

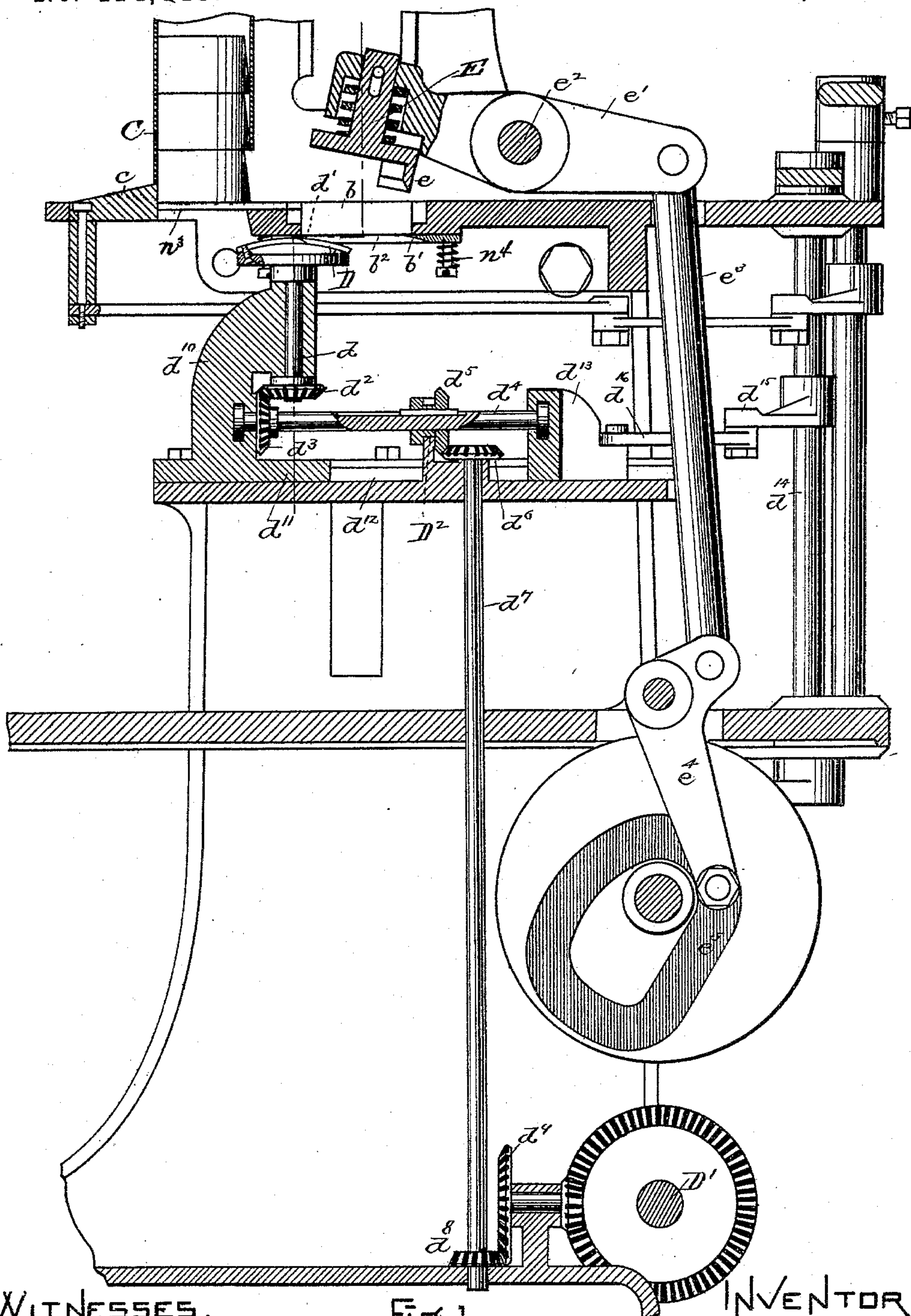
(No Model.)

4 Sheets—Sheet 1.

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

No. 414,448.

Patented Nov. 5, 1889.



WITNESSES.

J. W. Dolan

Fred. B. Dolan.

Fig. 1.

INVENTOR.

D. F. Raymond

(No Model.)

4 Sheets—Sheet 2.

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

No. 414,448.

Patented Nov. 5, 1889.

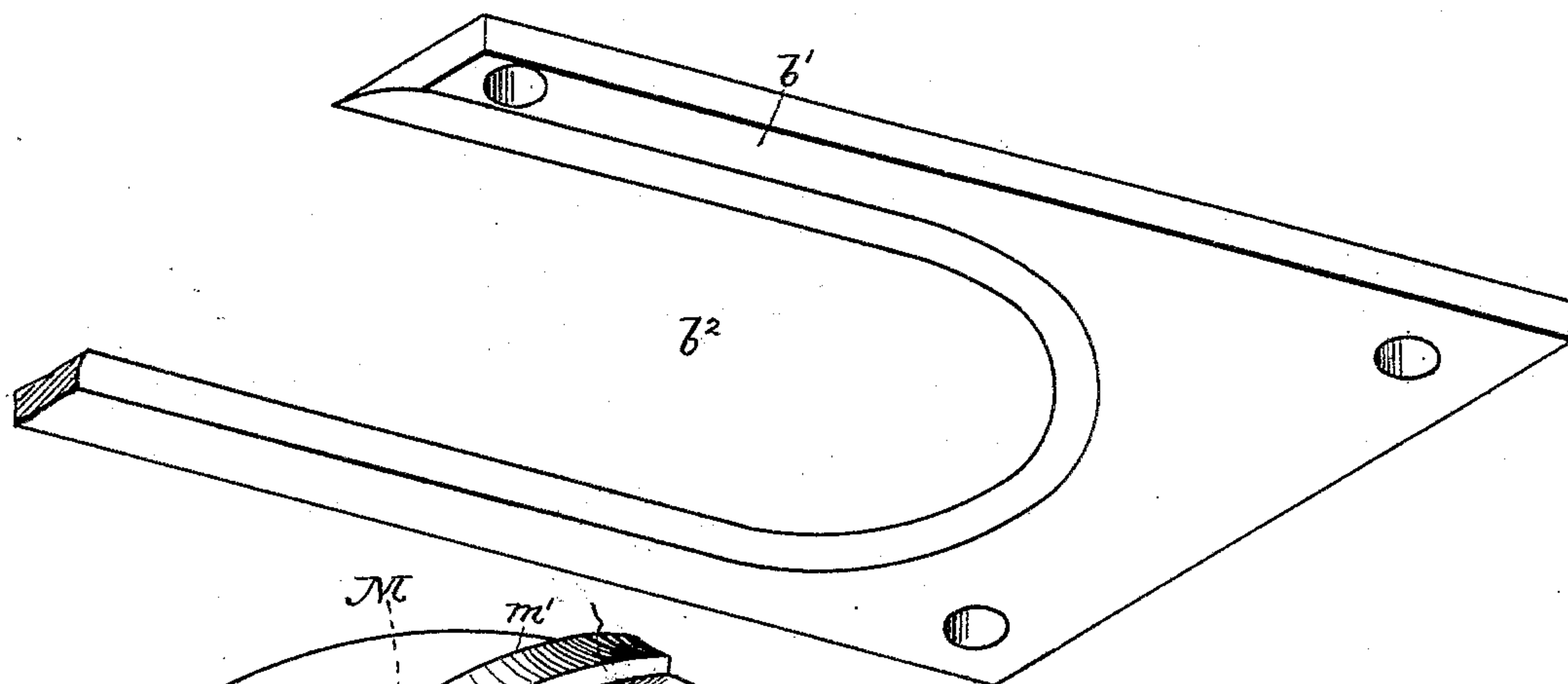


Fig. 2.

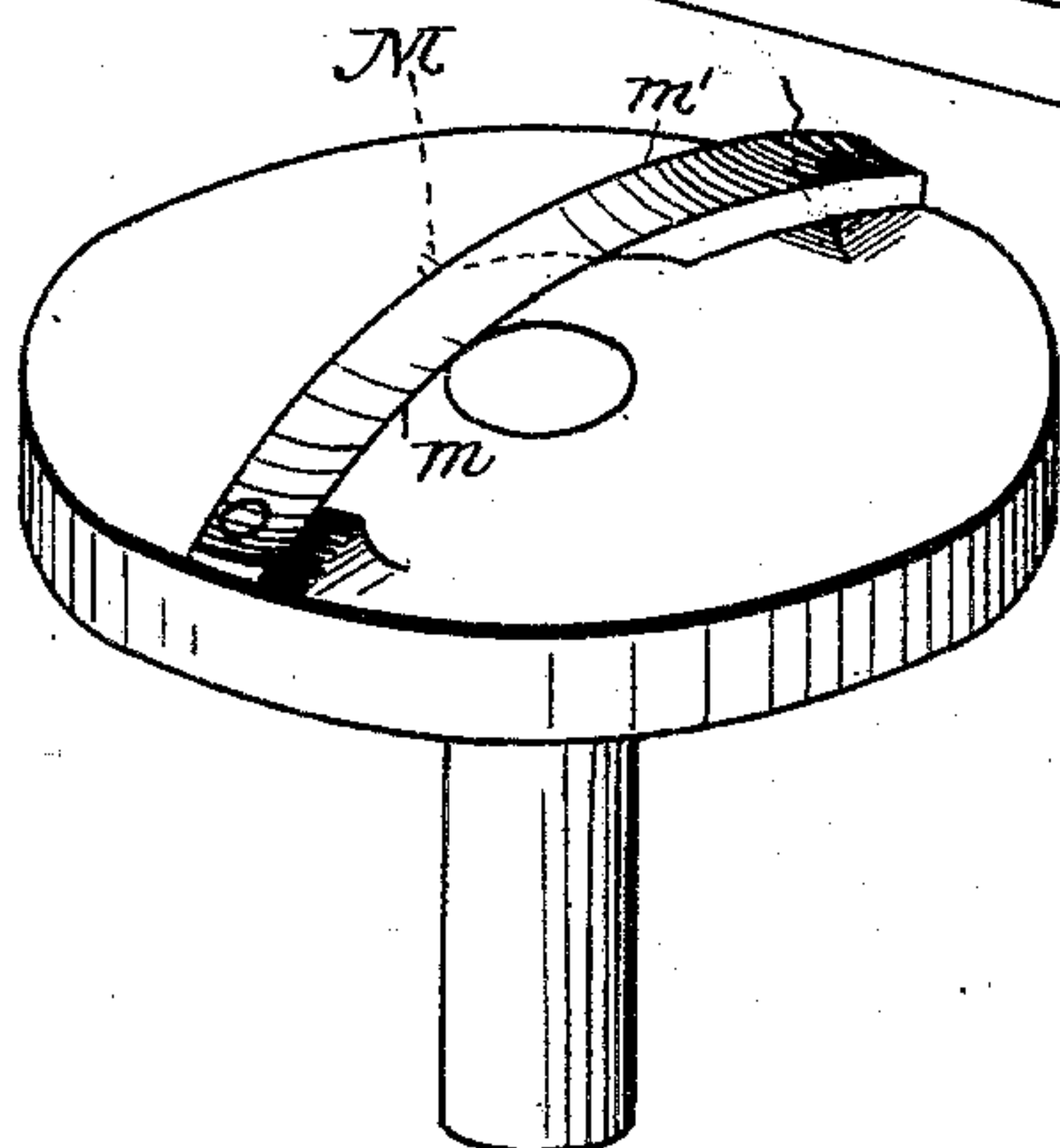


Fig. 3.

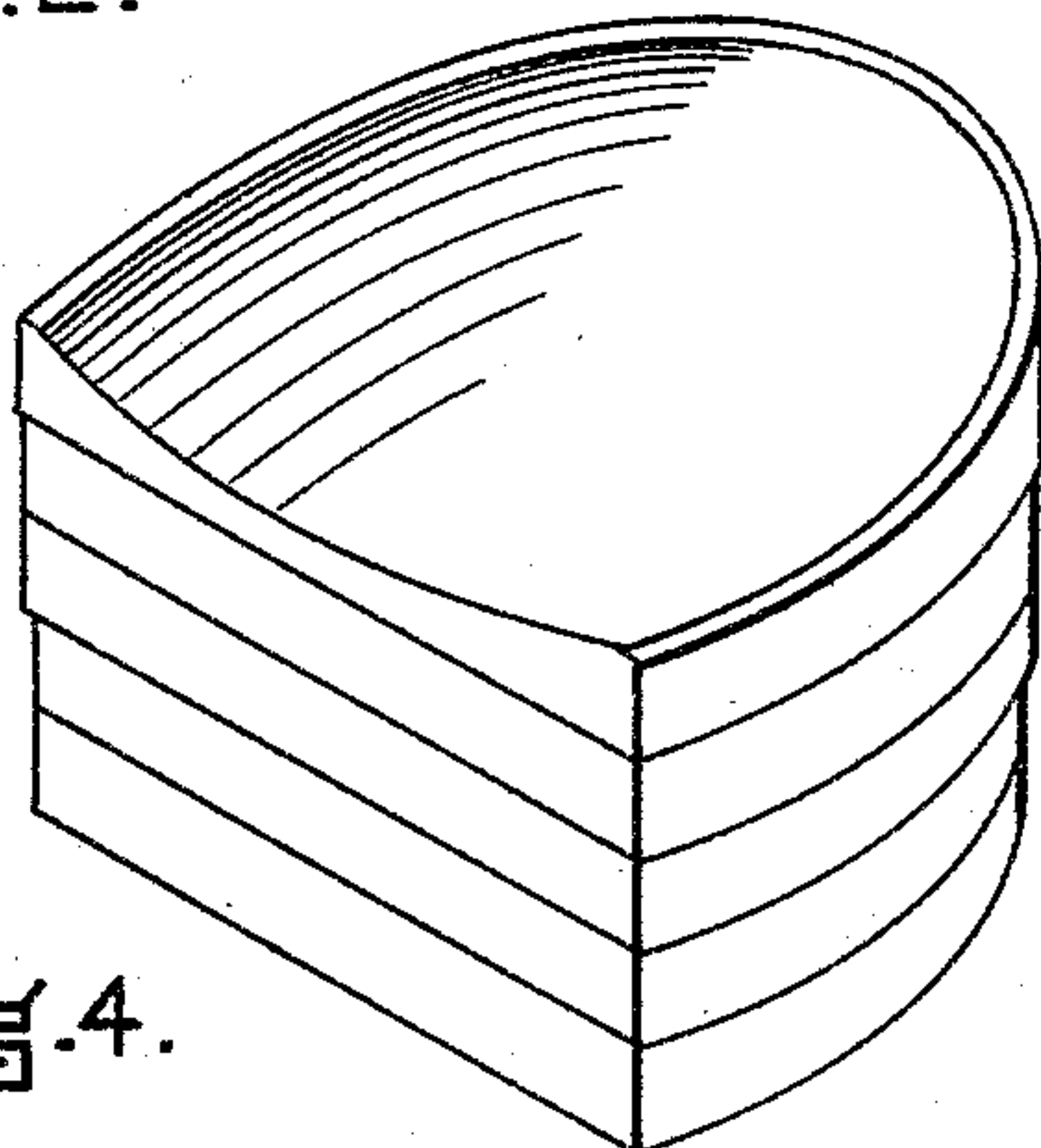


Fig. 4.

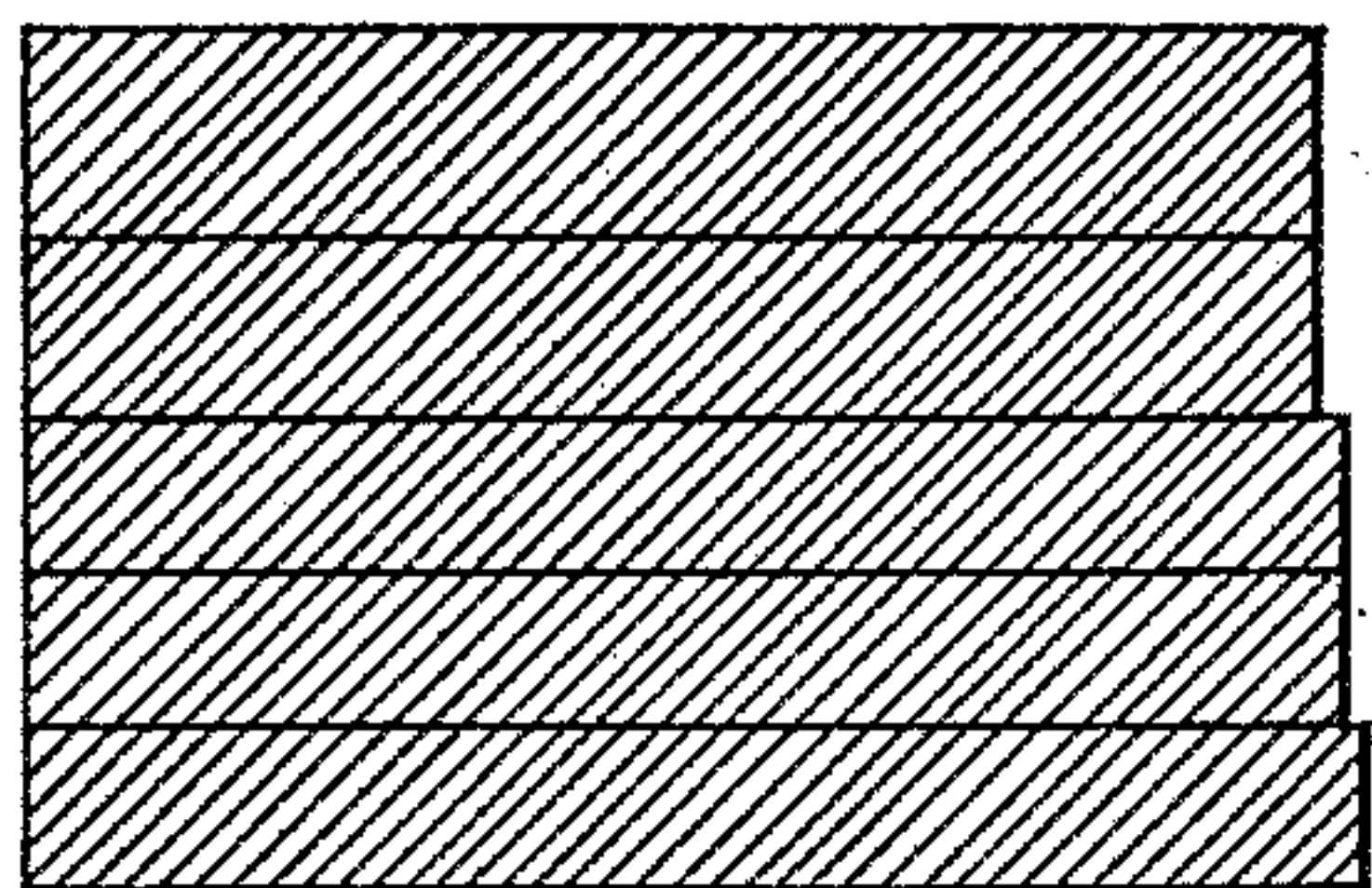


Fig. 5.

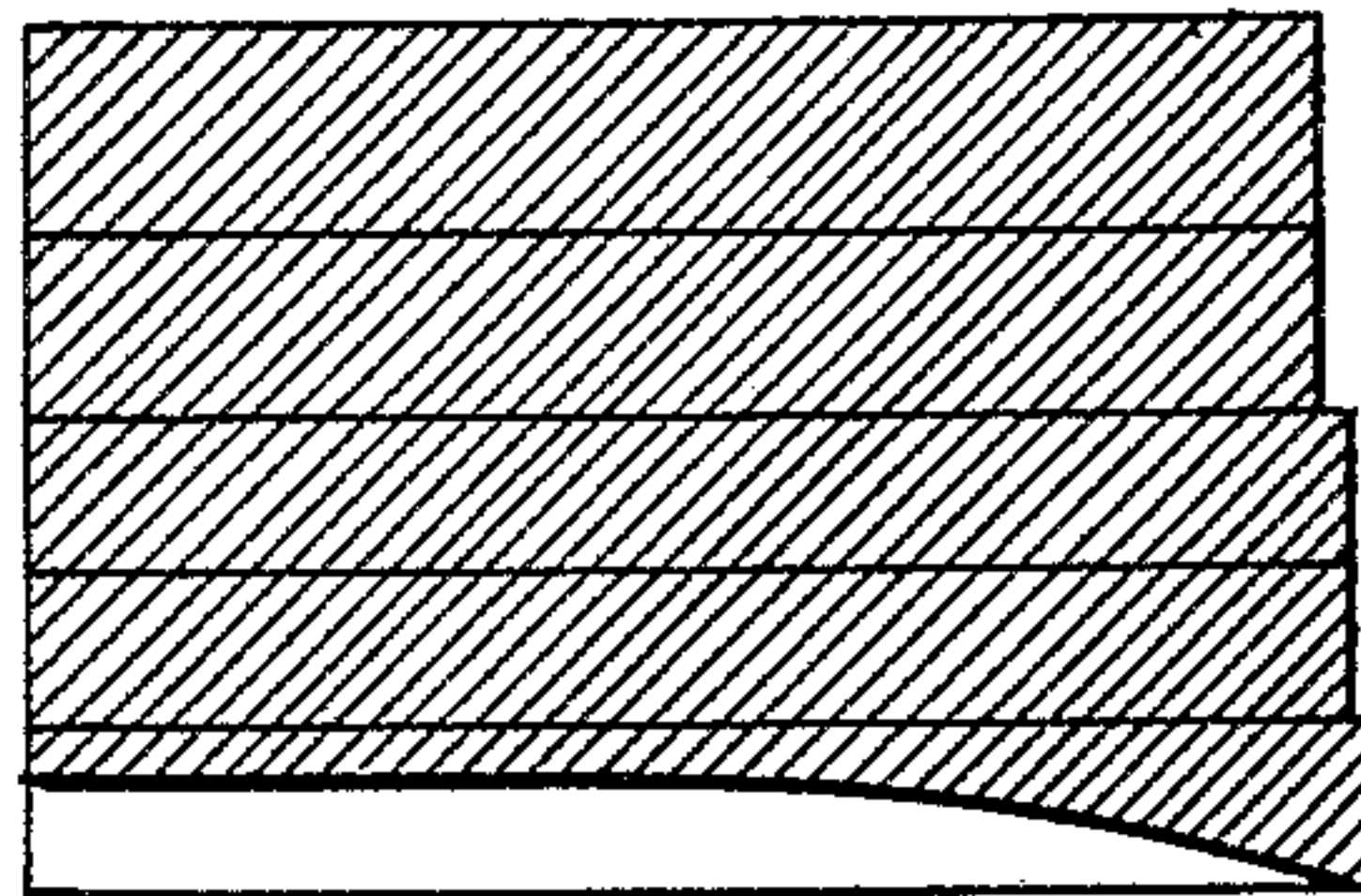


Fig. 6. INVENTOR.

WITNESSES.

J. W. Dolan.

Fred. B. Dolan.

F. F. Raymond.

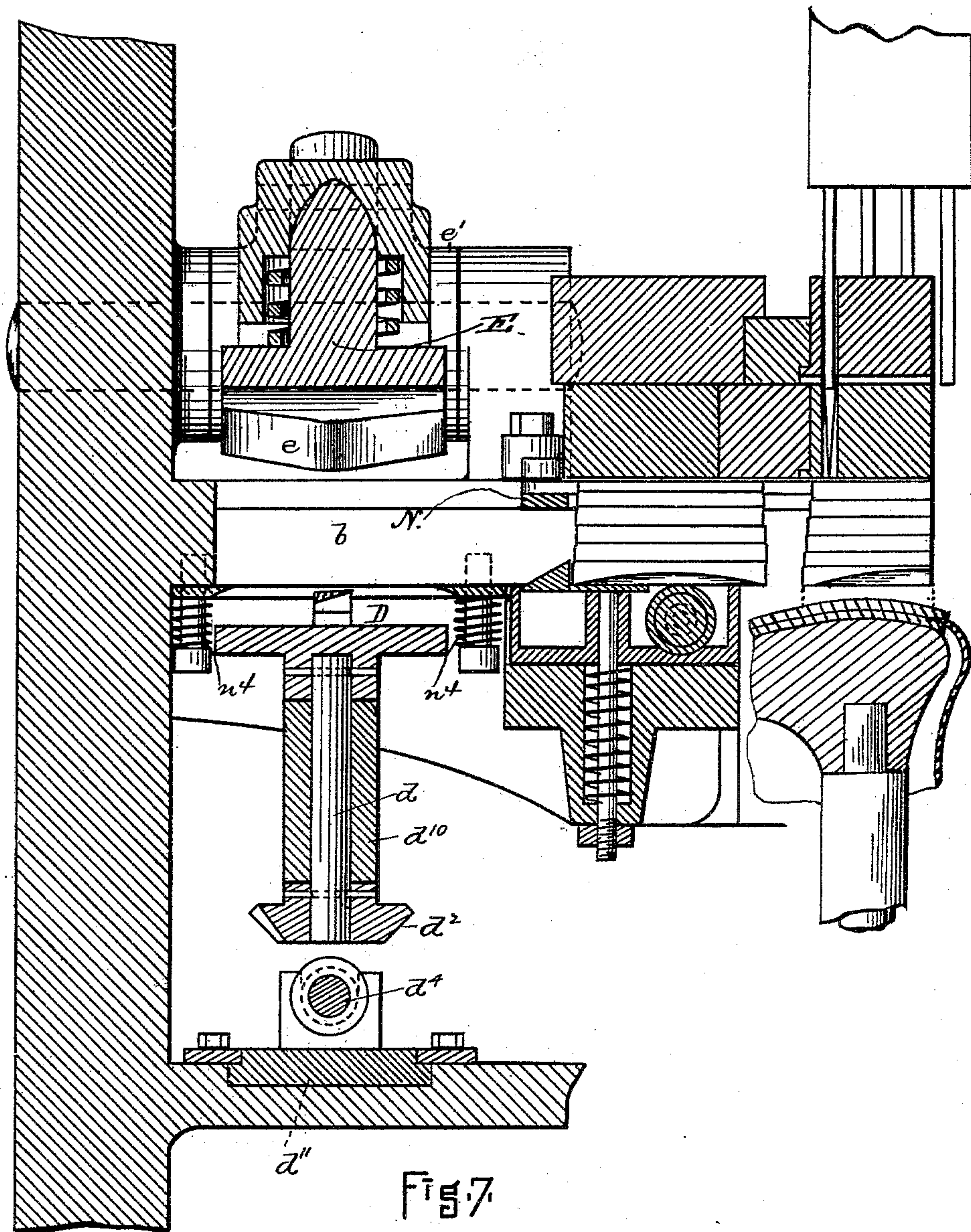
(No Model.)

4 Sheets—Sheet 3.

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

No. 414,448.

Patented Nov. 5, 1889.



WITNESSES.

J. W. Dolan
Fred. B. Dolan.

INVENTOR.

T. F. Raymond

(No Model.)

4 Sheets—Sheet 4.

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

No. 414,448.

Patented Nov. 5, 1889.

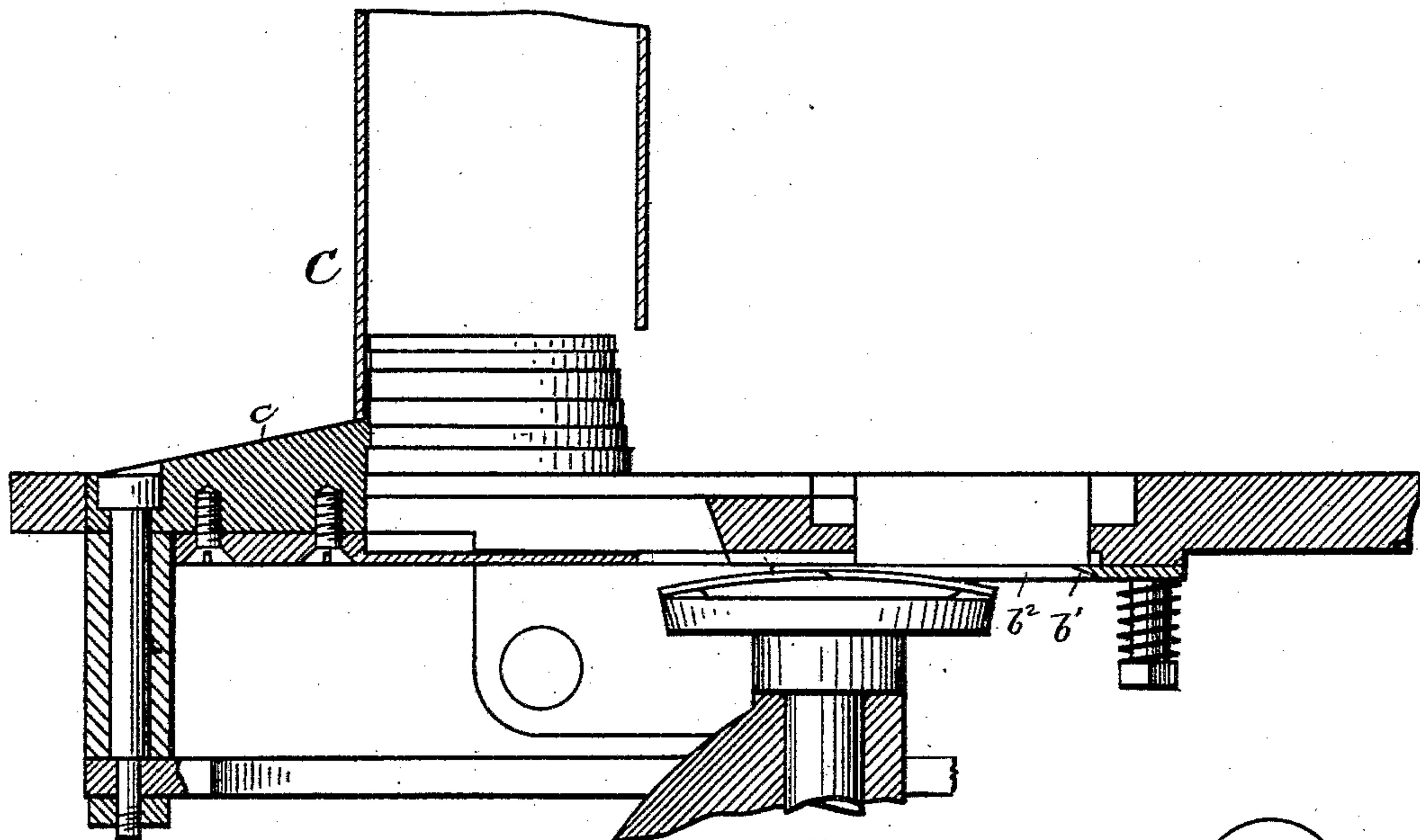


Fig. 11

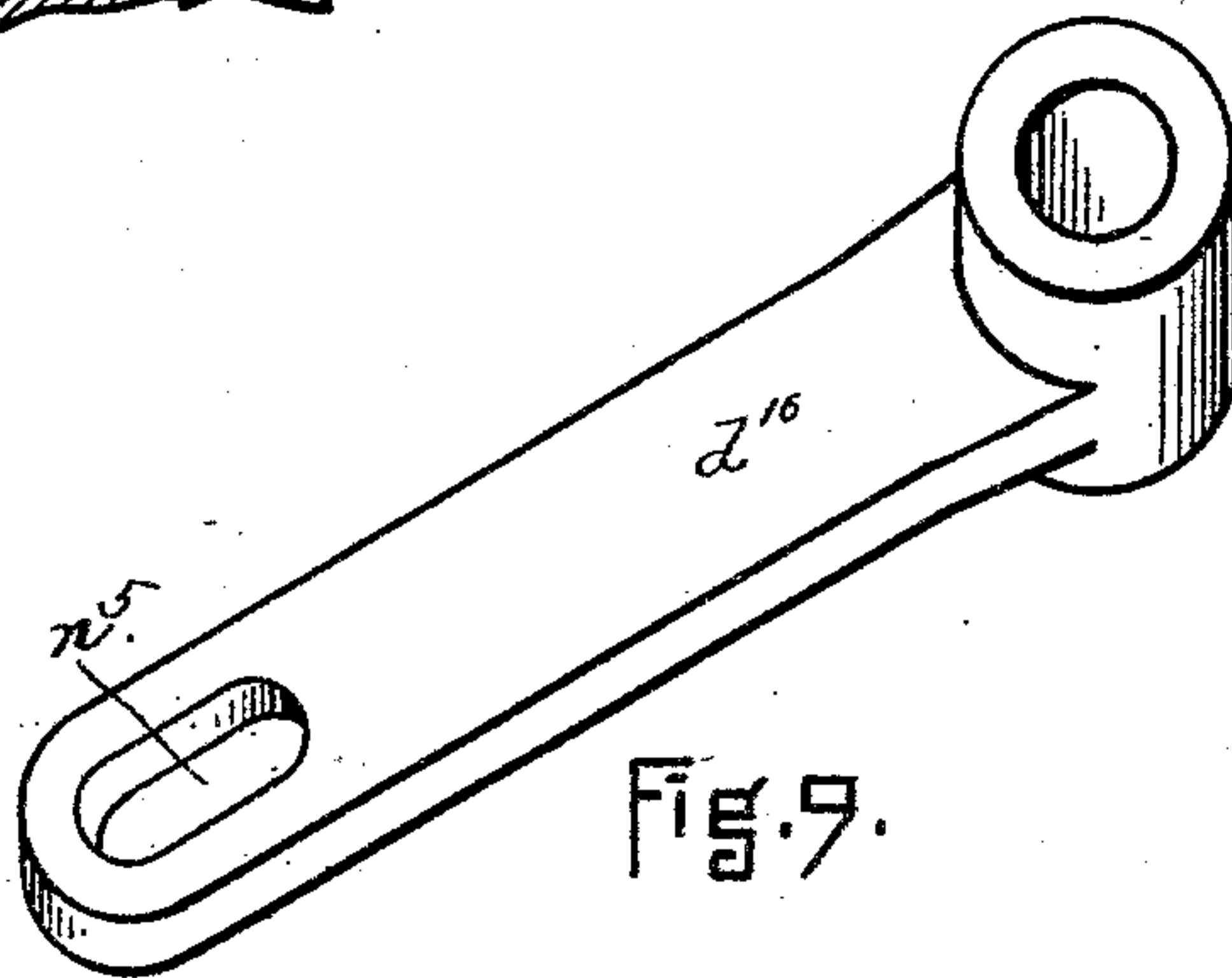


Fig. 9.

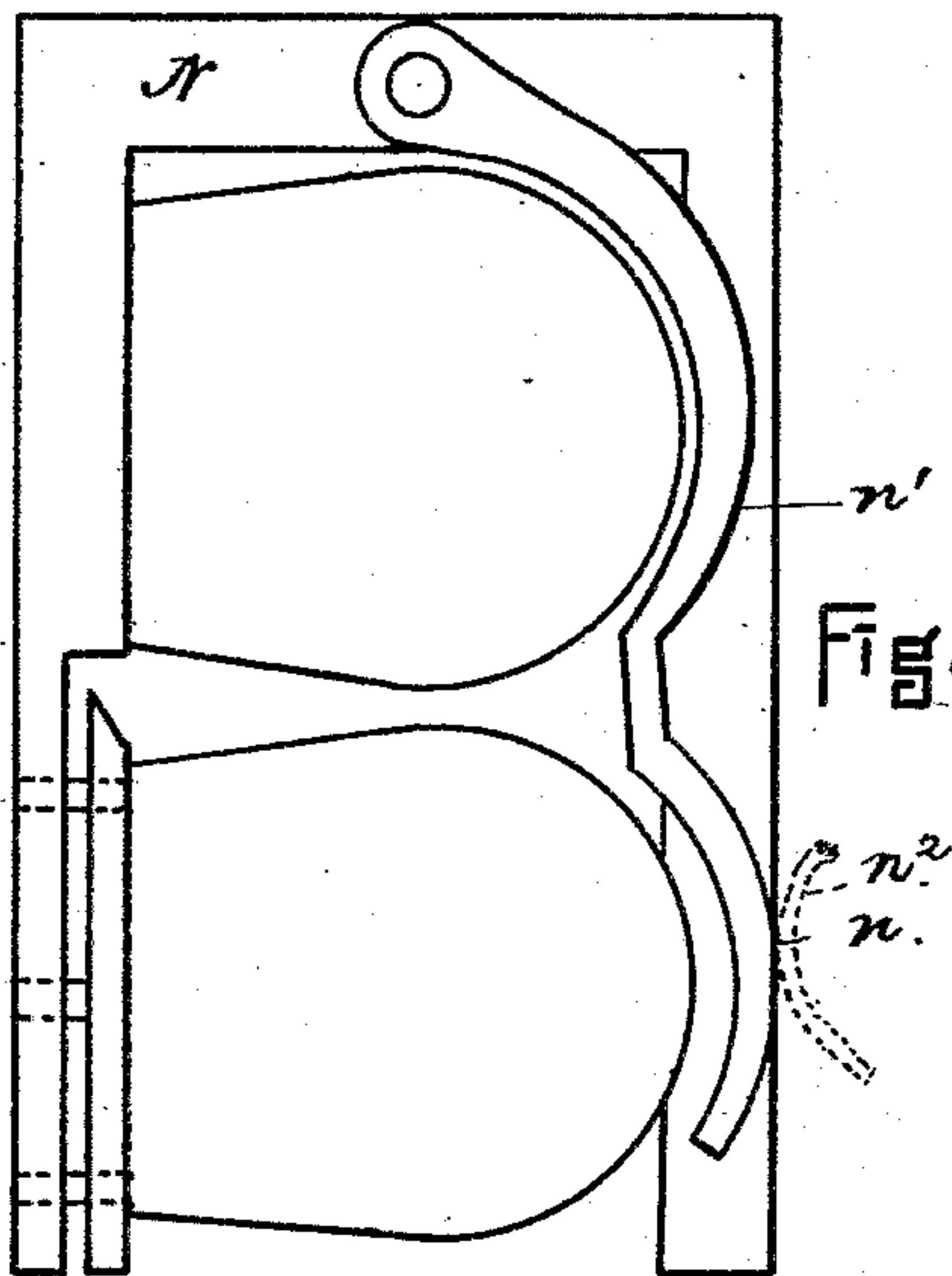


Fig. 10

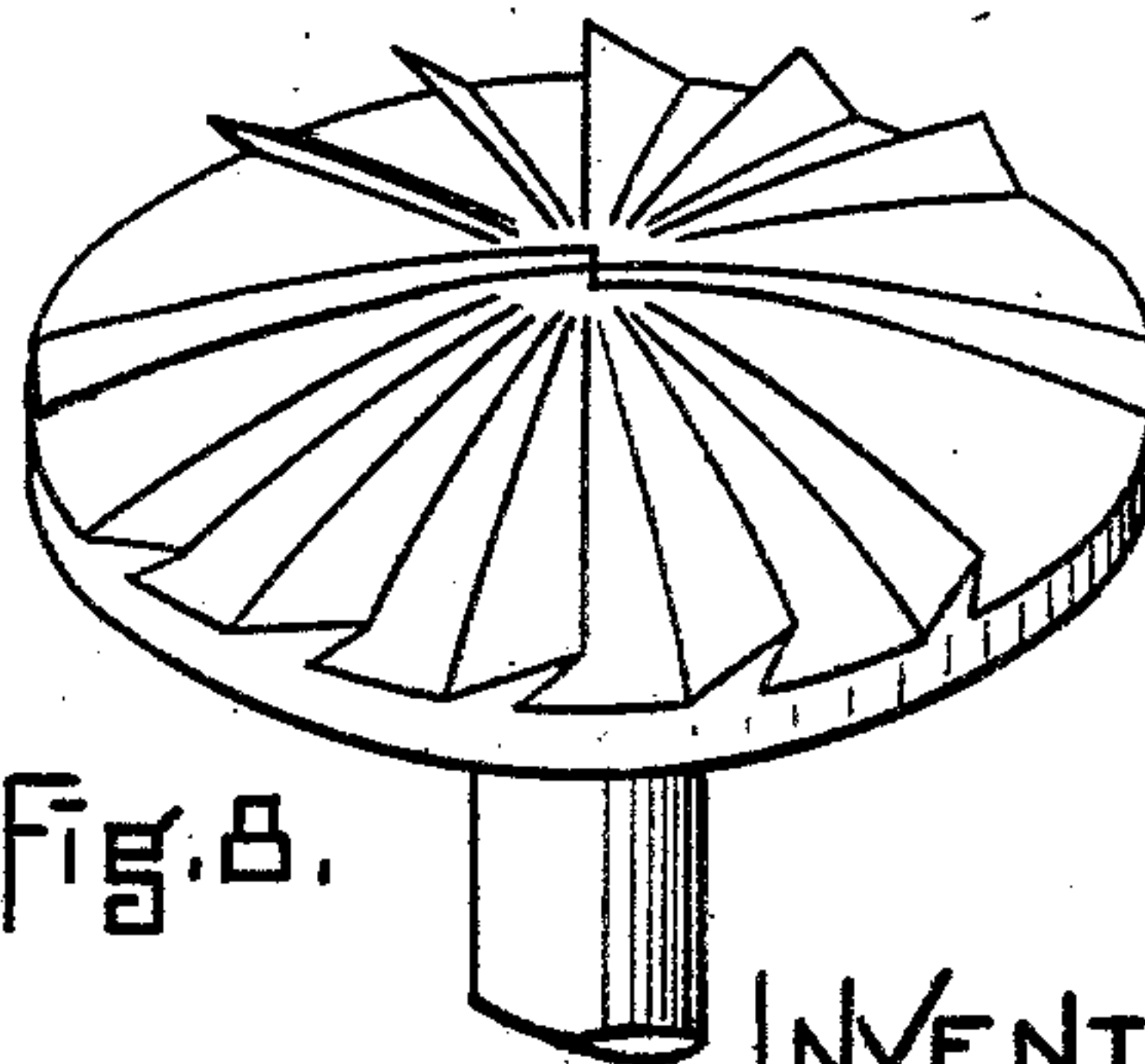


Fig. 8.

WITNESSES.

J. M. Dolan
Fred. B. Dolan

INVENTOR.

F. F. Raymond

UNITED STATES PATENT OFFICE.

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

HEEL-NAILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 414,448, dated November 5, 1889.

Application filed April 16, 1887. Serial No. 234,988. (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 relates to a heel-attaching machine provided with a supplemental heel-seat-forming device, which is arranged to operate against the under surface of the heel-blank as it is held in a pocket in the machine and to remove a sufficient amount of stock from the blank to form a cavity or seat before it is advanced to the heel-attaching devices.

It further relates to means for feeding the heel-blanks to the pocket and for presenting them to the cutting devices, and also for moving them from the cutting or forming devices to the attaching devices.

It also relates to various features of organization and details of construction which will be hereinafter specified.

In the drawings, Figure 1 is a vertical section to illustrate the parts to which this invention applies. Fig. 2 is a perspective view of a yielding plate contained in the pocket, and which supports the heel-blank while it is being presented to the cutter. Fig. 3 shows in perspective one form of cutter. Fig. 4 is a view, inverted, of a heel-blank with a seat formed by the operation of the cutter. Fig. 5 is a vertical section of a heel-blank before it has been submitted to the action of the cutter. Fig. 6 is a view in section of a heel-blank after it has been submitted to the action of the cutter. Fig. 7 is a sectional detail enlarged. Fig. 8 is a view of a burr-cutter. Figs. 9, 10, and 11 are detail views.

The invention is represented as applied to the machine represented in my application for patent for improvement in heel-nailing machines (Case A) executed of even date herewith. The heel-attaching devices are similar in all respects to the mechanism therein referred to, and it is thought unnecessary to specifically describe the same. To a pocket *b* the heel-blanks are fed from the box or receptacle *C* by the carrier *e*, which is

provided with movements by a cam and connecting mechanism, as specified in said application. The pocket *b* has a yielding plate *b'*, supported at both edges and having the hole *b²*, and beneath the upper surface of this plate, when at its highest position, is a cutter *D*, which is mounted upon the end of a vertical shaft *d*, so as to be rotated upon a vertical axis and in a horizontal plane. This cutter has a cutting-surface *d'*, of any desired configuration, and the cutters thereof may be of any desired or required shape, and may be made integral with the cutter-block or separate therefrom.

In Fig. 8 I have represented a solid or burr cutter, and in Figs. 1 and 3 a strap-knife cutter. The cutter has in addition to a rotary movement a horizontal movement, and it is adapted to first cut in the central and rear parts a circular cavity corresponding substantially with the circle of the back of the heel, and after cutting such cavity to be moved forward to the breast of the heel to form a continuation of the cavity of substantially the width of the cavity thus formed; or the cutter may be moved to begin at the breast end of the blank and be moved toward the back end of the blank, so that the cutting begins at the breast. The rotary movement is imparted to the cutter by means of the shaft *d*, upon which it is mounted, the bevel-gear *d²* at the lower end of said shaft, the bevel-gear *d³*, which meshes with the bevel-gear *d²*, the horizontal shaft *d⁴*, which carries the bevel-gear *d³* and the bevel-gear *d⁵*, the bevel-gear *d⁶*, which meshes with the bevel-gear *d⁵*, and is carried at the upper end of the vertical shaft *d*, and the bevel-gear *d⁸* at the lower end of the vertical shaft, which meshes with the bevel-gear *d⁹* on a short shaft connected by the bevel-gear with the main shaft *D'*. The shaft *d⁴* is arranged to be moved horizontally in the bevel-gear *d⁵*, the said bevel-gear *d⁵* being held by a support or bracket *D²* in a stationary position. The support *d¹⁰*, for carrying the cutter *D*, the shaft *d*, and bevel-gears *d²* *d³* are mounted upon a slide-plate *d¹¹*, which is made movable horizontally upon its table or support *d¹²* by the shaft *d⁴*. The shaft is connected with the slide-block in a manner to permit it to rotate in relation thereto, and at the same time to

be used as a rod in moving it back and forth. It is attached at its rear end in a similar manner to a slide-block d^{13} , and this slide-block has horizontal movements imparted to it at desired intervals by means of a cam, (not shown,) cam-shaft d^{14} , connecting-lever d^{15} , and link d^{16} .

It will be seen from this description of the cutter that it is first permitted to rotate upon its vertical axis, and it is then moved or advanced while still rotating, upon a horizontal line, until it has cut a seat or cavity to the breast of a heel, and after doing this it is returned to its original position to operate upon the next heel in order.

To bring the heel-blank in contact with the cutter, I use a movable head or block E, (see Fig. 1,) which has a blank-centering device e , and which is moved vertically by a lever e' , pivoted at e^2 , the rod e^3 connecting the end of the lever with the lever e^4 , which is operated by the cam e^5 on the cam-shaft. This cam is timed to move the heel-blank downward in its pocket with the yielding plate b' immediately after the heel-blank has been fed into the pocket, to bring the under surface of the heel-blank in contact with the rotating cutter, and to hold it there while the cutter is removing the stock in forming the seat. The cutter of course operates very rapidly in doing this work. Instead of arranging the cutter and head E in the pocket b' , they may be arranged between the box for holding the heel-blanks and the said pocket. The heel-blank, with its heel-seat thus shaped or formed, is moved from the pocket by the transferrer to the heel-attaching devices.

It is not essential that the cutter be operated to form the seat during the actual operation of the heel-attaching devices, as its operating mechanism and the head E may be arranged to be operated by independent devices of the same character as those herein indicated, but connected with the shaft operating the heel-attaching machine by an independent belt, and connected with the heel-attaching machine so as to be set in operation by it at the end of its operation upon a heel.

I would say that I do not confine myself to the especial form of cutter or cutting mechanism herein described, nor to the form of transferrer; and I would further say that while I prefer to use a transferring device for carrying the blank to the attaching devices and the heel-blank-feeding mechanism for automatically feeding the heel-blanks from a box or receptacle to the cutter, yet I do not confine myself to its use in connection with these elements.

In Figs. 1 and 3 I show a cutter-block having the blade M extending across it. This blade M is curved to any desired shape and has the cutting-edge m upon one side and the cutting-edge m' upon the other side, the two cutting-edges overlapping at the center, so that upon the rotation of the blade the two

cutting-edges m m' serve to cut or remove the substance of the heel-blank from the heel in forming the seat.

The cam for operating the presser or block E may be so timed as to move the heel-blank downward a greater distance during the operation of the cutter upon the breast of the heel, and thus provide the heel-blank with a heel-seat deeper at the breast end. The block or presser E, preferably, is attached to the end of the lever e' , so as to yield vertically in relation to it. The pocket, preferably, is arranged in part in the heel-blank-transferrer plate N, and the section n of the grasping-arm n' may serve to center the blank by being moved against its rear end by the spring n^2 .

In order that the heel-blank may be delivered without tipping to the yielding plate b' , there may be attached to the heel-carrier to move therewith a plate n^3 , Fig. 1, which is adapted to be moved across the pocket over the yielding plate b' , and in advance of the heel-blank, and which receives the heel-blank when it reaches or is fed into the pocket, and then withdrawn to leave the blank resting evenly on the plate b' .

The plate b' is represented as mounted on the springs n^4 , so as to have a slight movement vertically to permit the blank to be held above the cutter until the time of its operation, and then to move downward a sufficient distance to bring the part of the heel-blank to be removed in line with the cutter.

The extent of horizontal movement of the cutter in an inward direction may be varied by means of the slot n^5 in the link d^{16} and the bolt which fastens it to the slide-block d^{13} . (See Fig. 9.)

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, a heel-seat-forming device or mechanism to be employed in connection with attaching devices, comprising a rotating and laterally-movable cutter adapted to be operated upon the under surface of the heel-blank to form a cavity or seat therein by removing portions of the blank, and suitable mechanism for operating the same, substantially as described.

2. The combination, in a heel-attaching machine employing attaching devices, of a rotary laterally-movable heel-seat-cutting apparatus, and a transferrer for moving the heel-seat from the cutting apparatus to the attaching devices, substantially as described.

3. The combination, in a heel-attaching machine employing heel-attaching devices, of a rotary laterally-movable heel-seat-cutting apparatus, an automatic heel-blank-feeding device for feeding heel-blanks in successive order thereto, and a transferrer for moving the formed heel-blank from the cutting apparatus to the heel-attaching devices, substantially as described.

4. The combination, in a heel-attaching machine, of the rotary laterally-movable heel-seat cutter d' and devices, substantially as set forth, for presenting the heel-blank thereto, substantially as described.

5. The combination, in a heel-attaching machine, of the heel-seat cutter d' and the movable head or plate E, substantially as described.

6. The combination, in a heel-attaching machine, of the heel-seat cutter d' , a heel-centering device, and the movable head or plate E, substantially as described.

7. The combination, in a heel-attaching machine, of the heel holding and centering devices, the cutter d' , its shaft d , and the slide-block d^{11} , substantially as described.

8. In a heel-attaching machine, the combination of the cutter d' , its shaft d , the shaft d^4 , the bevel-gear $d^2 d^3$, the slide-block d^{11} , supporting the bevel-gear $d^2 d^3$ and the shaft d , the slide-block d^{13} , a cam connected with the slide-block, and means for rotating the shaft d^4 , substantially as described.

9. In a heel-attaching machine, the combination of the head or presser E, vertically movable in relation to the cutter, with the yielding plate b' , having the hole or aperture b^2 , and the cutter d' , substantially as described.

10. In a heel-attaching machine, the combination of the cutter d' with the yielding-plate b' , having the hole or aperture b^2 , substantially as described.

11. In a heel-attaching machine, the combination of the cutter d' with the vertically-

movable head or plate E and a cam for moving said head or plate, substantially as described.

12. In a heel-attaching machine, the combination of the cutter d' , the vertically-movable head or plate E, the lever e' , the connecting-rod d^3 , and cam d^4 , substantially as described.

13. In a heel-attaching machine, the cutter, comprising a block having a blade M, arranged diametrically across it and in relation to the axis of the cutter, as described, and having the reversely-arranged sharpened or cutting edges $m m'$, substantially as described.

14. In a heel-attaching machine, the combination of the heel-blank carrier c , the slide-plate n^3 , and the yielding plate b' , having a pocket formed above the same, substantially as described.

15. An organized machine for forming heel-seats and attaching heels, comprising a rotary cutter adapted to be operated against the under surface of the heel-blank to form a seat, an automatic heel-blank feeder, a transferrer for the formed heel-blank, the heel-attaching devices, as set forth, and mechanism, substantially as described, for connecting and automatically operating said parts, all arranged as and for the purposes specified.

FREEBORN F. RAYMOND, 2D.

Witnesses:

J. M. DOLAN,

FRED. B. DOLAN.