

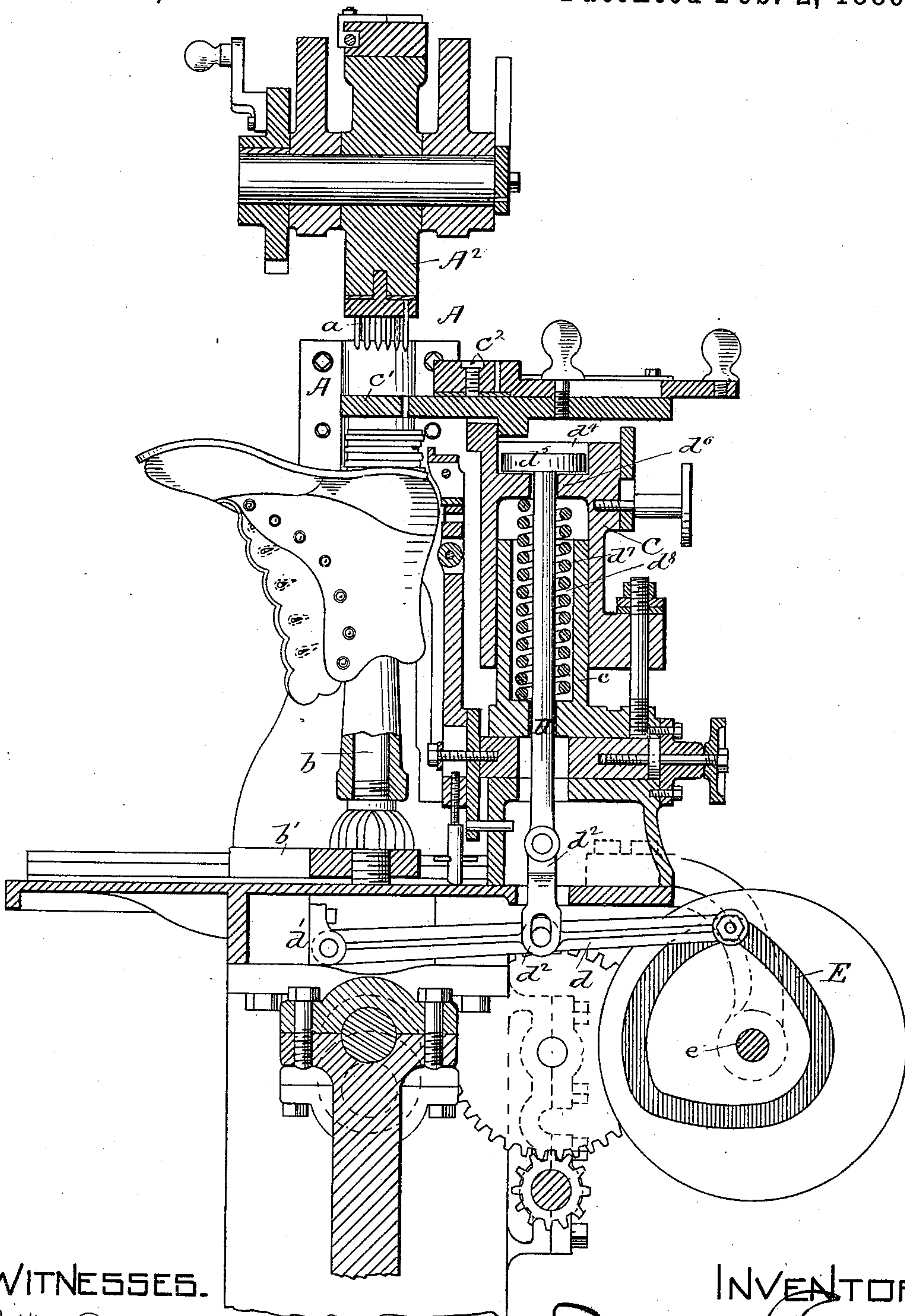
(No Model.)

3 Sheets—Sheet 1.

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

No. 335,242.

Patented Feb. 2, 1886.



WITNESSES.

J. W. Dolan  
Fred. B. Dolan.

FIG. 1.

INVENTOR

F. F. Raymond

(No Model.)

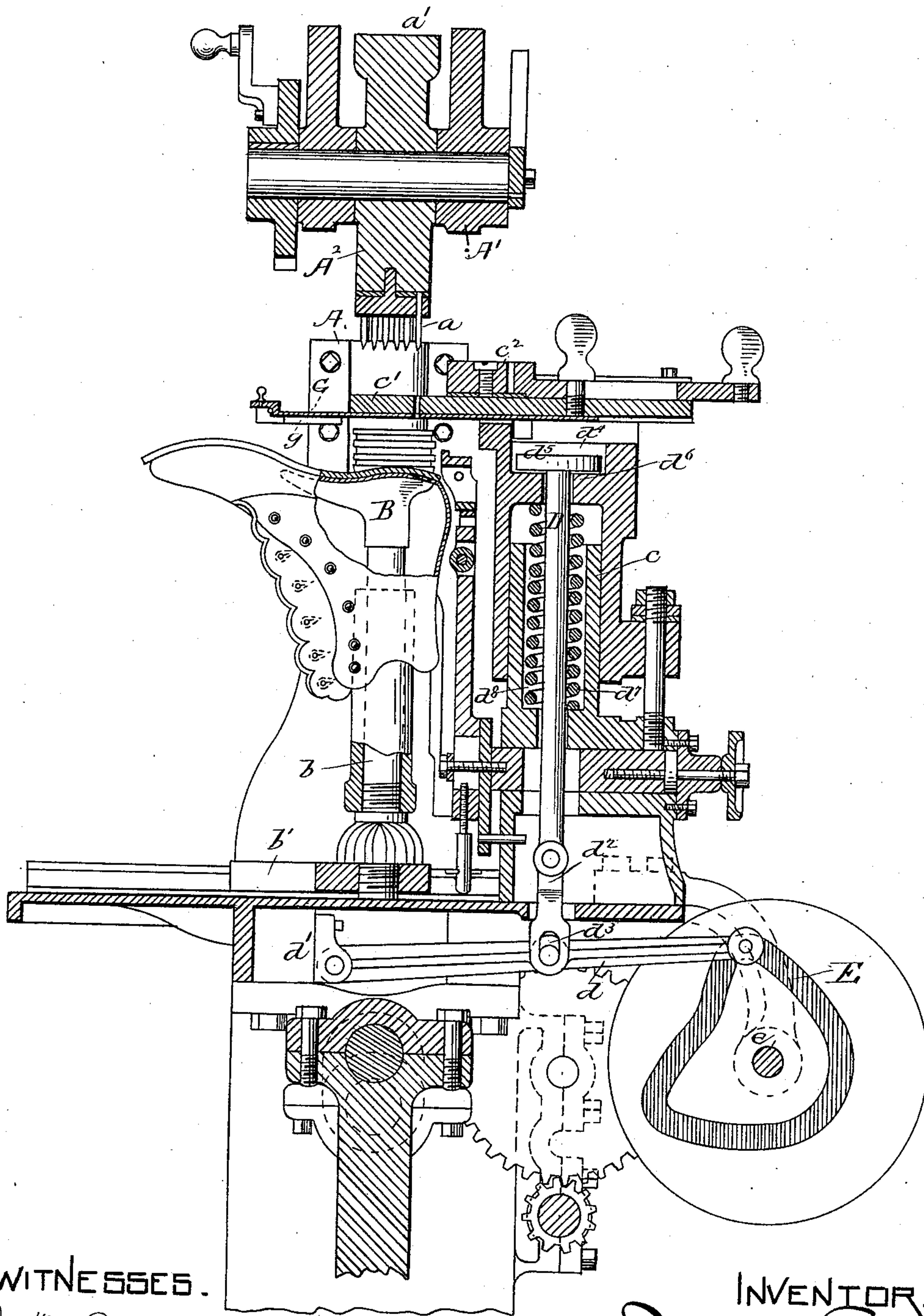
3 Sheets—Sheet 2.

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FIG. 2.

INVENTOR.

F. F. Raymond.

(No Model.)

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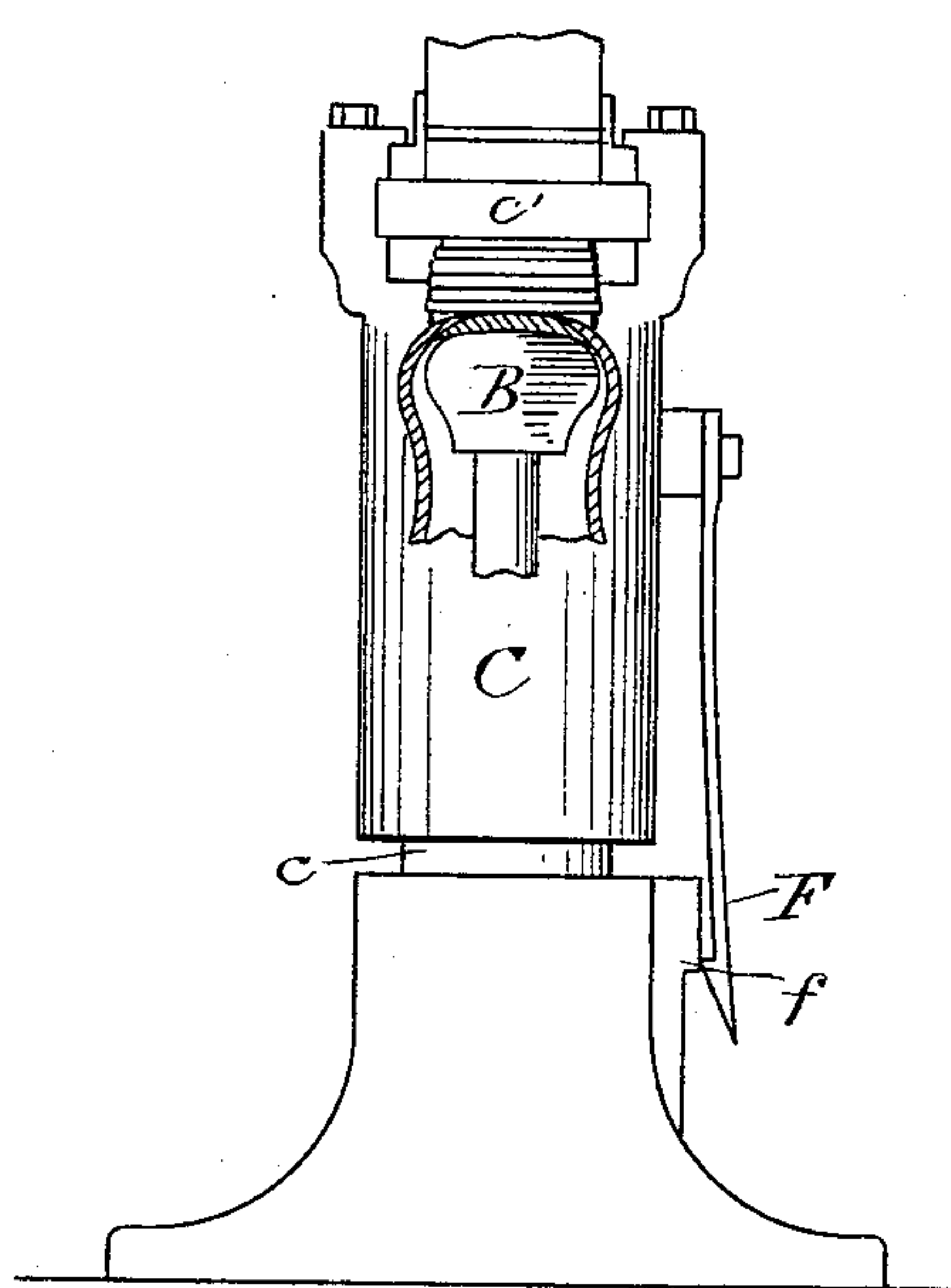


Fig. 5.

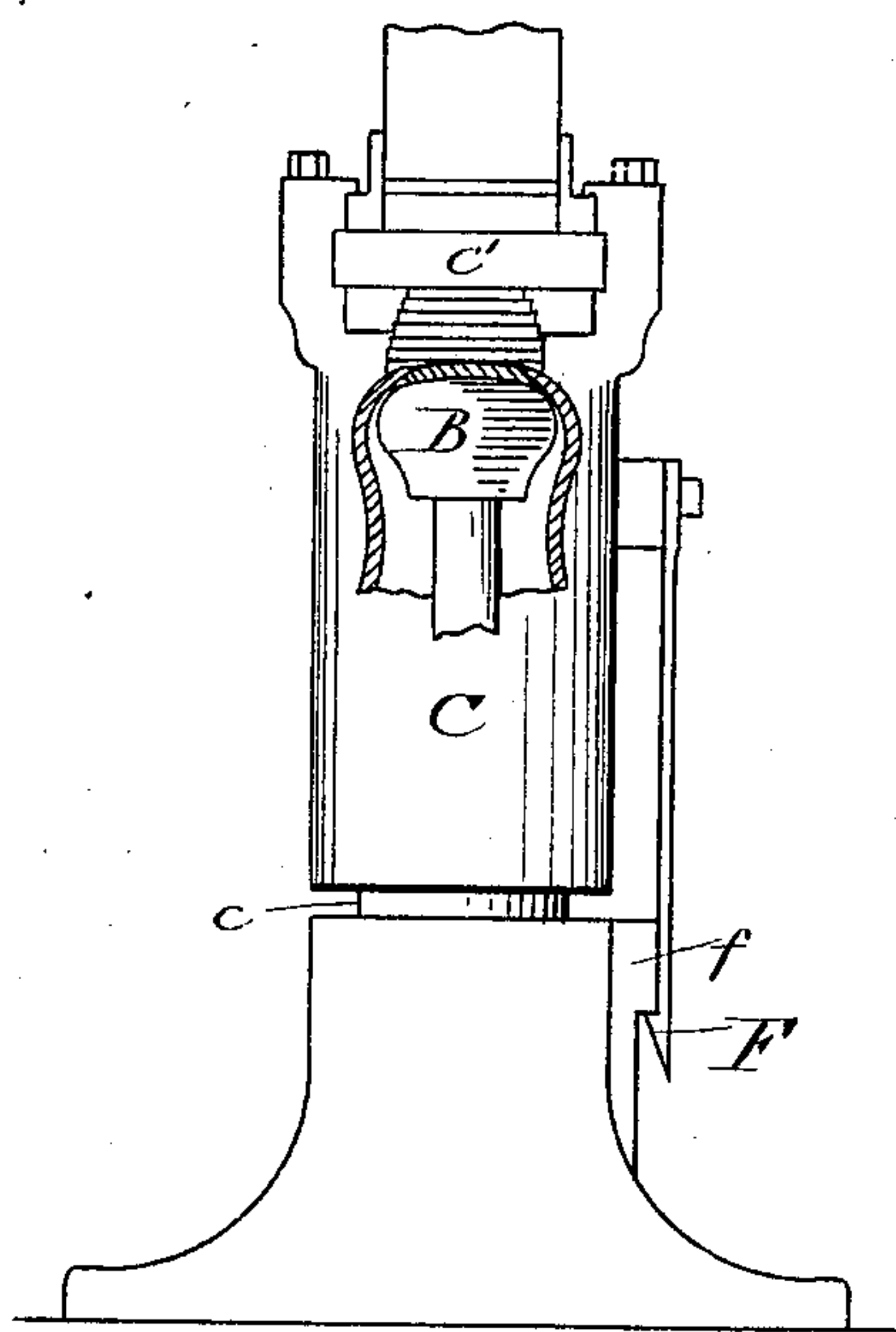


Fig. 4.

WITNESSES.

J. W. Dolan.  
Fred. B. Dolan.

INVENTOR.

Frederic F. Raymond.



# UNITED STATES PATENT OFFICE.

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

## HEEL-NAILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 335,242, dated February 2, 1886.

Application filed November 18, 1885. Serial No. 183,178. (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 invention is an improvement upon that described in the Patent No. 316,894, granted Henry A. Henderson, April 28, 1885. In said patent the templet or pressure plate is represented as moved downward vertically upon the heel-blank, to compress and solidify it upon the sole of the boot or shoe, and to hold it compressed thereon while the awls are moved out of position and the drivers moved into operative position, and during the operation of the drivers, the contact of the flat surface of the awl-holding block therewith, and as automatically latched or locked in its lowest position after it had thus been moved downward. This involves the movement of the templet-plate while the awls are being driven into the heel-blank, and the compression of the heel-blank causes the awls to be moved outward very slightly while they are being driven, and this, in certain classes of work, is a defect.

By my invention the templet-plate is not moved downward by the awl-block, (except as hereinafter specified,) but is moved downward independently and the heel-blank is compressed before the awls enter it. This result is accomplished by connecting the table carrying or supporting the templet with a cam by means of a connecting rod and lever, so that upon the movement of the cam the table and the templet-plate are moved downward and held in a depressed position until it is desired to move them upward.

Referring to the drawings, Figure 1 represents a view, part in vertical section and part in side elevation, of the central upper part of a National heel-nailing machine containing the features of my invention. Fig. 2 is a similar view of the same parts representing in addition a sliding top-lift-holding plate. Figs. 3 and 4 are detail views, reference to which is hereinafter made.

A represents one of the side frames of the machine.

A' is the cross-head which carries the revolving head, A<sup>2</sup>, having an arm supporting a gang or group of awls, *a*, an arm (not shown) supporting a gang or group of drivers, and an arm supporting a spanker, *a'*, which may or may not have a top-lift-holding device attached. The revolving head may also have another arm (not shown) for supporting a heel-breasting knife, as described in my Patent No. 316,177, and the revolving head may be automatically revolved by mechanism, substantially as described in the Henderson and Raymond Patent No. 317,647, or in any other way. The cross-head is reciprocated by mechanism substantially as described in the Henderson Patent No. 316,894, or in any other suitable manner.

B is the heel-support or last. It is mounted upon the post *b*, which is supported by the sliding plate *b'*.

C is the carriage or table. It is vertically movable upon the post or standard *c*, as hereinafter described, and it carries or supports the templet *c'*, which is preferably horizontally movable therein into and out of operative position, and the nail-carrier *c''*.

Both the templet and the nail-carrier may be automatically moved into and out of operative position by mechanism described in my Patent No. 290,109, or in any other desirable way, if preferred.

D is a rod extending through the center of the post *c* and through the table, and connected at its lower end with the lever *d*, which is pivoted at *d'*. The rod D is connected with the lever *d* by means of the link *d''*, which is fastened to the lever by a stud which enters the slot *d'''* of the link. The lever is moved upward and downward at stated intervals by means of the cam E upon the cam-shaft *e*.

The connecting bar or rod D is fitted or attached to the table or carriage, so that the table or carriage can have an independent movement in relation thereto. This is provided by forming the cavity *d'* in the table of a shape substantially as represented in Fig. 1, and providing the rod or bar with a head, *d''*, the shoulders of which project upon the portion



$d^6$  of the table. A spring,  $d^7$ , which surrounds the rod or bar and is contained in part in a pocket or recess,  $d^8$ , in the post  $c$ , bears against the post and carriage and serves to keep the carriage supported in its highest position.

The cam is so timed that upon the starting of the machine the carriage or table is immediately moved downward before the awls can enter the heel-blank, and this downward movement of the carriage or table presses the templet-plate forcibly downward upon the heel-blank and compresses it before the awls enter it. The awls, however, immediately follow this downward movement of the templet.

The awl-block can be used for imparting an additional compression, if desired, and the automatic latch F can be used for locking the carriage depressed in its lowest position, if desired. The cam E can be so shaped as to hold the heel compressed upon the sole of the boot or shoe after the templet has once been brought down and after the awls have been withdrawn, and while the nails are being fed and driven. After the nails have been driven, if a latch is used it is released, and the cam is so shaped as to allow the table or carriage to return to its highest position, and it is not again moved down unless it is desired that a top lift be applied by the cam instead of by the spanker of the revolving head, in which event the cam is so shaped as to lift or permit the upward movement of the carriage or table for the insertion of a plate, G, supporting a top-lift holder,  $g$ , which plate slides in the carriage below the templet-plate, and may be automatically moved to bring the top lift into position or moved by hand, and after such movement the cam again moves the table or carriage, the templet, and the top-lift-holder plate downward, but not so great a distance as before, thus spanking or applying the top lift to the heel. The table or carriage is given the loose connection with the connecting rod or bar D in order that it may be moved downward independently of the bar or rod, if desired for any reason. The plate G, which supports the top-lift holder  $g$ , also has perforations arranged in a portion of the plate back of that carrying the top-lift-holding device, which perforations are adapted to be brought in line with the perforations in the templet when the heel-attaching nails are driven, and this plate G is locked in position to the templet-plate, either when the said holes are in register with the templet-plate holes or when the top-lift holder is in operative position by means of a spring-latch, substantially as described in my Patent No. 326,779.

In Fig. 3 I have represented the templet  $c'$  as having been drawn down by the cam E upon the heel-blank, and as having compressed it to some extent; and I have also shown the awl-holding block as bearing upon the upper surface of said templet-plate preparatory to moving it downward still farther upon the

heel-blank to increase the compression of the heel-blank, the latch F being shown as being disengaged from the catch  $f$ .

In Fig. 4 the position of these parts is shown upon the completion of the additional pressure given by the awl-holding block, and it will thus be seen that the templet and its supporting-table have been moved downward sufficiently to permit the latch F to engage the catch  $f$ . The cam is also timed, if desired, to exert a downward draft or pull upon the templet while this additional compression by the awl-block is progressing. After the table is latched down, the cam may be so timed or shaped as to return the rod D and its cam  $d^5$  to their original positions, so that upon the unlatching of the latch F the springs shall serve to immediately move or return the table and templet to their normal position. It will be seen, however, that this additional compression by the awl-holding block can be given the heel-blank even if the cam be not used to assist in the compression, because of the provision by which the templet and table may be moved downward against the action of the spring  $d^7$  without the movement of the rod D. This is owing, as above explained, to the nature of the connection between the rod D and the table.

I would state that I do not confine myself to the especial form of the connection between the rod D and the cam; neither do I confine myself to a cam and lever for operating the rod D, as a toggle or any other equivalent mechanical device may be employed for drawing the rod downward.

I would have it understood that I do not limit the use of the draw-rod D to one having loose connection with the table or carriage, as it may be fastened thereto to operate to lift the table as well as to draw it downward, in which case the spring  $d^7$  need not be used.

In lieu of the awl-block for providing an additional downward movement to the templet, any other downwardly-moved block or surface carried by the cross-head may be employed.

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

1. The combination of the last or work-support, the table or carriage C, supporting the templet, the templet  $c'$ , the cam E, and mechanism connecting it with the table, whereby the templet is adapted to be moved downward and held in a depressed position, all substantially as described.

2. The combination of the last or work-support, the post  $c$ , the table or carriage C, the templet  $c'$ , supported thereby, and the nail-holder  $c^2$ , with the cam E, rod D, and lever  $d$ , all substantially as described.

3. The combination of the last or work-support, the post or support  $c$ , the table C, carrying or supporting the top-lift holder, and a templet, with the cam E, lever  $d$ , and rod D, all substantially as described.

4. The combination of the last or work-sup-



port, the post or support *c*, and the table or carriage C, supporting the templet, with the cam E, lever *d*, and the positively-actuated rod D, having a loose connection with the table or carriage C, as and for the purposes described.

5 The combination of the last or work-support, the post or support *c*, the carriage C, supporting the templet, the rod D, having a loose connection with the carriage or table, and the spring *d'*, as and for the purposes described.

10 6. In a heel-nailing machine, the combination of the last or work-support, the post or support *c*, the carriage or table C, and the rod D, positively actuated to draw the table downwardly, with a reciprocating block arranged

to further move the templet downward, all substantially as and for the purposes described.

7. The combination, in a heel-nailing machine, of a last or work-support, a carriage or table supporting a templet, and a cam connected with the table, constructed, substantially as described, and adapted first to move the templet to compress the heel-blank and then to lift or allow the lifting thereof, and then to again depress or move the templet to apply a top lift to the attached heel-blank, all substantially as set forth.

FREEBORN F. RAYMOND, 2D.

Witnesses:

J. M. DOLAN,  
FRED. B. DOLAN.