

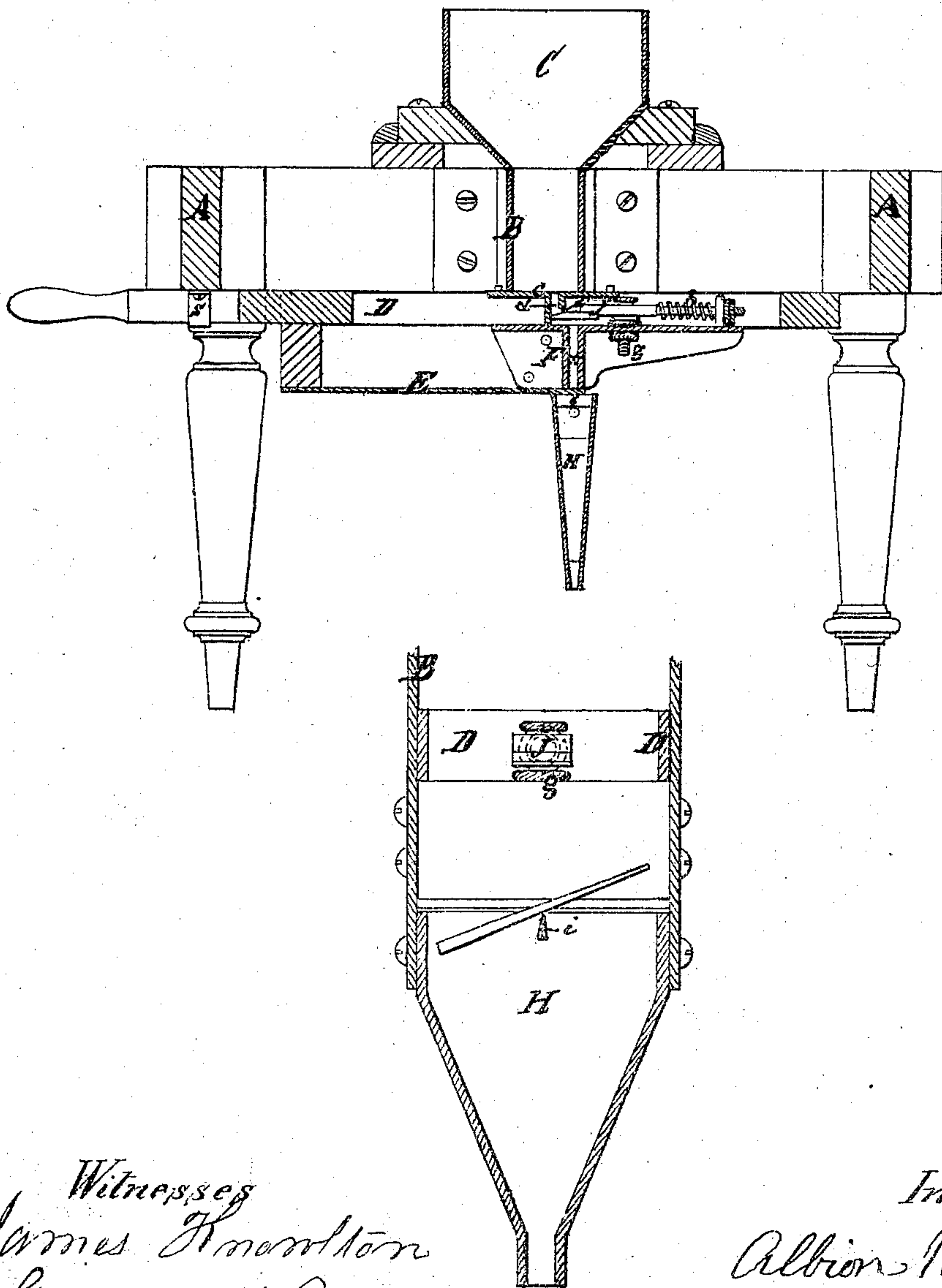
ALBION KNOWLTON.

2 Sheets--Sheet 1.

Improvement in Machines for Distributing Nails.

No. 118,250.

Patented Aug. 22, 1871.



Witnesses
James Knowlton
Samuel Erving

Inventor
Albion Knowlton

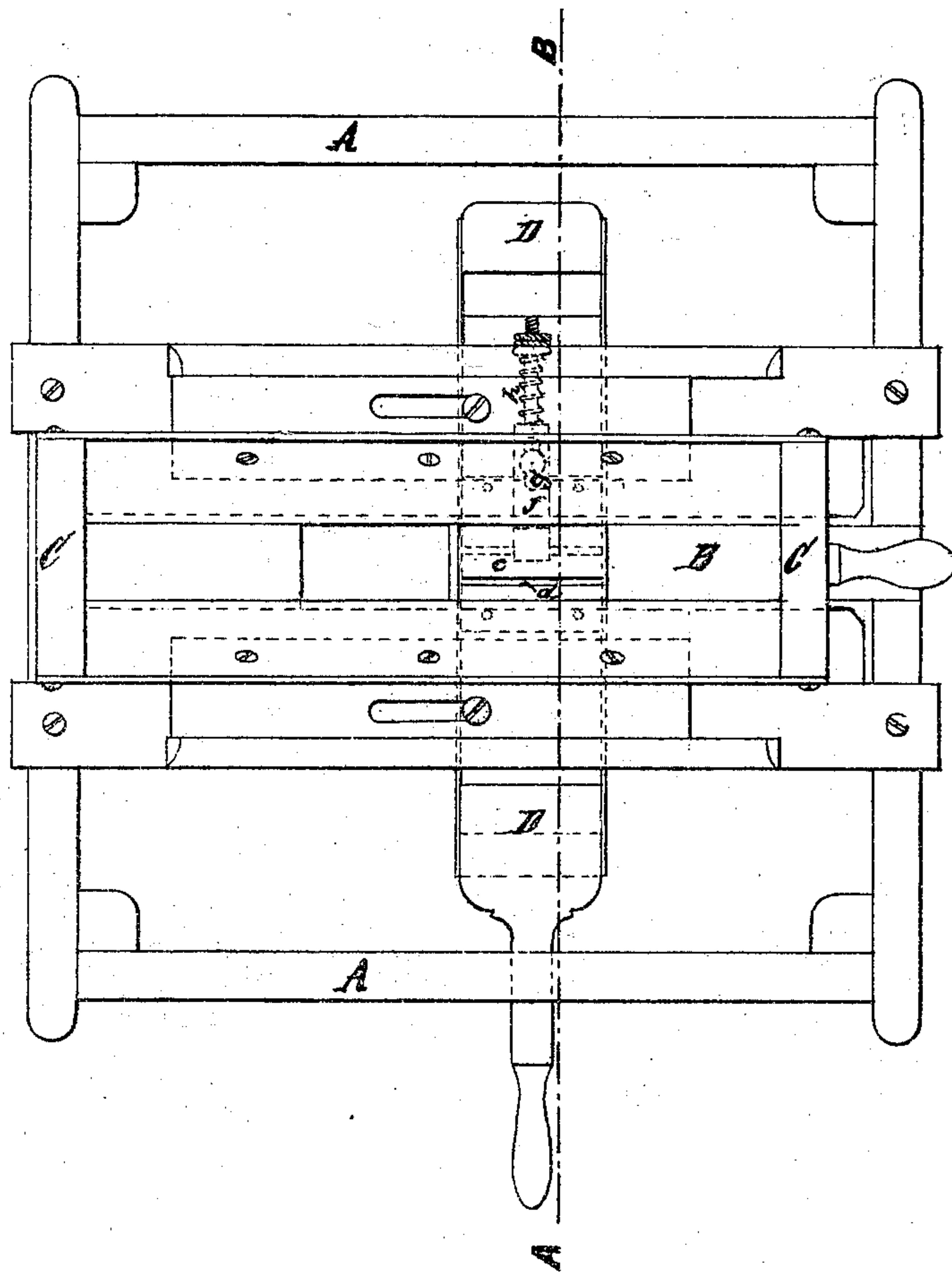
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Improvement in Machines for Distributing Nails.

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UNITED STATES PATENT OFFICE.

ALBION KNOWLTON, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR DISTRIBUTING NAILS.

Specification forming part of Letters Patent No. 118,250, dated August 22, 1871.

To all whom it may concern:

Be it known that I, ALBION KNOWLTON, of Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented a new and useful machine for singling out and distributing the nails used to secure the pieces of leather which form the heel of a shoe or boot; and I declare the following to be a full, clear, and exact description thereof.

In machines for forming and finishing boot and shoe-heels in use at the present time the operation of singling out the nails and putting them into holes in the heels made to receive them is done by hand; this necessitates the employment of an operative for this purpose to each machine, besides being a slow operation. The object of my invention is to distribute from a hopper or series of hoppers or reservoirs one nail at a time, the point of each nail as it passes from the machine being turned in the same direction, so that they may be inserted by machinery into holes previously punched in the heel of a shoe or boot for receiving them, and to render the singling out and distribution of nails automatic.

To enable others to use my invention, I will proceed to describe it, reference being made to the accompanying drawing making a part of this specification.

In the accompanying drawing, Figure 1 represents a plan of the machine. Fig. 2 represents a section through the line A B, as shown in Fig. 1. Fig. 3 represents a section of the conductor, showing the manner in which the nail is turned.

My machine may be divided, for the purposes of description, into two parts: First, the hoppers for holding and arranging the nails parallel to each other. Second, the mechanism for singling out and distributing the nails so that they shall be delivered with the head directed downward. I. A represents a frame-work upon which a rectangular box, B, of brass or other metal, is fitted. This box is about one inch in width, two inches in depth, and varies in length according to the number of nails to be distributed at the same time. This box is divided vertically into compartments or hoppers, each a little longer than the nail to be used. These hoppers or reservoirs are open at the top, the bottom being closed in a manner hereafter to be described. C represents a hopper placed over the hoppers B. This hopper, the transverse section of which is some-

what in the shape of a U, is open at the bottom, and extends the whole length of the line of hoppers, the bottom being a little narrower than the width of the hoppers B. This hopper has a reciprocal movement in the same direction as the longest axis of the hoppers B, and is actuated by a cam or other well known mechanical contrivance. II. The mechanism for distributing the nails consists: *a*, of a movable frame, the upper surface of which carries a plate forming the bottom of the reservoirs B, and furnished with a groove or pocket, while the lower surface is formed of a plate, placed at the distance of half an inch or more below the upper plate, and extending a little beyond the perforation or pocket in the upper plate. *b*, of a stationary plate placed between the upper and lower surfaces of the movable frame, supporting a plunger operated by a spring, the purpose of which is to prevent more than one nail at a time from passing from the machine. This plate is also furnished with a perforation or pocket, the walls of which extend the distance between the bottom of the pocket or perforation of the upper plate of the movable frame and the upper surface of the bottom plate of the same. *c*, of a conductor in the form of a flattened cone, placed under the stationary perforation or pocket, and bisected at the upper part by a thin edge of metal for the purpose of turning the nail and directing it head downward. The movable frame forming the bottom of the hopper is shown at D. This is so constructed as to have a reciprocal movement of about one-half of an inch (more or less) under the hoppers and at right angles with them. (In the accompanying drawing the frame is adapted to only one of the hoppers.) This frame is secured to the framework of the table at *s*, and slides between the hangers *b b*. *c* represents the portion of the frame D forming the bottom of the hopper or reservoir; *d*, the perforation or pocket bisecting it, which is a little wider than the head of the nail to be used, and the same length as the hopper. The walls of this perforation extend a short distance below the upper surface of the frame D. One of these walls has a portion of it removed, as represented in *d'*. E represents the bottom plate of the frame D; F, the stationary plate placed between the upper and lower surfaces of the movable plate, and secured to the reservoir or hopper by the hangers *b b*. *x* represents the

perforation or pocket of the plate F; J, the plunger operated by the spring *h*, and attached to the plate F by the screw *g* moving in the slot *g'*. This plunger, the point of which is of iron or steel beveled at the end, plays through the slot *d* at *d'*, at a distance above the surface of the plate F a little greater than the width of the head of the nail to be used. H represents the conductor, and *i* the thin edge of metal bisecting this conductor. The length of the mouth of this conductor is the same as the length of the slot *x*, and of any convenient width. The walls of the conductor come together at the bottom so as to easily admit the passage of a nail, the orifice being about one-quarter of an inch square.

The mode of operation is as follows: The reservoirs or hoppers are first filled with nails laid parallel to each other, and a pound or more of nails are thrown loosely into the large hopper C. A few of the nails fall into the slot *d*, one above the other, the bottom nail resting on the stationary plate F. The machine is then put in motion. As the frame D moves inward the pocket *d* is brought directly over the pocket *x* of the stationary plate F; while the lower plate E of the movable frame is brought directly under the pocket *x*, and the nail resting on the stationary plate F falls into the pocket *x* upon the plate E. As the pocket *d* moves over the pocket *x* the plunger J passes into the pocket *d*, pressing against the second nail from the stationary plate so as to allow the bottom nail only to pass into the pocket *x*. The movable frame then moves in the opposite direction, carrying the pocket *d* away from the plunger, so that this is no longer pressed against the nails contained in the pocket or the walls of the same, and another nail falls upon the plate F. The plate E is withdrawn, and the nail resting upon this plate drops into the conductor H, falling with its center across the edge of metal *i*. The head, by its gravity, is directed downward, and in this position it passes from the conductor. The frame is then moved inward, and the operation repeated as above described, a nail with the head downward passing from the machine at every completed movement of the frame. The large hopper C containing the nails loosely thrown into it is, during these operations, moved forward and backward above the hoppers, the motion and the shape of the hopper straightening the nails and keeping the hoppers supplied

with nails laid parallel to each other. It is obvious that, the position of each nail as it leaves the machine being determined, its subsequent position may be changed, as convenience may require. The reciprocal movement given to the hopper C and to the frame D may be produced by a shaft, cam, or other well-known mechanical contrivance.

This machine may also be constructed with any number of hoppers and distributing apparatus, though for all practical purposes one would be sufficient, the distribution being at the rate of about two per second. The size of the hoppers, slots, and conductors will also vary according to the size of the nail to be used.

This machine may also be applied to the sorting and distribution of needles preparatory to putting them into wrappers, whereby a great saving of time and labor may be effected. This apparatus may also be used for sorting, distributing, and feeding into a roller horse shoe-nails after they have been punched out and when in the first stage of manufacture, the ends of the slots being enlarged so as to admit the passage of the head of the nail.

The position of the narrow edge of metal *i* may be varied as convenience may require, being placed either in the conductor H or in the slot *x*, at any point at a distance of one-half the length of the nail to be used below the plate F, although I have found the position as described meets all the requirements of the machine. The edge *i* may also be placed longitudinally across the conductor when it is desired that the heavier side of the nail should be conducted downward, as in the case of a horse shoe-nail when partly formed.

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

1. In nail-distributors, the combination of the hopper C and reservoir B, the movable slotted frame D, the plate E, the stationary slotted frame F, with plunger J and bisected conductor H, substantially as and for the purpose set forth.

2. The combination of the plunger J, the slide D with slotted plate *c* attached, and the plate F, as and for the purpose described.

ALBION KNOWLTON.

Witnesses:

JAMES KNOWLTON,
SAMUEL SNOW.