



(No Model.)

3 Sheets—Sheet 2.

J. E. McCANNA.  
MOLDING MACHINE.

No. 448,987.

Patented Mar. 24, 1891.

Fig 3.

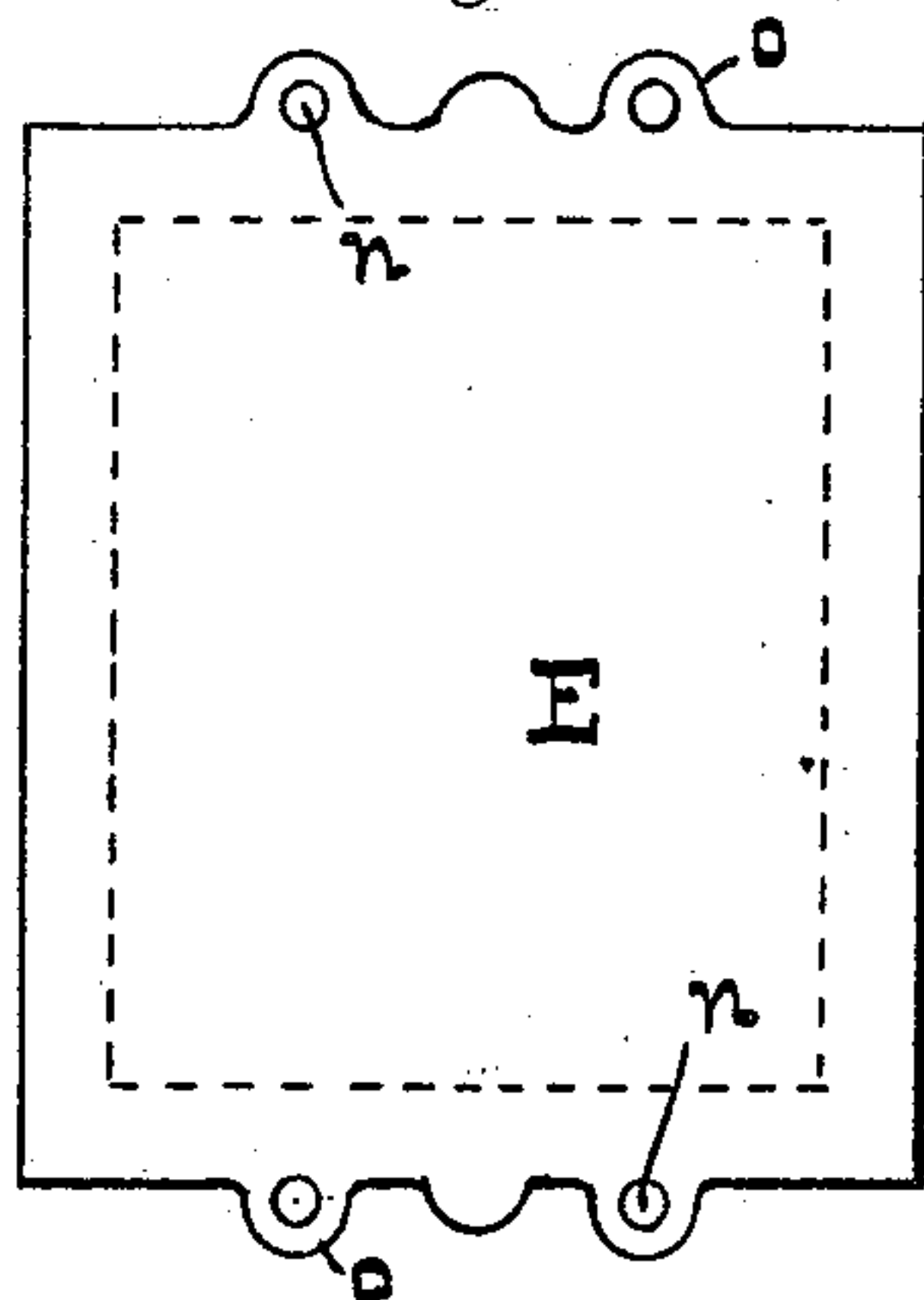


Fig 2.

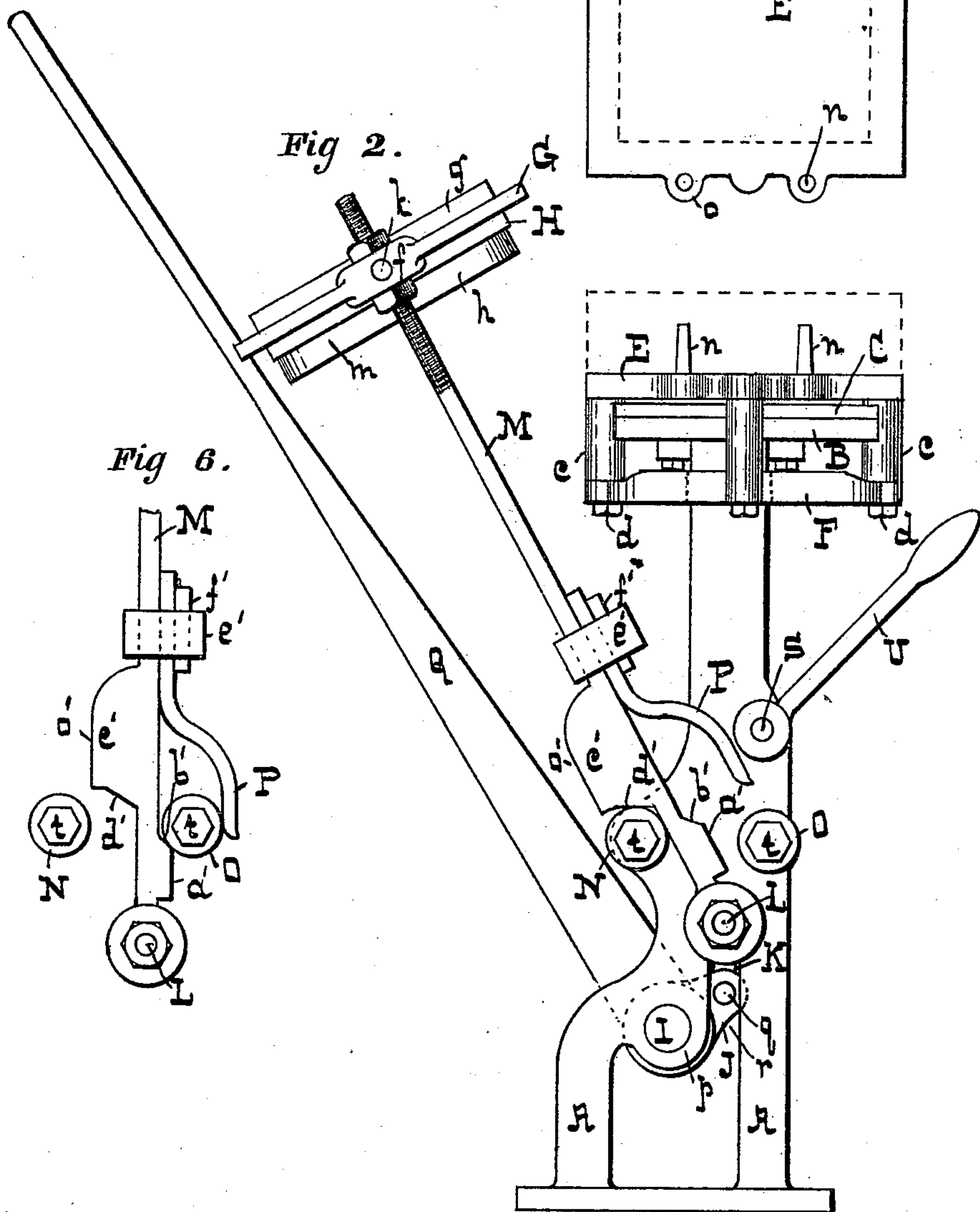
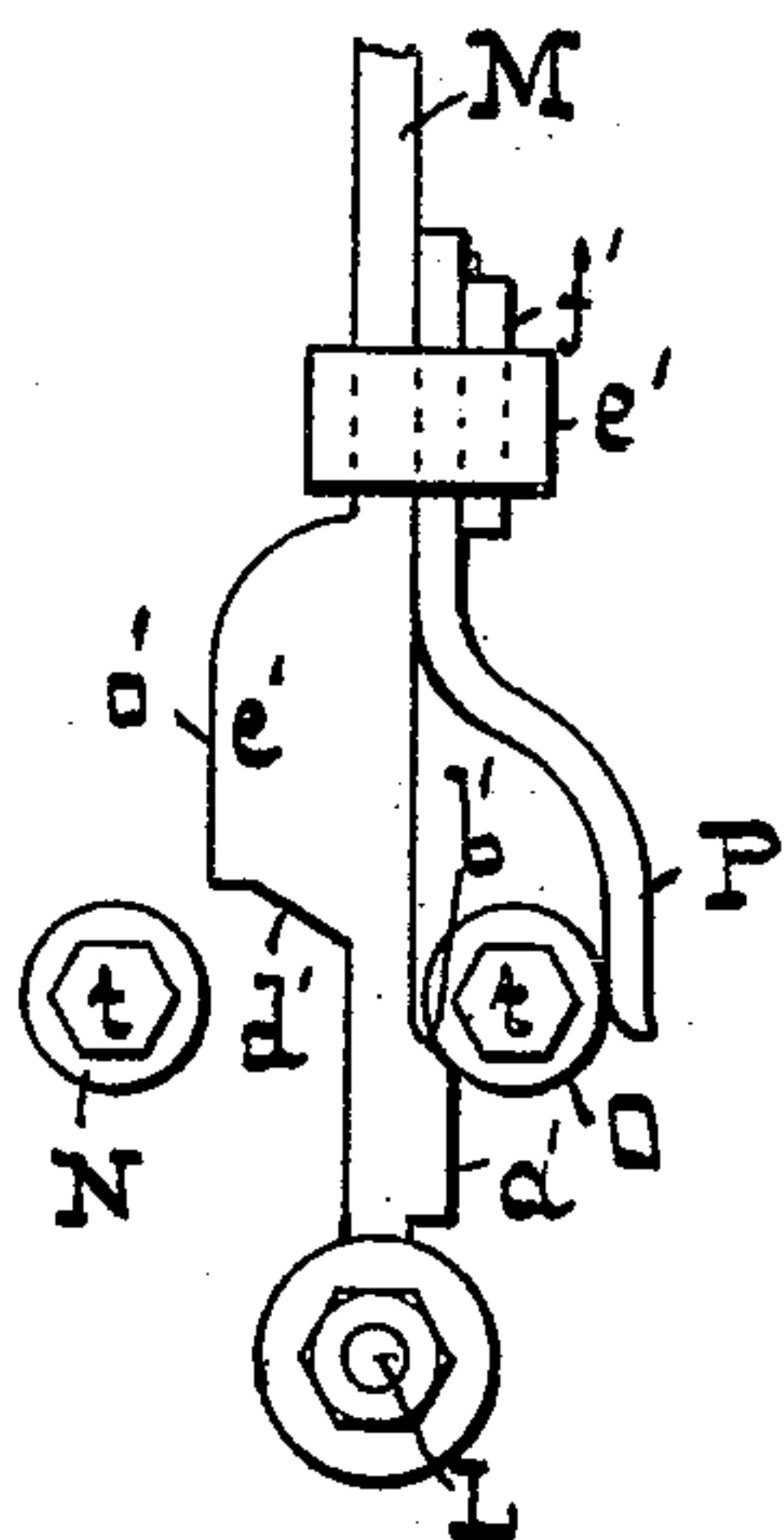


Fig 6.



- WITNESSES -

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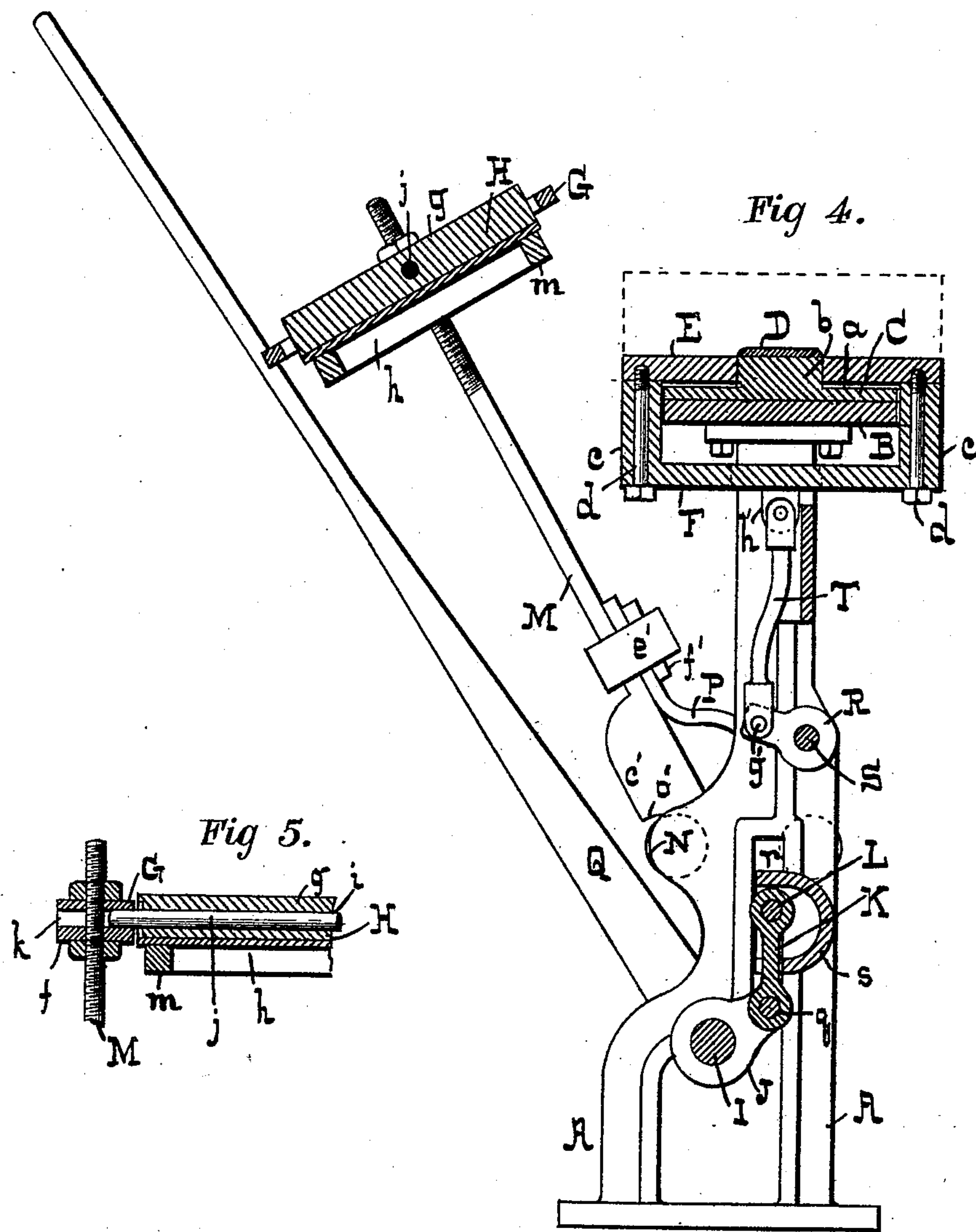
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# UNITED STATES PATENT OFFICE.

JOHN EDWARD McCANNA, OF BALTIMORE, MARYLAND.

## MOLDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 448,987, dated March 24, 1891.

Application filed December 8, 1890. Serial No. 373,885. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN EDWARD McCANNA, of the city of Baltimore and State of Maryland, have invented certain Improvements in Molding-Machines, of which the following is a specification.

In the description of the said invention which follows, reference is made to the accompanying drawings, forming a part hereof, and in which—

Figure 1 is an exterior front view of the machine, and Fig. 2 an exterior side view of the same. Fig. 3 is a top view of a part of the machine, and Fig. 4 a central vertical section of Fig. 2. Figs. 5 and 6 are details of the invention.

A is the frame of the machine, having a branched lower end, and terminating at the upper end in a plate B.

C is the pattern-plate bolted to the plate B, having on its surface *a* a projection which corresponds in outline with the pattern to be molded. In the present case only one projection *b*, which is cylindrical in shape, is employed and upon it is the pattern D, consisting of a circular disk.

E is the face-plate, having an opening corresponding in shape to the pattern. In the drawings this opening is circular, so as to make the plate fit closely around the pattern seated on the projection or boss *b*.

F is the base for the face-plate E, and it is slotted so as to admit of its movement independently of the frame A. The slots are shown in dotted lines. It has four lugs *c*, through which bolts *d* pass, and these bolts secure it to the face-plate. Of course it will be understood that when a different pattern is to be molded a different face-plate is employed. In other words, the face-plate must in all cases conform in shape of opening to the pattern.

The face-plate E and its base F, which are bolted together, have a vertical movement for a purpose hereinafter described. When the face-plate is at its lowest position, as shown particularly in Fig. 4, its upper surface is flush with the top of the pattern-boss and the pattern D projects its full thickness above it.

G is the rammer-frame consisting of a bar bent into a rectangle with lugs *f* at two of its

sides. Within this frame is supported the rammer H, which consists of the board *g* and the tucker *h* secured together. The board *g* has a hole *i* extending transversely of it, and in it is placed a rod *j* with its ends in holes *k* in the lugs *f*. By means of this pivotal rod *j* the rammer H may be turned on its axis, so as to bring either its flat side or the side having the tucking-flanges *m* over the machine proper.

The flask in which the mold is made is shown only in dotted lines in Figs. 3 and 4; but the pins *n* which enter lugs on the flask are shown in Figs. 2 and 3. It will be understood that the flask also has pins, which enter lugs *o* on the face-plate E.

I is the main shaft of the machine, supported in bearings *p* in the frame A.

J J are cranks on the shaft I, connected by means of the pin *q*.

K is a link which connects the crank-pin *q* to a cross-head L, adapted to have a vertical sliding movement within slots *r* in the two branches of the frame A. This cross-head is protected from the action of sand by means of a cover *s*, which is slotted at its lower edge to admit of the movement of the link K.

M M are bars which at their upper ends pass through the lugs *f* of the rammer-frame, and at their lower ends they are loosely connected to the cross-head L.

N and O are rollers on studs *t*, which project from the lugs *u* on the frame A. Each bar M has a projection *a'* on one side thereof, with an inclined upper face *b'*, and on the other side of the bar is another projection *c'*, with an inclined lower face *d'*, for purposes hereinafter described.

P P are guiding-hooks attached by means of clamps *e'* and keys *f'* to the bars M. The object of these hooks will hereinafter appear. Q is a hand-lever keyed to the main shaft I, by means of which the rammer is made to have a reciprocating movement.

As before stated, the base-plate F, carrying the face-plate E, has a vertical movement, and this is effected through the medium of a crank R on a shaft S, supported in suitable bearings in the frame A, a link T leading from the crank-pin *g'* to lugs *h'* on the under side of the base-plate, and a hand-lever U. In order that the face-plate E may have a



steady movement as the lever U is operated, the base F is provided with two guide-bars V, which slide within bearings formed in a downward projection W of the frame A.

5 X is a sand-hopper supported in any suitable manner from the ceiling of the foundry or from the machine. This hopper has a hinged bottom *m'* and a sand-gate *n'*. The cubical content of the space in the hopper  
10 between the gate and the hinged door is designed to be slightly more than that of the flask, so that when the hopper is filled and the gate and hinged door are closed the flask may be filled by merely opening the said door.  
15 Supposing the various parts of the machine to be relatively placed as shown in the drawings, the operation of molding is as follows: The pattern and face-plate are first dusted over with some parting material, such as  
20 plumbago. A flask is then placed on the face-plate and charged with sand either by shovel or from the hopper X. The hand-lever Q is now drawn forward and operating through the cranks J, their crank-pin *q*, link K, cross-  
25 head L, and the bars M draw down the rammer-frame G and its rammer H. The downward movement of the rammer at first or before it reaches the flask is at an angle with reference to the vertical center line of the  
30 machine; but the inclined faces *d'* of the projections *c'* coming in contact with the rollers N cause the bars M, with the rammer, to swing forward until the points of the guide-hooks P come in contact with the rollers O,  
35 and the said bars are thereby brought into a vertical situation. The position of the bars at this time is illustrated in Fig. 6. The remaining portion of the movement of the bars effected through the hand-lever is now verti-  
40 cal, and the tucker-section of the rammer being underneath or down the flanges *m* of the tucker enters the filled flask near to its sides and compress the sand at that place. The lever Q is now thrown back, which at  
45 first merely raises the rammer; but as the inclined faces *b'* of the projections *a'* come in contact with the rollers O the bars M are thrown backward, the guiding-hooks P rising from the said rollers and admitting of that  
50 movement. At the same time the straight faces *o'* of the projections *c'* pass above the rollers N and allow of the completion of the said backward movement. The rammer now assumes its original position. The rammer  
55 is next turned or reversed in position, which brings the flat side down, and after more sand has been added to the flask, so as to fill the space made by the tucker-flanges, the ramming operation as described is repeated.  
60 After the hand-lever Q is a second time thrown back, the compressed sand projecting

above the flask is trimmed off and the face-plate and flask raised from the pattern. This is accomplished by pulling down the hand-lever U, which, through the medium of the  
65 crank R and link T, which is pivoted to the base of the face-plate, raises the face-plate and its flask containing the mold. While the hand-lever U is in its depressed position the flask is covered by a follow-board, lifted from  
70 the face-plate, turned over, and placed aside. The hand-lever U is now raised, which brings the face-plate into its original position, another flask is laid on the face-plate, and the molding operation, as before described, re-  
75 peated.

It will be understood that the pattern is so arranged on the pattern-plate that the flasks all match, and any two of them may be clamped  
80 together to form a complete mold.

I claim as my invention—

1. In a molding-machine, the combination of a frame, a rammer, bars attached at their upper ends to the said rammer, a cross-head, to which the lower ends of the said bars are  
85 pivoted, a projection on the forward side of the said bars having an inclined upper face, and a roller in the path of the said projections, whereby in the elevation of the cross-head the inclined surfaces of the said projec-  
90 tions come in contact with the said rollers, and the said bars with the rammer are thrown back, substantially as specified.

2. In a molding-machine, the combination of a frame, a rammer, bars attached at their  
95 upper ends to the said rammer, a cross-head, to which the lower ends of the said bars are pivoted, a projection on the rearward side of the said bars having an inclined under surface, and a roller in the path of the said projec-  
100 tions, whereby in the depression of the said cross-head the inclined surfaces of the said projections come in contact with the said rollers, and the said bars with the rammer are thrown forward, substantially as specified. 105

3. In a molding-machine, the combination of a frame, a rammer, a pair of bars attached at their upper ends to the said rammer, a cross-head to which the lower ends of the  
110 said bars are pivoted, hooks on the forward side of the said bars, and rollers in the path of the points of the said hooks when the said bars are in a backward inclined position or approaching a vertical position, which hooks as  
115 the cross-head is depressed pass over the said rollers and draw the said bars to a vertical position, substantially as specified.

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Witnesses:

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