

(No Model.)

2 Sheets—Sheet 1.

F. F. RAYMOND, 2d.

NAIL MAKING, DISTRIBUTING, AND DRIVING MACHINE.

No. 528,805.

Patented Nov. 6, 1894.

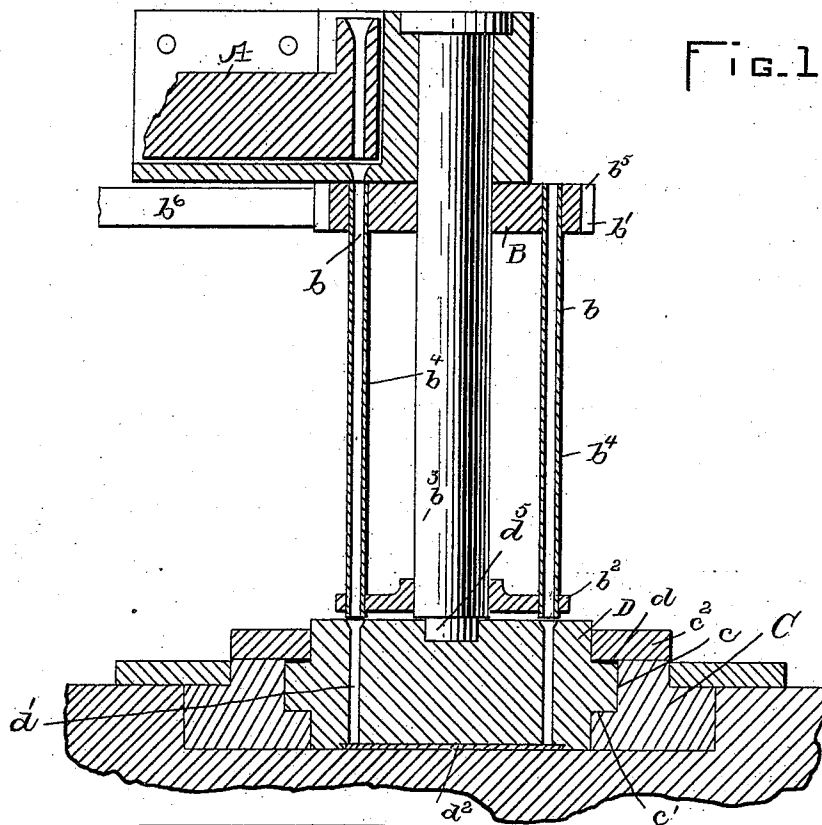


FIG. 1

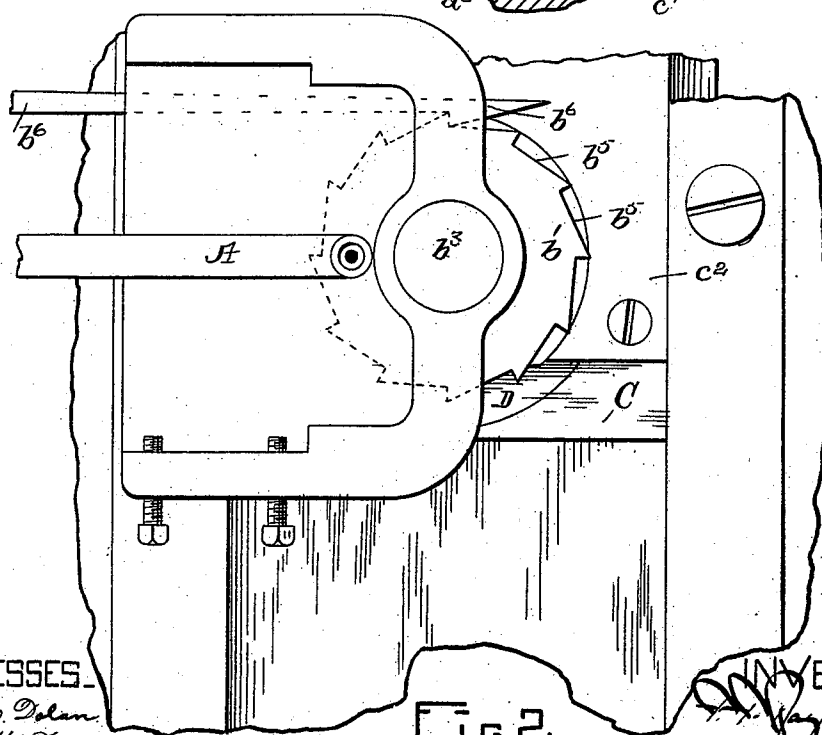


FIG. 2

WITNESSES.

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(No Model.)

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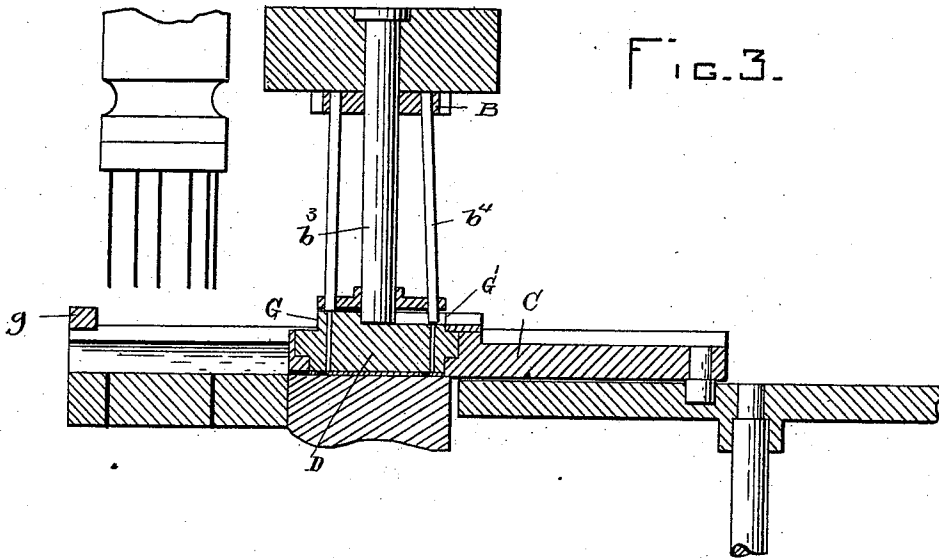
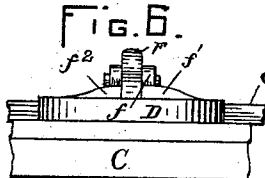
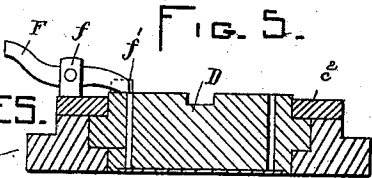
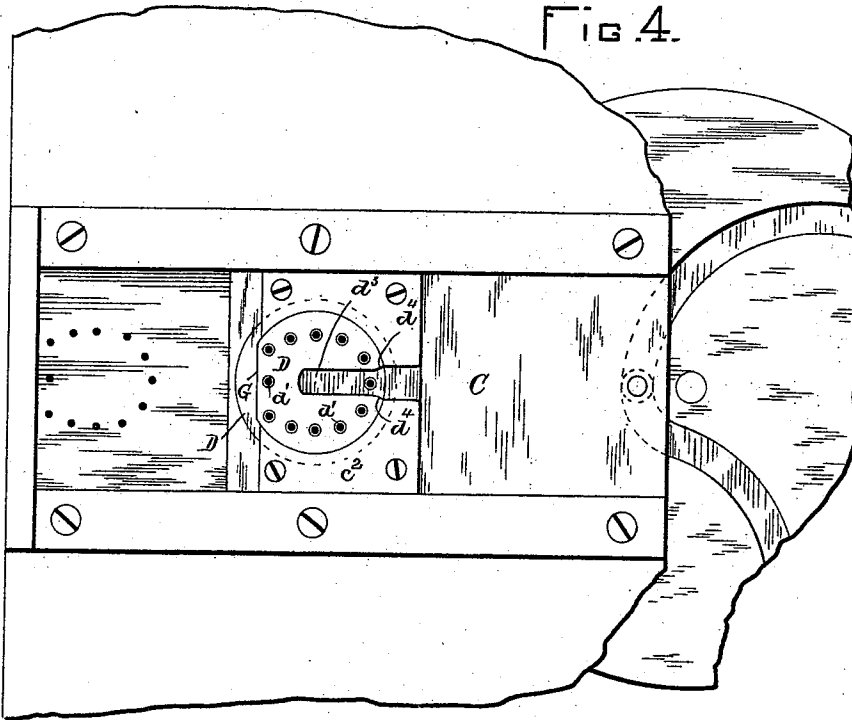


Fig 4.



WITNESSES.

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UNITED STATES PATENT OFFICE.

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

NAIL MAKING, DISTRIBUTING, AND DRIVING MACHINE.

SPECIFICATION forming part of Letters Patent No. 528,805, dated November 6, 1894.

Application filed February 20, 1892. Serial No. 422,323. (No model.)

To all whom it may concern:

Be it known that I, FREEBORN F. RAYMOND, 2d, a citizen of the United States, residing at Newton, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Nail Making, Distributing, and Driving 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 invention relates to that part of a nail-making, distributing and driving machine known as the distributor. Such machines have nail-making or supplying devices for delivering nails to the distributing mechanism which comprises devices for receiving the nails from the nail-making mechanism or nail supplying apparatus, and arranging the nails in order for driving, and nail driving devices which comprise a gang of nail drivers and a nail carrier for transferring the nails from the distributor to the nail drivers.

In the present invention a portion of the distributor is stationary and another portion of it is movable with the nail-carrying plate or slide.

The invention is represented as organized in a machine having many of the features of that described in various patents granted to me. Nails are supplied the distributor by any suitable nail making or distributing apparatus. The nail driving devices are similar to those described in the patent No. 467,242. The distributor comprises a rotary group of tubes arranged in a circular form at their upper ends and in the form or order in which the nails are to be driven at their lower ends, and a rotary section of the nail carrier plate which is adapted in one position to form a part of the distributor in that it is connected with it at such time to be rotated with it and to therefore receive into its holes the nails which are delivered to its various tubes as they are delivered, and at other times to form a portion of the nail carrier slide or plate in that it is disconnected from the distributor and is advanced or moved to a position to deliver its nails to the nail drivers.

Referring to the drawings,—Figure 1 is a view in vertical section of enough of the mechanism to illustrate my invention. Fig.

2 is a view in plan thereof. Fig. 3 is a view to illustrate the relation of the distributor to the nail driving devices. Fig. 4 is a plan taken above the nail carrier, of the nail carrier, templet and a part of the nail carrier cam. Figs. 5 and 6 are detail views of a modified form of latching mechanism to which reference is hereinafter made.

The nails are made from wire by means of dies and cut-offs carried by rolls, the wire being fed to the rolls by a suitable feeding mechanism. From the rolls the nails are transferred by a nail carrier A into a position to be delivered to the various holes or passages *b* of the distributor B. A plunger not shown serves to drive the nail from the transferer into the said holes or passages any desired distance even entirely through the same if required. The distributor comprises the upper block *b'*, the lower plate *b''*, the connecting post *b'''*, and the tubes *b''''*. The tubes extend through holes in the upper block to the upper surface thereof and through holes in the lower block. At their upper ends they are regularly arranged in circular order, and at their lower ends in the order in which the nails are to be driven, in this case in the form of a heel. The block B has upon its edge ratchet teeth *b⁵* by means of which it is rotated, by the feed pawl *b⁶*. C is the nail carrier plate or slide. It is movable from a position under the distributor by means of a cam or by any other desired means, to a position to deliver its nails to the drivers. At the front end of the plate is a circular recess *c* having a shoulder *c'* near its lower end. In this recess there is arranged to rest upon the shoulder *c'* a circular block D, and the block is held in place in the recess by an annular cap plate *c²*, see Fig. 2, which is adapted to bear upon the shoulder *d* of the block D with sufficient stress to overcome the momentum of the block in turning, that is, it exerts friction upon the block. The block has nail-receiving holes *d'* arranged in the order of the holes in the plate *b''* of the distributor. It also has a hole-covering plate *d²* either rotary or slide as may be desired, and adapted to be automatically opened and closed in any of the well known ways. The block has in its top a cross recess *d³* preferably extending across the same and having the rear entrance

d^4 flaring, as represented in Fig. 4. Upon an extension of the post b^3 of the distributor or upon the under surface of the plate b^2 is a block d^5 of a size to fit the recess d^3 in the block D, that is, it is of the same width or substantially the same width as the recess, and it projects sufficiently downward from the plate b^2 to be in line with said recess.

The distributor is always stopped in its rotation with the block d^5 in such a position that a backward movement of the nail carrier slide C will bring the rotary block D beneath the plate b^2 , and will enter its recess d^3 upon the block d^5 , so that when the plate C comes to rest the rotary block D is coupled to the distributor and forms a part thereof.

Upon the starting of the nail supplying mechanism, the distributor is caused to be rotated, and the block D is turned with it, and each nail is dropped or forced by the plunger, through various tubes of the distributor in regular order or sequence to corresponding holes of the block D, each hole of said block D receiving a nail from its respective tube before the next nail is delivered the next tube in order. By this means each hole of the block D is supplied with a nail before or at the time the distributor and block D have made a full revolution, and the connection between the nail transferer A and each hole of the nail-carrying block D is direct and without a transfer of intermediate parts, and with the use of a plunger each nail is driven through a separate tube into the nail-receiving pocket or hole of the nail-carrying section of the distributor. At the end of the rotation of the block D the nail-supplying machine comes to rest, and the nail carrier plate C is in condition to be moved to feed the nails in the nail block D to the nail drivers, and upon such movement of the plate C the nail block D is disengaged or uncoupled from the distributor and advanced to a position under the drivers, the cover plate d^2 being moved at the end of the slide movement to uncover the holes. The drivers are reciprocated through said holes, driving the nails therefrom into the work below.

In order that the holes of the nail block D may be in line with the drivers, it is necessary that the block be held centered in the plate C, or that there be some means for centering it before the drivers enter the holes therein. There are a number of ways of accomplishing this object. One has been incidentally described above, and that is, the friction upon the block D caused by the plate c^2 , this friction being sufficient to hold the block D in the relation to the plate C that it is in at the stopping of the distributor, and during its movement from the distributor to its position under the nail drivers. While this answers very well, it is not what would be called a positive registration, and in Fig. 5 I have shown a positive latch for locking the block D in registering position to the slide plate C. It com-

prises a latch F upon the plate C pivoted to a standard f having its end f' shaped and arranged to enter the catch which is in the form of a notch or recess f^2 on or in the upper surface of the block D. This latch and catch are so placed that at the end of the rotary movement of the distributor and block the catch comes in line with the latch and the latch engages the catch, and the two parts are locked together. The latch is so shaped that upon the starting of the nail-supplying devices it is tripped from engagement with the catch by means of a lever of the starting mechanism, the said lever bearing upon the outer arm of the lever F so that its downward movement, or movement necessary for starting the nail-supplying devices, lifts the latch from engagement with the catch and permits the distributor and block D to be turned.

Another device for registering the block D is represented in Figs. 2 and 3. When this form of device is used, the block D is provided with one or two square surfaces G G'. One only, however, is sufficient, and that the one upon its forward end. To use this square surface in registering the block, it is necessary to arrange across the slide way in which the plate C is moved and at the end thereof a bar g having a flat face against which the square face G of the nail block D is brought into contact by the plate C. If the two square or straight surfaces are parallel with each other, then the holes d' of the block D are in perfect register. If the block is slightly turned so that its straight edge G is not parallel with the straight edge of the bar g , then as the slide C approaches the end of its movement toward said bar g , one end of the straight edge of the block D comes into contact with the straight edge of the bar g and is turned thereby sufficiently to bring its entire straight edge parallel and in contact with the straight edge of the bar g , the movement of the slide C not ceasing until the two straight surfaces are in contact their entire length.

The advantage of the invention consists in the doing away of all transfers in the distributor, and also in the doing away of covering plates, and the leading of each nail by a separate tube into a nail-receiving hole of the distributor either by gravity or by a positive action of a plunger.

Of course the invention may be used for supplying any form of a movable or removable nail carrier or holding block D with nails whether the said block is used to deliver nails immediately to drivers by an automatic movement or by hand, or whether it is used to deliver nails to the holes of a templet or to any other position or place.

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

1. In a machine of the character specified, a rotary nail distributor having nail passages the upper ends of which are arranged in cir-

cular order and the lower ends of which are arranged in the order in which the nails are driven, with a rotary nail carrier adapted to be moved in unison with the distributor while receiving nails, and to be moved therefrom to deliver the nails thus received, as and for the purposes described.

2. In a machine of the character specified, a rotary distributor, a nail carrier slide, a rotary nail-carrying block mounted in or on said slide, and a coupling for connecting said rotary carrier with the nail distributor, as and for the purposes specified.

3. The combination in a machine of the character specified, of a rotary distributor, a movable plate having a rotary nail carrier mounted in or upon it, means for rotating the carrier C when beneath the nail distributor in unison with it, and a registering device for registering the nail carrier in the movable plate, as and for the purposes described.

4. In a machine of the character specified, the combination of the rotary distributor having nail distributing passages, and a coupling block d^5 , with the movable plate C, the rotary nail carrier D carried thereby, having the recess d^3 to fit the coupling block d^5 , as and for the purposes specified.

5. The combination in a machine of the character specified, of a rotary distributor having a number of passages through which nails are delivered, a movable plate a rotary

nail holder carried by said plate, a cam for moving said plate from a registering position in relation to the distributor to a registering position in relation to a gang of drivers, and for holding said plate with the nail holder in operative relation to the distributor, and also in operative relation to the nail drivers, a coupling for connecting the rotary nail holder with the distributor, and a registering device for holding it in registering relation to the drivers upon the end of its rotation with the distributor, as and for the purposes specified.

6. The combination in a machine of the character specified, of a rotary distributor having a number of nail-receiving and guiding passages therein open throughout their length, and a rotary nail holder having nail-receiving holes in the order and arrangement of the delivery ends of the passages of the distributor, and movable from the distributor, as and for the purposes described.

7. The combination of the plate C the rotary nail holder D having a catch f^2 the nail distributor, the latch F, and the starting mechanism of the nail supplying and distributor-operating mechanism, as and for the purposes described.

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Witnesses:

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M. MCFAGUE.