

(No Model.)

3 Sheets—Sheet 1.

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

No. 415,559.

Patented Nov. 19, 1889.

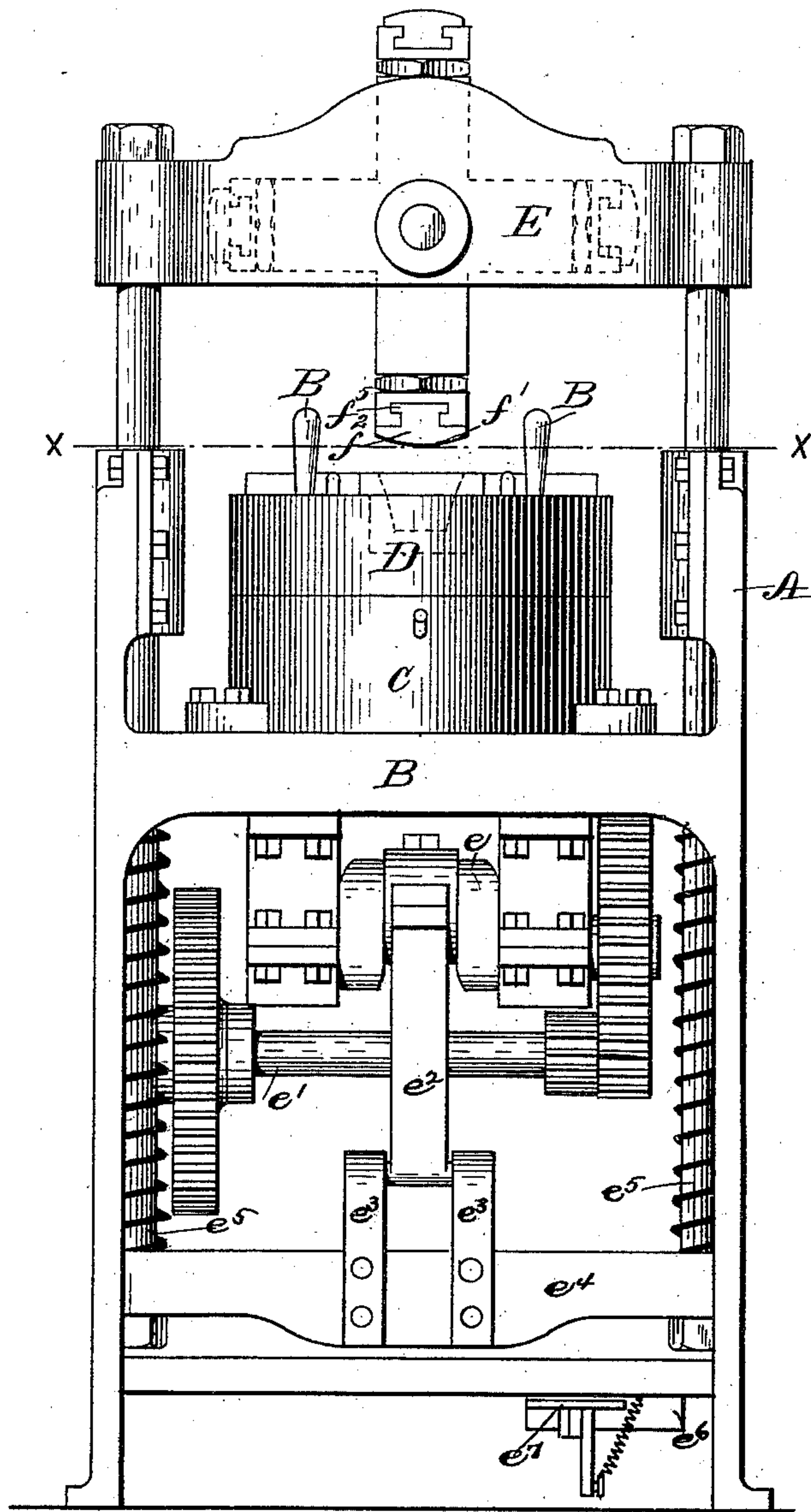


FIG. 1.

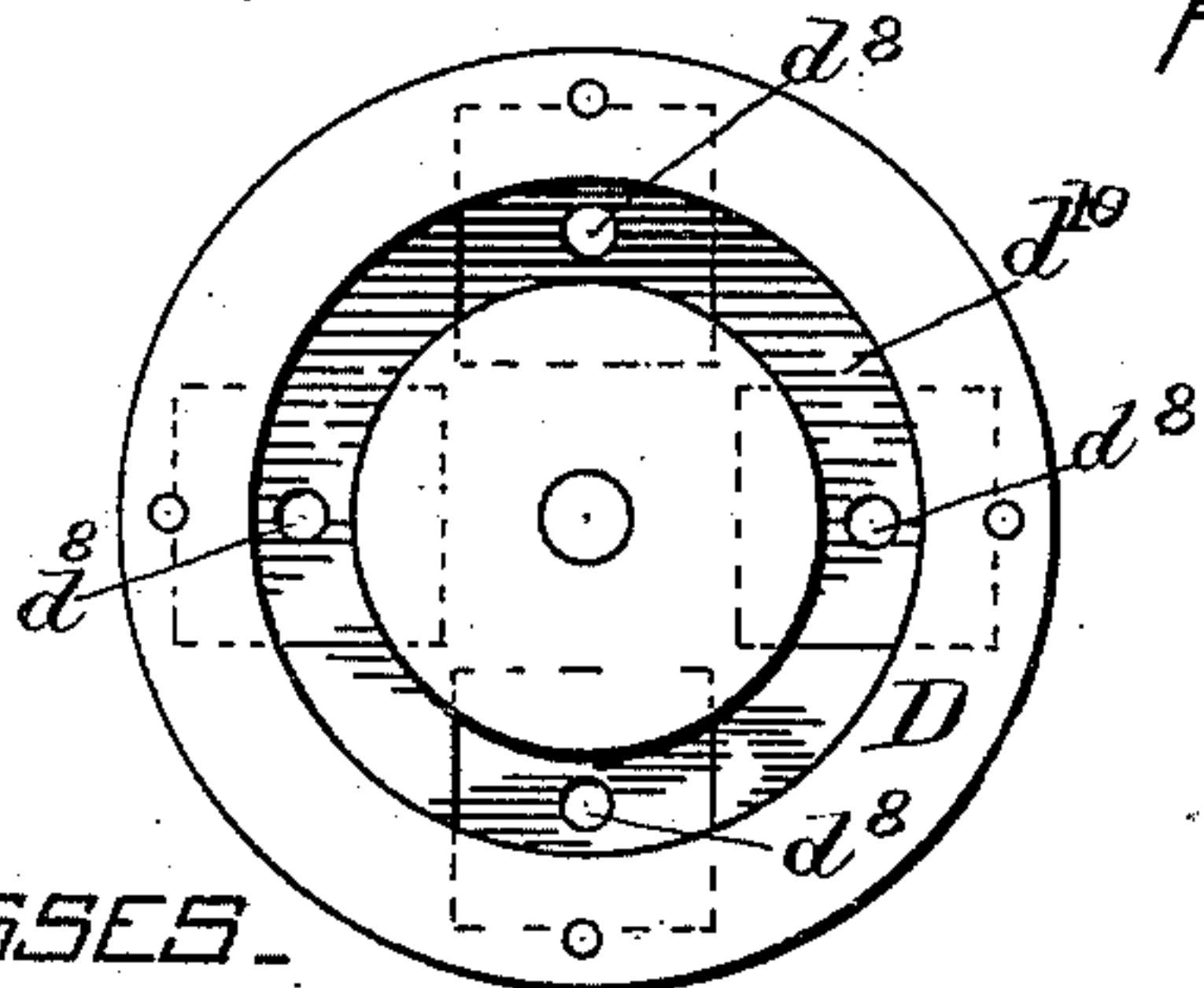


FIG. 5.

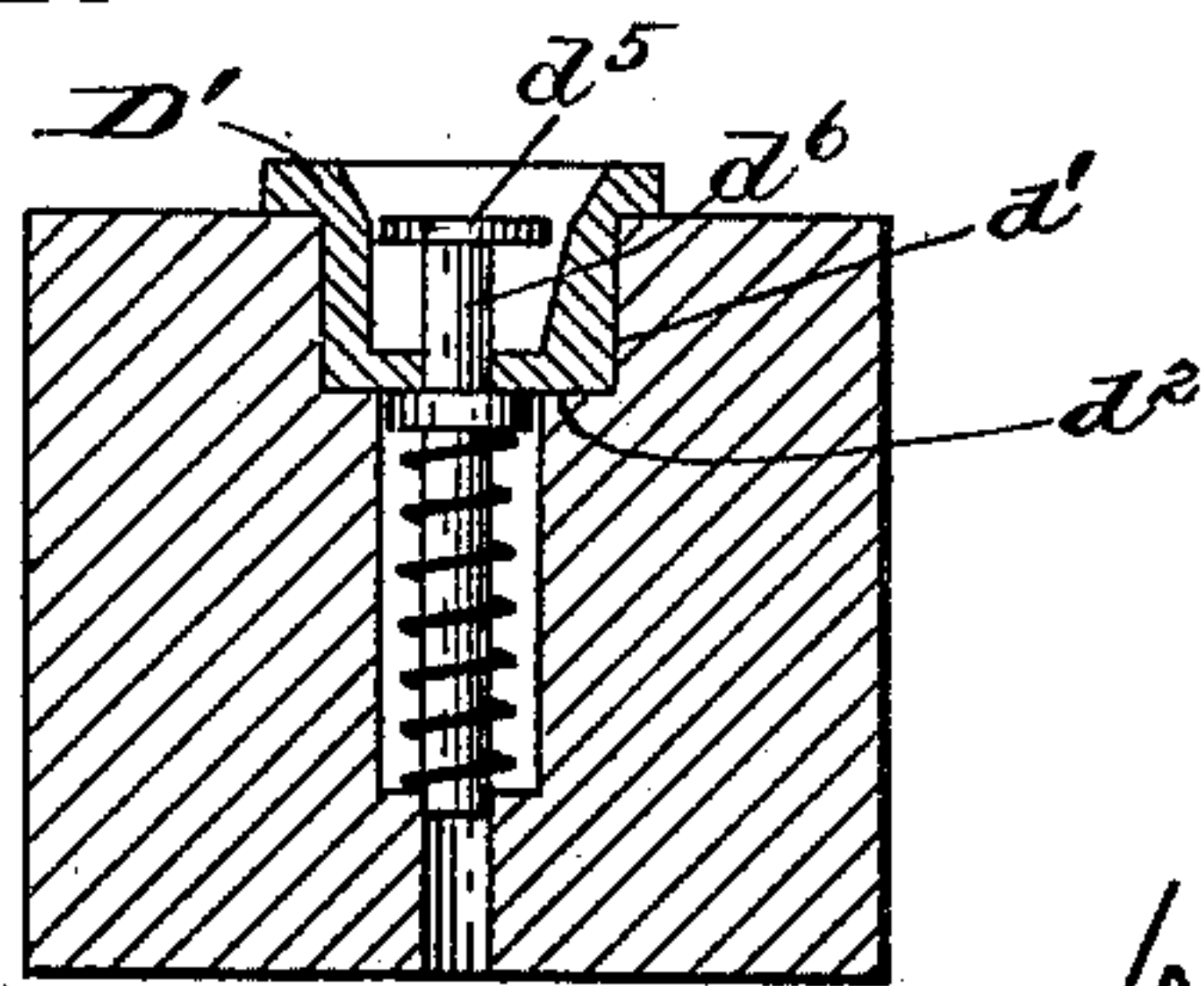


FIG. 7.

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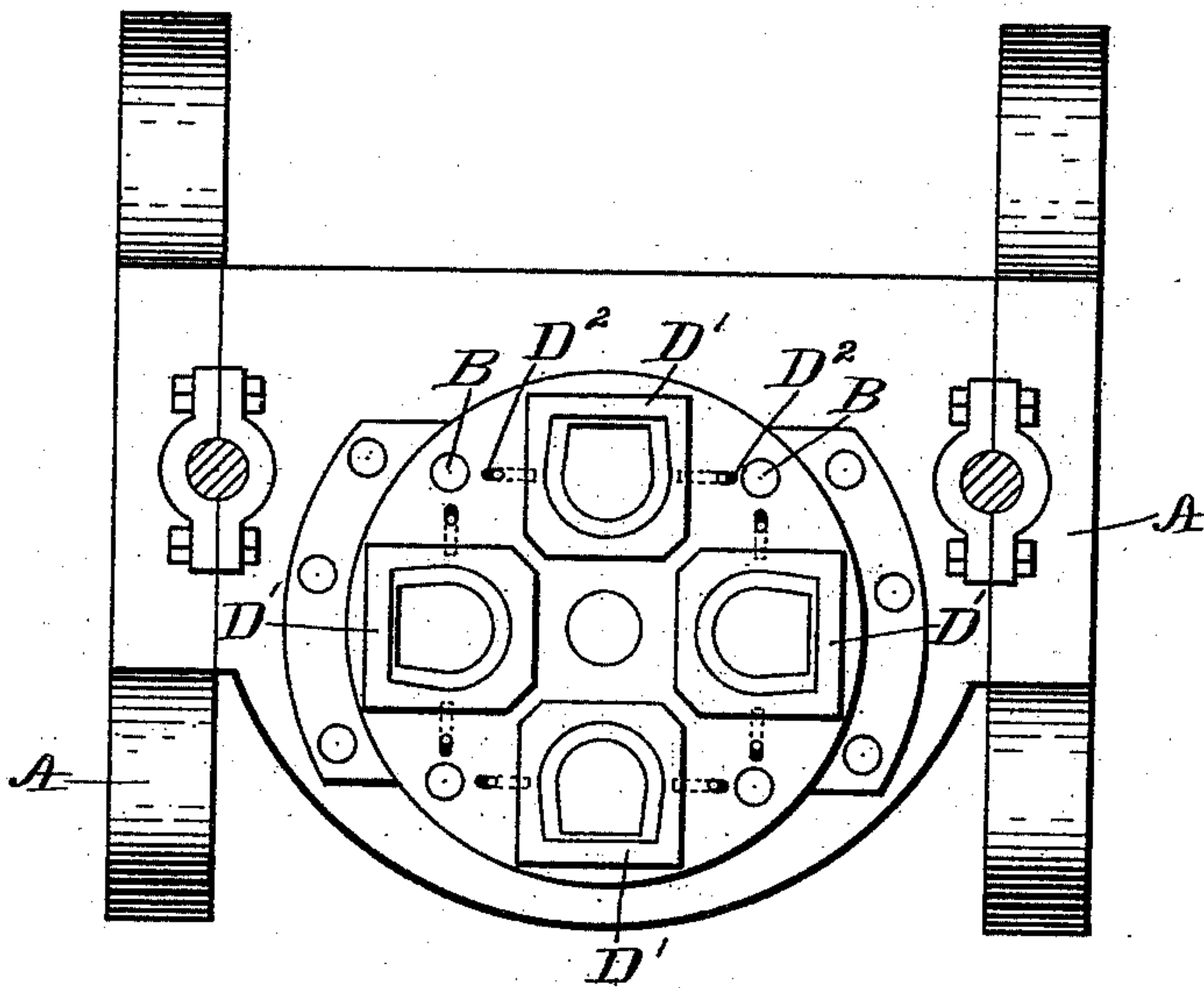


Fig-2.

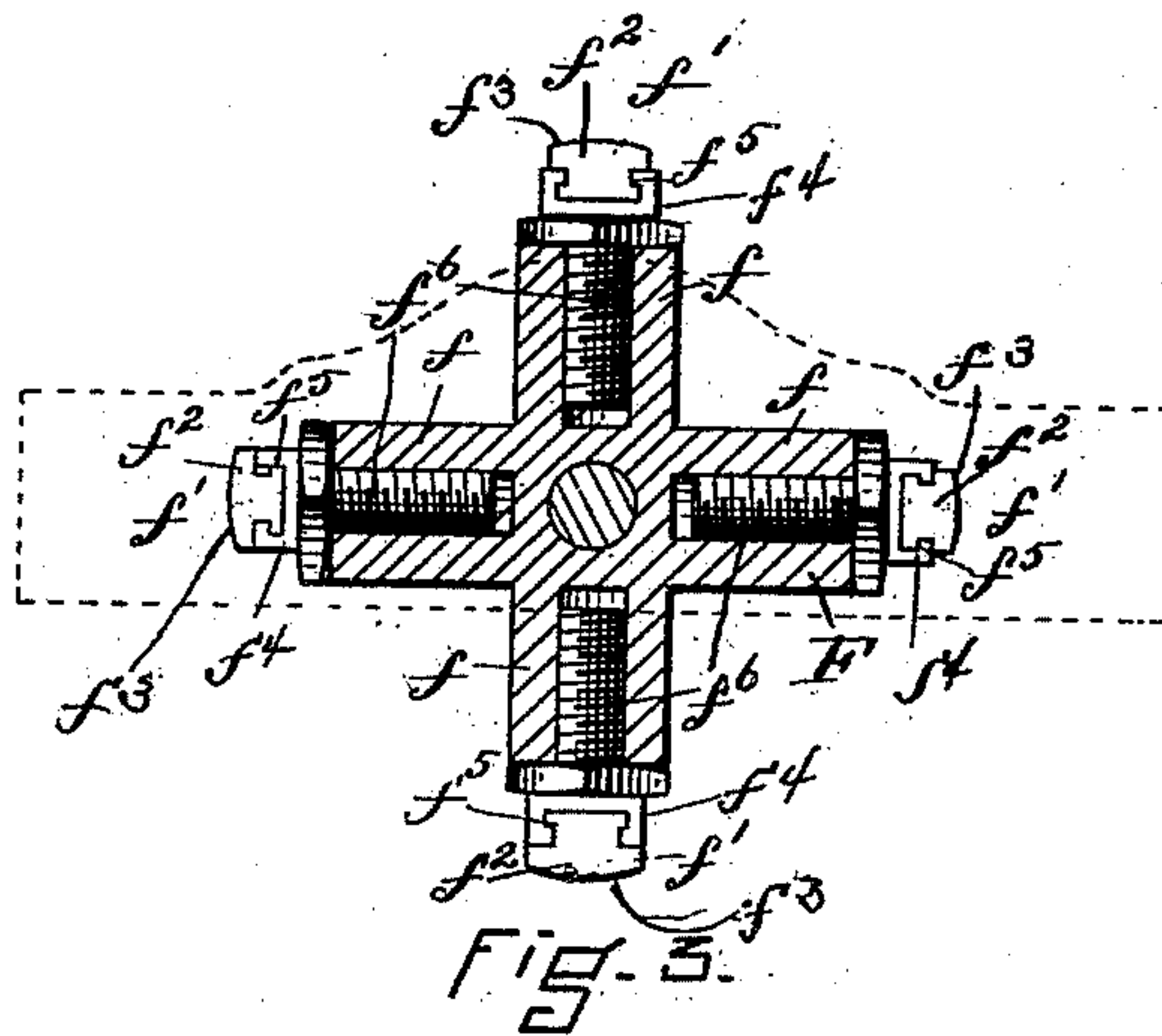


Fig-3.

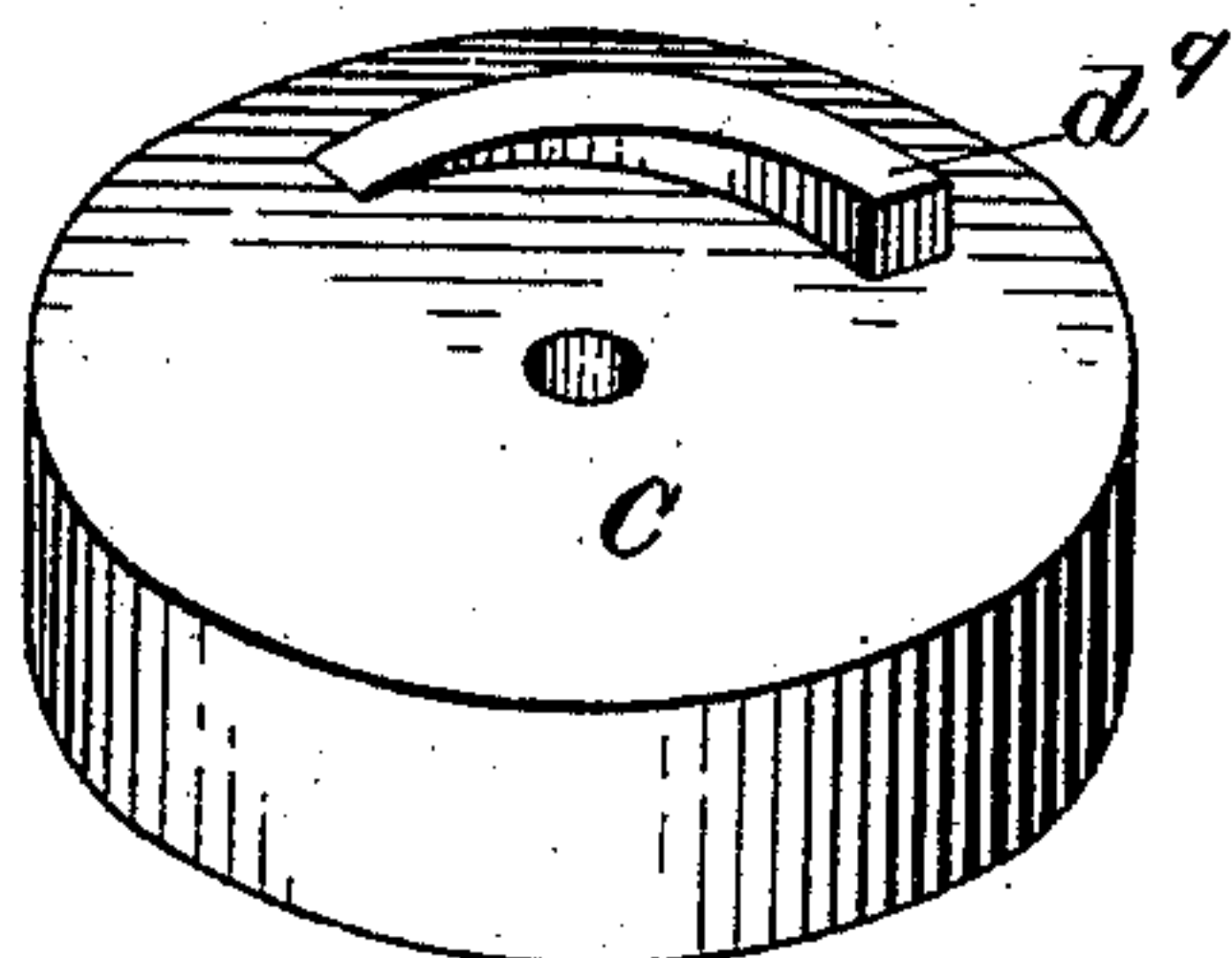


Fig-4.

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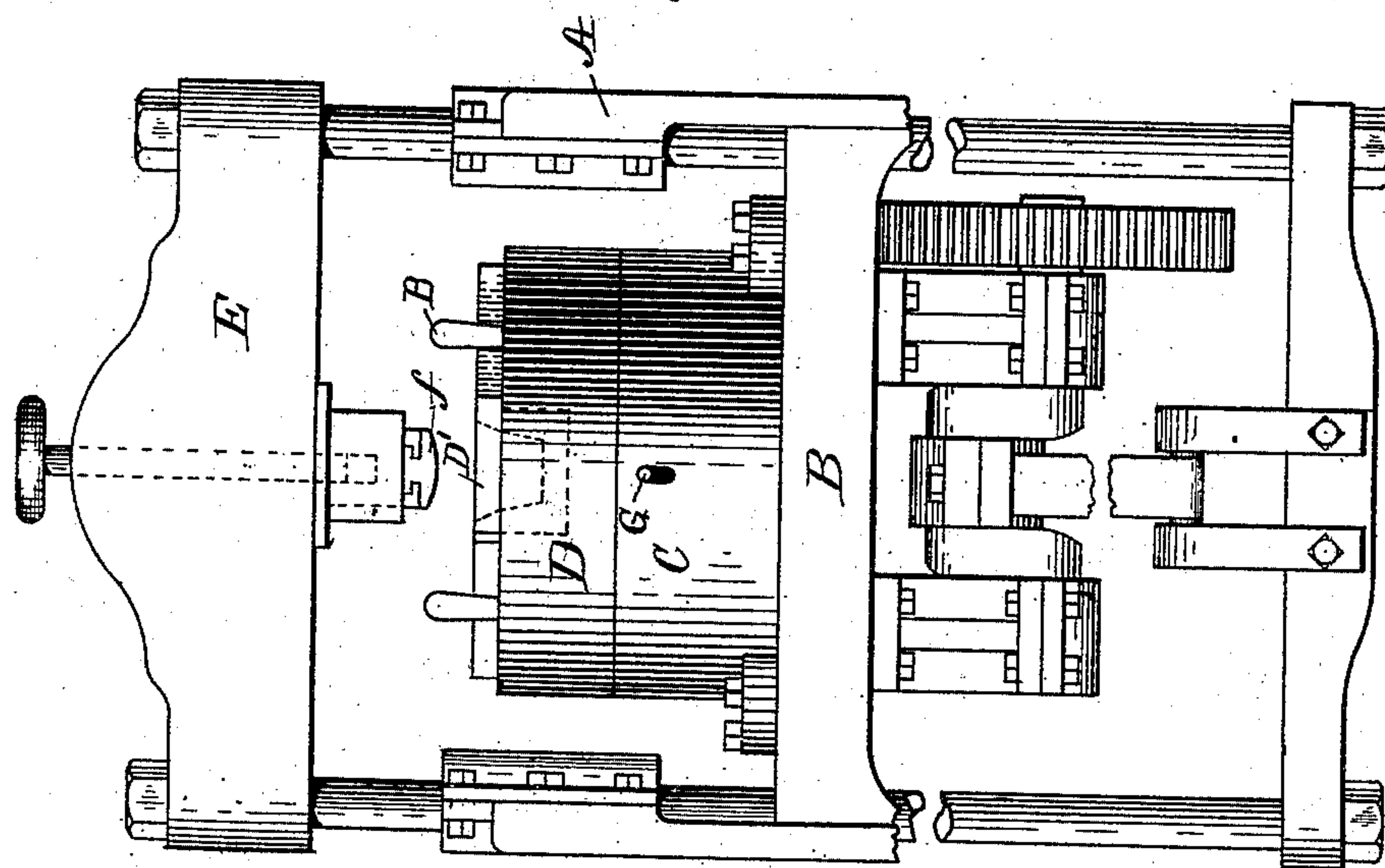
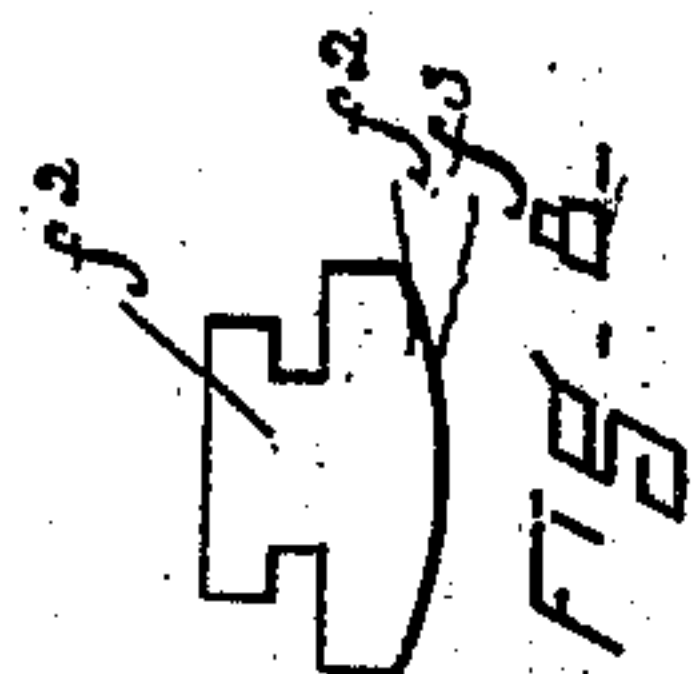
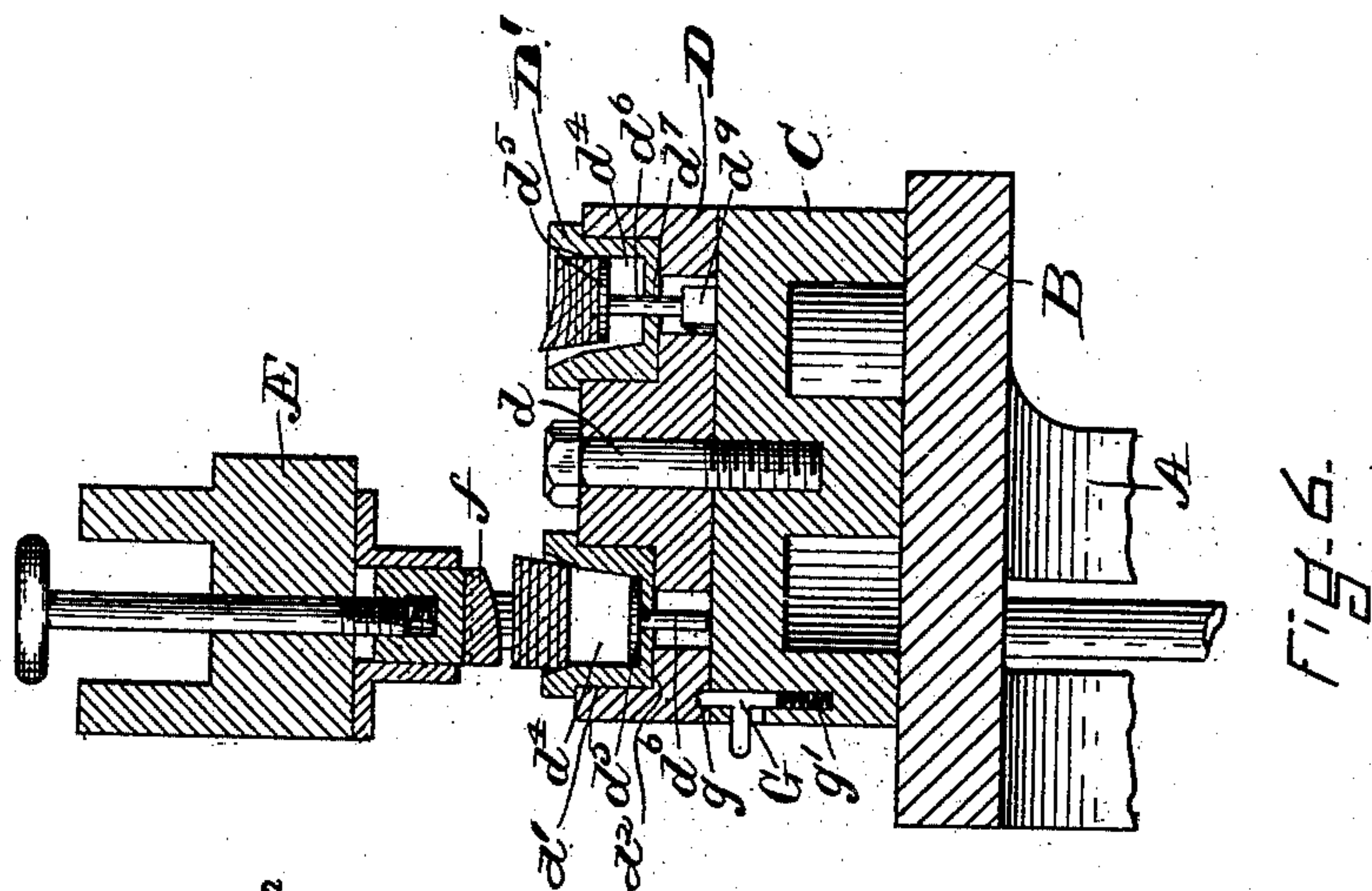
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UNITED STATES PATENT OFFICE.

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

HEEL-MACHINE.

SPECIFICATION forming part of Letters Patent No. 415,559, dated November 19, 1889.

Application filed October 27, 1887. Serial No. 253,487. (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 Shaping or Compressing 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 produce a cheap, simple, and effective machine for shaping or forming heel-blanks.

In the drawings, Figure 1 is a view in front elevation of a machine having the features of my invention. Fig. 2 is a view in horizontal section upon the line xx of Fig. 1 and in plan below said line. Fig. 3 is a vertical section taken through the revolving head. Fig. 4 is a view in perspective of a block for supporting the die-holder. Fig. 5 is a view of the die-holder reversed. Figs. 6 and 7 illustrate a slight modification. Fig. 8 is a view of the heel-seat former detached. Fig. 9 illustrates the die-block holder as having a single die.

The invention is represented as embodied in a machine having some of the features of the National Heel-Attaching Machine, and in the drawings A represents the frame of the machine.

B is a table.

C is a stand mounted upon the table and supporting a rotary block D. This block is preferably circular in shape, has a central hole which receives the pivot d , and also has one or more square holes d' , (preferably four,) each of which is adapted to receive a solid die-block D', the block resting upon the shoulder d^2 at the bottom of the die-receiving hole or cavity. Each die-block has a die d^4 , in which the heel-blank is adapted to be formed, and it also has a movable diaphragm or plate d^5 , having a stem or spindle d^6 , extending downwardly through a hole d^7 , formed in the bottom of the die-block, into the hole d^8 in the holding plate or block D. The plate d^5 is imperforate. When a number of die-blocks are carried by the plate or block D, the dies may be of the same size or form, or they may be varied in

size and form, as may be desired, for the purpose hereinafter specified. The bed C also has the incline d^9 arranged at the back of the bed or table or upon one side thereof, as may be desired, to be in line with the holes d^8 , and the end of the pin or stud d^6 of the plate d^5 is adapted to ride upward upon it as the plate or block D is rotated. This causes the plate d^5 to be lifted relatively to the die-block and to move the compressed or formed heel-blank outward therefrom. The block or plate D has a circular recess d^{10} in continuation of the holes d^8 , into which the lifting-wedge extends. Each die-block D' is held to the plate or holder D by buttons D² or in any other desired way.

E is a cross-head, which is provided with a reciprocating movement above the dies in any desired way. I prefer that described in the Henderson patent, Reissue No. 10,589, which comprises, substantially, a crank e , connected with the pulley-shaft e' by pinions and gears, and carrying a pitman e^2 , which is guided at its lower end in the guides e^3 , carried by a lower cross-head e^4 , which is connected with the upper cross-head E by means of the rods e^5 . A slide-block e^6 , operated by a treadle e^7 in one direction and a spring in the opposite direction, makes the connection between the end of the pitman and the lower cross-head—that is, the block being pushed into the line of movement of the pitman, which is constantly reciprocating, causes both the cross-heads E and e to be reciprocated, and at the end of the upward movement of the heads the slide-block is automatically withdrawn by the spring, and another reciprocation does not take place unless it is again moved into operative position with the pitman. There are also used springs for holding the cross-heads in their highest position. Upon this head E is mounted the rotary head F, having two or more arms f .

I have represented in the drawings the head provided with four arms, and each arm carries a heel-seat former f' , which preferably comprises a plate f^2 , having a lower operating-surface f^3 , the reverse of the shape which it is desired to form in the heel-seat surface of the heel-blank, and this plate is adapted to be attached to the block f^4 by

tongues which slide into guideways f^5 formed therein, and the block f^4 is made vertically adjustable by means of the screw f^6 .

In Figs. 6 and 7 I have represented the cross-head as provided with one fixed arm and a former instead of a rotary head. I prefer the rotary head, however, because it enables me to carry in the machine, in position for immediate use, as many different sizes or forms of formers as there are arms, and also because by it I can form a heel-seat by progressive formation—that is, by the use of two or more of the formers in succession, the first to form a portion of the heel-seat cavity, the second another portion, and the third to finish, or the second to finish, if desired—that is, any given numbers of formers may be used in succession in this way, and the heel-seat formed and the heels solidified by their successive action; and in this regard I would say that the formers brought successively in use may vary in size and shape according to the form of the heel-seat or heel-blank which it is desired to produce. I would also say that in some cases a stationary die-block may be used instead of one mounted upon a rotary plate or block, in which event the spindle or stem of the movable lifter may bear upon a spring sufficiently powerful to lift it and press the heel-blank from the die. (See Fig. 9.)

The operation of the machine is as follows: The heel-blank is placed in the die-cavity by a boy, if a rotating table is used, and moved under the former. The former is then caused to make a reciprocation, compressing the heel-blank in the die and forming the heel-seat. The die with the compressed heel is then moved and another one brought into place, the plate or block carrying the die-blocks being rotated in succession over the wedge-lifter, which causes the diaphragm contained in each die to be lifted in succession and the compressed heel-blank to be stripped from the die. Where the heel-blank is submitted to two or more forming operations, after the first reciprocation of the rotary head with a former of one size is made, the rotary head is turned to bring another former into place, and it is again reciprocated, and this second reciprocation may further solidify the heel, or it may simply act to further form the heel-seat, or it may do both. The third and fourth heel-formers may be used, if desired.

To increase the compression of the blank, it is simply necessary to move the block holding the former downward by means of its adjusting-screw.

To register each die-block in position, I form in the under surface of the rotary block D the tapering holes g and form in the base C a recess for the spring-pin G, which is adapted to be moved upward vertically by the spring g' , which has a conical upper end, which fits the conical recess g .

Having thus fully described my invention,

I claim and desire to secure by Letters Patent of the United States—

1. The combination herein described, in a heel forming and compressing machine, of a bed block or support C, a movable die-block holder or plate D, mounted thereon, and die-blocks D', open at their tops, supported by said movable plate or holder, the said die-blocks having no vertical movement, in combination with a reciprocating head carrying one or more heel-seat forming and pressure blocks, as and for the purposes specified.

2. The combination, in a heel forming and compressing machine, of a bed C and a movable die-block holder or plate D, mounted upon said bed C, having two or more die-holders, with die-blocks D', each of which has a die-cavity open at its top, and the mechanism coacting therewith, as specified, as and for the purposes described.

3. The combination, in a heel forming and compressing machine, of a stationary bed having a wedge, a die-holder, a die-block carried by said die-holder, having its mouth or entrance at the top provided with a diaphragm operated by the wedge on the bed, a reciprocating head, and a heel-seat forming and compressing block carried by said head, substantially as described.

4. The combination, in a heel compressing and forming machine, of a bed block or support for a die-block, said die-block, and a reciprocating head carrying two or more heel adjustable compressing and seat-forming blocks adapted to be brought successively into operative position by the mechanism specified, as and for the purposes described.

5. The combination, in a heel forming and compressing machine, of a bed block or support upon which is mounted a die which of itself is stationary, the said die open at its top, a reciprocating head, a heel-seat-forming block carried by said head, and means, as described, for varying or adjusting the vertical position of the former in relation to said head, as and for the purposes described.

6. The combination of the bed C and the rotary die-holder block or plate D, having the die-block recesses d' , holes d^8 , and recess d^{10} , with the die-blocks D', movable diaphragms d^5 , having the stems or spindles d^6 , and the lifting-wedge d^9 , substantially as described.

7. The combination, in a heel forming and compressing machine, of the die-block-holding plate D, having a die-block-holding recess d' , with the die-block D' and locking device G, substantially as described.

8. The combination, in a heel forming and compressing machine, of the bed C, the movable block-holder D, the die-blocks D' carried thereby, the holes g in the die-block holder D, and the locking or registering pin G, substantially as described.

9. In a machine for forming and shaping heel-blanks, the combination, with a rotatable die-block, the dies, and the diaphragms

therein having depending spindles or stems, of the stationary bed having a wedge thereon adapted to coact with said spindles or stems of the diaphragms, substantially as described.

5 10. In a machine for forming and compressing heel-blanks, the combination of the rotary head having two or more arms f , the adjusting screw f^6 , the plates or blocks f^4 , having guiding-recesses f^5 , and the plate or

heel-seat former f' , having flanges adapted to engage with the recesses f^5 and provided with convex outer surfaces, as set forth, substantially as described.

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Witnesses:

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E. P. SMALL.