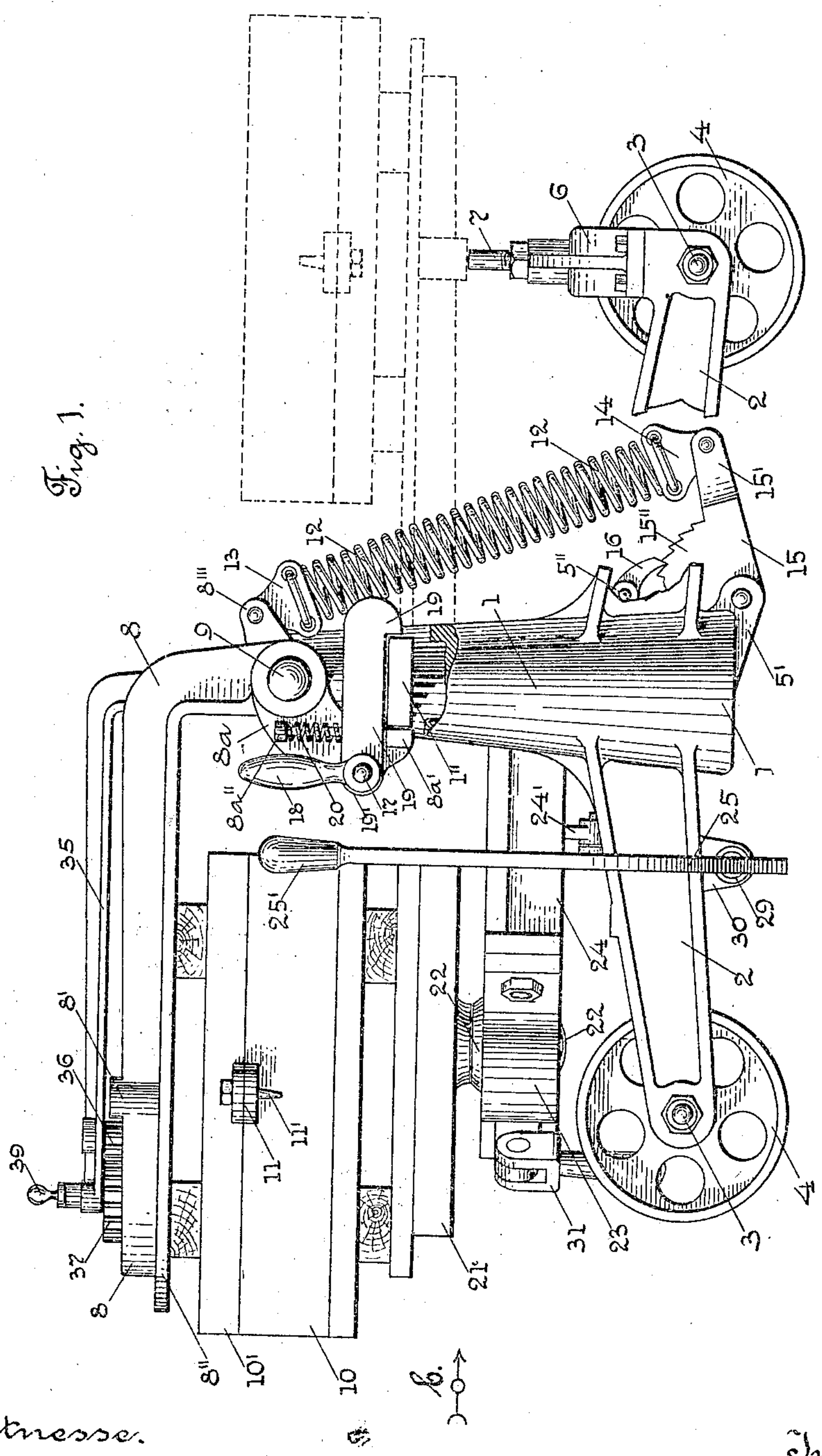


F. A. WHITMORE.
MOLDING MACHINE.
APPLICATION FILED JAN. 7, 1907.

914,770.

Patented Mar. 9, 1909.
2 SHEETS—SHEET 1.

Fig. 1.



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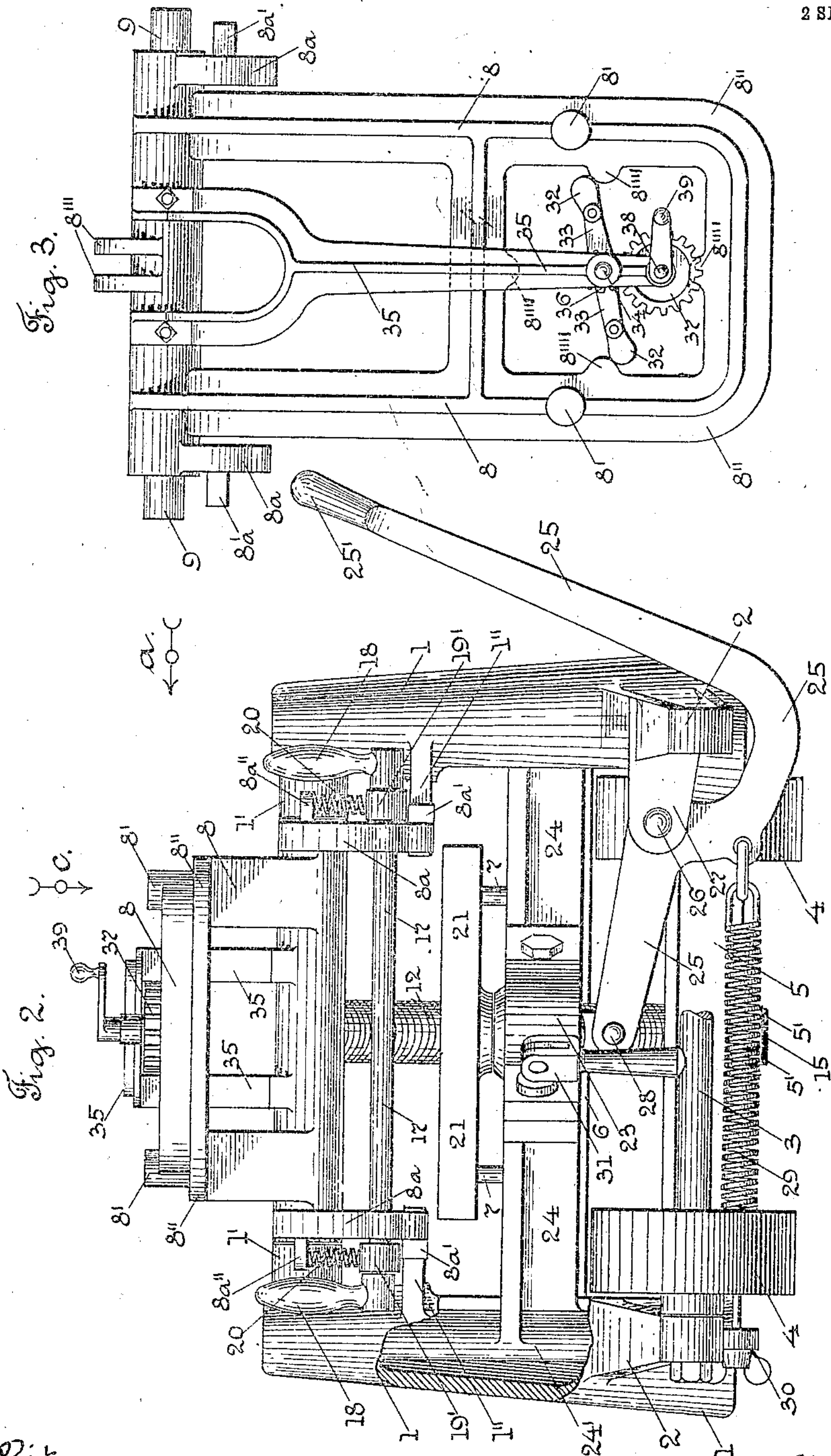
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UNITED STATES PATENT OFFICE.

FRED A. WHITMORE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, A CORPORATION OF MASSACHUSETTS.

MOLDING-MACHINE.

No. 914,770.

Specification of Letters Patent,

Patented March 9, 1909.

Application filed January 7, 1907. Serial No. 351,105.

To all whom it may concern:

Be it known that I, FRED A. WHITMORE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Molding-Machines, of which the following is a specification.

My invention relates to molding machines, and particularly to that class of molding machines known as rock-over molding machines.

The object of my invention is to improve upon the class of molding machines referred to as ordinarily made, and to provide a rock-over molding machine of improved construction, and in which there is no vertical movement of the mold carrier, and means are provided for automatically locking in position the mold carrier after it has been rocked over, and means are provided for moving up and adjusting the lower table under the mold, after it has been rocked over, and for clamping the same in its adjusted position, and means are provided for rapping the pattern mold to loosen the sand from the pattern, all as will be hereinafter fully described.

I have shown in the drawings sufficient portions of a molding machine, of the class referred to, embodying my improvements, to enable those skilled in the art to understand the construction and operation thereof.

Referring to the drawings:—Figure 1 is a side view of a molding machine embodying my improvements, looking in the direction of arrow *a*, Fig. 2; the upper part of one of the upright stands or columns of the machine is partially broken away to illustrate parts otherwise concealed, and one side of the frame is broken out to illustrate parts otherwise concealed. The broken lines show the position of the mold carrier, and mold before they are turned over. Fig. 2 is a front view of the parts shown in Fig. 1, looking in the direction of arrow *b*, same figure, showing one of the upright stands or columns partially broken away, and a wheel shaft broken away, and one wheel left off, and, Fig. 3 is a plan view of the mold carrier detached, looking in the direction of arrow *c*, Fig. 2.

The frame-work of the machine is made of metal, and preferably comprises two hollow upright stands or columns 1, each having side extensions or arms 2, extending out in

opposite directions, and forming the supports for different parts of the machines. Each pair of arms 2 has supported at their outer ends a transverse shaft or rod 3, having in this instance loosely mounted thereon at each end a wheel 4.

The two upright stands or columns 1 are connected at their lower ends by a transverse girth 5, see Fig. 2. A transverse girth or cross bar 6 extends over one pair of wheels 4, and is bolted or otherwise attached at each end to one pair of side arms 2. Extending up from the cross bar 6 are two rods or supports 7, adjustable vertically, on the upper ends of which are adapted to rest the mold carrier 8, as shown by broken lines in Fig. 1.

The mold carrier 8 is preferably made of the shape shown in the drawings, and swings on the shaft 9, which is fastened securely into the top of the stand or column 1, to form the pivotal or hinge support for the mold carrier 8. —The mold carrier 8 has in this instance two round blocks or extensions 8' thereon, which are adapted to rest on the upper ends of the supports or pins 7, see Fig. 1. The mold carrier 8 has preferably a side extension or flange 8'' thereon, to which is adapted to be clamped the bottom or pattern holder portion 10' of the mold 10. The mold 10, and its pattern holder 10', may be of any ordinary construction, and are held together, and in proper relative position by bolts 11' passing through ears or lugs 11 on the mold. The mold 10 is adapted to be moved from the position shown by broken lines in Fig. 1, through the pivotal connection of the mold carrier 8, to the position shown by full lines in Fig. 1.

A counterbalance spring 12 is attached at one end, in this instance to a plate 13 which extends between and is pivotally connected to two ears 8''' on the mold carrier 8, see Fig. 1. The lower end of the counterbalance spring 12 is in this instance attached to a plate 14, which extends between the fork shaped end 15' on the lever or arm 15, which is pivotally mounted between ears or lugs 5' on the cross girth 5. The lever 15 has teeth or a ratchet surface 15'' thereon, which are engaged by a pawl 16 which is pivotally mounted on ears or projections 5'' on the cross girth 5. By means of the teeth 15'' on the lever 15, and the pawl 16, the position of said lever 15 may be adjusted, and conse-

quently the tension of the counterbalance spring 12 may be adjusted, to increase or diminish the tension, as desired.

The pivoted end of the mold carrier 8 has two arms or extensions 8^a, thereon, each of which has a side projection 8^{a'} thereon. In the two arms 8^a is loosely mounted a rock shaft 17 which has fast on each end thereof a handle 18. Near each end of the rock shaft 17, in this instance between the handle 18 and the arm 8^a, is fast the hub 19' of a lock latch or catch 19. Each lock latch or catch 19 is adapted to extend over and automatically engage a stationary extension or lug 1'' on the upright stands or columns 1, and a side extension or lug 8^{a'} on each arm 8^a is adapted to engage the opposite edge of the extension or lug 1'', see Fig. 1, when the mold carrier 8 has been rocked over, from the position shown by broken lines in Fig. 1 to the position shown by full lines in Fig. 1. A helically coiled expansion spring 20 is held in this instance between a lug 8^{a''} on the arms 8^a, and the upper side of the lock latches or catches 19, and acts to hold the catch 19 in engagement with the projections 1''. To disengage the lock latches or catches 19 from the extensions 1'', against the action of the springs 20, the shaft 17 is rocked, through the handles 18, to raise the latches 19.

The lower table, which is adapted to have a vertical motion and to be adjusted when it is moved up under the mold 10, after said mold is rocked over, in this instance consists of the table 21 having a ball 22 on its lower part, which extends within a clamp socket 23 on the table support or frame 24, which has the vertically extending portions or guides 24' located within the upright stands or columns 1, see Fig. 2, and adapted to move up or down therein. The table 21 and its support 24, are adapted to be raised and lowered, in this instance, through the movement of a hand-operated lever 25, which in this instance is preferably of the shape shown in Fig. 2, and is in this instance pivotally mounted on a stud 26 on a stand 27 secured to or forming a part of one of the side extensions or arms 2, see Fig. 2. The lever 25 has at one end the handle 25', and at its other end is pivotally attached by a stud 28 to the lug or projection 24' on the lower part of the frame 24 of the table 21.

A counterbalance spring 29, attached at one end to the lever 25, and adjustably connected at its other end to a stationary lug or projection 30 on one side extension or arm 2, see Fig. 2, acts as a counterbalance spring to overcome the weight of the table 21, and allow the table to be moved up more easily. By reason of the ball and socket joint connection, between the table 21 and its support 24, the table 21, by turning the clamp handle 31 of the clamp socket 23, to loosen the clamp, will adjust itself to its

proper position on the underside of the mold. The clamp handle 31 is then turned to tighten the clamp socket 23, and hold the table in its adjusted position.

In connection with the mold carrier 8, I preferably use a rapping mechanism, or means for rapping or moving the mold carrier 8; and with it the mold, to loosen the pattern in the sand. The open frame-work of the mold carrier 8 at its free end, has, in this instance four lugs, or ears 8''' extending inwardly, see Fig. 3, which extend in the path of and are adapted to be engaged by two weights or blocks 32, each pivotally mounted on opposite ends of a lever 33, which is centrally supported and fast on an upright shaft 34, mounted in suitable bearings on the outer free end of a rigid arm or brace 35, which is secured at its opposite end on the pivotally attached end of the mold carrier 8. The shaft 34 has a pinion 36 fast thereon, which meshes with and is rotated by a pinion 37 fast on a shaft 38 mounted in suitable bearings on the end of the arm 35. A handle 39 is also fast on the shaft 38, and is used to rotate said shaft, and through the revolution of the pinion 37 and the pinion 36, to rotate the lever 33, and cause the weights or blocks 32 thereon to engage the lugs or ears 8''' on the mold carrier 8, and rap said carrier, and through the rapping of said carrier shake the mold 10, to loosen and allow the ready removal of the pattern.

From the above description in connection with the drawings, the operation of my molding machine will be readily understood by those skilled in the art. The mold carrier is in the position shown by broken lines in Fig. 1, and the mold having the pattern therein is clamped or secured to the carrier 8, and the sand is placed in the mold and rammed in, and the bottom board is put on, and the parts clamped together in the usual way; the operator then raises the mold carrier 8 with the mold fast therein, and rocks it over on its pivotal support, from the position shown by broken lines, to the position shown by full lines in Fig. 1. The counterbalance spring 12 acts to lessen the weight of the mold carrier and mold, after it has passed its pivotal center. As the mold carrier is rocked over, from the position shown by broken lines, to the position shown by full lines in Fig. 1, the lock latches 19 pass over the extensions 1'' on the columns 1, and act to automatically lock and hold the mold carrier 8 and the mold 10 in its rocked over position, the extensions 8^{a'} on the arms 8^a engaging the extensions 1'' on the columns 1, see Fig. 1. After the mold carrier and mold have been rocked over to the position shown by full lines in Fig. 1, the attendant, after turning the clamp handle 31 of the clamp socket 23 for the ball 22 on the table 21, to release the ball 22, moves up the support 24 of the table

21, and also the table 21, and said table 21, coming in contact with the lower part of the mold 10, adjusts itself to the proper position. The clamp handle 31 is then turned to
 5 tighten the clamp socket on the ball 21, and the attendant, through the rotation of the handle 29 of the rapping mechanism, raps the mold carrier 8 and the mold 10, loosening the pattern in the sand. He then disconnects
 10 the pattern portion of the mold from the flask, and raises the lever 12, and through the lowering of the table support 24 and the table 21, lowers the mold, and allows it to drop away from the pattern. The mold car-
 15 rier 8 is then returned to the position shown by dotted lines in Fig. 1, and the operation is repeated.

It will be understood that the details of construction of my improvements may be
 20 varied if desired.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a molding machine having a mov-
 25 able table, the combination with a mold car-

rier having a rock over movement, of means for automatically locking said carrier in position after it has been rocked over the movable table.

2. In a molding machine, the combination 30 with a table adapted to be raised and lowered under the mold carrier by a manually operated lever, and said lever, and said table having a ball and socket clamp attachment to allow the adjustment or leveling of the 35 table under the mold, and a clamp handle for clamping the socket on the ball to hold the table in its adjusted position, of a mold carrier having a rock over movement, and means for automatically locking the carrier 40 in position after it has been rocked over the movable table, and manually operated means for unlocking the mold carrier, and a counterbalance spring for the mold carrier, and means for adjusting the tension of said 45 spring.

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Witnesses:

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 H. F. PHELPS.