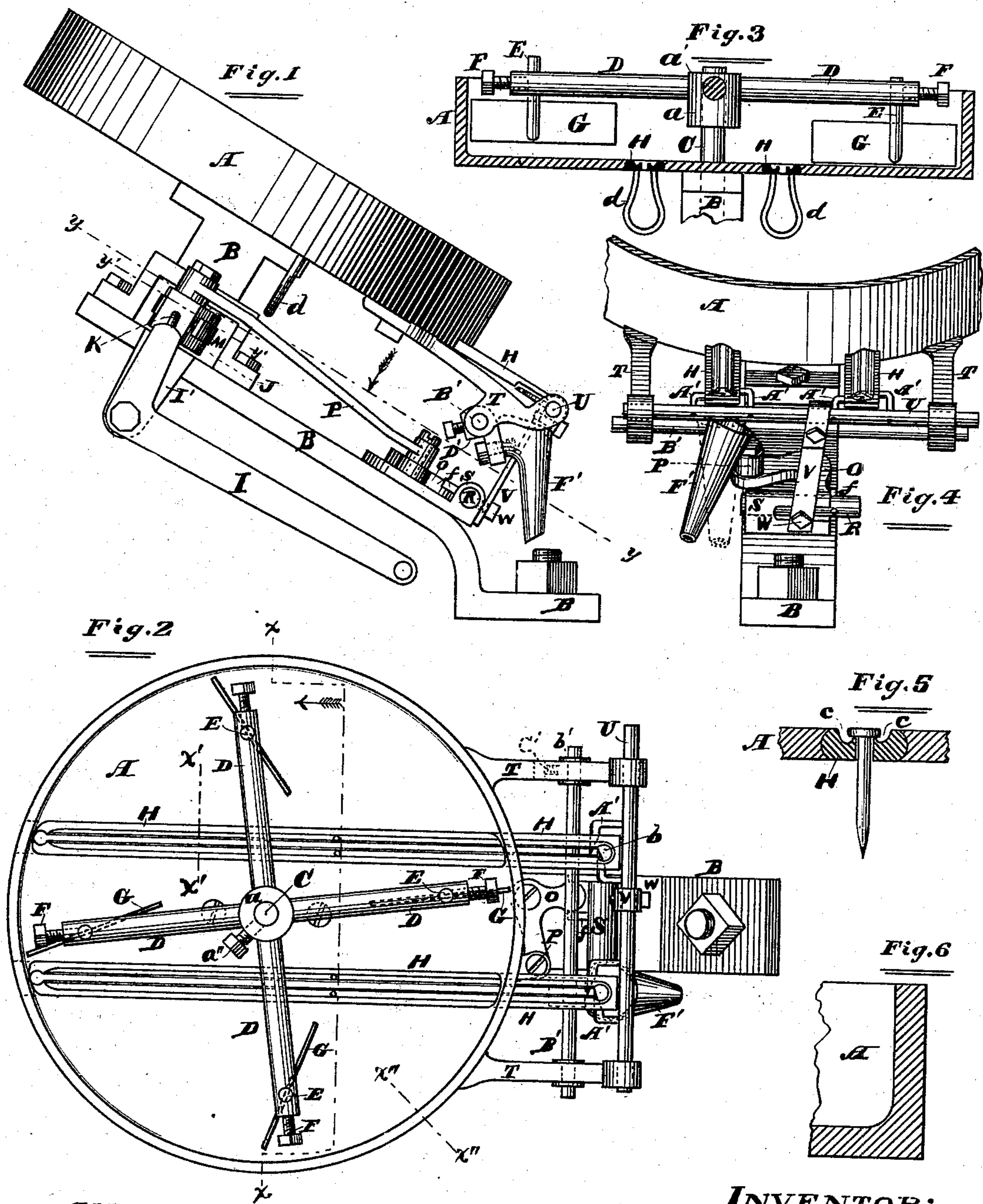


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No. 221,844. Patented Nov. 18, 1879.



Attest:

*J. H. Lawlor*  
*J. P. Whiting*

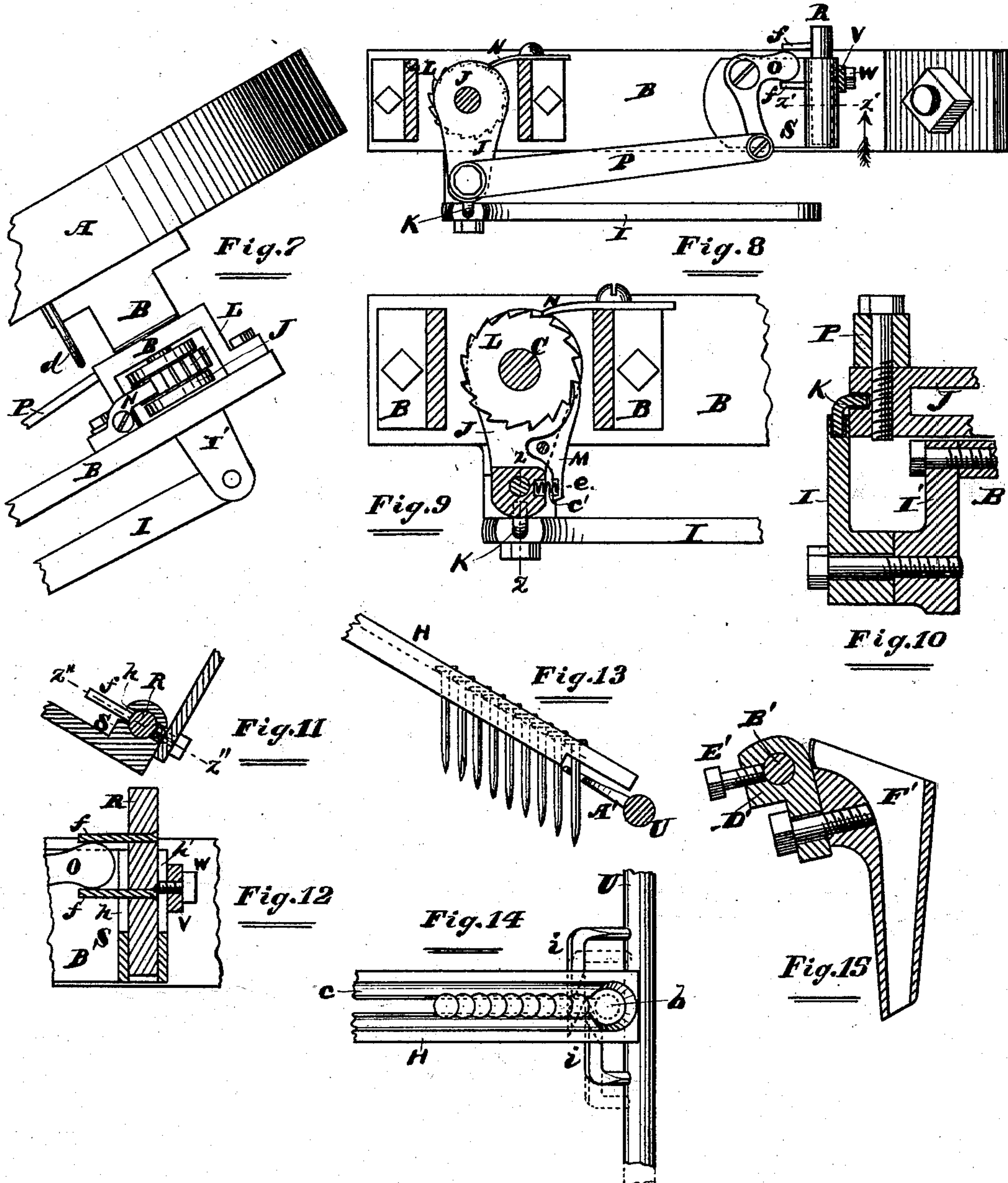
INVENTOR:

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# UNITED STATES PATENT OFFICE.

HENRY MESSER, OF CHICAGO, ILLINOIS.

## IMPROVEMENT IN NAIL-FEEDING ATTACHMENTS FOR BOX-NAILING MACHINES.

Specification forming part of Letters Patent No. **221,844**, dated November 18, 1879; application filed September 6, 1879.

*To all whom it may concern:*

Be it known that I, HENRY MESSER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Nail-Feeding Attachments for Box-Nailing Machines, of which the following, in connection with the accompanying drawings, is a specification.

In the drawings, Figure 1, Sheet 1, is a side elevation of a nail-feeding attachment embodying my invention, and indicating its inclination when applied to use. Fig. 2, Sheet 1, is a top or plan view of the same; Fig. 3, Sheet 1, a section in the plane of the line  $x x$  of Fig. 2; Fig. 4, Sheet 1, a front view of the attachment; Fig. 5, Sheet 1, a section taken at  $x' x'$  of Fig. 2; Fig. 6, Sheet 1, a section at  $x'' x''$  of Fig. 2; Fig. 7, Sheet 2, a side elevation of the rear part of the feeder, showing the side opposite that shown in Fig. 1; Fig. 8, Sheet 2, a section in the plane of the line  $y y$  of Fig. 1; Fig. 9, Sheet 2, a section at  $y' y'$  of Fig. 1; Fig. 10, Sheet 2, a section at  $z z$  of Fig. 9; Fig. 11, Sheet 2, a section at  $z' z'$  of Fig. 8; Fig. 12, Sheet 2, a section at  $z'' z''$  of Fig. 11; Fig. 13, Sheet 2, a side view of the guideway, indicating the position of the pendent nails therein, and their position with relation to the cut-off. Fig. 14, Sheet 2, is a top view of the parts shown in Fig. 13; and Fig. 15, Sheet 2, is a vertical central section of one of the nail chutes or conductos, and of its bearing or support.

Like letters of reference indicate like parts, and the arrows indicate the direction in which the sectional views are taken, respectively.

In the drawings, A represents a circular and comparatively shallow dish or box for receiving the nails in a promiscuous mass, and B is an arm or standard, to which the box A is firmly attached.

The arm B is inclined, as shown, so that when it is applied to a machine the box A will be correspondingly inclined, the lowest part of the box being toward the punches or drivers of the machine.

C is a rotary post or arbor passing down through the center of the box A, and D D are arms extending radially from the upper end of the post C.

E E are pins passing through the arms D D near the ends of the latter, and F F are set-screws or clamps entering the ends of the said arms and meeting the pins E E, which may be turned on their vertical axes and adjusted vertically, and then clamped by means of the screws F F.

G G are brushers or sweepers, consisting, preferably, of strips of rubber, leather, or other similar material, applied to the pins E E below the arms D D.

In order to render the arms D D easily removable and adjustable, I apply them to a hub,  $a$ , fitted to the upper end of the post C, and clamped thereto by means of a screw,  $a''$ .

H H are slotted slides or railways arranged in the bottom of the box A, and extending some distance from the front thereof, as shown. The slots in the parts H H are wide enough to receive the body or stem of the nails freely, but narrow enough to suspend the nails by their heads, and the forward ends of these slots terminate in openings  $b b$ , large enough to release the nails as they reach the ends of the slots.

In order that the nails may move as freely as possible in the ways H H, I sink grooves  $c$  into the upper faces of the said ways, leaving a very narrow edge to support the heads of the nails, as is clearly represented in Fig. 5, and I fit the said ways into the bottom of the box A, as there shown, so that they will be firmly and properly supported along their entire length, and so that they may be easily removed and replaced.

To keep the ways H H from becoming contracted or pinched upon the nails, I employ spring-loops  $d d$ , which are applied to and extend below the said ways so as to straddle the nails, as is clearly indicated in Fig. 3, it being understood that the spring force of the said loops is exerted laterally, or toward the sides of the box.

I make the inner lower corner of the box A rounded or full, as shown in Figs. 3 and 6, so that the nails will not be liable to be lodged out of the reach of the parts G G.

I is a bell-crank lever, pivoted at its angle to an arm, I', depending from the standard B. J is a block, through which the post C passes



freely, and the upper end of the short arm of the crank I is jointed to the outer or projecting end of the block J by means of the bent piece or coupler K freely entering both the said parts. L is a ratchet-wheel, arranged between the leaves or arms of the block J, and rigidly applied to the post C. M is a push-pawl, pivoted to the block J and engaging the ratchet L, and, to insure this engagement properly one arm of the pawl rests on a spring, *e*. N is a spring-stop, engaging the ratchet L to prevent its rotation except in one direction.

O is a bell-crank lever, pivoted to the forward part of the standard B, and P is a pitman or connecting-arm connecting the block J and crank O. R is a sliding bar or bolt moving laterally in a yoke, S, and carrying the two rearwardly-extending pins *ff*, between which one arm of the crank O extends, as shown, the yoke S being slotted or open, as indicated at *h h*, to admit of the lateral movement of the pins *ff* as the crank O is vibrated, the contact of the said crank and pins causing a laterally-reciprocating movement of the bar R.

T T are brackets or supports extending forward from the box A, and U is a laterally-sliding bar, having bearings in the said brackets. V is an arm, connecting the bar U rigidly with the bar R by means of the pin or screw W, and the yoke S is slotted or open, as shown at *h' h'*, to receive the screw W. A' A' are bent fingers or cut-offs, extending rearward from the bar U, the parts A' A' being arranged in pairs underneath each projecting part or end of the ways H H.

The ends of the fingers A' A' are bent toward each other in each pair, as is clearly indicated in Fig. 14, and overlap each other slightly, and the overlapping parts are sufficiently apart to receive a nail freely, and are beveled off on their inner or forward faces to a point, as shown in the figure last above referred to. I also deem it preferable to bevel off the rear faces or edges of the fingers A' A', as indicated at *i i*, Fig. 14, for the purpose hereinafter set forth.

B' is a bar fastened rigidly in the brackets T T, preferably by means of a screw, C'. D' is a block, adjustable laterally and rotatively on the bar B', being held thereon by means of a set-screw or clamp, E'. F' is a nail-chute, arranged vertically, and clamped to the block D' in such manner as to be capable of being vibrated laterally, as indicated by the full and broken lines in Fig. 4.

In order to use the feeding attachment now described for the purpose for which it is intended, I proceed as follows: First, it is applied to the nailing-machine in such manner as to be inclined in the manner already set forth, and so that nails discharged into the chute F' will fall properly into the nail-receivers on the nailing-machine, it being understood that the number of chutes corresponds to the number of receivers. I then connect the forward end of the long arm of the crank

I to a vertically-reciprocating part of the nailer, or make the connection such that the said crank will be vibrated vertically. A quantity of nails should then be placed in the box A. When the machine is set in operation the movement of the crank I will carry the block J back and forth rotatively, and by this means the pawl M will rotate the ratchet L, and an intermittent rotary movement will be thus communicated to the post C, and consequently the arms D D and brushers G G will be carried around in the box A, so as to agitate the nails therein, or push them about from place to place and keep them in motion. The stems or bodies of some of these nails will fall into the slots in the ways H H, and be suspended freely therein, having very little friction, for the reason that the grooves *cc* prevent the heads of the nails from being in contact with the ways except to a very small extent, it being understood that the nails will be thus suspended by their heads. These suspended nails, owing to the inclination of the box A and the jarring of the machine, will slide freely forward until they reach the rearmost fingers A' A', and the ways H H will thus become filled. As the block J is moved back and forth the pitman P oscillates or swings the crank O on its pivot, and the bar R is thus moved back and forth laterally, owing to the fact that one end of this crank extends between the pins *ff*, which extend from that bar. As the bar R is connected to the bar U by means of the arm V, the bar U is also moved back and forth laterally with each action of the nail-drivers. Each movement of the bar U in one direction draws the rearward fingers A' A' from the forward nail in the line suspended in the ways H H, and carries the forward fingers A' A' in front of that nail, which moves down against the finger thus presented. The movement of the bar U in the opposite direction draws the forward fingers A' A' away from the forward nails and thrusts the rearward fingers in front of the next succeeding nails, thus releasing or cutting off the forward nails and stopping the forward movement of the rest. The nails thus released drop one by one into the chutes F', and are by them conducted to the nail-receivers so as to be driven by the next action of the drivers. This operation continues automatically until all the nails are fed out of the box A.

It is to be understood that the brushers G G are to be adjusted at such a height and at such angles as to work with good effect. I would regard combs and bristles as the equivalents of each other, and of rubber, leather, or other like material, for the purpose set forth.

By making the chutes F' F' laterally adjustable on the bar suspending them, and also rotatively adjustable thereon, as well as vibratory on the pin or clamp connecting them to the block coupling them to the bar B', I adapt the feeding attachment to machines having nail-receivers set at different distances apart



from each other, as well as to machines wherein the receivers are adjustable laterally, the mouth or upper end of the chutes being sufficiently large to admit of the adjustment described.

It is obvious that some of the details of construction herein fully described, while performing useful functions of themselves, are only auxiliary in accomplishing the general object and aim in view, and not absolutely essential to the operation of the device. Many of these details are, as will be perceived, capable of modifications in construction without materially affecting the functions of the parts so modified, and I do not, therefore, here intend to be restricted to details of construction otherwise than hereinafter specifically set forth.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an automatic nail-feeding attachment for box-nailing machines, the combination of the nail-box with slotted removable nailways, substantially as and for the purposes specified.

2. In an automatic nail-feeding attachment for box-nailing machines, the combination of the nail-box with nailways with the longitudinal groove *c c*, parallel thereto, and arranged near the said ways, substantially as and for the purposes specified.

3. In an automatic nail-feeding attachment for box-nailing machines, the combination of the nail-box with removable slotted nailways, provided with the spring-loops *d d*, projecting from the under face of the said ways and extending across the slots therein, substantially as and for the purposes specified.

4. The combination, in an automatic nail-feeding attachment for box-nailing machines, of the nail-box and the removable slotted ways *H H*, extending beyond the said box, substantially as and for the purposes specified.

5. The combination, in an automatic nail-feeding attachment for box-nailing machines, of the nail-box and removable slotted nailways extending beyond the forward part of the said box, and having therein the grooves *c c*, arranged parallelly to the slots in the said ways, substantially as and for the purposes specified.

6. The combination, in an automatic nail-feeding attachment for box-nailing machines, of the nail-box, the slotted removable ways *H H*, extending beyond the said box, and having therein the grooves *c c*, and the spring-loops *d d*, all arranged with relation to each other substantially as and for the purposes specified.

7. In an automatic nail-feeding attachment for box-nailing machines, the combination of a fixed circular nail-box, having open nailways or slots therein, the revolving arms *D D*, and the adjustable brushers *G G*, substantially as and for the purposes specified.

8. The combination, in an automatic nail-

feeding attachment for box-nailing machines, of the circular nail-box *A*, having slots or open nailways therein, the central rotary post or arbor *C*, the removable radial arms *D D*, and the adjustable brushers or nail-agitators *G G*, substantially as and for the purposes specified.

9. The combination, in an automatic nail-feeding attachment for box-nailing machines, having a circular slotted nail-box and revolving brushers therein, of the central rotary post or arbor *C*, a ratchet device for rotating the said post, and the bell-crank *I*, jointed to the said ratchet device, substantially as and for the purposes specified.

10. The combination, in an automatic nail-feeding attachment for box-nailing machines, of the fixed circular box *A*, the projecting feedways *H H*, the rotary brushers *G G*, and the laterally-reciprocating bar *U*, carrying the fingers or cut-offs and stops *A' A'*, substantially as and for the purposes specified.

11. The combination, in an automatic nail-feeding attachment for box-nailing machines, of the projecting nailways *H H*, the reciprocating bar *U*, made cylindrical in its bearings, and carrying the fingers or cut-offs and stops *A' A'*, and the connecting-bar *V*, clamped adjustably to the said bar, to admit of the adjustment of the latter rotatively, substantially as and for the purposes specified.

12. The combination, in an automatic nail-feeding attachment for box-nailing machines, of the bell-crank *O*, the sliding bar *R*, carrying the pins *f f*, the sliding bar *U*, carrying the fingers *A' A'*, and connected to the bar *R*, the projecting ways *H H*, and the pitman *P*, substantially as and for the purposes specified.

13. The combination, in an automatic nail-feeding attachment for box-nailing machines, of the laterally-vibrating chute *F'* and the feedways and cut-off, substantially as and for the purposes specified.

14. The combination of the laterally-adjustable chute *F'* with the cut-off and fixed nailways of an automatic nail-feeding attachment for box-nailing machines, substantially as for the purposes specified.

15. The combination of the bar *B'*, the chute *F'*, rotatively adjustable with relation to the said bar, and the nailways and cut-off of an automatic nail-feeding attachment for box-nailing machines, substantially as and for the purposes specified.

16. The laterally-adjustable vibratory and rotatively-adjustable chute *F'*, in combination with the feedway and cut-off of an automatic nail-feeding attachment for box-nailing machines, substantially as and for the purposes specified.

HENRY MESSER.

Witnesses:

GEO. G. BELLOES,  
J. H. LAWLOR.