

(No Model.)

3 Sheets—Sheet 1.

F. F. RAYMOND, 2d.

## HEEL NAILING MACHINE.

No. 332,001.

Patented Dec. 8, 1885.

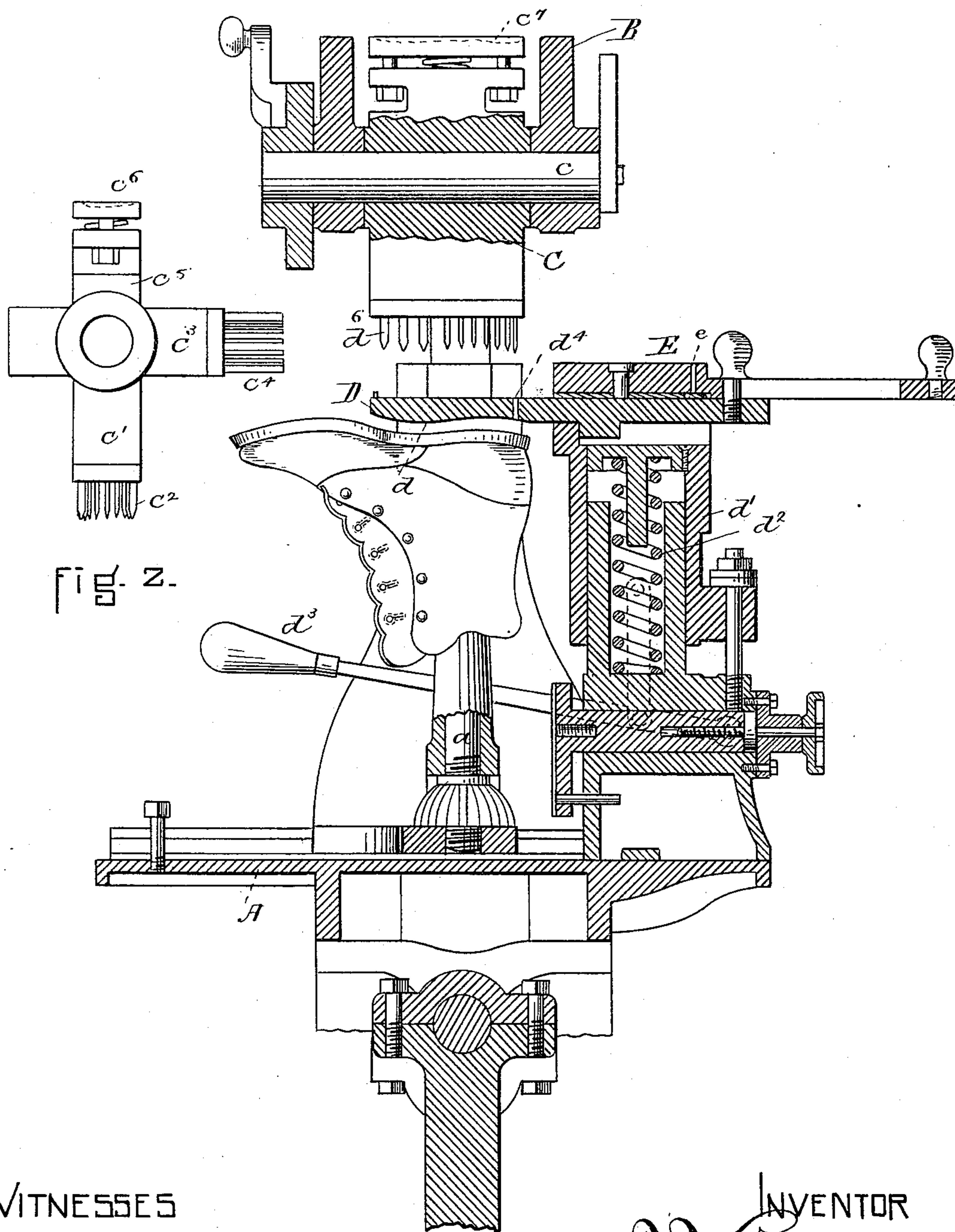


Fig. 2.

Fig. 1.

WITNESSES

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INVENTOR

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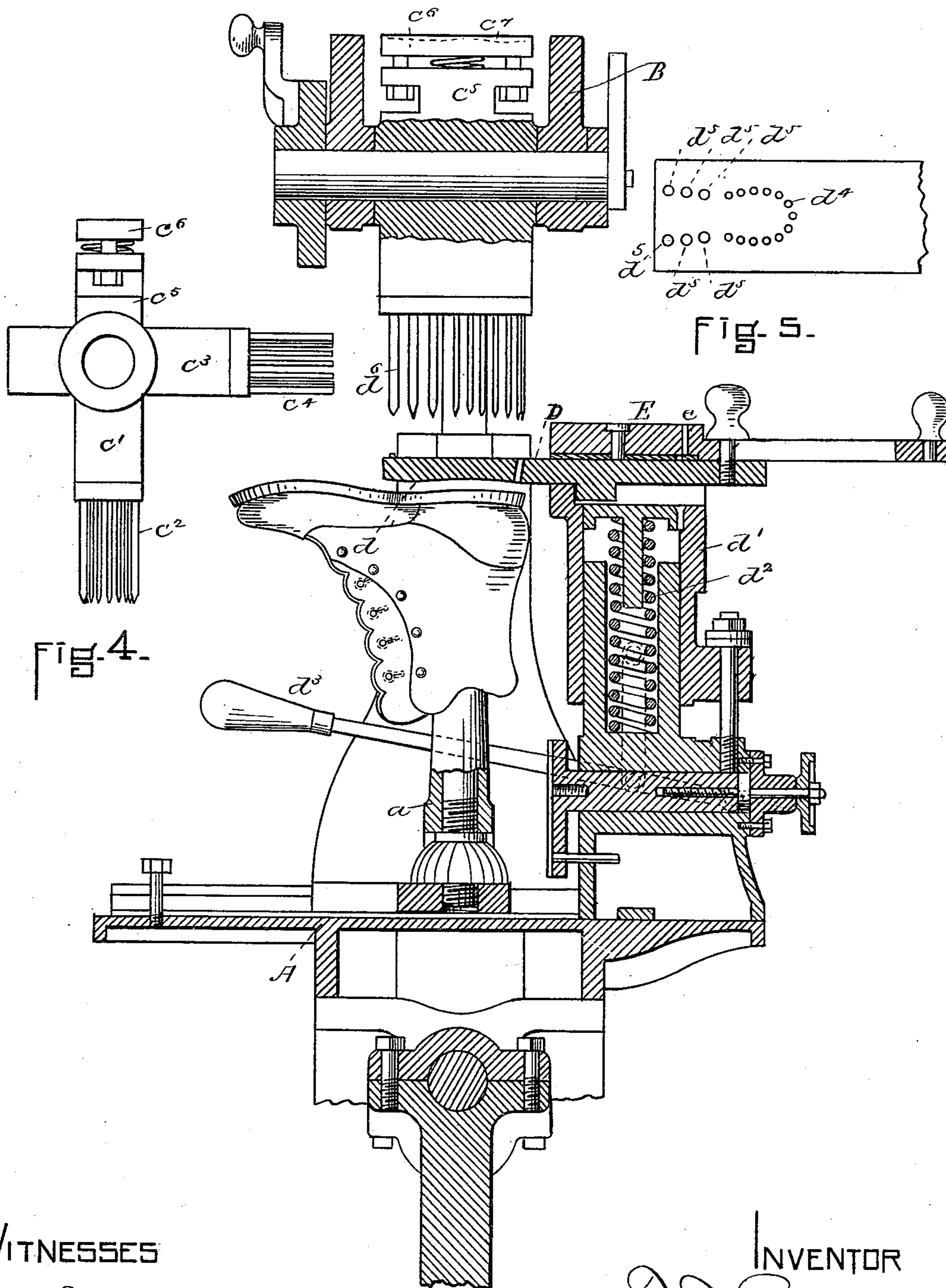
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FIG. 3.

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(No Model.)

3 Sheets—Sheet 3.

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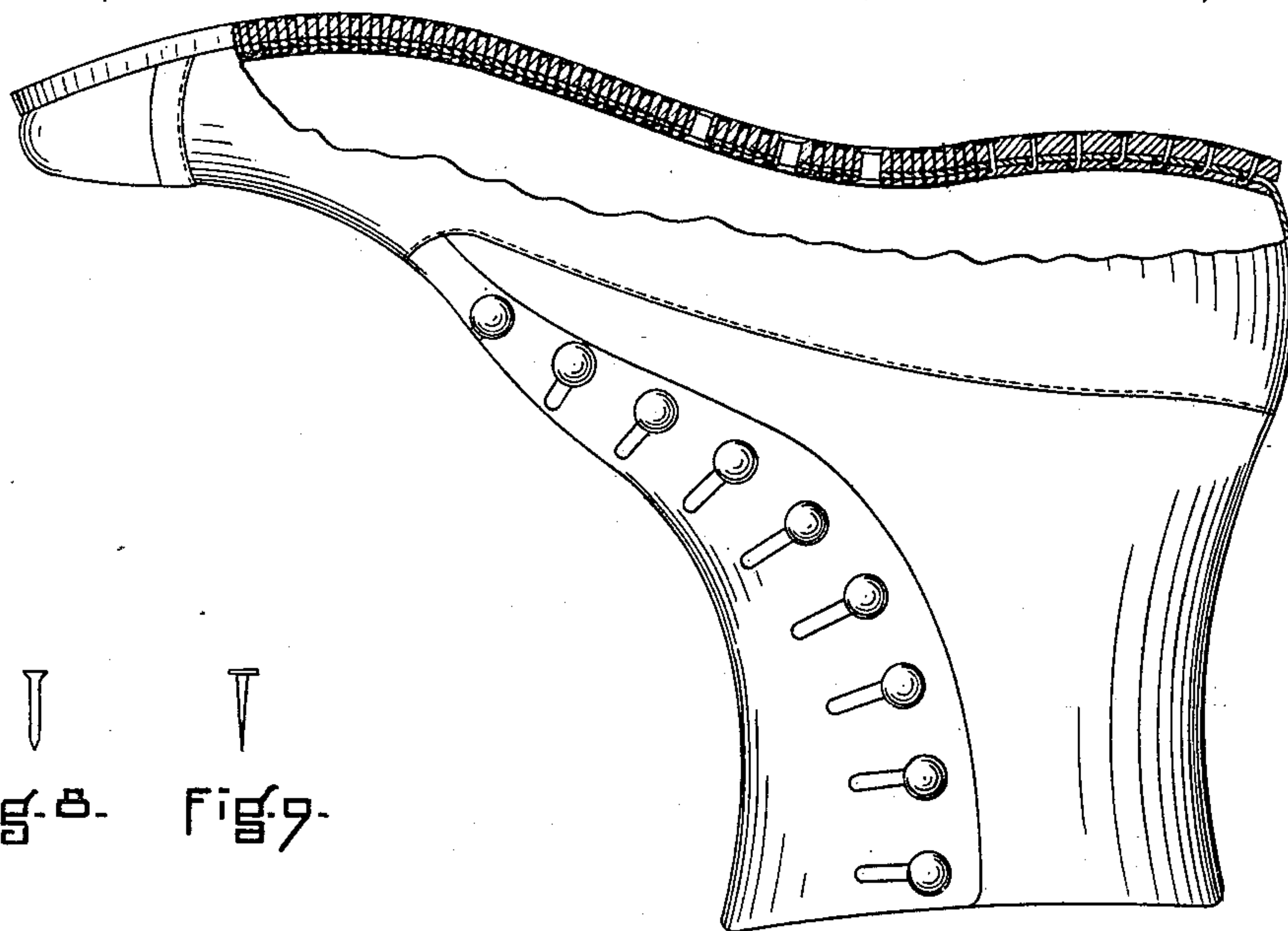


Fig. 6.

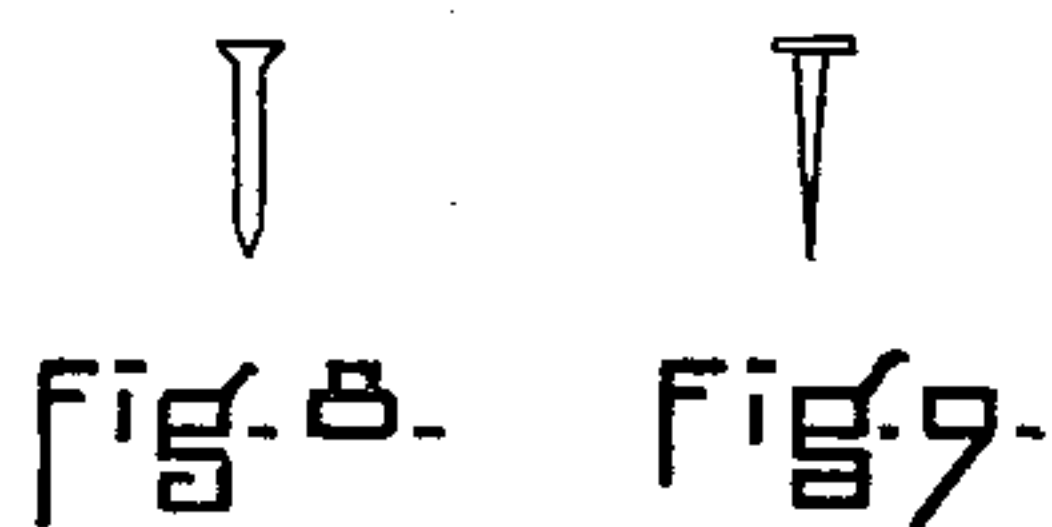


Fig. 8.

Fig. 9.

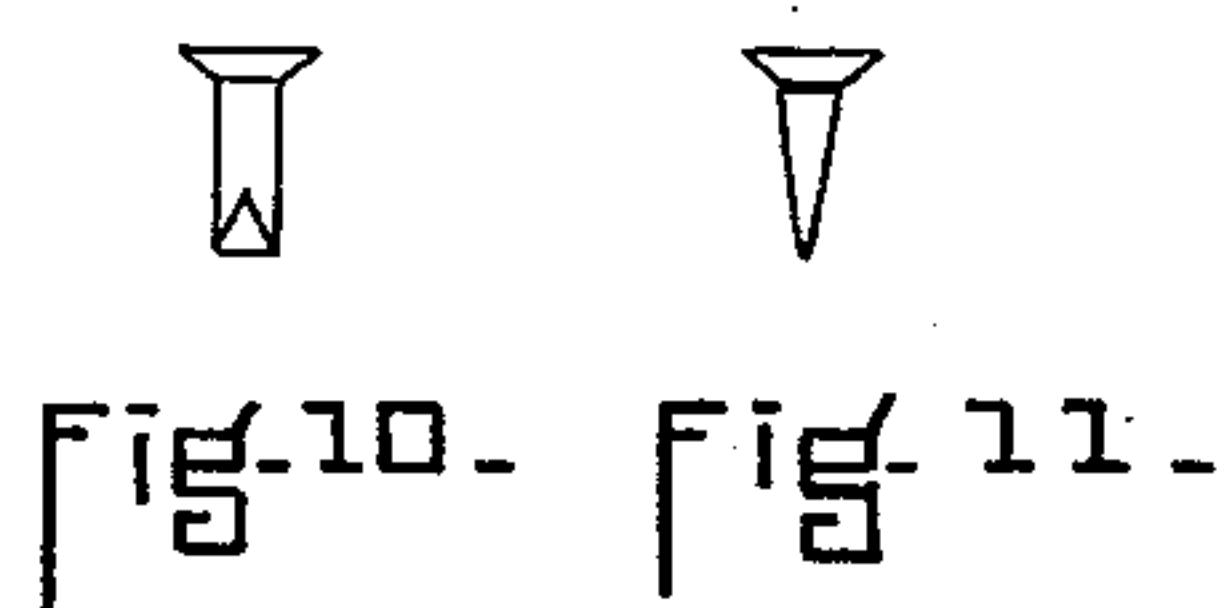


Fig. 10.

Fig. 11.

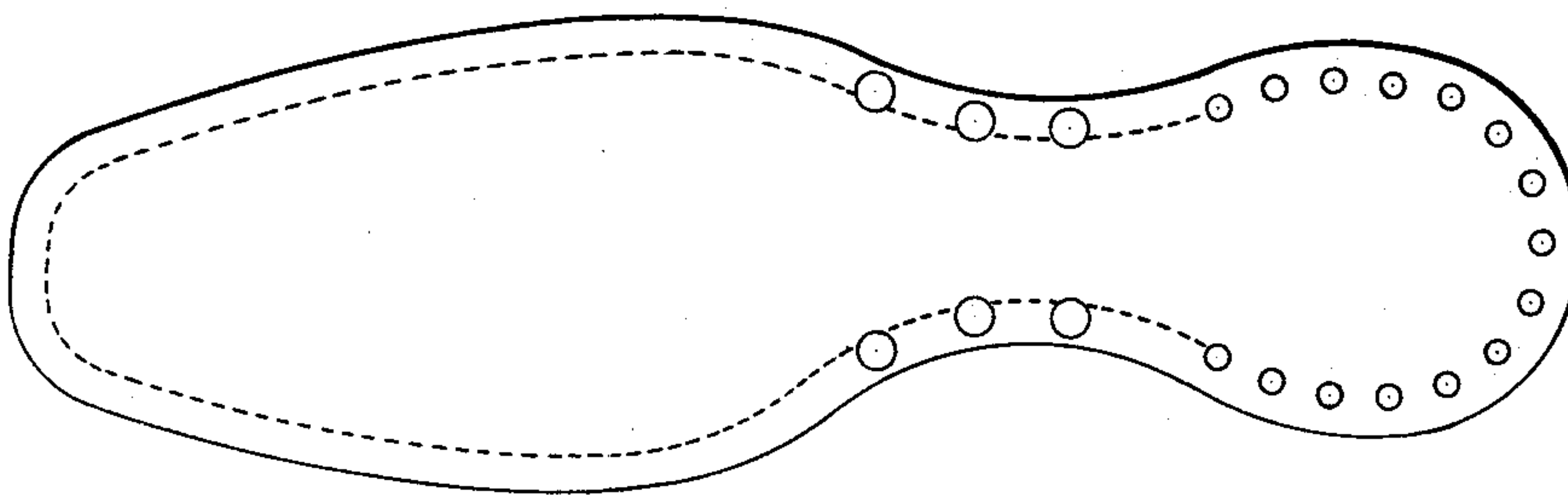


Fig. 7.

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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. 332,001, dated December 8, 1885.

Application filed October 7, 1885. Serial No. 179,200. (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 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 object of the invention is to provide a machine for nailing the heel-seats and shanks of outsoles to the upper and insole by a gang or group of fastenings simultaneously driven. The invention is an improvement upon that described in Patent No. 316,894; and it relates especially to the construction of the templet and nail-holder plates and awls and drivers, whereby a gang or group of fastenings may be driven through the heel portion of the sole to fasten it to the upper and insole, and other fastenings, either of the same nature or of a different character, be driven, preferably, at the same time through the shank-section of the sole, or, if desired, the section immediately in front thereof, or in both sections; and the invention is especially applicable for use in connection with boots or shoes having the outsoles attached either by sewing or pegging, as it is especially desirable in shoes so made to unite the heel end of the sole to the upper and insole by nails preferably headed and having clinching-points, and also to secure the outsole to the upper and insole in the shank and in the adjacent sections by rivets, or by other headed fastenings, which shall prevent the ripping or parting of the sole from the upper or insole at the place or places where, if only sewed or pegged, from the bending of the sole in walking, ripping is very likely to take place.

Referring to the drawings, Figure 1 is a view in section and elevation of the front of the machine containing my invention. Fig. 2 is an elevation of the revolving head. Fig. 3 represents a slight modification, hereinafter referred to. Fig. 4 is a view in elevation of the revolving head used with said modification. Fig. 5 is a plan view of a part of the templet-plate. Fig. 6 represents, in elevation and section, a boot having its sole nailed by this machine. Fig. 7 is a plan view of the boot

invented. Figs. 8, 9, 10, and 11 are views of various fastenings which I use.

A is the bed-plate; *a*, the sliding jack mounted thereon and carrying the last or work-support.

B is a reciprocating head carrying a revolving head, C, mounted upon the shaft *c*, and having an arm, *c'*, supporting a gang or group of awls, *c''*, an arm, *c'''*, carrying or supporting a gang or group of drivers, *c''''*, and an arm, *c''''''*, carrying or supporting the spanker-block *c''''''''*. The awls, drivers, and spanker-block are adapted to be brought successively into operative position upon the turning of the shaft.

D is the templet-plate. It preferably is moved horizontally into and out of operative position with the awls and drivers. It has a cavity, *d*, of the shape which it is desired to give to the heel and shank sections of the outsole, and it is substantially the converse in shape of the upper surface of the last or work-support upon which the boot or shoe is mounted. This templet is mounted upon a post, *d'*, having a downward vertical movement in opposition to the spring *d''*, and it is adapted to be moved downward by the lever *d'''* or by the contact of the awl-block therewith, and it is moved upward by the spring *d''*. After it has been moved down it is held locked in place upon the work by a latch shown in said Patent No. 316,894.

The templet D is represented as provided with the holes *d''''*, arranged for the delivery and driving of the nails used in fastening the heel end of the sole to the upper and insole, and the additional or auxiliary holes *d''''''*, which are used for the purpose of delivering the additional nails or fastenings used in the shank and in the section of the sole in front of the shank. These auxiliary holes may be of the same size as the holes *d''''*; but when rivets or fastenings having large heads are employed these holes must be larger than the holes *d''''*, and in Fig. 5 I have represented the holes as so enlarged. Of course, these additional or auxiliary fastenings may be driven into any part of the shank or section of the sole immediately in front thereof, and it depends somewhat upon the character or class of work where these fastenings are driven.

For women's work, and for light work generally, it is desirable to use headed fastenings



with clinching-points of substantially the character used for securing the heel, and to place them at uniform distances apart from the end of the heel-section to or very nearly to the ball of the foot, not, however, placing them very closely together.

For heavy work, brogans, plow-shoes, tap-soles, &c., it is desirable to use rivets, slugs, or large shank-fastenings having large heads, and these are placed where the strain upon the sewing or pegging or nailing from the bending of the sole or soles is greatest. For ordinary uses, from one to three or four of these rivets or large-sized headed fastenings will be sufficient; and where a tap or half sole is employed one or more should be driven at or near its inner end into the insole; and in Figs. 6 and 7 I have represented a light shoe with the extra or additional fastenings driven in the shank and section immediately adjacent thereto; and in Figs. 10 and 11 I have represented a form of rivets and fastenings for this auxiliary nailing or fastening which I prefer to use.

The nail holder and carrier E is adapted to be moved horizontally into and out of operative position, and has holes corresponding in size and location to the holes  $d^4$  of the templet, and additional holes and location to the hole  $d^5$  of the templet, and it is provided with a hole-covering plate similar to that described in said patent and similarly operated.

It is not always essential to first prick holes before the fastenings are driven, and when it is not of course the awls are dispensed with. For driving the large fastenings or rivets, however, it will be found desirable to use large awls, to form holes of sufficient size to receive the shanks of the fastenings; and in the drawings I have shown the awl-holder block as provided with large awls  $d^6$ , adapted to be used with the holes  $d^5$ , and the awl-holder plate is of a size to receive and hold these two groups of awls.

It is necessary, also, that the drivers shall vary in size according to the size of the nails or rivets driven; and I have represented the driver-holder block as having a gang of small drivers to be used in connection with the hole  $d^4$ , and of large drivers to be used in connection with the holes  $d^5$  in driving rivets or large shank-fastenings.

In Figs. 1 and 2 I have represented the awls and drivers of a length sufficient to bring the surface of the awl-supporting block and driver-block in contact with the surface of the templet and surface of the nail-carrier, and the holes in the nail-carrier and templet are straight.

In Figs. 3 and 4 I have represented the use of longer awls and drivers, and have shown the templet-plate as provided with inclined holes, whereby the nails may be set quite close to the edge of the outsole and given a downward and inward direction therefrom. I have

ascertained that by making the awls and drivers longer, as shown, upon entering these holes they will readily follow their inclination; and for certain classes of work it is advantageous to have the holes so shaped and the nails so driven.

The heel-nails and the auxiliary nails may be fed and driven simultaneously, or the heel-nails may be first fed and driven and the auxiliary nails or fastenings afterward.

After the nails have been driven, the work may be spanked by the spanker  $c^6$ , and if the spanker is employed it has a recess,  $c^7$ , which is substantially of the same shape as that of the templet-plate. The use of the spanker is desirable in certain classes of work, as it tends to consolidate still further and shape the sole, level it, and set the fastenings well into the stock, so that they shall be flush with the surface thereof and of a uniform and finished appearance.

I have shown the templet, nail-holder, awls, drivers, and spanker as operated by hand; but I would say that they may either be so operated or operated by means of the automatic devices described in my various patents and pending applications, or their equivalents. I would also say that the nails and fastenings may be fed to the templet-plate automatically from nail making and feeding devices instead of by hand, if desired, and that any of the devices described in my various patents and pending applications may be employed for this purpose.

When the spanker is not operated, the templet may not be provided with a horizontal movement.

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

1. The combination of a support for the boot or shoe, a templet having the holes  $d^4$   $d^5$ , and the nail-driving devices, all substantially as described.

2. The combination of a support for the boot or shoe, a templet having the holes  $d^4$   $d^5$ , a sliding nail-holder having the holes corresponding to those of the templet, and the nail-driving devices, all substantially as described.

3. The combination of a support for the boot or shoe, a templet having small holes  $d^5$ , and the comparatively large holes  $d^6$ , arranged in front of the holes  $d^5$ , and a gang or group of drivers of a size to fit the holes  $d^5$ , and a gang or group of larger drivers to fit the auxiliary holes, all substantially as specified.

4. In a heel-nailing machine, the combination of a support for the boot or shoe, a templet having the cavity  $d$  and the holes  $d^4$ , and enlarged holes  $d^5$ , entering said cavity, all substantially as specified.

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Witnesses:

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