

No. 666,075.

Patented Jan. 15, 1901.

J. VERNON.

MACHINERY FOR MANUFACTURING HORSESHOES.

(Application filed Oct. 16, 1900.)

(No Model.)

4 Sheets—Sheet 1.

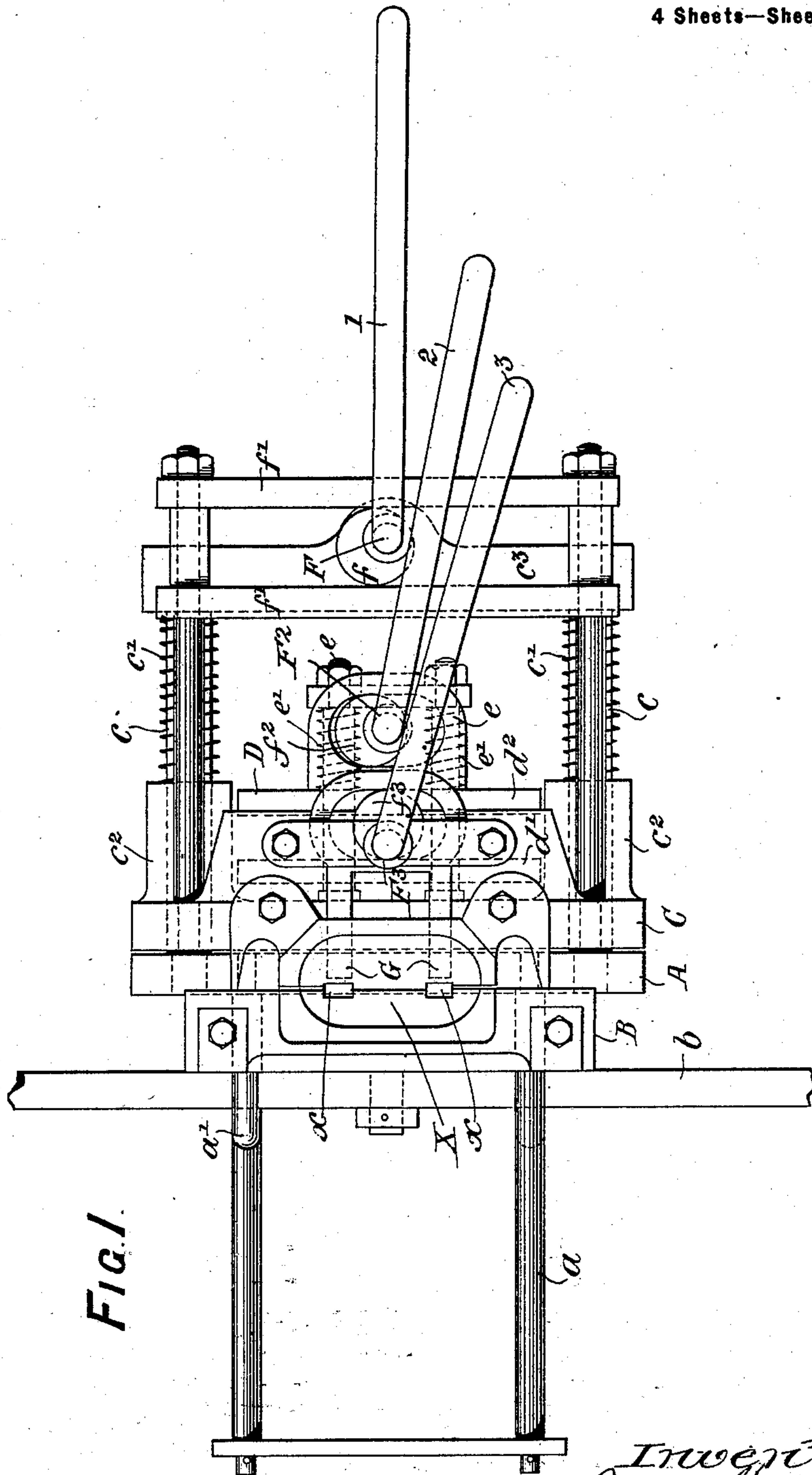


Fig. 1.

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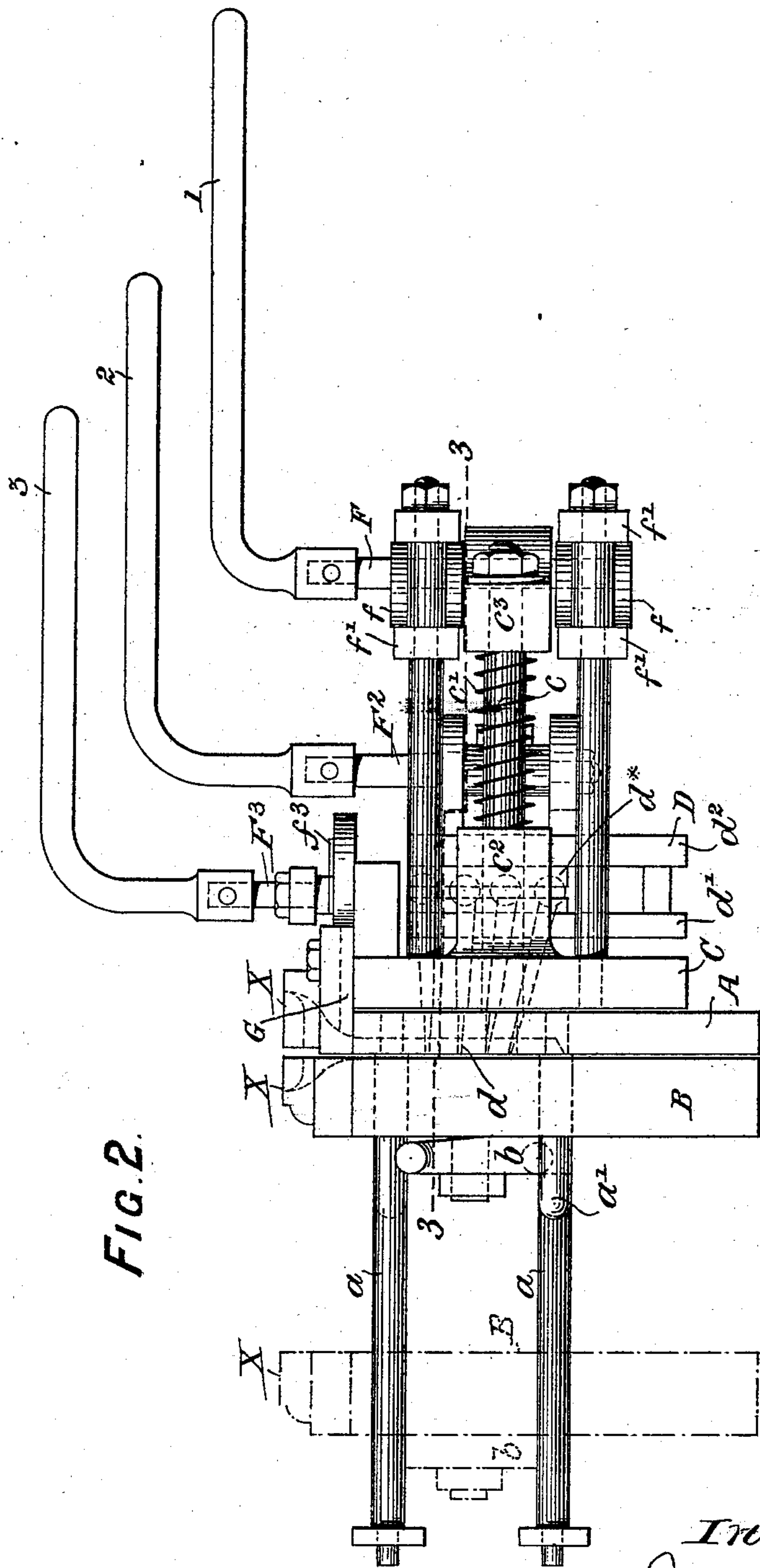
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FIG. 3.

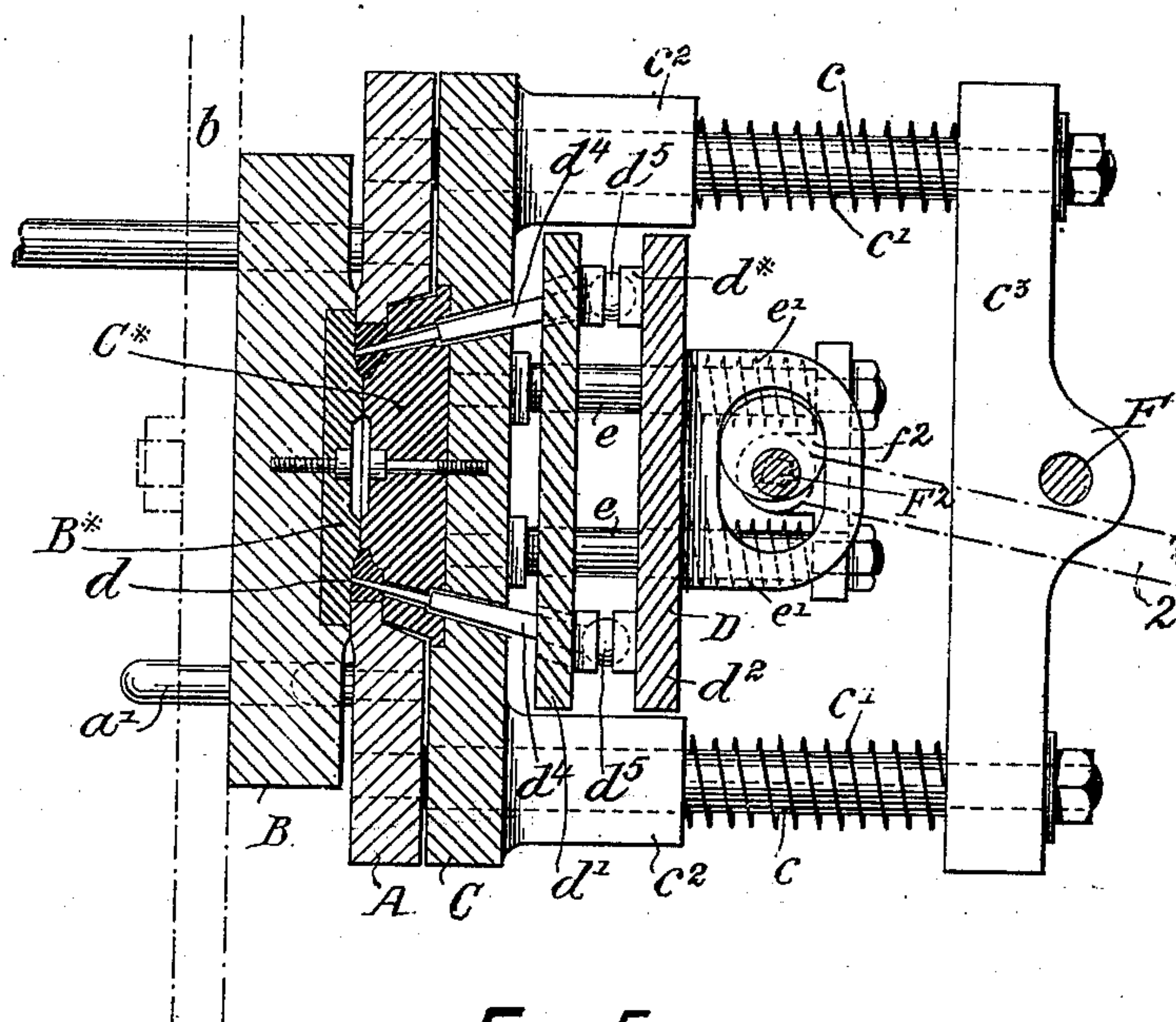
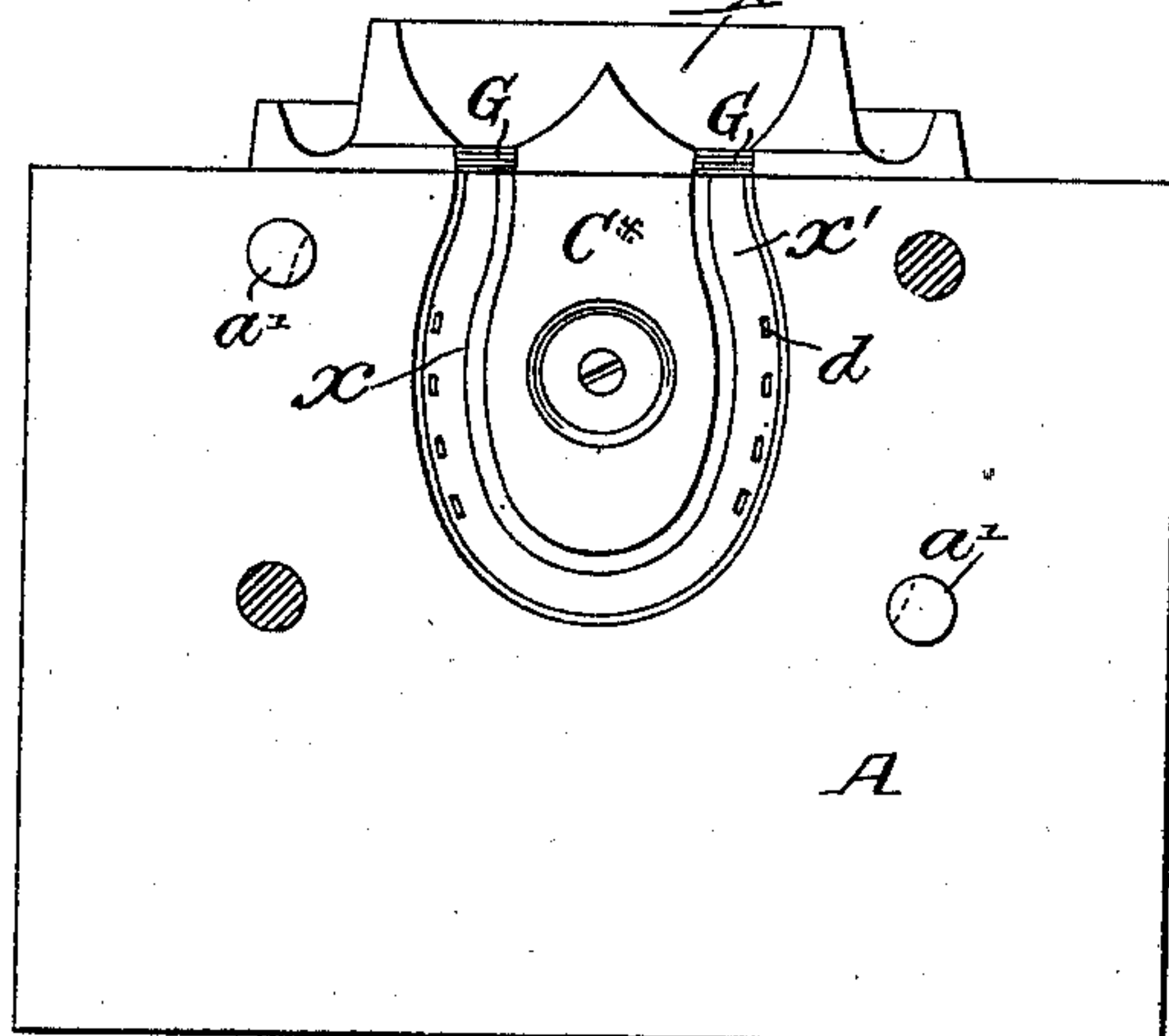


FIG. 5.



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FIG. 4.

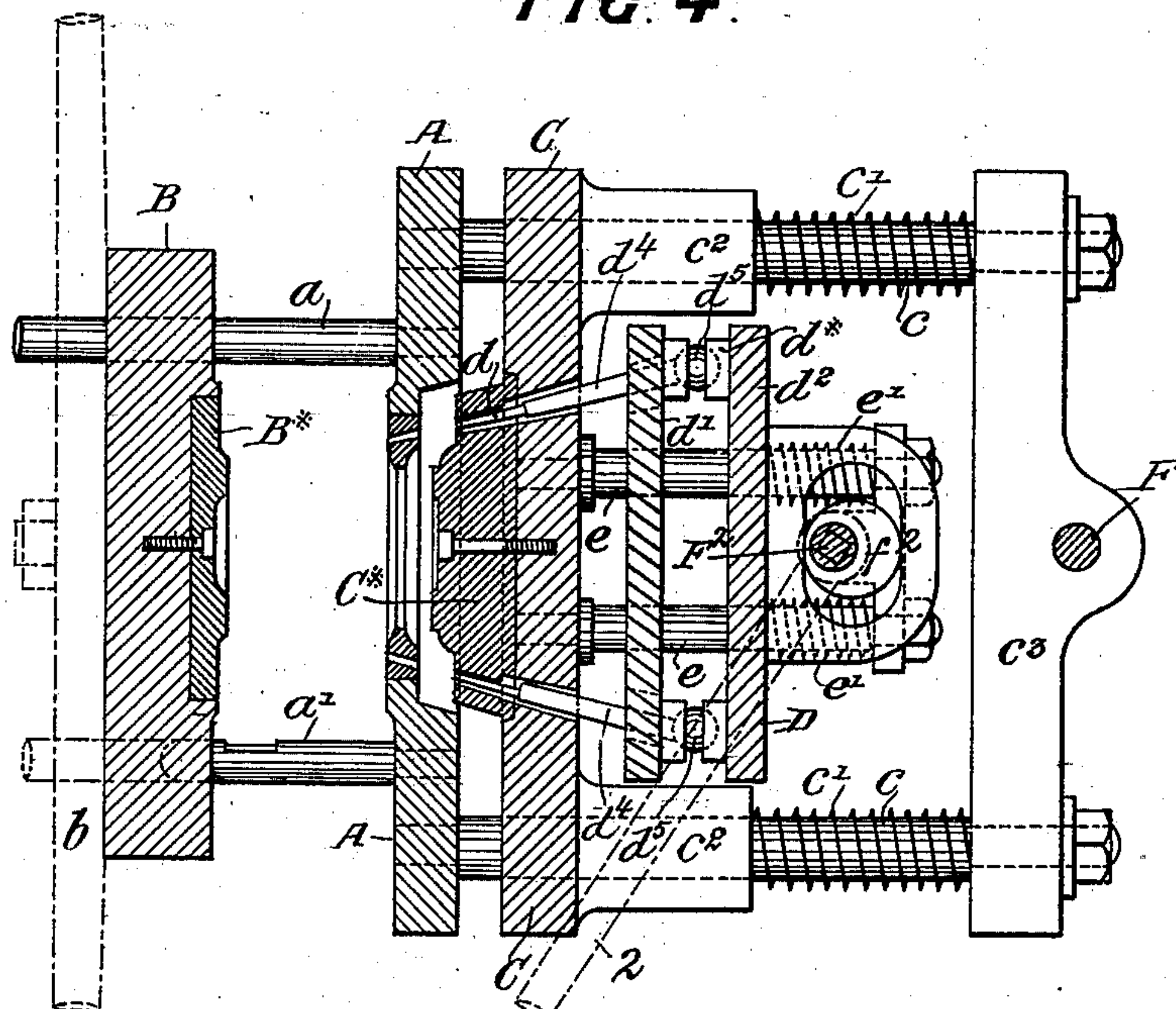
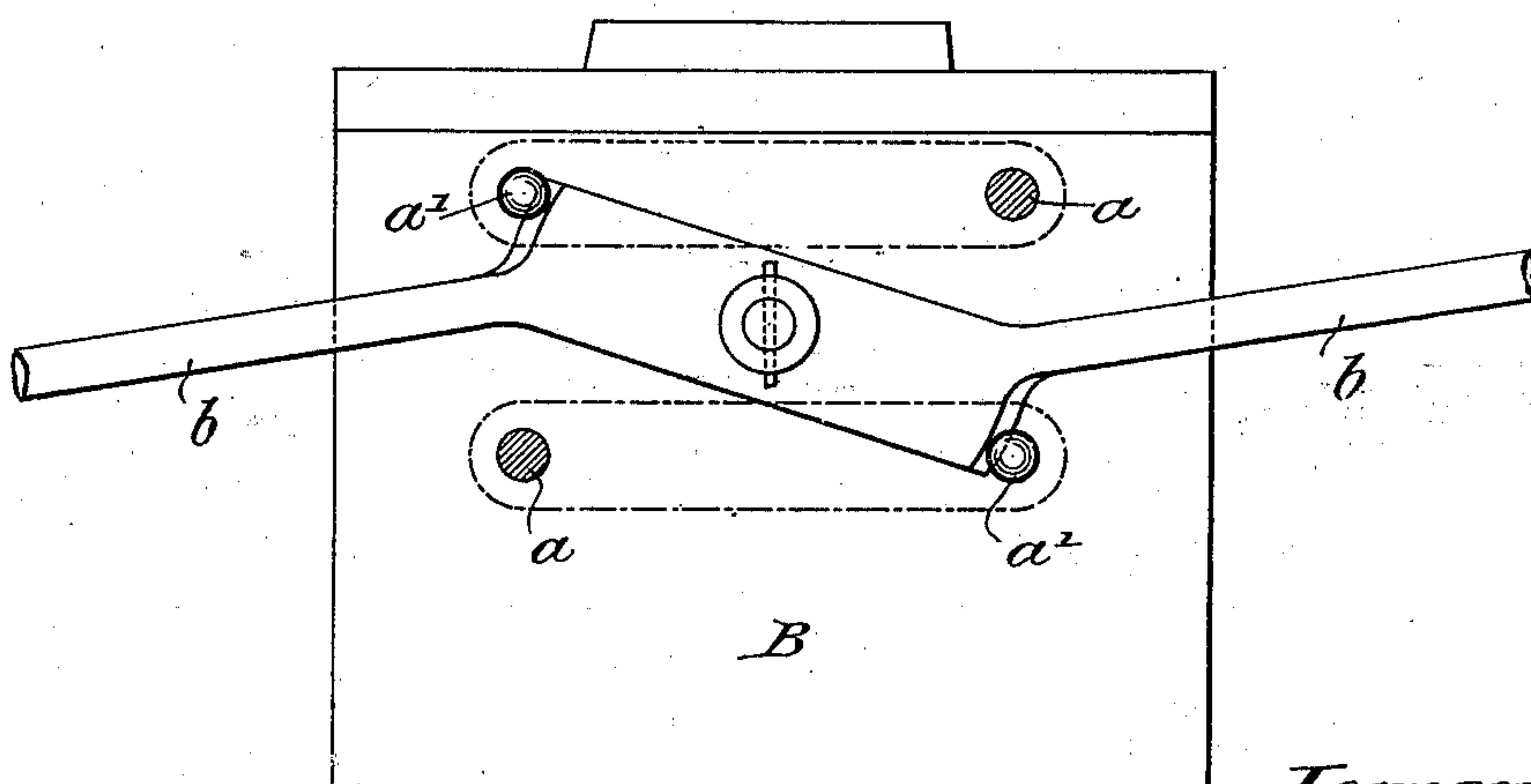


Fig. 6.



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JAMES VERNON, OF NEWTON-STEWART, SCOTLAND.

MACHINERY FOR MANUFACTURING HORSESHOES.

SPECIFICATION forming part of Letters Patent No. 666,075, dated January 15, 1901.

Application filed October 16, 1900. Serial No. 33,233. (No model.)

To all whom it may concern:

Be it known that I, JAMES VERNON, upholsterer, of Newton-Stewart, Scotland, have invented certain new and useful Improvements in Machinery for Manufacturing Horseshoes, of which the following is a specification.

The present invention has reference to machinery for use in the manufacture of cast steel or iron horseshoes, and has for its object to insure a better product than has previously been regularly obtained.

Hitherto the chill or metal-mold has been so constructed that there was some difficulty in disengaging the casting therefrom with sufficient rapidity to avoid defects arising from shrinkage while in the mold.

The chills usually employed hitherto have comprised a fixed back part, with the recess for the casting therein, and a movable cover or front, the nail-hole cores being inserted at the proper inclination into the mold through the back part.

According to the present invention the back is movable as well as the front, and there is a center part which retains the casting and supports it externally when the other portions of the mold are withdrawn, which is done immediately the casting is sufficiently set, so that the shrinkage cannot cause damage therein.

In the accompanying drawings I have shown a horseshoe-casting machine embodying my improvements.

Figure 1 is a plan view, and Fig. 2 is a side elevation, of the mold in a closed condition. Fig. 3 is a sectional plan of the mold closed on the line 3 of Fig. 2, and Fig. 4 is a similar view on the same line open. Fig. 5 is a front view of the middle plate of the mold, and Fig. 6 is a front view of the front part or cover.

A is the center or fixed portion of the mold, mounted vertically on a solid bracket or framing. (Not shown in the drawings.)

B is the cover, sliding on the rods $a a$, carried horizontally by the plate A.

C is the movable back plate, having an independent sliding movement on the horizontal rods $c c$, carried by the back of the center plate A.

The mold is formed in the portions or plates A and C, the former providing the external circumference and the latter the inner cir-

cumference and back. The cover B completes the chill by inclosing the front. The mouth or gate X of the runner-hole x is furnished by an upward extension of the parts B and C. The nail-hole cores d , of which there are eight, (see Fig. 5,) project through the back plate C in inclined directions. (See Figs. 3 and 4.) These cores are carried on stems d^1 , jointed to a frame D, which frame is capable of sliding backward and forward on rods $e e$, fixed in the back of the plate C.

The frame D consists of two plates $d' d^2$, braced together face to face, a short distance apart. The former plate is pierced to permit the free passage of the stems d^1 of the cores d . The joint connection of the core-stems to the frame is effected by means of loose socket-pieces d^* engaging with balls d^5 on the core-stem ends, Figs. 3 and 4. The stems can rock freely in the sockets, and the latter themselves can move to and fro between the plates as occasion demands, the socket-pieces d^* being simply placed between the faces of the plates $d' d^2$, which, as above stated, are braced or tied together face to face, and the socket-pieces are held in position by the balls d^5 , while free to slide on the faces of the plates $d' d^2$ as the core-stems rock. The extreme positions of these socket-pieces in their movement between the plates $d' d^2$ are shown in Figs. 3 and 4.

The movement of the cover B is effected by the double-handled lever b , which is pivoted centrally thereto. (See Fig. 6.) By means of this lever the cover B may be drawn out into the dotted position of Fig. 2 or thrust home into the drawn position, where it may be locked by engaging the lever with the studs $a' a'$, projecting through the cover B from the plate A. (See Fig. 6.) The back part C is normally pressed up against the fixed plate A by the springs c' , which embrace the rods c and bear against the fixed cross-head c^3 , carried by the rods c and the bosses c^2 on the back of the plate C. To withdraw the plate C, a cam device is employed operated by a handle 1. The cam device comprises a vertical spindle F, passing through the fixed cross-head c^3 and carrying eccentrically-mounted bowls f . These bowls engage with portions of a rectangular frame f' , attached to the plate C, and thereby with-

draw the plate C when the eccentrics are rotated.

The portion or lining C* of the back plate C, which forms the mold, is preferably made removable, as shown, so that shoes of different patterns may be made in the same machine by merely changing one portion C* for another of different form. Similarly the part B* of the plate B may be also removable.

The handle 2 operates the nail-hole cores *d* by means of a cam device having spindle F² and eccentrically-mounted bowls *f*² and similar to that just described with regard to the plate C. *e' e'* are pressure-springs tending to advance the cores in a forward direction. G is a double-ended chisel for severing the runner from the casting. This chisel G is operated by a handle 3 by means of a cam device having spindle F³ and eccentrically-mounted bowls *f*³, like those already described.

To make a casting, the parts of the mold are put together, as in Figs. 1 and 2, and locked. The metal is then run in, the nail-cores operated, and the back plate C immediately withdrawn. This leaves the casting supported externally in the plate A, so that any shrinkage which takes place in cooling does not tend to bind the shoe in the mold and cause it to crack or split. The casting is prevented from following the back C, when the latter is withdrawn, by the beveled form of the recess in the plate A, which is best seen at Figs. 3 and 4. After the back C has been withdrawn the cover B can be drawn back and the casting removed at convenience. The retirement of the nail-hole cores will immediately precede the withdrawal of the back C, so that the latter will be thereby freed to make a more rapid release of the still-heated casting.

Molds of this description are preferably arranged in batches in the vicinity of a portable ladle by which the molten metal is sup-

plied. A mechanical conveyer for the ladle is preferably furnished.

I claim—

1. A mold or chill for casting horseshoes, comprising three vertical portions, one of which is a fixed middle portion and the others movable toward and from the faces of the fixed middle portion to close and open the mold, and a set of inclined movable cores projecting through one of the portions into the mold for making nail-holes in the casting, substantially as set forth.

2. In a mold for casting horseshoes, the combination with a fixed middle part of the mold, of back and front parts of the mold movable toward and from said middle part to close and open the mold; removable mold portions or linings carried by said back and front parts, and inclined nail-hole cores projecting through the back part into the interior of the mold, substantially as set forth.

3. In a mold for casting horseshoes, the combination with a fixed middle part forming the exterior circumference of the mold, of a back part forming the inner circumference and back of the mold, and a cover inclosing the front of the mold, said back part and cover being movable toward and from the faces of the fixed middle part to close and open the mold, and inclined nail-hole cores projecting through the back part into the interior of the mold, substantially as set forth.

4. In a mold for casting horseshoes having two movable and one fixed portion, a set of inclined nail-hole cores, an operating device for advancing and withdrawing said cores, ball-and-socket attachment for connecting the cores to the operating device whereby movement in a lateral and vertical direction is freely permitted substantially as set forth.

JAMES VERNON.

Witnesses:

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