

(No Model.)

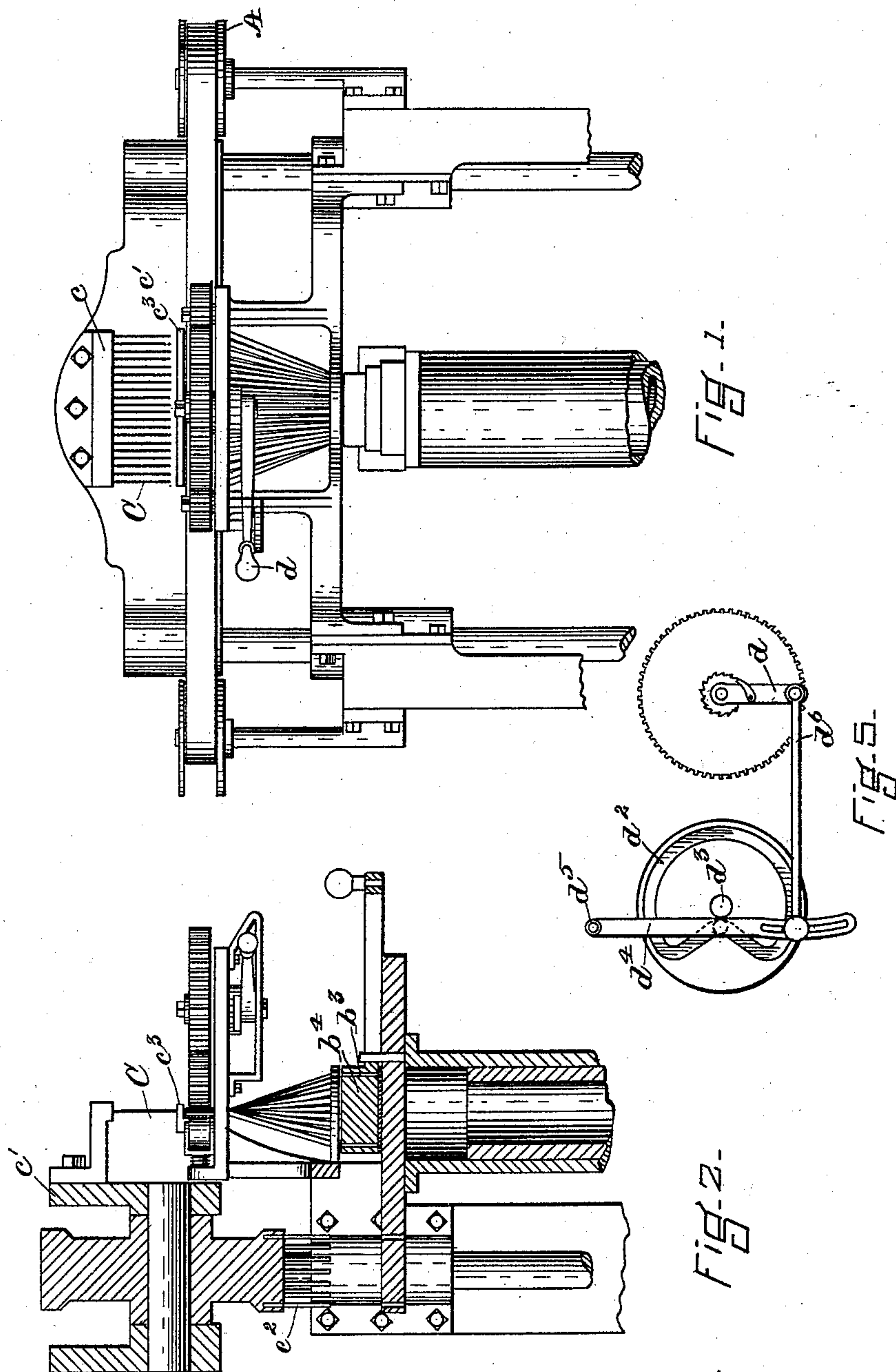
2 Sheets—Sheet 1.

F. F. RAYMOND, 2d.

NAIL FEEDING AND DISTRIBUTING MACHINE.

No. 383,911.

Patented June 5, 1888.



WITNESSES.

J. M. Dolan.

E. P. Small.

INVENTOR  
F. F. Raymond.

(No Model.)

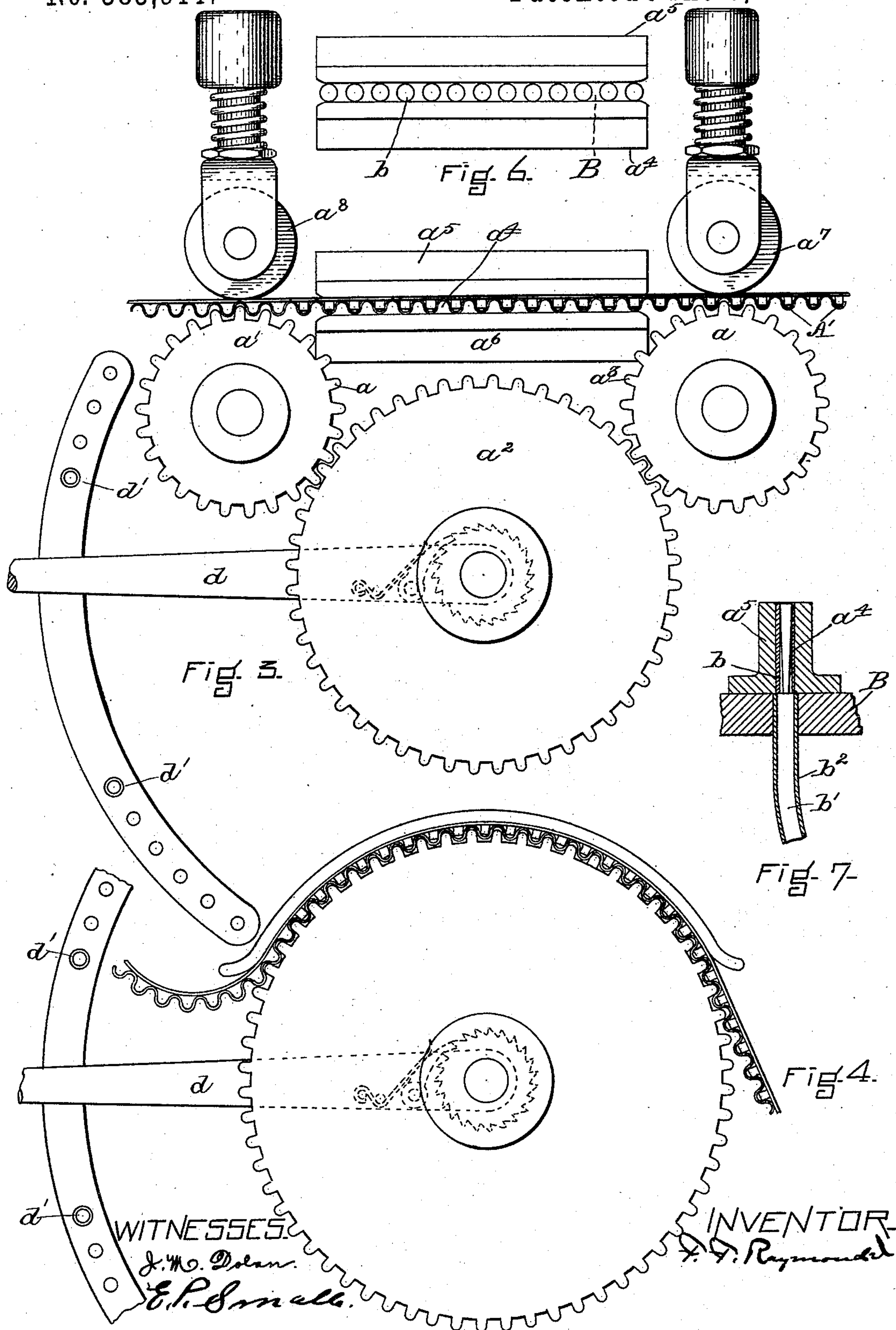
2 Sheets—Sheet 2.

F. F. RAYMOND, 2d.

## NAIL FEEDING AND DISTRIBUTING MACHINE.

No. 383,911.

Patented June 5, 1888.





# UNITED STATES PATENT OFFICE.

FREEBORN F. RAYMOND, 2D, OF NEWTON, MASSACHUSETTS.

## NAIL FEEDING AND DISTRIBUTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 383,911, dated June 5, 1888.

Application filed October 27, 1887. Serial No. 253,486. (No model.)

*To all whom it may concern:*

Be it known that I, FREEBORN F. RAYMOND, 2d, of Newton, in the county of Middlesex and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in Nail Feeding and Distributing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The object of the invention is to provide a means for feeding and distributing loose nails as a gang or group. For this purpose I prefer to employ the form of nail-carrier described in the application of Jonas R. Prouty, executed October 6, 1887, and comprising a flexible strip having a line of pockets or nail-holders arranged therein in regular or uniform order, each of which carries or holds a nail; and my invention relates to means for feeding this or similar nail-carrying strips from a supply-reel into a position to bring a given or desired number of its pockets, and consequently the nails held therein, into line with a gang or group of ejectors which are moved through the pockets to eject the nails therefrom into a gang or group of distributing-passages having a regular or uniform arrangement in relation to each other at their upper ends, and having their lower ends diverged or caused to occupy such relation as may be desired for the delivery of nails into the order or arrangement in which they are to be driven.

The invention further relates to various features of construction and organization.

In the drawings, Figure 1 is a view in rear elevation of a portion of a heel-nailing machine having the features of my invention. Fig. 2 is a vertical section thereof. Fig. 3 is an enlarged plan of a part thereof. Figs. 4 and 5 illustrate modifications. Figs. 6 and 7 are detail views.

Referring to the drawings, A represents the supply-reel upon which the nail-carrying strip is wound.

$a$   $a'$  are feed-wheels, which are caused, by means of the gear  $a^2$ , to be rotated in the same direction. These feed-wheels are in the nature of spur-gears, and their teeth  $a^3$  mesh with the projections  $A'$  of the nail-carrying strip, which form the pockets or holders, and also

with the teeth of the gear  $a^2$ . The feed-rolls  $a$   $a'$  are separated from each other, and there is arranged between the two a feed-passage,  $a^4$ , formed by the parallel plates  $a^5$   $a^6$ . There is also arranged opposite the roll  $a$  the pressure-roll  $a^7$ , and opposite the roll  $a'$  the pressure-roll  $a^8$ . These rolls act to keep the strip in contact or up against the rolls  $a$   $a'$ , and in their stead plates—preferably yielding plates—may be substituted. Extending across the end or bottom of the feedway  $a^4$  is a plate, B, which has a line of holes,  $b$ . Each of these holes is connected by a distributing-passage,  $b^1$ , in a tube,  $b^2$ , with a hole,  $b^3$ , in the nail-carrier  $b^4$ , or in a nail-holder, or, in some cases, directly with the templet, through which the nails are driven into the work. The tubes, or the passages in the tubes, give the direction to the nails as they are delivered or ejected from the nail-carrying strip and guide them to the arrangement in which it is desired that they shall be driven. Above, or in line with the feedway  $a^4$ , is a gang of ejectors, C. These are represented as attached to a block,  $c$ , carried by the cross-head  $c'$ , which operate the drivers  $c^2$  for driving the nails fed and delivered into the work. These ejectors C may enter the pockets or holders of the nail-carrying strip directly upon their downward movement, or there may be arranged above the feedway  $a^4$  a templet-plate,  $c^3$ , having holes, through which the ejectors C pass before entering the pockets or holders of the nail-carrying strip.

The feed-wheels  $a$   $a'$  may be operated by hand by means of a lever,  $d$ , connected with the gear-wheel  $a^2$  by a feed pawl and ratchet carried by the gear, the extent of movement of which handle regulates the extent of movement of the feed-wheels, and which is fixed by means of the adjustable stops  $d'$ ; or the feed-wheels may be moved automatically by means of a cam,  $d^2$ , on the shaft  $d^3$ , which communicates movement to the lever  $d$  by means of the lever  $d^4$ , pivoted at  $d^5$  and link  $d^6$ . The fulcrum of the lever may be made adjustable to vary the throw of the lever  $d$ , or the link may be adjustable thereon.

In Fig. 4 I represent, in lieu of two feed-rolls,  $a$   $a'$ , the employment of one feed-roll, the teeth of which mesh with the projections of the nail-carrying strip, and which is caused



to travel in a curved feedway about it, there being a curved plate which maintains the strip in contact with the teeth of the feed-roll. This construction involves the use of the feed-roll sufficiently large to furnish teeth for the greatest number of nails which it is desired to distribute and drive at one time, and also that the ejectors C be arranged upon a curved line and the block B have its holes, *b*, upon a curve instead of a straight line. The feed-wheel itself will be operated in the same manner that the gear-wheel *a*<sup>2</sup> is operated—namely, by a ratchet-feed operated by a lever which is moved either by hand or by a cam, as above explained.

In operation the movement communicated to the feed-roll causes the strip to be moved the required distance to bring a given number of pockets or nail-holders into the feedway, and so that each pocket or holder is in line with one of the holes of the block B and also with the ejectors C. The downward movement of the ejectors C drives or ejects the nails from the holders or pockets, and they fall by gravity through the holes *b* and passages of the distributing-tube to a carrier or holder or templet.

If the head-carrying block supporting the ejectors has more than one reciprocation for every gang or group of nails driven, then the feed of the nail-strip after a gang or group have been ejected therefrom does not take place until the time for delivering another gang or group of nails to the drivers, and this in an automatic machine may be regulated by the cam, or in a hand-machine by the lever *d*.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a nail feeding and distributing machine, the combination of a delivery-reel for holding a nail-carrying strip, a nail-strip-feeding device comprising a feed roll or rolls having teeth to mesh with projections upon the strip, and a feedway provided with holes through its bottom through which nails are forced from the strip, and a gang or group of reciprocating ejectors to simultaneously enter the pockets or holders of said strips and force nails therefrom through said holes, as and for the purposes specified.

2. The combination of a nail-strip-feeding device comprising one or more feed-rolls, having spur-teeth adapted to engage projections upon the side of a nail-carrying strip, and means for rotating it or them, a plate or roll for holding a nail-strip in the feedway and in contact with the teeth of the feed roll or rolls, a block or plate, B, having holes *b* of the same arrangement as the pockets or holders of the nail-carrying strip, and a reciprocating gang or group of ejectors, substantially as described.

3. The combination of the reciprocating gang of ejectors C, the delivery-reel A, the feed-rolls *a* *a'*, having spur-teeth *a*<sup>2</sup>, the feedway *a*<sup>4</sup>, the pressure-roll *a*<sup>7</sup>, the block B, having the holes *b*, the tubes *b'*, having the distributing-passages *b*<sup>2</sup>, the gear *a*<sup>2</sup>, and the ratchet-wheel carried thereby, and lever *d*, having a pawl to engage the ratchet, as and for the purposes described.

FREEBORN F. RAYMOND, 2D.

Witnesses:

J. M. DOLAN,  
E. P. SMALL.