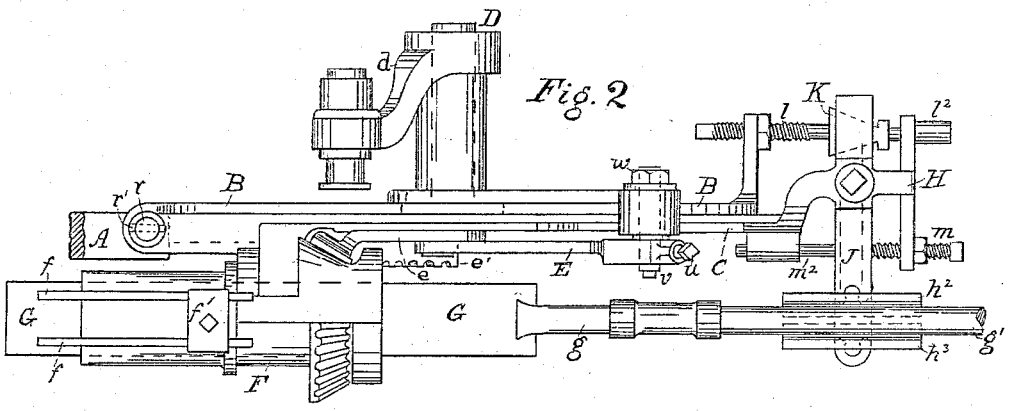

Fig. 2

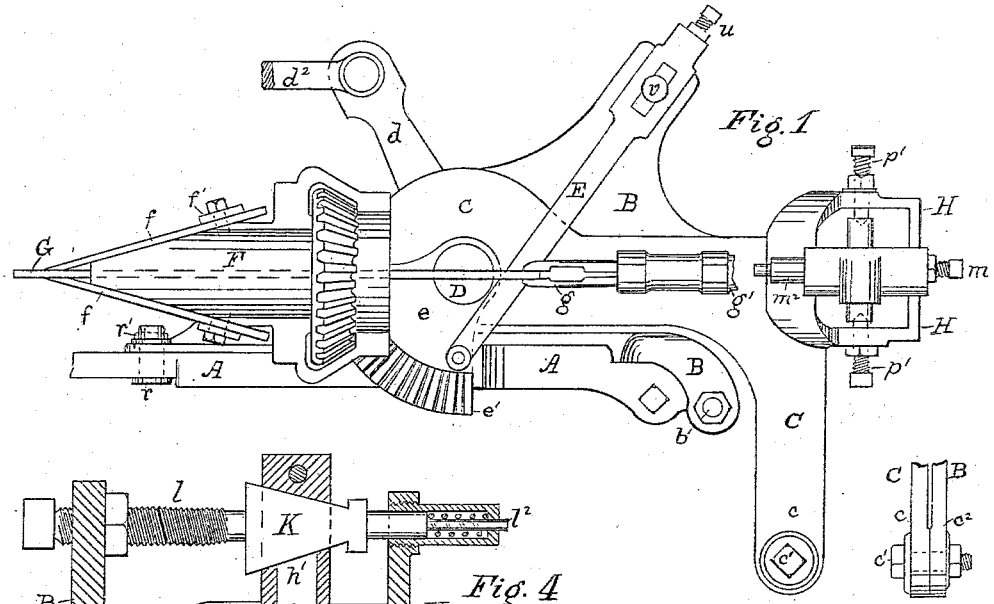

Fig. 1

Fig. 5

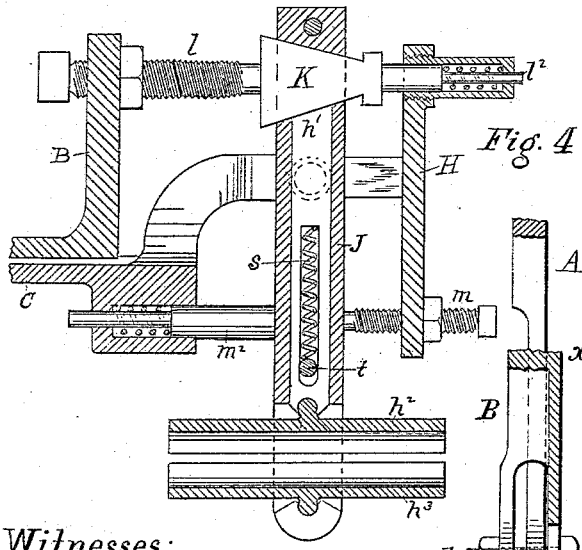

Fig. 4

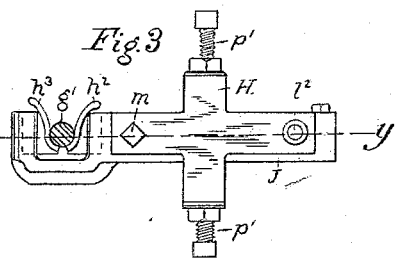

Fig. 3

Fig. 6

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UNITED STATES PATENT OFFICE.

ASAHEL H. TYRRELL, OF TYRRELL HILL, OHIO.

NAIL-PLATE FEEDER.

SPECIFICATION forming part of Letters Patent No. 381,599, dated April 24, 1888.

Application filed January 27, 1887. Serial No. 225,740. (No model.)

To all whom it may concern:

Be it known that I, ASAHEL H. TYRRELL, a citizen of the United States, residing at Tyrrell Hill, in Trumbull county, in the State of Ohio, have invented certain new and useful Improvements in Plate-Feeders for Nail-Machines; and I hereby declare that the following is a full and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my invention. Fig. 2 is a plan view from above. Fig. 3 is an elevation of the feeding-clamp, viewed from the rear end of the device. Fig. 4 is a sectional view of the feeding-clamp on the line *x y* of Fig. 3. Fig. 5 is a detached view in elevation of the pivotal attachment of the plates P and C. Fig. 6 is a detached view from above of the hinged attachment of plates A and B.

Similar letters of reference refer to similar parts in the several views.

The object of my invention is to simplify the construction of nail-plate-feeding devices and to dispense with a number of parts usually employed, whereby in my improved device I secure a direct-acting mechanism, dispensing with levers, ratchets, pawls, &c., usually employed, thus greatly reducing the number of joints and parts, obviating wear, and producing a device that is more certain in its operation, less liable to derangement, more easily adjusted than other devices in use for the same purpose, and I combine the entire operative mechanism of my device within that of the feeder proper, all of which is driven by a single connecting-rod operated from the nail-machine and at the least possible expenditure of power.

In the drawings, A is a foot-plate to be bolted or otherwise rigidly secured in place upon a nail-machine in such position that the feeder may present the plates properly to the cutting-dies.

B is a plate standing vertically and having at its base a horizontal flange resting upon the plate A, to which it is pivoted at its forward end, which is the end nearest the nail-machine, by the pivot *v*, secured by the key *v'*, while the rear part of the flange is formed into a hinge by dividing it into two lugs which project downward, so as to receive between them a projecting part of the plate A, through which a bolt, *b*, is threaded and passes freely through the lugs on plate B as bearings, the head of the bolt bearing against the outer side of one lug and a jam-nut on the bolt bearing against the outer side of the other lug, as shown in Fig. 6. The space between the lugs of the plate B is sufficient to allow considerable lateral movement to the part of plate A carried between them, so that by turning the bolt *b* the entire feeder may be traversed from side to side to vary the angle of the cut.

C is another plate standing parallel with and close to plate B, to which it is pivoted at the end of an arm, *c*, by the bolt *c'*, a similar arm, c^2, being formed on the plate B for that purpose. The plate C has journaled in it the rocking crank-shaft D, which passes through an opening in plate B considerably larger than the shaft and carries upon its inner end a plate, *e*, having substantially the form of a quadrant of a circle and having at its periphery a segment-rack, *e'*, which meshes with a bevel-gear surrounding the mouth of the working-barrel. To the segment *e* is pivoted the lower end of a pitman, E, while its upper end is pivoted to the plate B by an adjustable pivot, *v*, threaded and provided with a set-nut, *w*, at one end. The outer end of the crank-shaft D bears the crank *d*, driven by the connecting-rod d^2, which actuates the mechanism.

F is the working-barrel, which is of the usual form and supported in a bracket or sleeve attached to the plate C.

f f are springs resting on shoulders formed upon the outer face of the working-barrel, meeting at their outer ends to grip the plate, and held in place by the clamps *f'*, which are provided with shoulders to embrace the springs upon their outer sides and hold them rigidly in place at their upper or inner ends, while the outer ends, which grip the nail-plate, are free to spring sidewise as well as apart.

G is the nail-plate, (shown in Fig. 1, in the position of feeding to the cut,) and *g* is the plate clamp or nipper attached to the feed-rod *g'*, which is broken away in Fig. 1 to show the feeding-clamp mechanism.

H is the frame carrying the feeding-clamp, and is integral with or rigidly attached to the plate C. It is provided at top and at bottom with set-screws p^x, between which is pivotally supported a case, J, carrying within it a slide, h', which at its inner end bears against a wedge, K, passing laterally through the case J, and is held in contact with the wedge by a spring, s, contained in a slot in the slide h' and bearing against the slide h' and a bolt, t, which passes through the slot and holds in place the cover of the case J. To the outer end of the slide h' is affixed a freely-moving clamp-plate, h^2, while a similar clamp-plate, h^3, is supported on a curved bracket-arm projecting from the case J in such position as to receive between the clamp-plates the feed-rod g', which has on it a stop adjustably secured, so as to abut against the clamp-plates when the nail-plate has fed nearly to the end, and thus stop the feed before the clamp g can reach the cutting-die.

An adjustable stop, l, is rigidly secured to the plate B in such position as to bear against the base of the wedge K, and is opposed by a spring-stop, l^2, carried upon the frame H in such position as to bear against the apex of the wedge K, which is provided with lateral shoulders or made wide enough to permit it to slide laterally between the stops l l^2, which act as bearings for such movement. A second adjustable stop, m, secured to the frame H and opposed by a spring-stop, m^2, borne on the plate C, bears between it and said spring-stop the case J.

In the operation of my improved device the action of the various parts is as follows: The plate to be cut being adjusted in its clamp g and the rod of the latter placed between the clamp-plates h^2 h^3, so that the forward end of the nail-plate is presented to the cutting-die and resting between the springs f f, the movement of the crank d in the direction indicated by the arrow in Fig. 1 will rotate the shaft D and segment-rack e' in the same direction, whereby the working-barrel F is revolved, and at the same time as the path traversed by the rack e' extends beyond a circle having the upper pivot of the pitman E for its center and the distance between the pivots of said pitman as its radius, the rack e' in its revolution is forced to conform to a path which will have the upper pivot of the pitman E for its center of revolution, to permit which the shaft D as it revolves rises and moves backward in a short curve, lifting with it the plate C, in which it is journaled, which turns on its pivot c' for that purpose, and thus lifts the working-barrel to permit the turning of the plate G. The lifting of the plate C, pivoted so far below the shaft D, draws back with it the frame H and case J and allows the spring-stop l^2 to throw forward the wedge K, when the spring s, causing the slide h' to follow the wedge, loosens the clamp-plates upon the feed-rod g', and the plate G being held by the springs f f, the clamp plates carried by the case J and slide h' are moved back along the rod g', and as the plate C descends again and carries forward the frame H and case J the wedge, being pushed back by the stop l and being in contact with the inclined inner face of the opening in case J, through which it passes, moves laterally toward the slide h', sliding between the stops l l^2 as bearings, and forces out the slide h', which movement tightens the clamps h^2 h^3 upon the feed-rod g', and with the forward movement of the frame H and case J feeds forward the plate G to an extent determined by the adjustment of the stops l and m, which operation is repeated with each oscillation of the crank d, the extent to which the plate C and barrel F are lifted being regulated by the relative distance of the pivot v from the center of shaft D, which actuates the segment-rack, whose radius is smaller than the distance between the pivots of the pitman E, which distance is adjusted by means of a set-screw, u, passing through the upper end of the pitman and engaging a sliding journal-block through which the pivot v passes.

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

1. In a nail-plate feeder, the mechanism for lifting the working-barrel to allow its revolution, consisting of a fixed vertical plate having pivoted thereto and parallel therewith a movable plate supporting the working-barrel and feeding mechanism, in combination with a vibrating segment-rack for actuating the working-barrel, and a pitman connecting the vibrating rack and the fixed plate and having its points of connection at a greater distance than the radius of said rack, substantially as described.

2. In a nail-plate feeder, the fixed vertical plate B, having lateral adjustment to vary the angle which it presents to the cutting-dies, in combination with a movable plate parallel with and pivoted to said fixed plate and having journaled in it a rocking shaft, a segment-rack rigidly affixed to said shaft and adapted to rotate the working-barrel, and a pitman pivoted at one end to said rack and at the other end to the fixed plate B and having the distance between the pivots of said pitman greater than the radius of the rack to which it is pivoted, substantially as shown and described.

3. The combination of the laterally-adjustable fixed plate B, the movable plate C, supporting the working-barrel and pivoted to the plate B at a point below and in rear of the working-barrel, the rack e', of circular or segmental form, attached to a shaft journaled in plate C and adapted to rotate the working-barrel, and the lifting-pitman E, pivoted at one end to said rack and at the other end to said fixed plate by an adjustable pivot, the distance between the pivots of said pitman being greater than the radius of said rack, substantially as described.

4. In a nail-plate feeder, the feeding mechanism consisting of the slide h', carrying the clamp h^2, and supported in a case or frame pivoted between the screw-bearings p p', in combination with the wedge-block, the stationary clamp h^3, having limited pivotal movement, the plates B and C, and the adjustable rigid stops l and m and spring-stops l^2 and m^2, substantially as described.

5. The combination of the slide h', supported in a case pivoted between vertical adjustable bearings and having a clamp pivotally attached to its free end, the wedge-block, and the adjustable stop m, and spring-stops l^2 and m^2, and the fixed clamp h^3, with limited pivotal movement, all attached to and operating with the plate C, and the adjustable rigid stop l, attached to and operating with the plate B, substantially as described.

In witness whereof I hereunto set my hand, in the presence of two witnesses, this 11th day of January, A. D. 1887.

ASAHEL H. TYRRELL.

Witnesses:
B. F. SEYMOUR,
L. PRENTISS.