

(No Model.)

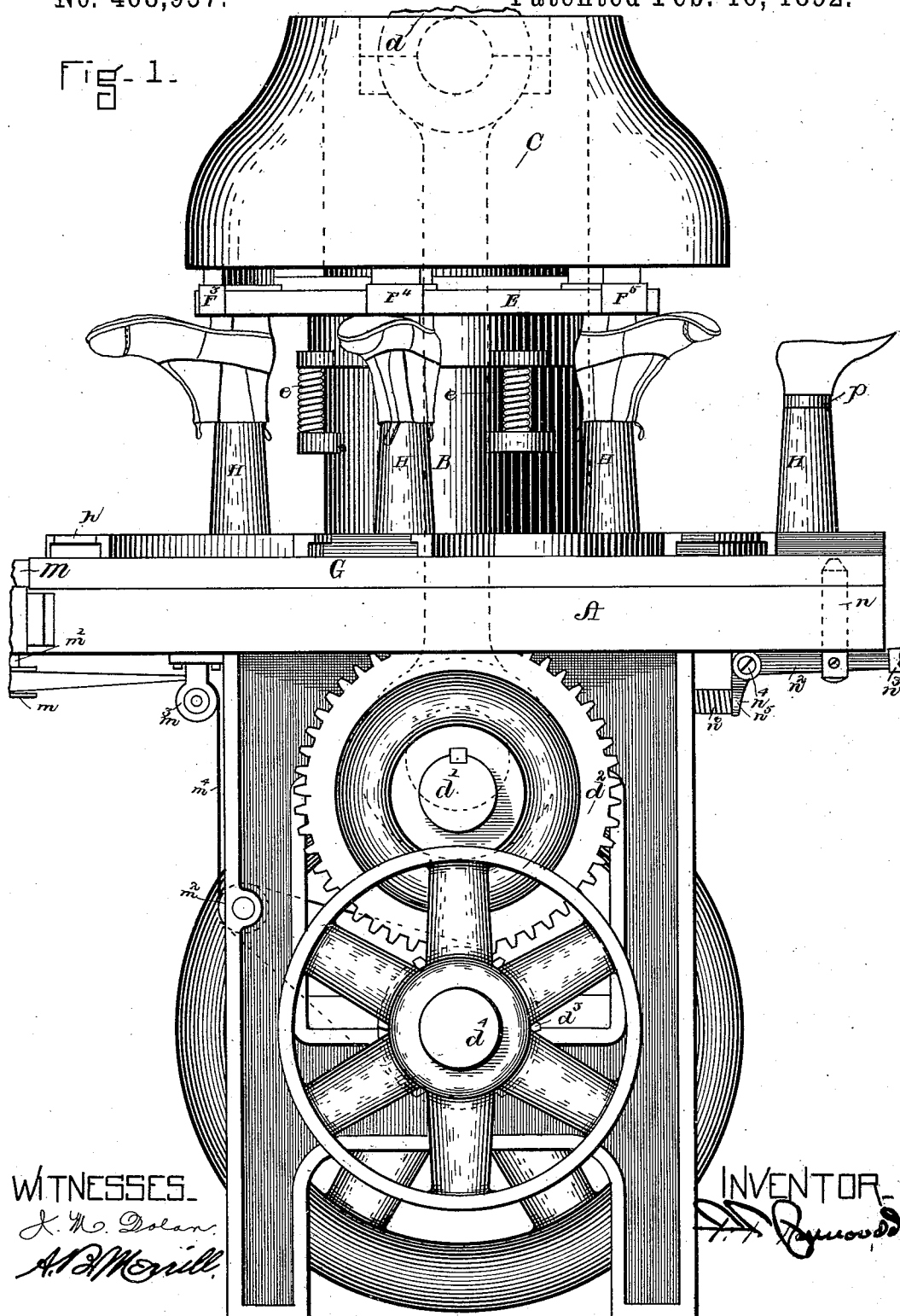
4 Sheets—Sheet 1.

F. F. RAYMOND, 2d.  
HEEL NAILING MACHINE.

No. 468,957.

Patented Feb. 16, 1892.

Fig. 1.



WITNESSES.

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(No Model.)

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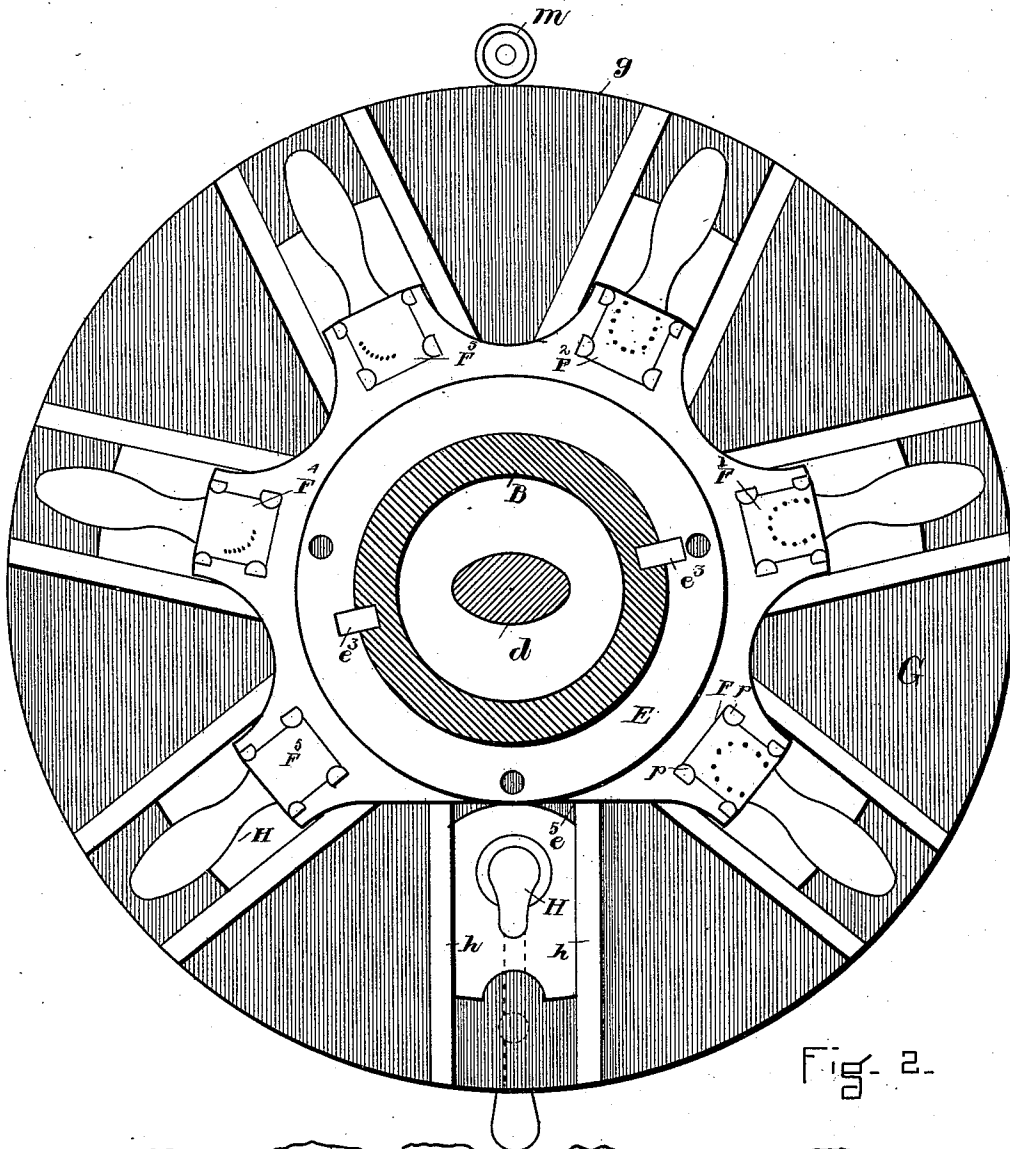


Fig. 2.

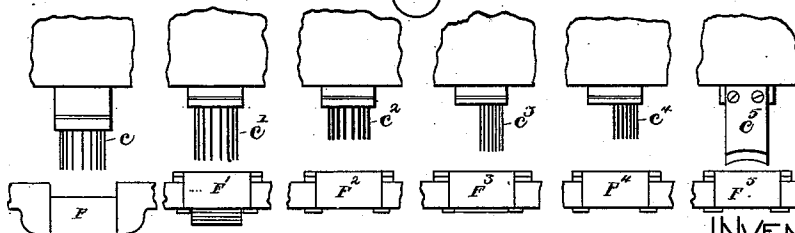


Fig. 4

WITNESSES.

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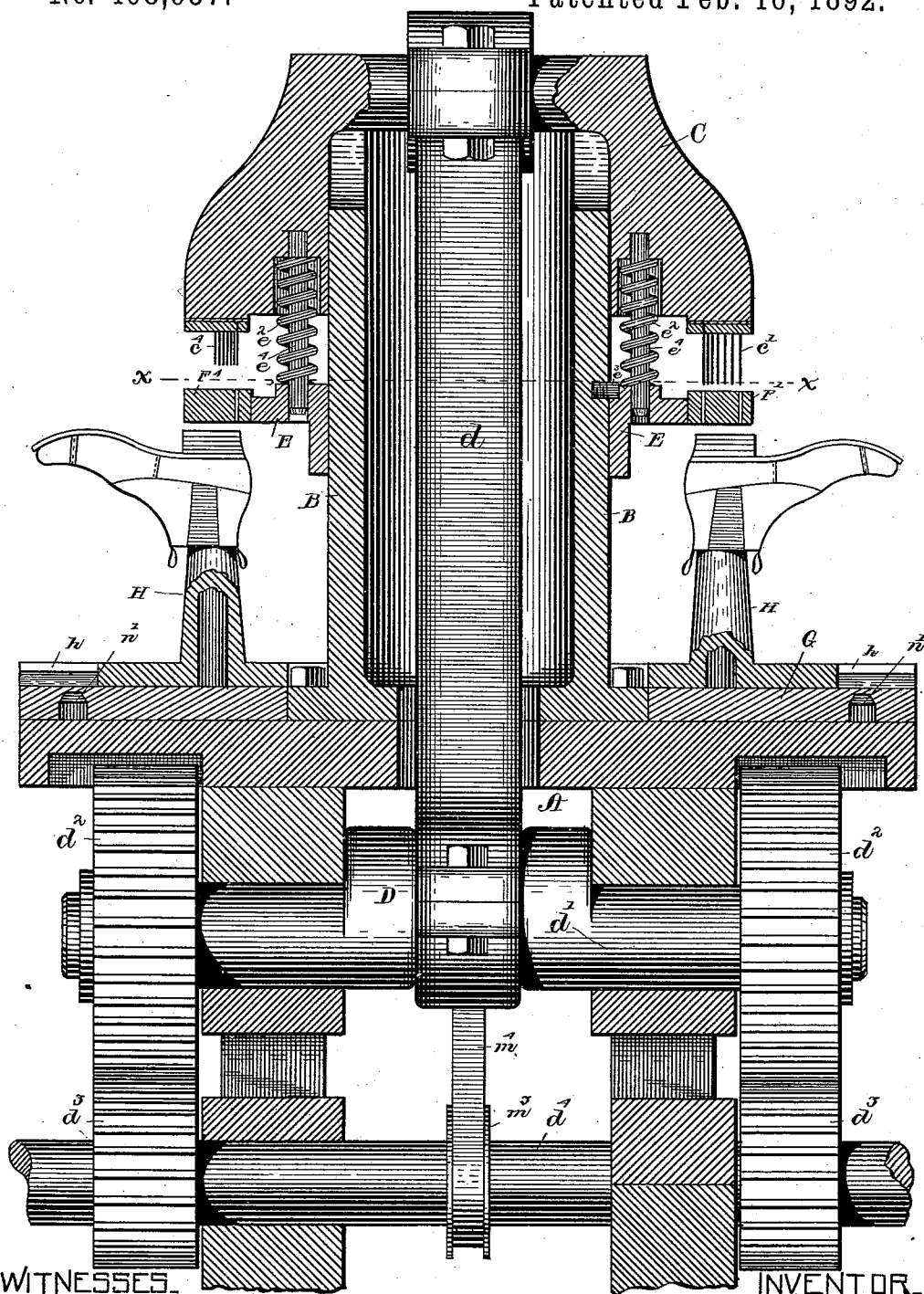
(No Model.)

4 Sheets—Sheet 3.

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FIG. 3.

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(No Model.)

4 Sheets—Sheet 4.

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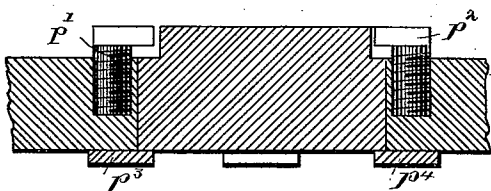


Fig. 5.

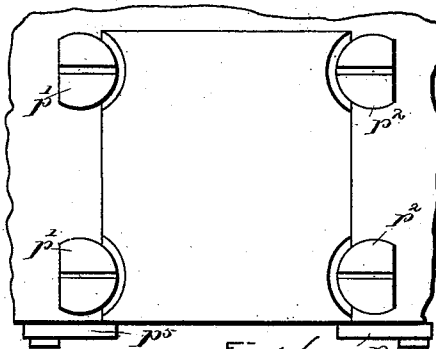


Fig. 6.

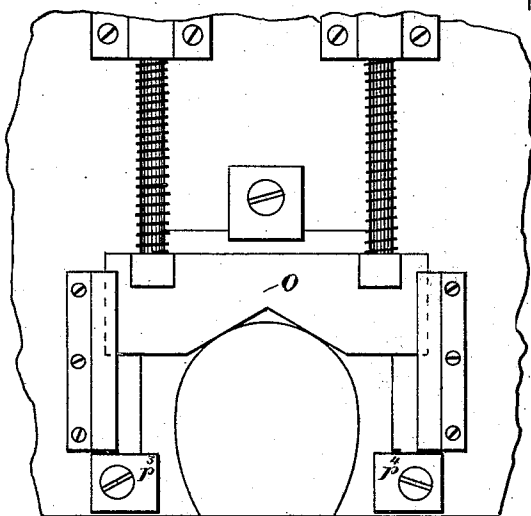


Fig. 7.

WITNESSES.

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# UNITED STATES PATENT OFFICE.

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

## HEEL-NAILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 468,957, dated February 16, 1892.

Application filed June 15, 1889. Serial No. 314,484. (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 Heel-Nailing 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 the improvement in heel-nailing machines hereinafter specified, and whereby the operations of nailing the heel-seat, pricking holes in the heel-blank, driving attaching-nails, applying or spanking the top lift, forming slugging-holes through the top lift, driving slugging-nails, and leveling and breasting the heels proceed simultaneously upon practically as many boots or shoes.

In the drawings, Figure 1 is a view in side elevation of a machine having the features of my invention. Fig. 2 is a view in horizontal section and plan upon and below the line  $xx$  of Fig. 3. Fig. 3 is a vertical central section of the machine. Figs. 4, 5, 6, and 7 are detail views.

A is the frame of the machine.

B is a vertical base or column rising from the frame of the machine.

C is a head having a bearing upon the column or post B and reciprocated by means of a powerful crank D and the heavy connecting-rod  $d'$ . The crank-shaft  $d'$  has suitable bearings in the frame of the machine and is connected at each end by gears  $d^2$  with the pinions  $d^3$  upon the pulley-shaft  $d^4$ .

E is a vertically-movable table supported by and arranged to slide upon the column B. It supports the sole-nailing templet F, the pricking-templet F', the attaching-nail-driving templet F<sup>2</sup>, the top-lift-attaching templet F<sup>3</sup>, the slugging-templet F<sup>4</sup>, and the leveling and breasting templet F<sup>5</sup>. Each templet preferably is in the form of a rectangular block and is secured in a holding-recess in the table E to have a slight vertical movement therein, in order that upon the application of pressure to the templets there may be no undue strain brought to bear directly upon their table or support E.

I have represented each templet as provided with a vertical movement in its holding-recess of the table by means of the screws  $p'$   $p^2$  and the stops  $p^3$   $p^4$ , and the templets are locked in their holding-recesses by means of buttons  $p^5$  or in any other desired way.

The table E preferably is moved upward vertically by springs  $e$ , (see Fig. 1,) and it is moved downward upon the downward movement of the head C by the springs  $e^2$ , the springs  $e^2$  being compressed sufficiently upon the downward movement of the head C to overcome the resistance of the springs  $e$ . Stops  $e^3$  limit the extent of the upward movement of the table. The table is connected with the head by means of rods  $e^4$ , which extend into holes in the head, and which serve to hold the table and its templets in register with the operating devices carried by the head and also as supports for the springs  $e^2$ .

Upon the bed A of the machine is an annular plate G, which is adapted to be rotated or turned upon the bed, and this plate supports the jacks H, which have a radial sliding movement thereon in ways  $h$ . There is one more jack employed than there are templets used, and the table E preferably is cut away and shaped at  $e^5$  (see Fig. 2) to not extend over one of the jacks, or the jack which happens to be in that position.

The plate G is represented as rotated or turned by a roll M, which bears against the edge  $g$  of the plate, and which is turned by means of a pulley  $m$  on the lower end of the roll-shaft  $m'$ , (see Fig. 1,) the pulley  $m^2$  upon a counter-shaft, the pulley  $m^3$  upon the pulley-shaft  $d^4$ , (see Fig. 3,) a belt  $m^4$ , extending from the pulley  $m^3$  to the pulley  $m^2$ , which is a double pulley, and another belt  $m^4$ , extending from said pulley  $m^2$  over the roll  $m^3$  to the pulley  $m$ . The plate G is held in position by means of a spring-pin  $n$ , (see Fig. 1,) which is adapted to enter in successive order the registering holes  $n'$  in the plate G, there being a separate registering hole for each jack. The spring-pin  $n$  extends from the operating-lever  $n^2$ , the said lever having a handle  $n^3$ , pivoted at  $n^4$ , and has an end  $n^5$ , against which a spring  $n^6$  acts. (See Fig. 1.)

The head C carries or supports a gang or group of sole-nail drivers  $c$ , a gang or group of

awls  $c'$ , a gang or group of drivers  $c^2$  for driving the heel-attaching nails, a gang or group of awls  $c^3$  for forming holes in the heel-blank for the reception of slugs, a gang or group of drivers  $c^4$  for driving the slugs, and a breasting-knife  $c^5$ . Each of the blocks supporting the respective drivers or awls and breasters, preferably are pressure-blocks—that is, their under surfaces come in contact with the upper surfaces of the respective templets with which they operate. There is upon the under side of the templet  $F'$  a heel-blank-holding device comprising a V-shaped spring-operated slide-plate  $O$  and a gage  $o$ , (see Fig. 7,) and a similar device is carried below the templet  $F^3$  for holding the top lift.

In operation the operator stands opposite the spare last, (see Fig. 2,) removing therefrom a heeled shoe and placing thereon a shoe with its heel-seat unnailed, and at the same time causing the head  $C$  to make a reciprocation, the other lasts, with the shoes thereon, being in operative position under the various templets  $F F' F^2 F^3 F^4 F^5$ , whereby a heel-seat of one shoe is being nailed, a heel-blank upon another shoe pricked, a heel-blank on still another shoe attached, a top lift applied to the attached heel-blank of another shoe and pricked for slugging, a heel on still another shoe slugged, and the heel upon the sixth shoe leveled and breasted. It will be observed that by this organization and operation there is produced upon each reciprocation of the machine one completely-heeled shoe, the heel-seat of which has been nailed, the heel attached, top lift applied, a second line of nails driven into it, and the heel leveled and breasted. Upon the completion of one reciprocation of the machine the operator causes the table bearing the jacks to be turned sufficiently to advance each jack from one templet to the next in order.

The level or height of the lasts in relation to the jack-posts may be varied by removable adjusting-blocks  $p$ , which are made of different thicknesses, and which are inserted between the under surface of the last and the upper surface of the post. (See right-hand jack, Fig. 1.) The nails and slugs preferably are loaded to the holes of the templets  $F F^2 F^4$  by skimmers operated by boys, and a boy likewise removes the pricked heel from beneath the templet  $F'$  to a position beneath the templet  $F^2$ .

It will be observed that the order of the operations upon the heel may be varied according to the kind of work required. I have referred to the slugging of a blind-nailed shoe. The apparatus can as well be used for flush nailing with two lines of attaching-nails, or one line of attaching-nails and another line of slugs. In some instances the sole nailing and leveling and breasting devices may be dispensed with.

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

1. The combination, in a heel-nailling machine, of the bed  $A$ , the column  $B$ , the reciprocating head  $C$ , arranged to slide on the column  $B$  and having the various gangs or groups of instruments  $c c' c^2 c^3 c^4 c^5$  disposed on the head around the column, as specified, and the table  $E$ , bearing the templets  $F F' F^2 F^3 F^4 F^5$ , the rotary table  $G$ , the lasts  $H$ , carried by said rotary table, there being one more last in number than templets used, substantially as and for the purposes described.

2. The combination of the head  $C$ , carrying a number of heel-operating devices, such as awls and nail-drivers, the table  $E$ , having a templet or block for each set of heel-operating devices used, the rotary table  $G$ , the jacks  $H$ , supported thereby, and the operating-wheel  $M$ , arranged to engage the edge  $g$  of the table and to rotate the same upon the release of the latch  $n$ , and said latch, substantially as described.

3. The combination, in a heel-nailling machine, of the bed  $A$ , the column  $B$ , the reciprocating head  $C$ , arranged to slide on the column  $B$  and having the various gangs or groups of instruments  $c c' c^2 c^3 c^4 c^5$  disposed on the head around the column, as specified, and the table  $E$ , bearing the templets  $F F' F^2 F^3 F^4 F^5$ , the rotary table  $G$ , and the lasts  $H$ , carried by said rotary table, there being one more last in number than templets used, substantially as and for the purposes described.

4. The combination, in a heel-nailling machine, of the bed  $A$ , the column  $B$ , the reciprocating head  $C$ , arranged to slide on the column  $B$  and having the various gangs or groups of instruments  $c c' c^2 c^3 c^4 c^5$  disposed on the head around the column, as specified, and the table  $E$ , bearing the templets  $F F' F^2 F^3 F^4 F^5$ , the rotary table  $G$ , and the lasts  $H$ , carried by said rotary table, there being one more last in number than templets used, substantially as and for the purposes described.

5. The combination, in a heel-nailling machine, of the bed  $A$ , the column  $B$ , the reciprocating head  $C$ , arranged to slide on the column  $B$  and having the various gangs or groups of instruments  $c c' c^2 c^3 c^4 c^5$  disposed on the head around the column, as specified, and the table  $E$ , bearing the templets  $F F' F^2 F^3 F^4 F^5$ , the rotary table  $G$ , and the lasts  $H$ , carried by said rotary table, there being one more last in number than templets used, substantially as and for the purposes described.

6. The combination, in a heel-nailling machine, of the bed  $A$ , the column  $B$ , the reciprocating head  $C$ , arranged to slide on the column  $B$  and having the various gangs or groups of instruments  $c c' c^2 c^3 c^4 c^5$  disposed on the head around the column, as specified, and the table  $E$ , bearing the templets  $F F' F^2 F^3 F^4 F^5$ , the rotary table  $G$ , and the lasts  $H$ , carried by said rotary table, there being one more last in number than templets used, substantially as and for the purposes described.

7. The combination, in a heel-nailling machine, of the bed  $A$ , the column  $B$ , the recip-

reciprocating head C, arranged to slide on the column B and having the various gangs or groups of instruments  $c^1 c^2 c^3 c^4$  disposed on the head around the column, as specified, and the table E, bearing the templets  $F^1 F^2 F^3 F^4$ , the rotary table G, and the lasts H, carried by said rotary table, there being one more last in number than templets used, substantially as and for the purposes described.

8. The combination, in a heel-nailing machine, of the bed A, the column B, the reciprocating head C, arranged to slide on the column B and having the various gangs or groups of instruments  $c^1 c^2 c^3 c^4$  disposed on the head around the column, as specified, and the table E, bearing the templets  $F^1 F^2 F^3 F^4$ , the rotary table G, and the lasts H, carried by said rotary table, there being one more last in number

than templets used, substantially as and for the purposes described.

9. The combination, in a heel-nailing machine, of the bed A, the column B, the reciprocating head C, arranged to slide on the column B and having the various gangs or groups of instruments  $c^1 c^2 c^3 c^4$  disposed on the head around the column, as specified, and the table E, bearing the templets  $F^1 F^2 F^3 F^4$ , the rotary table G, and the lasts H, carried by said rotary table, there being one more last in number than templets used, substantially as and for the purposes described.

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Witnesses:

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