

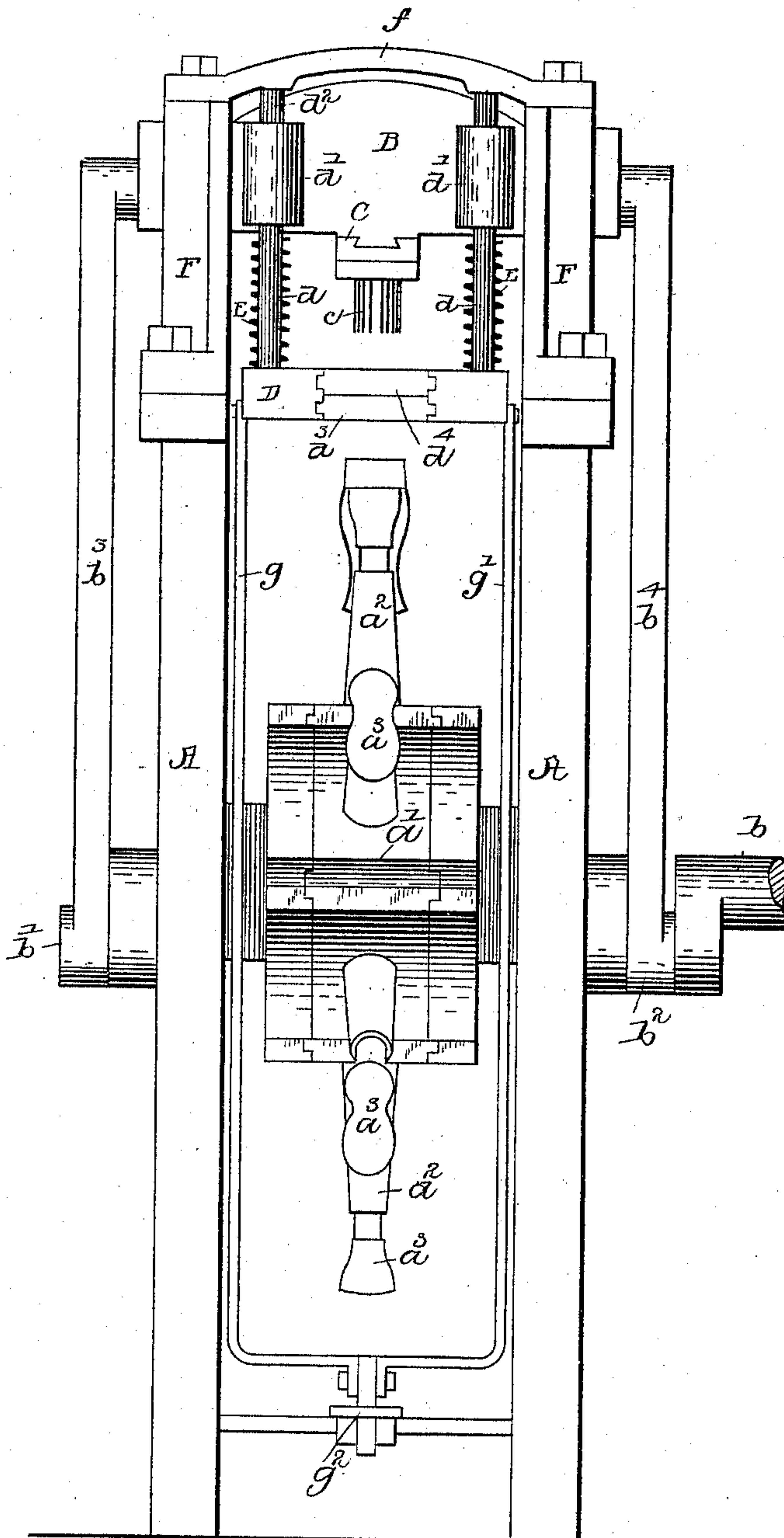
(No Model.)

4 Sheets—Sheet 1.

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

No. 584,601.

Patented June 15, 1897.



WITNESSES

*K. M. Dolan*  
*J. B. Gardner*

Fig. 1.

INVENTOR -  
*F. F. Raymond*

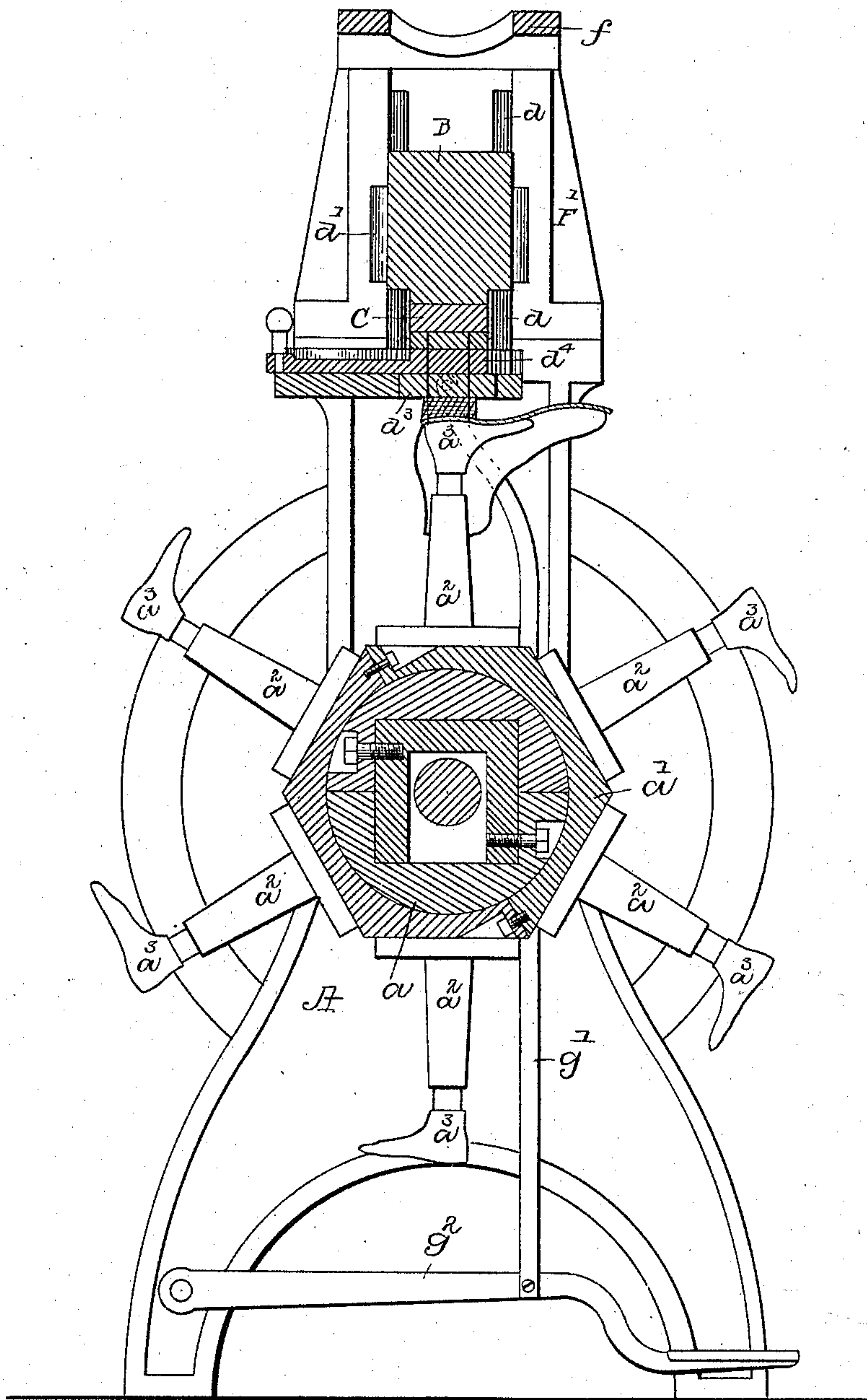
(No Model.)

4 Sheets—Sheet 2.

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

No. 584,601.

Patented June 15, 1897.



WITNESSES.

*J. W. Dolan*  
*J. D. Gardner*

Fig. 2.

INVENTOR.

*F. F. Raymond*

(No Model.)

4 Sheets—Sheet 3.

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

No. 584,601.

Patented June 15, 1897.

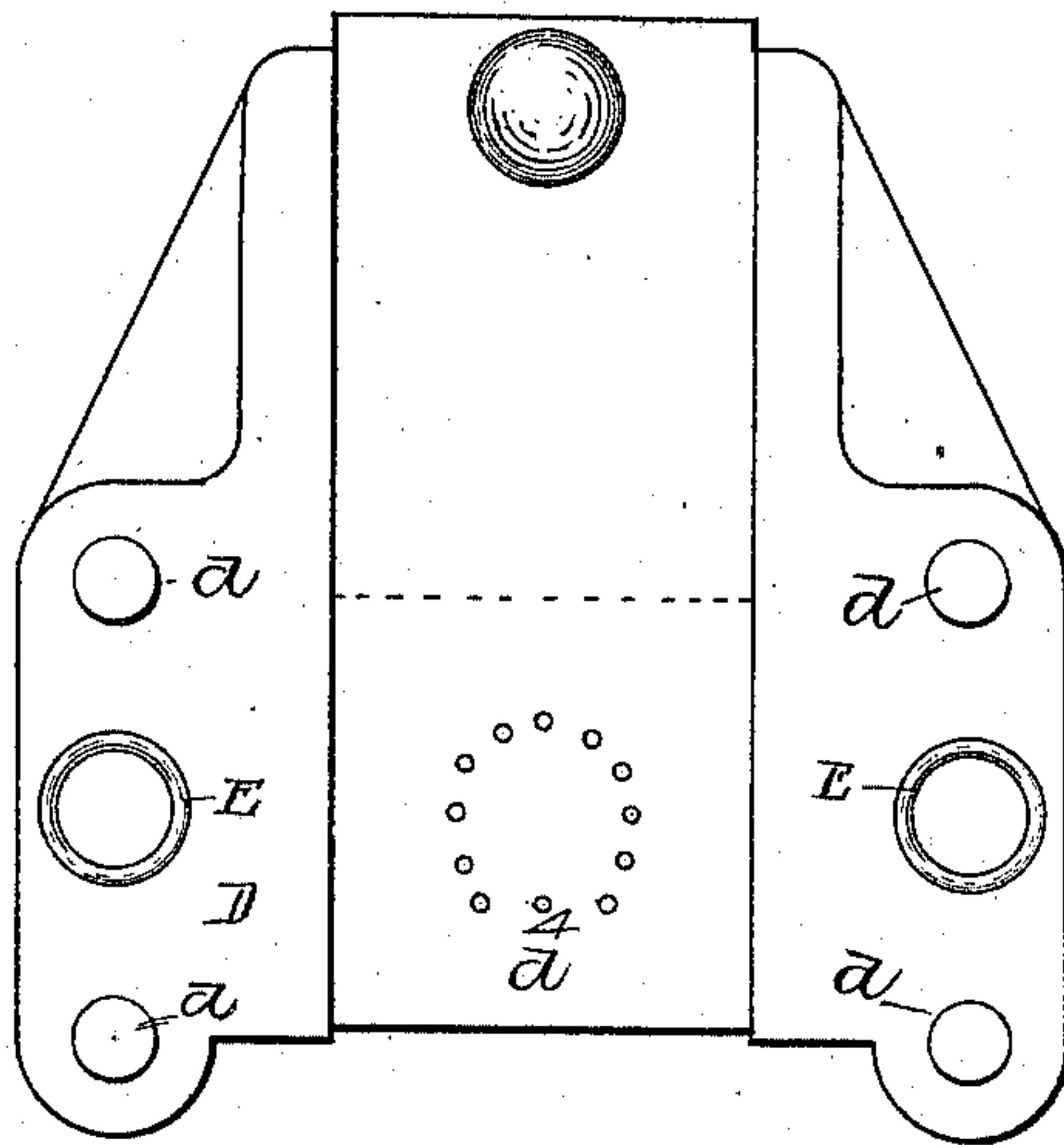
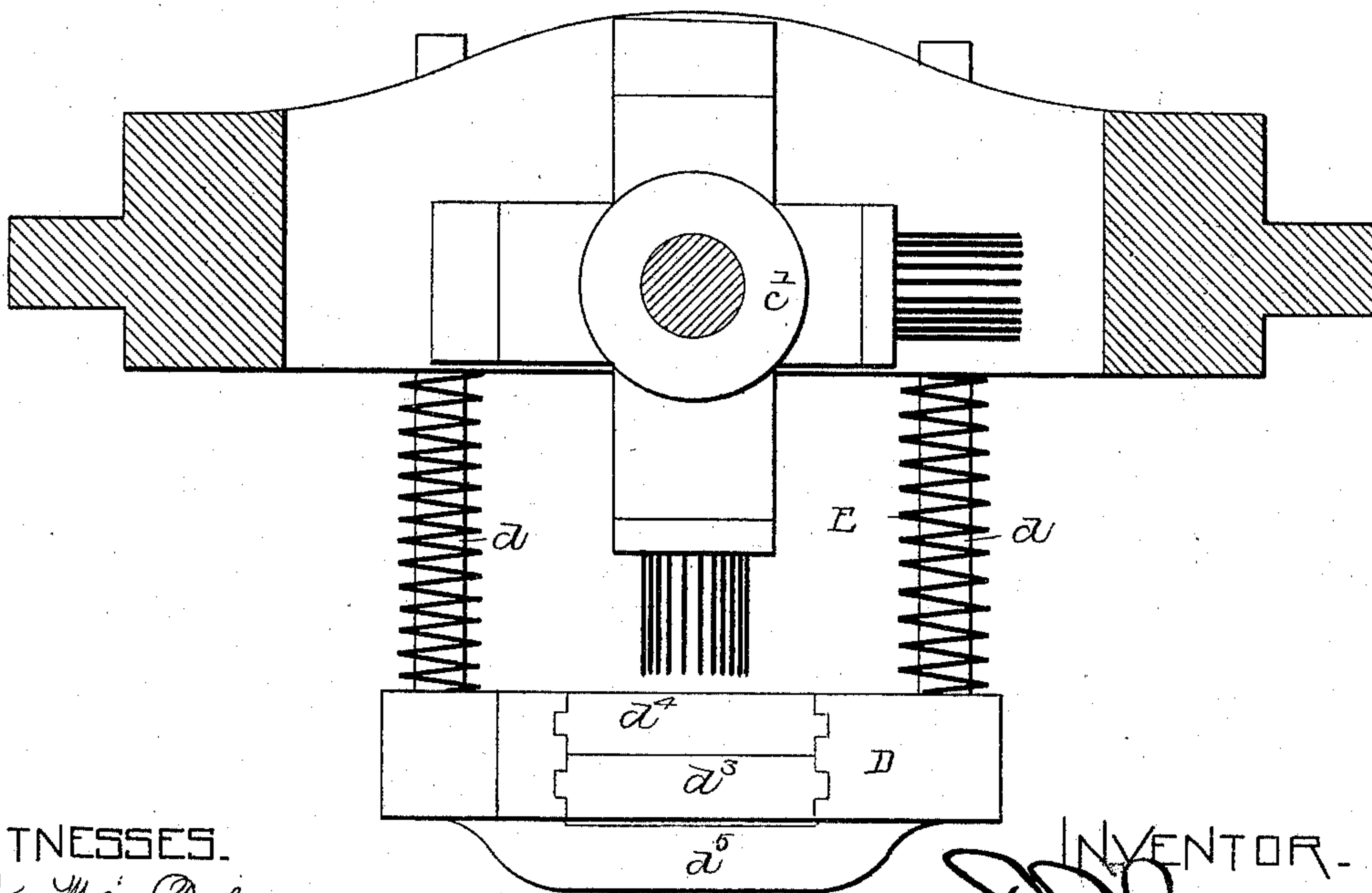


Fig. 3.



WITNESSES.

J. M. Dolan  
J. B. Gardner

INVENTOR.

F. F. Raymond

Fig. 4.



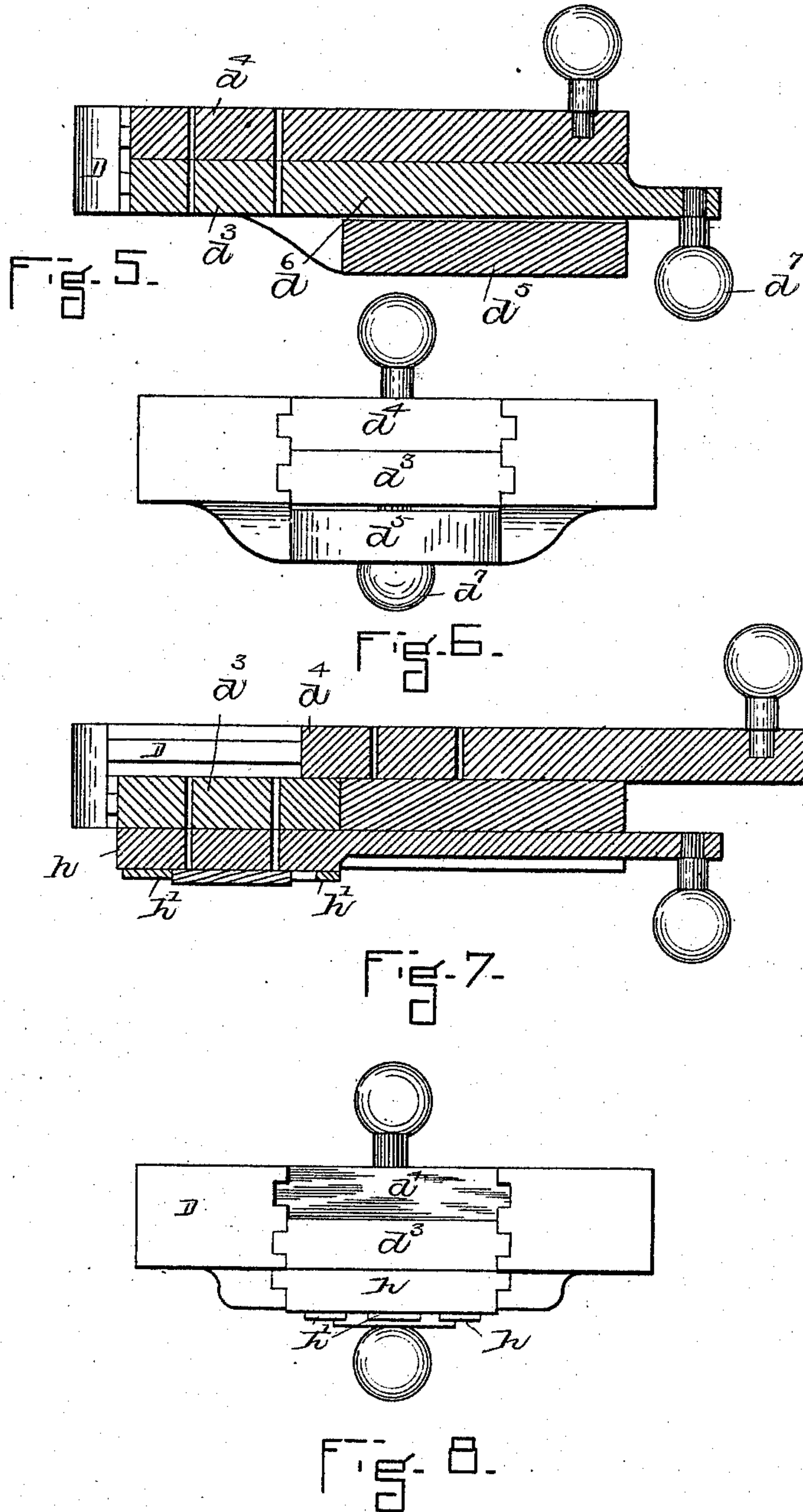
(No Model.)

4 Sheets—Sheet 4.

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

No. 584,601.

Patented June 15, 1897.



WITNESSES.

J. W. Dolan  
J. B. Gardner

INVENTOR.

F. F. Raymond



# UNITED STATES PATENT OFFICE.

FREEBORN F. RAYMOND, 2D, OF NEWTON, MASSACHUSETTS, ASSIGNOR TO  
JAMES W. BROOKS, OF PETERSHAM, AND JOHN BROOKS, OF CAMBRIDGE,  
MASSACHUSETTS, TRUSTEES.

## HEEL-ATTACHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 584,601, dated June 15, 1897.

Application filed September 24, 1889. Serial No. 324,918. (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-Attaching 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 a heel-attaching machine having the construction hereinafter indicated.

In the drawings, Figure 1 is a view in front elevation of a machine having the features of my elevation. Fig. 2 is a view in vertical central section thereof. Fig. 3 is a view in plan of the vertically-movable table and nail-carrier carried thereby. Fig. 4 is a detail view, principally in section, enlarged, representing a slight variation in the construction, to which reference is hereinafter made. Fig. 5 is a view in section from front to back to represent the form of plate shown in Fig. 4. Fig. 6 is a front elevation thereof. Figs. 7 and 8 represent the vertically-movable plate as provided with a sliding top-lift carrier and spanking-plate.

A is the frame of the machine.

a is a jack-support upon which is mounted a rotary hub  $a'$ . This hub supports a number of jacks  $a^2$ , each of which carries a last or work-support  $a^3$ . The jacks are moved with their support successively into operative position.

B is the cross-head. It is reciprocated, preferably, by means of the shaft  $b$ , having the cranks  $b'$   $b^2$ , which are connected with the cross-head by the side rods  $b^3$   $b^4$ . The cross-head may be solid, as represented in Fig. 1, and support a block C, carrying a single gang or group of drivers  $c$ , or it may be constructed as represented in Fig. 4 and carry a rotary head  $c'$ , which supports two or more arms, one of which carries awls and the other drivers. Whichever form of cross-head is used there is secured to the cross-head a plate D to be movable vertically therewith a limited extent. This plate D is represented as

or rods  $d$ . These bars or rods are secured to the sides of the cross-head at  $d'$  in any suitable way to slide thereon and their ends  $d^2$  extend above the upper surface of the cross-head.

The plate D carries a removable templet  $d^3$  and preferably a sliding nail-carrier  $d^4$ , which is secured to the plate D by cap-plates or in any other desired way. The plate is also attached to the cross-head by the springs E. There is arranged above the line of reciprocation of the cross-head, preferably extending from the cross-head guide F to the cross-head guide F', a plate or brace  $f$ , so arranged that its under surface acts as stops against which the ends of the rods or bars  $d$  come in contact upon the upward movement of the cross-head, so that the plate D and templet, after they have been lifted the necessary distance, are held stationary while the cross-head still continues to move upward. This lifting movement of the templet and table is necessary in order that a jack and work thereon may be rotated after the heel has been attached or the work nailed out of operative position by a movement toward the back of the machine while a new jack is being moved into operative position.

In order that the templet may be brought down upon the work and the nail-carrier moved to supply it with nails before the drivers are reciprocated, I have represented the plate D as moved downward by the rods  $g$   $g'$ , which are bent at their lower ends and connected with the treadle  $g^2$ .

This machine may be used for heel-seat nailing—that is, driving a load of nails into the heel end of the sole of the boot or shoe—or it may be used for attaching loaded heels, or it may be used for attaching heel-blanks which are pricked and loaded. When the heel is blind-nailed, the top lift is fed into position by a slide-plate  $h$ , movable below the templet-plate from behind the machine and which carries suitable top-lift grasping and centering devices  $h'$ .

In a machine having a rotary jack-support mounted upon a horizontal axis below and in line with the nail-driving devices it is necessary that there should be an unobstructed



space in which the lasts may travel from front to back of the machine, and also that the templet be so supported as to permit this movement of the jacks to take place, and also to be moved vertically from the surface of the work sufficiently to allow the turning movement of the jacks with the boots or shoes upon them, it being readily understood that the toe end of a jacked boot or shoe describes a considerably larger circle than the heel end, and consequently requires that the templet be lifted quite a little from the work before the jack can be turned.

It is obvious that the rods or bars  $d$  may be rigidly secured to the cross-head and the plate D mounted thereon to slide, springs being arranged to draw it upward or toward the cross-head and stops being arranged upon the side frames or cross-head guides to limit the upward movement of the table.

In Figs. 7 and 8 I have represented the plate D as carrying or supporting a sliding top-lift carrier and spanker  $h$ . It is attached to the under surface of the plate by guide-plates and supports a top-lift holding or centering device  $h'$ . When it is used, it is moved into operative position beneath the templet and the nail-carrier moved out of position from above the templet, the top-lift carrier-plate being made somewhat thinner than the nail-carrier to provide for the increased thickness of the top lift.

When the construction represented in Figs. 4 and 5 is used, the plate D is formed with the stay  $a^5$ , and the templet  $d^3$  is formed at the forward end of the slide-plate  $d^6$ , the slide-plate having a handle  $d^7$ , by which it is made horizontally movable. This permits the templet as well as the nail-carrier to be moved horizontally in the plate D sufficiently to permit the arm of the rotary head carrying the top-lift holder and spanker to be reciprocated to attach and spank the top lift upon the previously-attached heel-blank.

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

1. In a heel-attaching machine, the combination of a cross-head carrying the nail-driving devices, with an independent plate connected by means substantially as specified with the cross-head to be moved thereby a limited distance less than the throw of the cross-head, a templet supported by said plate, and rods by means of which the templet may be brought down upon the work, substantially as described.

2. In a heel-attaching machine, the combination of a cross-head carrying the nail-driving devices, with an independent plate connected by means substantially as specified with the cross-head to be moved thereby a limited distance less than the throw of the cross-head, a templet supported by said plate, and a movable nail-carrier also supported by said plate, substantially as described.

3. In a heel-attaching machine, the combi-

nation of a cross-head carrying the nail-driving devices, with an independent plate connected by means substantially as specified with the cross-head to be moved thereby a limited distance less than the throw of the cross-head, a templet supported by said plate, and a sliding nail-carrier also supported by said plate, and a movable top-lift holding and centering plate, substantially as described.

4. In a heel-attaching machine, the combination of a cross-head carrying the nail-driving devices, with an independent plate connected by means substantially as specified with the cross-head to be moved thereby a limited distance less than the throw of the cross-head, a templet supported by said plate, and a movable top-lift holding and centering plate, substantially as described.

5. The combination of the cross-head B, nail-driving devices carried thereby, the plate D supporting the templet  $d^3$ , the bars or rods  $d$  connecting the table with the cross-head as specified, the springs E stops for limiting the extent of upward movement of the plate and rods by means of which the templet may be brought down upon the work, substantially as described.

6. The combination of a rotary jack-support mounted on a horizontal axis, two or more jacks mounted thereon, with the reciprocating cross-head, nail-driving devices carried thereby, and the independently vertically-movable templet  $d^3$  supported upon each side and having a free unobstructed space beneath it, as and for the purposes described.

7. The combination, in a heel-attaching machine, of a rotary jack-support mounted upon a horizontal axis, two or more jacks carried thereby, a reciprocating head, and the nail-driving devices carried thereby, a vertically-movable templet connected with said cross-head by a yielding connection, and a stop or stops to limit the extent of its upward movement whereby it is caused to come to rest before the cross-head reaches its highest position, substantially as described.

8. The combination, in a heel-attaching machine, of a rotary jack-support mounted on a horizontal axis, two or more jacks mounted thereon, a templet supported by a plate or table upon a line with one of the jacks, and devices for moving said templet and its support from the path of rotation or movement of the jack and work thereon, as and for the purpose described.

9. The combination, in a heel-attaching machine, of the cross-head, nail-driving devices carried thereby, the plate D of the character specified connected by means substantially as specified with the cross-head to be moved thereby a limited distance less than the throw of the cross-head, and a top-lift carrying and spanking plate supported by and movable in relation to the said plate D, as and for the purposes described.

10. The combination of the nailing devices, a vertically-movable plate having a free



unobstructed space beneath it, a templet supported by said plate, a movable top-liftspanking-plate supported by said plate, and two or more jacks or work-supports upon a horizontal axis adapted to be moved successively into operative position, substantially as described.

11. The combination of the nailing devices, a vertically-movable plate having an unobstructed space beneath it, a sliding tem-

plet-plate supported by said movable plate D, and a jackway beneath said plate, and two or more jacks movable in said jackway from one side to the other, as and for the purposes described.

FREEBORN F. RAYMOND, 2D.

In presence of—

J. M. DOLAN,  
A. P. PORTER.