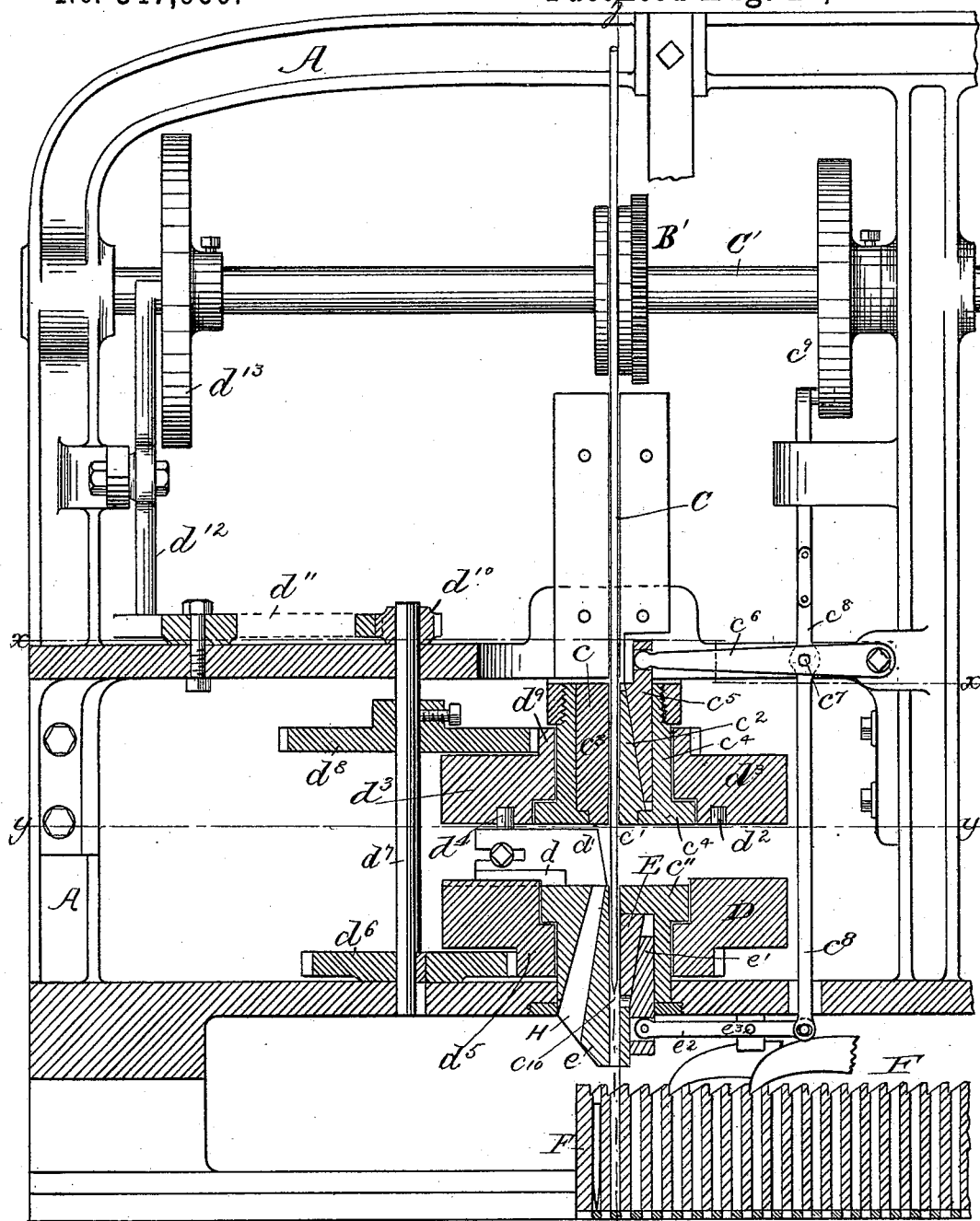


4 Sheets—Sheet 1.

No. 347,960.

Patented Aug. 24, 1886.



FTG-1-7

J. M. Dolan.
Rev. B. Dolan

INVENTOR

INVENTOR
D. F. Ferguson et al

(No Model.)

4 Sheets—Sheet 2.

F. F. RAYMOND, 2d.
NAIL MAKING AND DISTRIBUTING MACHINE.

No. 347,960.

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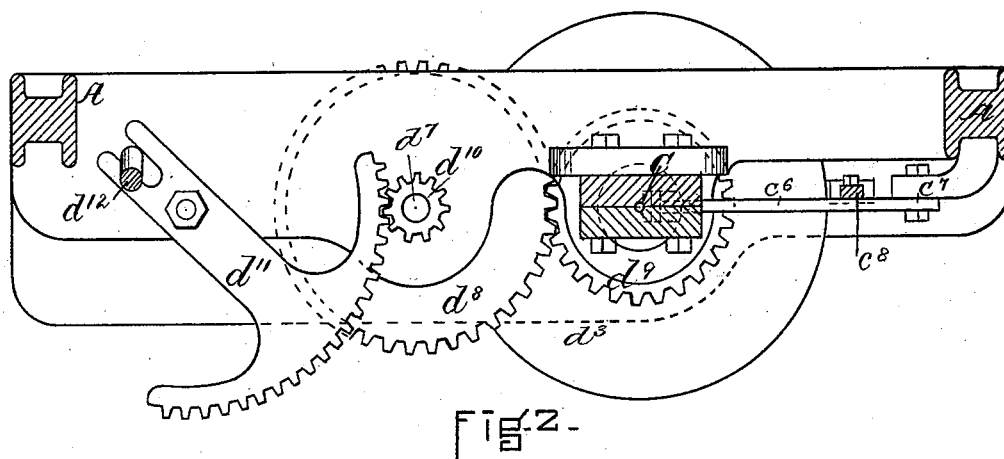


Fig. 2.

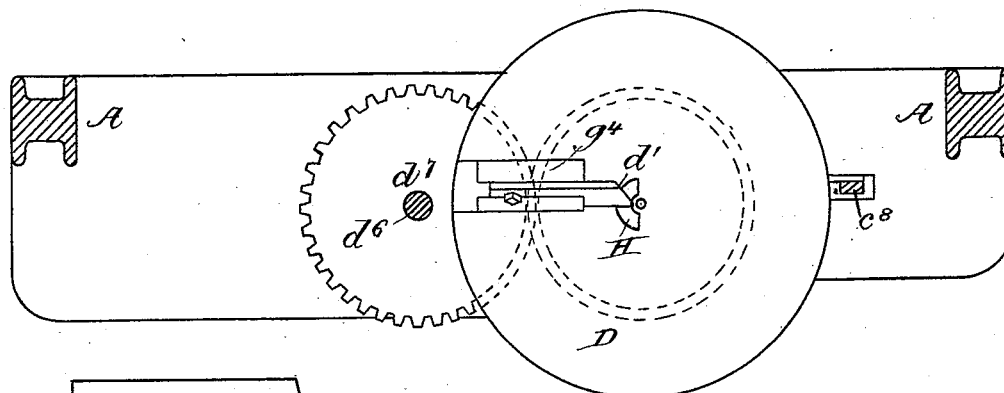


Fig. 3.

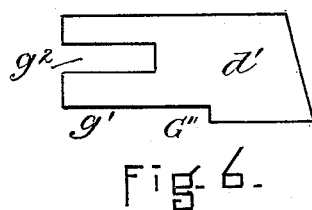


Fig. 6.

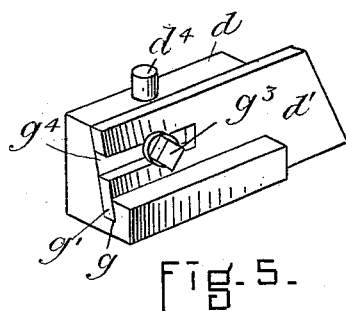


Fig. 5.

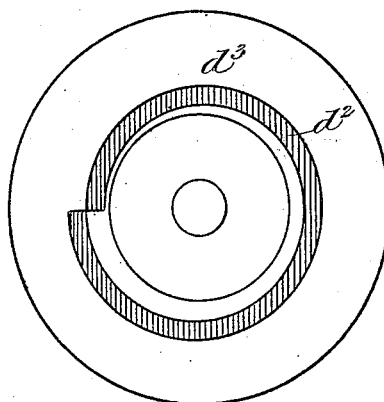


Fig. 4.

WITNESSES.

J. M. Dolan
Fred. B. Dolan

INVENTOR

F. F. Raymond

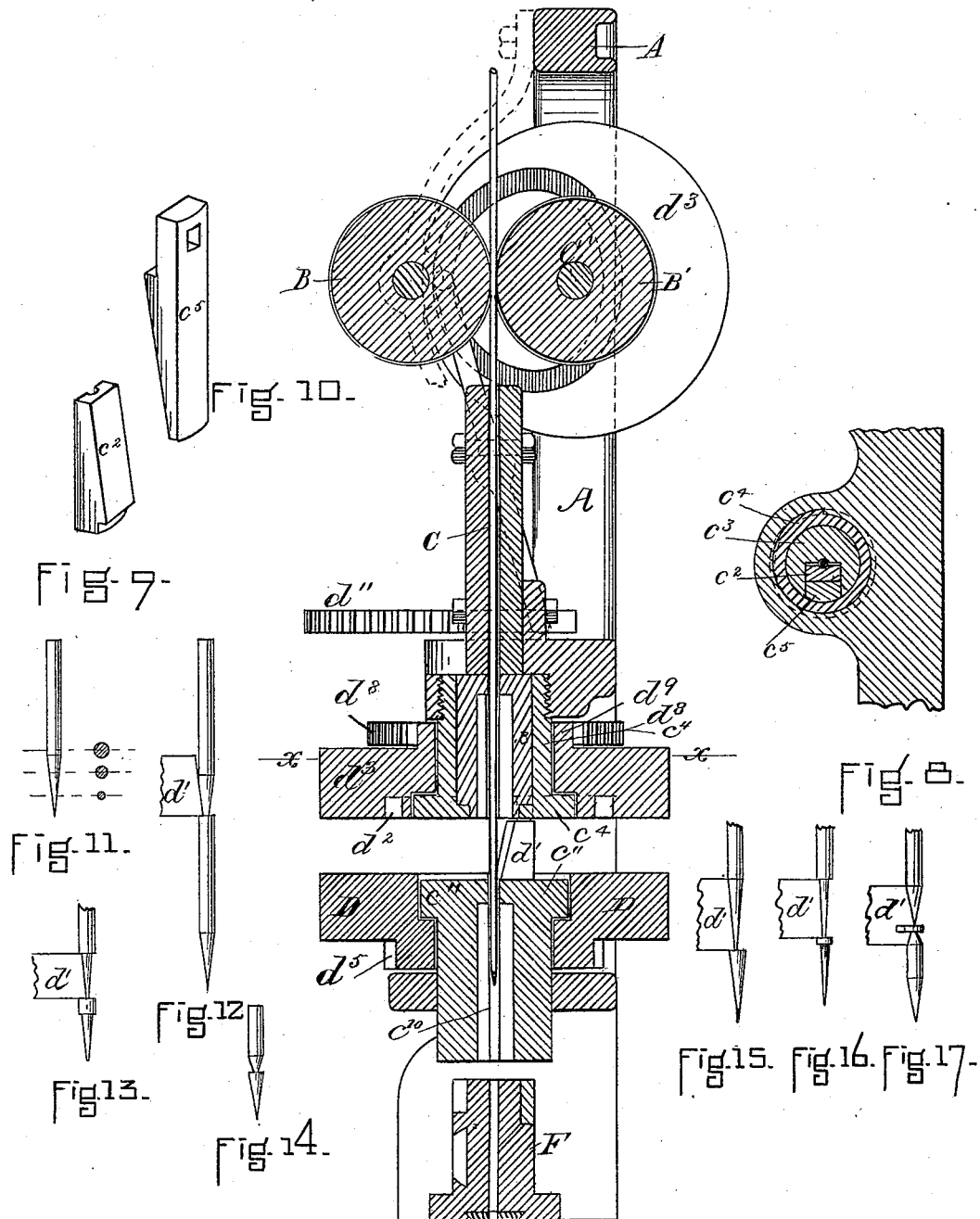
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WITNESSES

J. W. Dolan.
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INVENTOR

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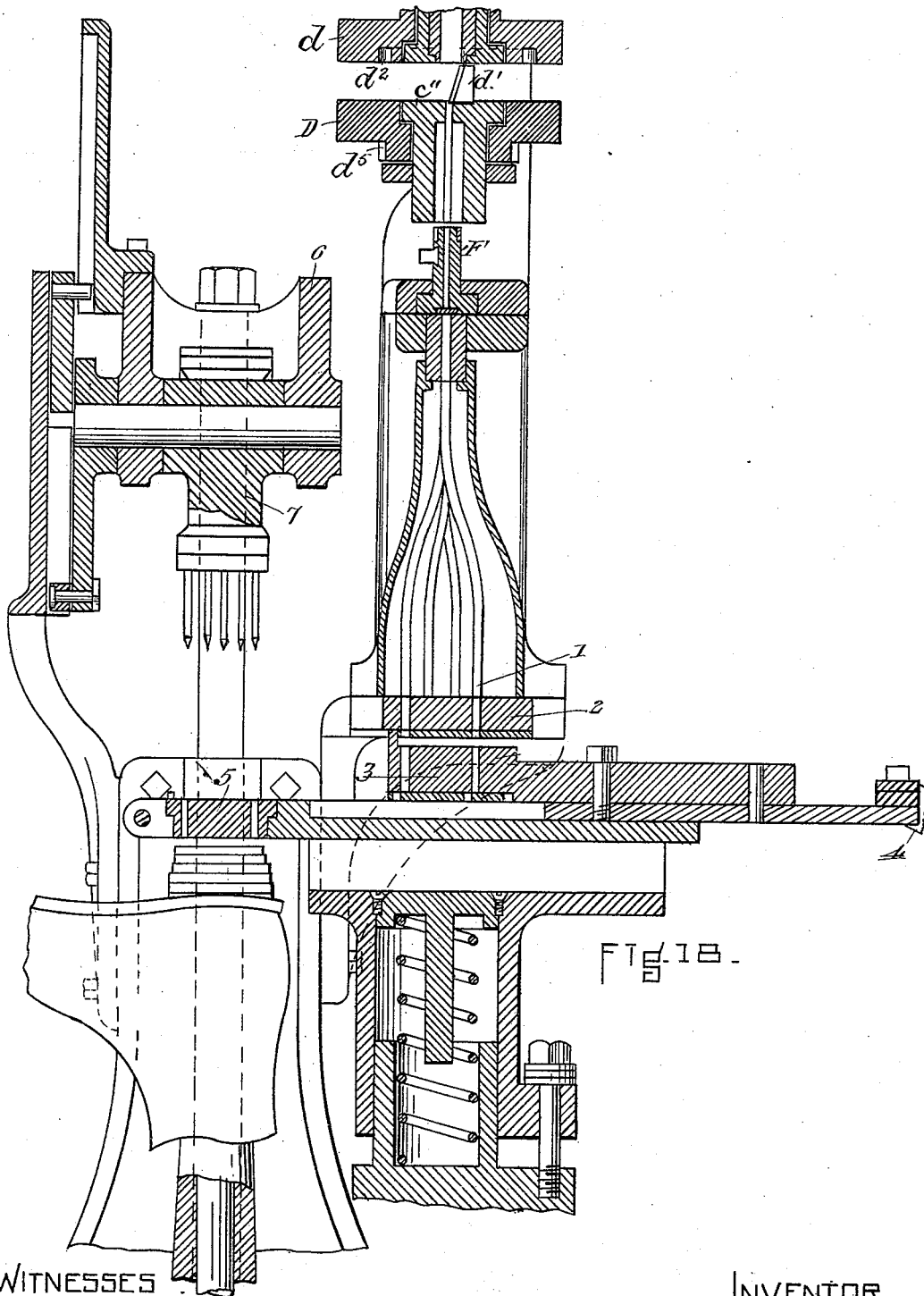
(No Model.)

4 Sheets—Sheet 4.

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WITNESSES

J. M. Dolan.
Fred. B. Dolan.

INVENTOR

F. F. Raymond

UNITED STATES PATENT OFFICE.

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

NAIL MAKING AND DISTRIBUTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 347,960, dated August 24, 1886.

Application filed February 6, 1886. Serial No. 190,967. (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 Making 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 primary object of the invention is to provide means for supplying a nail formed from wire with a conical point.

It further relates to means whereby a previously-pointed nail-blank or nail is severed at the completion of the formation of the point of the next nail in order.

It further relates to the combination of said pointing devices with a clamp for holding the wire rigidly or firmly during the operation of the cutter.

It further relates to the combination of the said point-forming mechanism with a wire-feeding mechanism.

It further relates to the combination of said nail-pointing mechanism with wire-feeding mechanism and a nail receiver and distributor.

It further relates to the combination of said wire-pointing mechanism, the wire-feeding mechanism, the nail receiving and distributing devices, and nail-driving devices.

The invention is represented as applied to a machine which has many of the features of the machine described in the Towns and Raymond application, filed November 27, 1885, Serial No. 184,048, and such portions of the devices as are common to both machines I have not specifically described here, reference being made to said application for a fuller description thereof.

Referring to the drawings, Figure 1 is a vertical section of a portion of the Towns and Raymond machine provided with my improvement. Fig. 2 is a horizontal section and plan upon and below the line xx of Fig. 1. Fig. 3 is a horizontal section and plan upon and below the line yy of Fig. 1. Fig. 4 is a plan view of the cam-disk inverted. Fig. 6 is a view in elevation of the pointing-tool. Fig. 5 is a perspective view of the pointing-tool and its holding-block. Fig. 7 is a vertical

cross-section on the line zz of Fig. 1. Fig. 8 is a horizontal section on the line xx of Fig. 7. Figs. 9 and 10 are perspective views of a part of the wire clamping mechanism. Figs. 11, 12, 13, 14, 15, 16, and 17 show different forms of nails, and of cutters for making them. Fig. 18 shows the arrangement of the pointing mechanism in relation to the nail-distributing and driving devices.

A represents the frame of the machine.

B B' are the wire-feed rolls. They are operated as described in said Towns and Raymond application.

The wire is fed by their joint action through the feedway C, between the clamping device or chuck c into the throat c' . The chuck or clamping device comprises two parts, c^1 c^2 , and they are confined or held in the sleeve c^4 . One of the blocks or parts c^2 of the chuck or clamp is stationary, and the other is movable toward and from the stationary part, and any suitable device may be used for giving it this movement. I have represented in the drawings the block c^2 as forced inward toward the block c^1 , and held locked in such position by the wedge c^3 , which is moved downward by the lever c^5 , pivoted at c^7 , rod c^8 , and cam c^9 on the main shaft C.

I would here state that I do not confine myself to the especial form of clamping mechanism employed, but may use any mechanical equivalent for that herein described. Below the chuck there is arranged a revolving disk, D, which supports a horizontally-movable block, d . This block carries or sustains at its end the pointing-tool d' , which has a cutting-edge of any desired form or configuration. The block d is moved inward toward the wire as the disk D is revolved by means of a cam-groove, d^2 , in the block d^3 , and a cam-pin, d^4 , which projects upward from the block d . This block d^3 may be stationary and the cam-groove d^2 arranged to advance the block d any desired distance during the revolution of the disk D; but when it is desired to sever a previously-pointed nail-blank and at the same time form a conical point upon the wire it is requisite that the block d should have a comparatively slow advancing movement while the disk D is revolving, in order to make the work upon the cutter as light as possible, or, in other words, so that the cutter shall not be advanced

too rapidly into the metal or the wire. To accomplish this I provide the cam disk or block d^b with a revolving movement in the same direction with the disk D, but at a slower rate of revolution, as by so doing the cam or cam-surface is revolved and will advance the block d with any degree of slowness or speed desired. The disk d^b has bearings upon the sleeve c^4 , and the disk D has ways in which the block d may be moved. The escape passage or continuation c^{10} of the throat has a wire or nail holding clamping-block, E, which is similar in construction and operation to the block c^2 of the upper clamp, and it is moved in relation to the fixed part e of the clamp by the wedge e' and the lever e^2 , pivoted at e^3 and operated by the rod e^4 . The disk D is revolved upon its post c^{11} by means of the gear-wheel d^5 , forming a part of the disk or attached to it, and the gear d^5 , on the shaft d' , and the disk d^5 is revolved by the gear-wheel d^6 on the shaft d' and the gear d^6 forming a part of or attached to the disk d^5 . The shaft d' is revolved one or more revolutions in one direction and then reversed by any suitable means, and I have represented for accomplishing this purpose the pinion d^{10} , the sector d^{11} , operated by the lever d^{12} and cam d^{13} on the shaft C'. There is arranged to be moved below the throat of the machine a nail receiving and delivery block, F, which is substantially like that shown in the Towns and Raymond application, and it is operated as therein specified—that is, it is provided with an intermittent forward-feeding movement and a continuous backward movement. It receives the nails as they are pointed and severed one by one and delivers them to the nail-distributor, from which they are taken by the nail-carrier and advanced to the nail-driving devices. This portion of the invention is like that described in the said Towns and Raymond application and in the Raymond Patent No. 317,199.

The start and stop motion mechanism or devices are similar to those described in the Towns and Raymond application.

The nail receiving and delivery block F delivers its nails to the passages in the tubes, by which they are conveyed to the holes 1 in the block 2, and they are discharged from the block 2 into the nail carrier or transferrer 3. This transferrer is automatically moved by a cam (not shown) and lever 4 to convey the nails from the block 2 to a position over the templet 5, from which they are driven into the heel or other work.

6 is a reciprocating cross-head which carries the revolving head 7, which supports the awls, drivers, and spanker, and is automatically revolved to bring them successively into operative position. These parts are similar to those described in the said Towns and Raymond application and in the Raymond Patents Nos. 290,109 and 317,199, and Henderson and Raymond Patent No. 317,647, and need not further be described here.

In operation the wire is fed by the wire-feeding device through the feedway to bring the end of the wire in line with the cutter d' . It is then clamped, and the cutter is immediately advanced and revolved and the point formed. The next operation of the feeding devices feeds the pointed wire into the part c^{10} of the throat. The wire is again clamped, the cutter advanced and revolved, the wire nail severed from the end thereof, and the end of the remaining wire pointed. The cutter then withdraws, the clamp or clamps are opened, and the wire again feeds forward, forcing the severed nail from the throat, and the operation proceeds as before.

It is obvious that the cutter d' may be operated so as not entirely to sever the nail, if desired.

It will be seen that the wire may be held by the clamps c^2 c^3 alone, or additionally by the lower clamping device. The wire is not only held clamped during the forming of the point and severing of the blank; but as a portion of the wire extends into the throat the wire is firmly held to better advantage than if the point were formed on the end of the wire, or, in other words, than if the wire were not supported by the portion of its length below the cutter during the operation of the cutter.

As the feedway and throat are in line, it is obvious that the operation of the feeding devices can be varied to feed a greater or less length of wire without in any way changing or modifying the action of the pointing mechanism, and that the wire-feeding mechanism described in the said Towns and Raymond application is adapted to vary the length of wire fed to vary the length of nail made.

I would here state that I do not confine myself to the especial wire-feeding mechanism described in said application, but may use any of the well-known feeding devices of the market for the purposes herein indicated. I would also state that the pointing devices herein described may be used in any other form of nail-making and nail or wire pointing machines.

I prefer to form the carriage or support for the cutting-tool as represented in Fig. 5—that is, as made broad at the base, having a cavity or recess, g , for the reception of the lower edge, g' , of the tool.

The tool is made substantially as shown in Fig. 6—that is, it has the recess G' in its lower edge, and also the recess g' , for the reception of the fastening screw or bolt g^3 . The cutting-edge of the tool should be in front of the back g^4 of the tool-holder. It will be seen also that where upper and lower clamping devices are used they are simultaneously operated by one cam and the levers e^6 e^2 . I have arranged in the post or sleeve c^{11} the passage H, which extends from a point adjacent to the section c^{10} of the throat to a chute, (not shown,) through which the waste escapes.

In Fig. 11 I have shown a nail having a long shank and a long tapering point.

In Fig. 12 I show the relation of the pointing-tool to the wire, the wire being shown as pointed at its end and the nail-blank as partially severed by the cutter from the wire.

5 Fig. 13 illustrates the use of the invention in making a short-pointed nail with a shoulder.

Fig. 14 is a view in elevation of a nail having a barbed point, which is made by a pointing-tool having an edge similar in shape to the shape of the barbed point.

Fig. 15 shows a nail partially severed from the wire, which is tapered throughout its length.

15 Fig. 16 is a view of a headed nail not quite severed from the end of the wire, and of the cutter for making the same. Of course it will be understood that the cutter is of a shape to form the head of the nail and to sever the 20 complete nail from the end of the wire, as described.

Fig. 17 is a view of a nail having a groove or recess about its head and a conical point, and of a cutter or pointing-tool for shaping 25 the same.

It will be seen that by means of the devices herein described, and by simply changing the shape of the cutting-edge of the tool, a 30 headed or shouldered nail, or a pointed nail, or a nail having a point and recesses or serrations extending regularly around the wire upon any part thereof or of any shape, can be made. I would especially call attention to the shouldered nail represented in Fig. 13, the 35 conical or tapering nail represented in Fig. 15, the headed or shouldered pointed nail represented in Fig. 16, the barbed nail represented in Fig. 14, and pointed and undercut headed nail represented in Fig. 17, as representing the operation of the devices in this 40 respect.

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

45 1. The combination of wire feeding devices, a feedway, a wire clamp, and a cutter, d' , adapted to be carried or moved around the wire, and to be advanced as it is carried or moved, all substantially as described.

50 2. The combination of wire-feeding devices, a feedway, and a cutter, d' , adapted to be carried or moved around the wire, and to be advanced as it is carried or moved, all substantially as described.

55 3. The combination of wire-feeding devices, a wire-clamp, the section c'' of the throat, and a cutter, d' , adapted to be carried or moved around the wire and to be advanced as it is carried or moved, all substantially as described. 60

4. The combination of wire-feeding devices, the throat c' and c'' , a cutter, d' , adapted to be carried or moved around the wire, and to be advanced as it is carried or moved, a wire-clamp above the cutter, and a wire-clamp below it, substantially as described. 65

5. The combination of wire-feeding devices, a feedway, C, wire clamping or holding devices, a revolving disk, D, the block d , carrying the cutter d' , and a cam grooved disk, d^3 , having a cam-groove, d^2 , substantially as described. 70

6. The wire-feeding devices and wire clamping or holding devices, a revolving disk, D, a block, d , carrying the tool d' , a revolving 75 disk, d^3 , having a cam-groove, d^2 , for operating the block d , all substantially as described.

7. The combination of wire feeding devices adapted to feed wire, a feedway, C, a disk, D, a block, d , carrying a tool, d' , a cam-groove 80 disk, d^3 , having a cam-groove, d^2 , a gear, d^5 , and a gear, d^6 , operated substantially as described, all substantially as set forth.

8. The combination of a rotary disk, D, a block, d , having a tool, d' , the disk d^3 , having 85 the cam-groove d^2 , and mechanism for rotating the disk at different speeds, all substantially as described.

9. The combination of a wire-clamping device with a rotary pointing cutter, d' , and devices for advancing the cutter, consisting of the rotary disk D and the cam-groove disk d^3 , having a cam-groove, d^2 , all substantially as described. 90

10. The combination of the tool d' , adapted 95 to be turned or moved around the throat of the machine, and to be advanced toward or beyond the center of the throat as it is turned, with a block or section of the machine having an escape-chute, H, opening in close proximity to the throat of the machine, substantially as described. 100

11. In a nail-forming mechanism, as a means for pointing the nail or nail-blank, a pointing-tool adapted to be carried or moved about the 105 nail or nail-blank and to be advanced as it is revolved.

12. In a nail-forming mechanism, as a means for severing a nail or nail-blank from continuous wire or nail-stock, a cutting-tool and 110 devices for carrying or moving it about the wire or nail-stock and for advancing it while it is being revolved.

13. In a nail-forming mechanism, as a means for severing a nail or nail-blank from continuous wire or nail-stock, and for at the same time 115 pointing a nail or nail blank, a pointing-tool and devices for carrying or moving it about the wire or nail-stock and for advancing it while it is being revolved to a point beyond median 120 line of the wire or nail-stock.

14. In a nail-forming mechanism, as a means for forming nails or nail-blanks of varying lengths from continuous wire or nail-stock and for pointing them, the combination of a variable wire or nail-stock feed, a severing and 125 pointing tool, and devices for automatically carrying or moving it about the wire or nail-stock and for advancing it while it is being revolved, operated immediately after the end 130 of the feed movement of the wire or nail-stock.

15. In a nail-forming mechanism, a nail or nail-blank severing or pointing tool and devices for carrying or moving it about the wire and advancing it while it is revolved until the nail or nail-blank has been severed or pointed, or both, and for then reversing the movement of the tool and returning it to its original position.

16. In a nail-forming mechanism, as a means for severing and pointing, or either, nails or nail blanks, a wire or nail-stock feeding device, a severing and pointing tool, or either, and devices for automatically carrying or moving it about the wire or nail-stock and for advancing it while it is being revolved, and a clamp in close proximity to the said tool, for rigidly holding the wire or nail-stock while the tool is operating, and devices for successively and automatically operating first the wire or nail-stock feed to advance it to the tool; second, the clamp to hold the wire or nail-stock stationary during the operation of the tool, and then the tool to sever and point, or either, the nail or nail-blank.

17. The combination of nail forming mechanism comprising a wire or nail-stock feed, a severing and pointing tool, or either, and devices for automatically carrying or moving it about the wire or nail-stock, and for advancing it while it is revolving with a nail-distributor.

18. The combination of nail-forming mechanism comprising a wire or nail-stock feed, a

severing and pointing tool, or either, and devices for automatically carrying or moving it about the wire or nail-stock, and for advancing it while it is revolving with a nail-distributor and transferring device.

19. The combination of nail-forming mechanism comprising a wire or nail-stock feed, a severing and pointing tool, or either, and devices for automatically carrying or moving it about the wire or nail-stock, and for advancing it while it is revolving with a nail-distributor, transferring and driving devices.

20. The combination, in an organized machine for making and driving nails, of a wire or nail-stock feed, a severing and pointing tool, or either, and devices for automatically carrying or moving it about the wire or nail-stock, and for advancing it while it is revolving, with devices for carrying or delivering the nails to nail-driving mechanism, said nail-driving mechanism, and intermediate connecting and actuating devices whereby the nails are automatically made, delivered, and driven.

21. As a means of revolving and advancing a pointing and severing tool, or either, in relation to stationary wire or nail-stock, a revolving disk carrying the tool-holding block, and guides for the same, and a rotating cam connected with the block.

FREEBORN F. RAYMOND, 2d.

Witnesses:

M. P. RAYMOND,

FRED. B. DOLAN.