

1,183,769.

J. E. REIGNER.
MOLDING MACHINE.
APPLICATION FILED JULY 25, 1913.

Patented May 16, 1916.
4 SHEETS—SHEET 1.

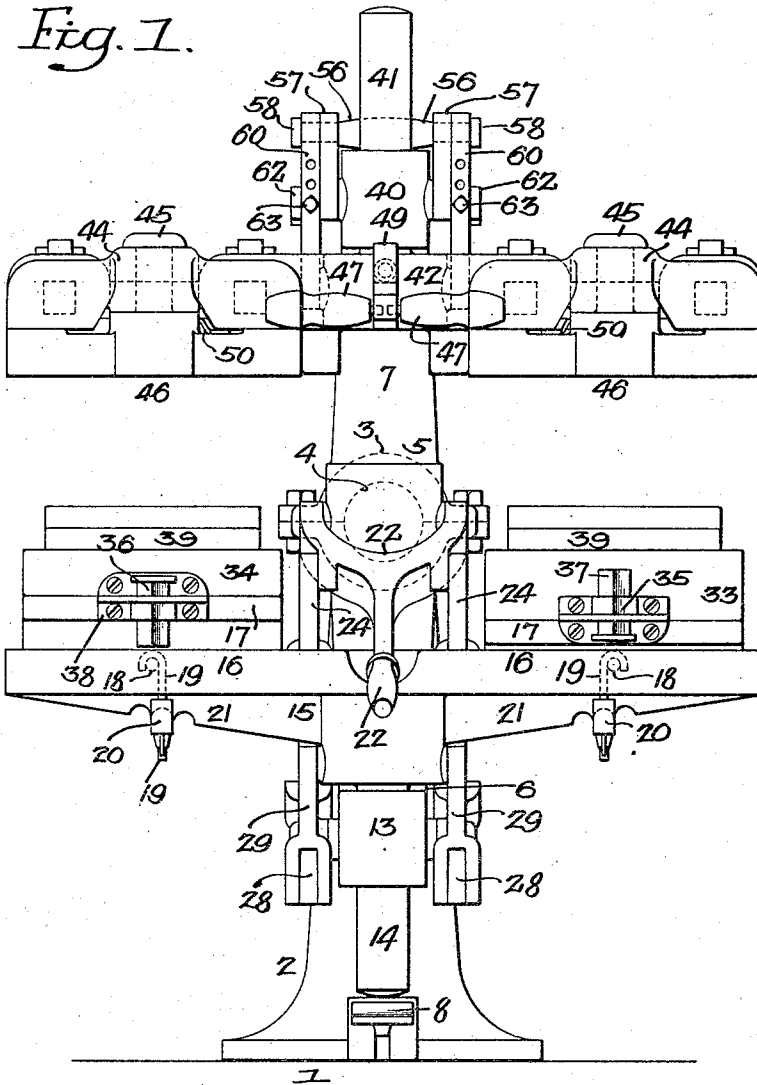
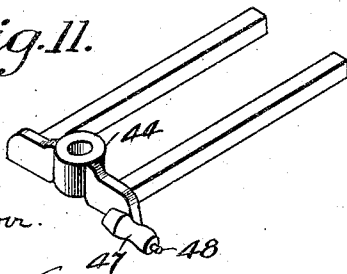


Fig. 11.



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Howard Brown

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 4 SHEETS—SHEET 2.

Fig. 2.

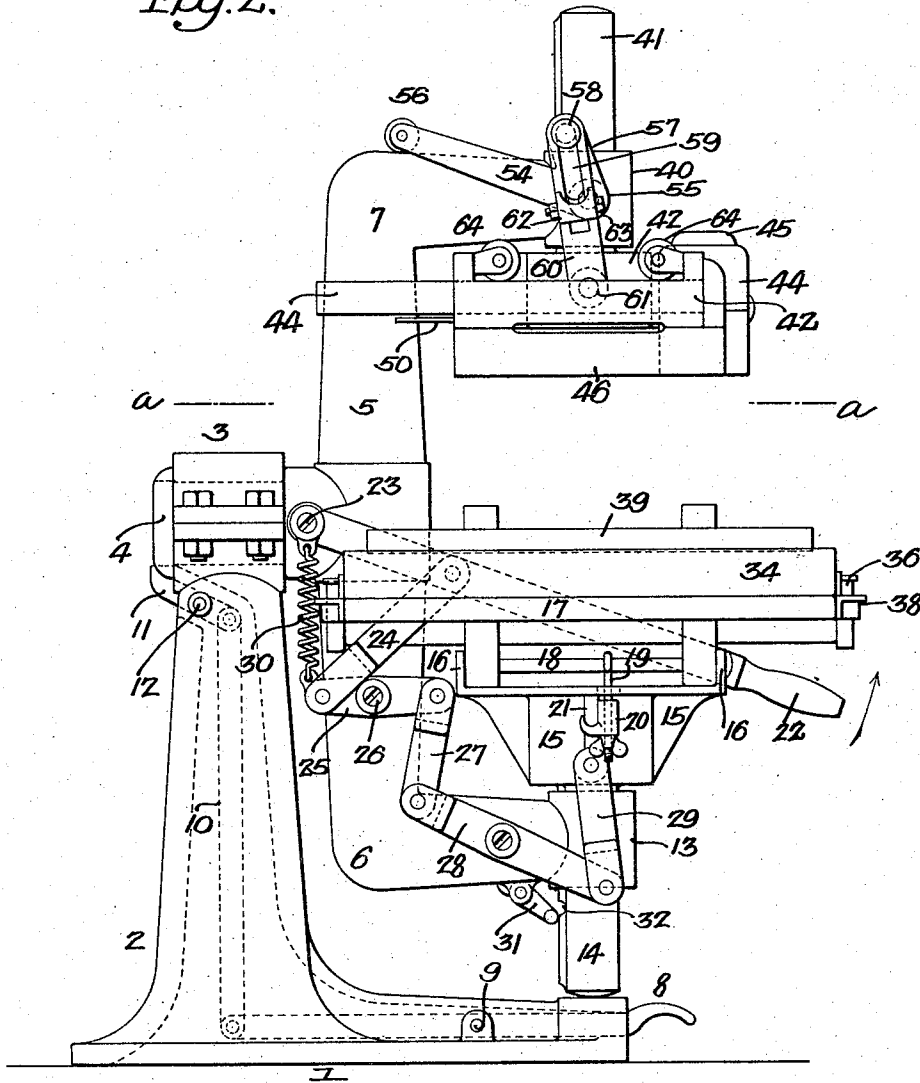
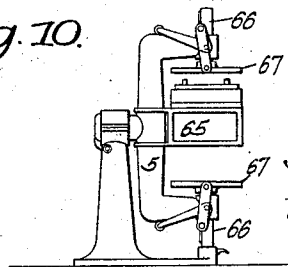


Fig. 10.



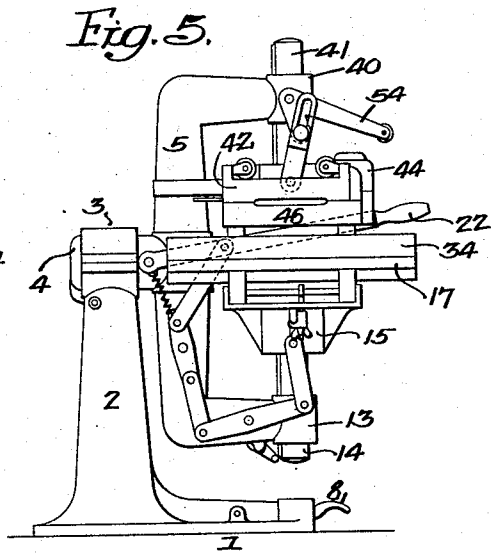
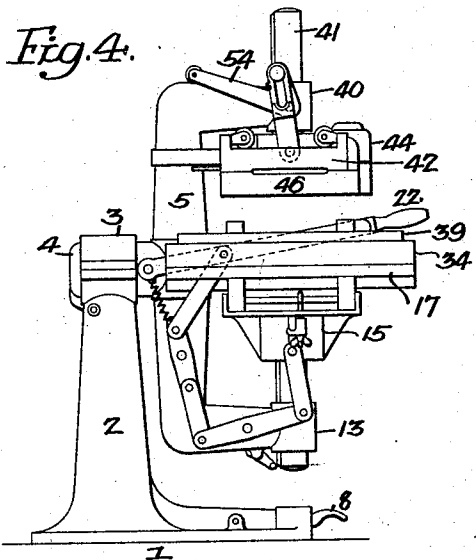
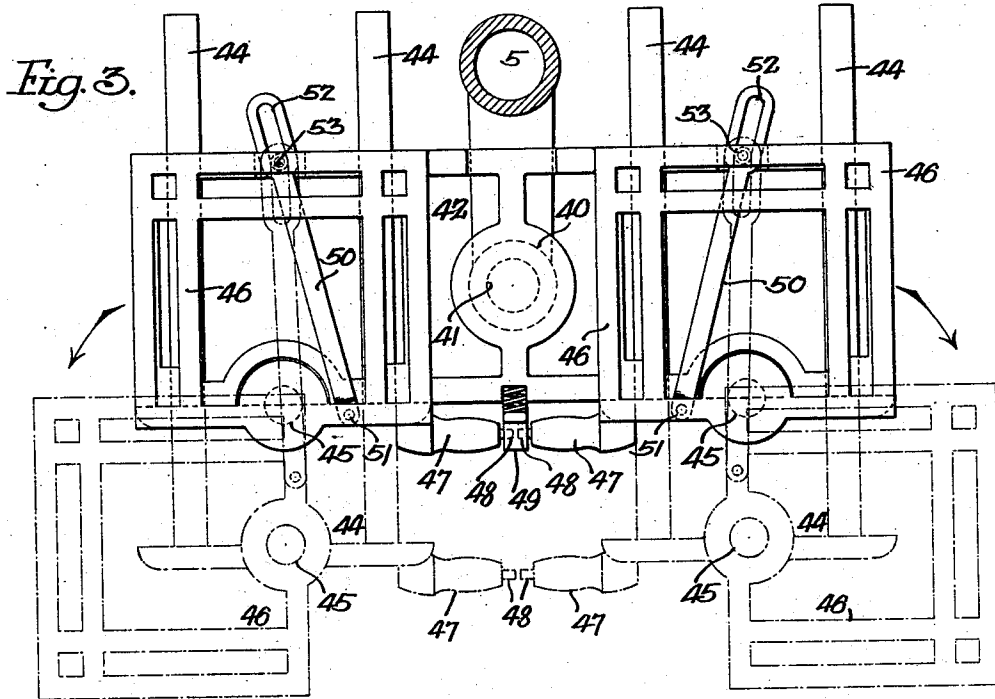
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Fig. 6.

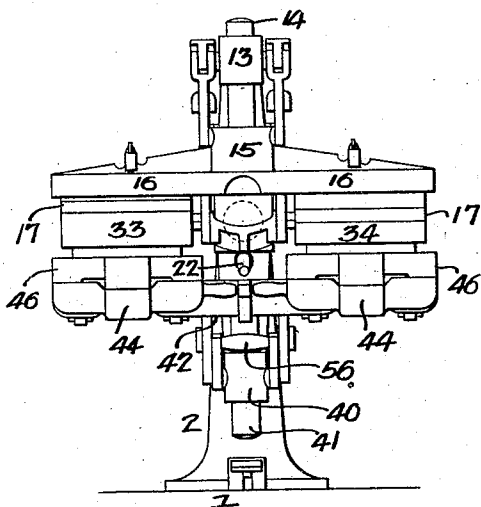


Fig. 7.

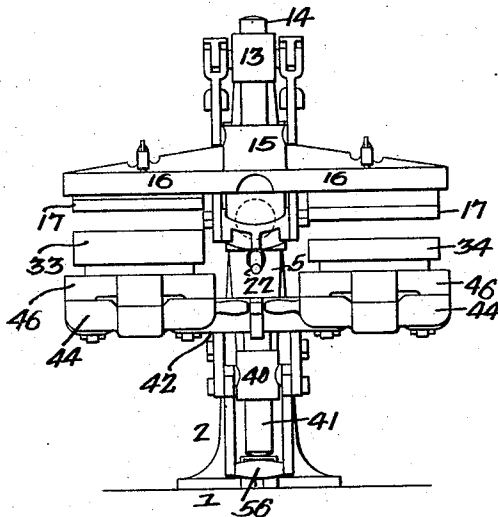


Fig. 8.

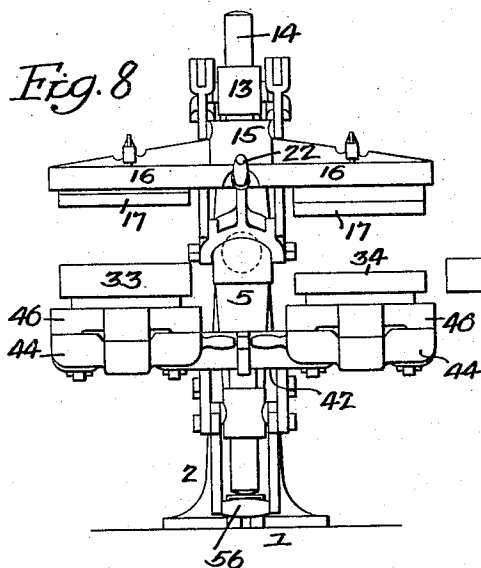
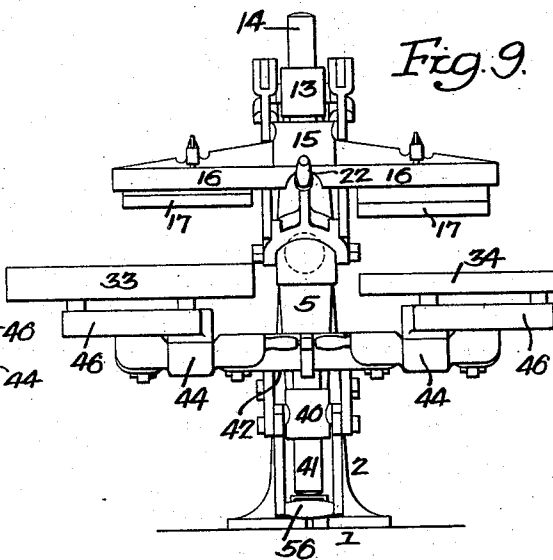


Fig. 9.



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UNITED STATES PATENT OFFICE.

JOHN E. REIGNER, OF POTTSTOWN, PENNSYLVANIA.

MOLDING-MACHINE.

1,183,769.

Specification of Letters Patent.

Patented May 16, 1916.

Application filed July 25, 1913. Serial No. 781,199.

To all whom it may concern:

Be it known that I, JOHN E. REIGNER, a citizen of the United States, residing in Pottstown, county of Montgomery, State of Pennsylvania, have invented certain Improvements in Molding-Machines, of which the following is a specification.

One object of my invention is to construct a molding machine so that both parts of the mold can be made at the same time and by the same operation.

A further object of the invention is to construct the machine in a simple yet substantial manner so that one man can readily operate it and can handle both sections of the flasks.

In the accompanying drawings: Figure 1 is a front view of my improved molding machine; Fig. 2 is a side view showing the parts in the same position as in Fig. 1; Fig. 3 is a sectional plan view on the line *a-a*, Fig. 2; Figs. 4 and 5 are views in side elevation showing the parts in different positions; Figs. 6 to 9, inclusive, are front views showing the parts in different positions; Fig. 10 is a view illustrating a modification of the invention; and Fig. 11, is a perspective view illustrating the supplemental carrier.

Referring to the drawings, 1 is the base on which is a standard 2 having a bearing 3 at its upper end for the trunnion 4 of the frame 5. This frame has an arm 6 and another arm 7 and is so arranged that it can be turned in the bearing 3.

8 is a treadle pivoted at 9 and connected by a rod 10 to a latch 11 which is pivoted at 12 on the standard. This latch is adapted to enter notches in the trunnion 4 so that on depressing the treadle 8 the latch 11 is withdrawn from a notch of the trunnion and the frame can be turned, as desired. On the end of the arm 6 is a bearing 13 in which is mounted a spindle 14 having a head 15 forming a table having a flange 16 at each side. Mounted on the table is the pattern board 17 on which the sections of the flask are mounted. There is one pattern board at each side of the center of the machine and each pattern board has a cross bar 18.

19, 19 are hooked bolts which engage the cross bars 18 of the pattern boards. Each bolt has a hooked sleeve 20 which engages a notched rib 21 on the table 15. By ad-

justing the thumb nut on the bolts 19 the pattern board will be securely held to the table.

In order to move the head vertically in the bearing 13, I provide a hand lever 22 pivoted at 23 to the frame 5 in the trunnion and connect this lever by a link 24 to a two-armed lever 25 pivoted at 26 to the frame 5. This lever is connected in turn by a link 27 to another two-armed lever 28 which is in turn connected by a lever 29 to the table 15 so that by raising the lever 22 in the direction of the arrow, Fig. 2, the table 15, and the pattern board 17, will be raised to any extent desired. A spring 30 is attached to one arm of the lever 25 and at the pivot point 23 to the frame 5 so as to counterbalance the sand in the mold. This mechanism is duplicated on each side of the frame 5, as illustrated in Fig. 1, the hand lever 22 being forked, as shown in said figure, to span the frame 5. The levers are so arranged that when the hand lever 22 is raised to the position shown in Fig. 4, for instance, the lever 25 and link 27 are in line and lock the head in the raised position.

31 is a latch pivoted to the arm 6 and arranged to enter a notch 32 in the spindle 14 when the frame is inverted so as to hold the spindle and its table from dropping. This latch only operates when the frame is inverted and the table 15 is in the upper position.

33 is the cope and 34 is the drag of the mold. On the cope are sockets 35 for the reception of the steady pins 36 secured to the drag. On one pattern board 17 is a pin 37 which enters the socket in the cope 35, and on the other pattern board is a socket 38 to receive the pin 36 of the drag.

When the sand is placed in the sections of the mold, the hand lever 22 is grasped and shaken so as to agitate the sand in the flasks in order that it may properly pack in the mold and when sufficient sand has been introduced the bottom boards 39 are placed on the two flasks, as illustrated in Figs. 1 and 2, and the table is raised by lifting the hand lever which is locked in the raised position. Then the mechanism, which I will now proceed to describe, is lowered so as to press upon the bottom board, compressing the sand in the flasks.

On the arm 7 of the frame 5 is a bearing 40 for the spindle 41 carrying a supplement-

tal frame 42 which can be raised and lowered for the purpose of compressing the sand in the flasks. This supplemental frame also forms the support for the flasks prior to their removal from the machine when the frame is inverted. Arranged to slide in the supplemental frame 42 is a carrier 44 Fig. 11 consisting of a head and two arms which are adapted to slide in ways in the supplemental frame and pivoted to the carrier at 45 is a bed 46 which can be turned to the position illustrated by dotted lines, Fig. 3, when the parts are inverted. Secured to the carrier 44 are hand holds 47 having pins 48 engaged by a spring latch 49 which holds them in the normal position, as in full lines, Fig. 3, but by raising the latch and pulling upon the hand holds 47 the carrier can be moved to the position illustrated in Fig. 7, and the two beds will be turned as illustrated by dotted lines in said Fig. 3, as a link 50 is pivoted to each bed at 51 and is slotted at 52 for the passage of a pin 53 on the supplemental frame 42.

54 is a lever pivoted at 55 to the bearing 40 on the arm 7 and by moving this lever the supplemental frame can be raised or lowered. The long arm of the lever has a hand hold 56 and the short arm 57 of the lever has a pin 58 which extends through a slot 59 in a link 60 pivoted at 61 to the supplemental frame. Mounted on the link is an adjustable stop block 62 which can be adjusted on the link and held in the adjusted position by the bolt 63 which can be located in any one of the series of holes in the link. This mechanism is duplicated on each side of the bearing 40, in the present instance, and the hand hold 56 connects the two levers 54 so that upon moving the lever from the position illustrated in Fig. 4 to that illustrated in Fig. 5, the supplemental frame can be brought down upon the bottom board of the flask and the sand therein compressed to any degree desired, according to the position of the block 62 on the links 60.

In order to allow the carrier to move freely, I provide rollers 64 Fig. 2 on the supplemental frame to support the carrier when the parts are inverted, as illustrated in Figs. 8 and 9.

Referring now to the diagrams Figs. 4 to 9, inclusive, Fig. 4 is a side view showing the lever 22 raised with the flasks in position for the sand to be compressed. Fig. 5 is a similar view showing the compression lever 54 turned with the supplemental frame pressed down upon the bottom board and compressing the sand within the flask. Fig. 6 is a front view showing the machine inverted after the compression has taken place and the pattern boards are on top. Fig. 7 is a front view showing the compression

lever 54 returned part way to allow the supplemental frame to draw the flasks away from the pattern boards which are suspended from the inverted table. Fig. 8 is a view showing the lever 22 raised, elevating the table and the pattern boards clear of the flasks. Fig. 9 is a view showing the carriers drawn out and the beds turning on their pivots so that both flasks are in position clear of the table and ready to be removed from the machine.

The operation is as follows: When the mechanism is in the position illustrated in Fig. 2, the particular pattern boards for the two parts of the mold are placed on the table and are secured thereto. Two flasks of the size desired are then placed on the pattern boards, the patterns projecting into the flasks. Sand is then placed in the molds and rammed in the ordinary manner and the flasks can be jarred by vibrating the handle and allowing the spindle 14 to strike an abutment on the base 1. After the desired quantity of sand is introduced into the flasks, then the bottom boards 39 are placed in position and the supplemental frame 42 is lowered on to the bottom boards by turning the handle 54 on its pivot and by forcing the handle down to its limit according to the adjustment of the blocks 62 on the links. The frame is then inverted with the supplemental frame acting as a support for the two flasks, but the inverted pattern boards are held to the table independently of the supplemental frame. Then the lever 54 is lowered carefully, as in Fig. 7, so as to draw the flasks, with the mold therein, clear of the pattern boards.

In order to allow plenty of clearance for the lateral removal of the flasks, the table 15 is elevated by the use of the handle 22, until the latch 31 engages the spindle 14 holding the table in the raised position. The table is held by this latch until the frame is again turned on its pivot. The carriers are then drawn out and the beds turned on their pivots so as to bring the flasks to the front of the machine clear of the mechanism after which they can be readily removed. The carriers are then forced in, turning the beds on their pivots and the treadle 8 is depressed withdrawing the latch from the notch in the trunnion when the frame 5 can be turned on its pivot bringing the table 15 to the first position. The latch 31 will drop out of engagement with the supplemental frame and the above operation can be repeated. It will be noticed that the spindles 14 and 41 are splined to their bearings 13 and 40 respectively so that while they are free to slide in their bearings, they cannot turn therein.

In Fig. 10, I have illustrated a modification in which the pattern board 65 is locked in a central position and is secured to the frame 5. Spindles 66, having pressure plates

67, are mounted in the arms of the frame 5 and lever mechanism is provided for moving these spindles.

The cope and drag sections of the mold are secured, one on each side of the pattern board, and when a flask is filled with sand and the pressure plate is actuated so as to compress the sand in the flask, then the frame 5 is turned and the same operation is repeated with regard to the other flask, after which first one flask and then the other is detached from the pattern board and withdrawn by actuating the pressure plate, which becomes the support for the flasks.

I claim:

1. The combination of a base; a standard thereon; a two-armed frame pivotally mounted on the standard and adapted to assume either of two positions; means for locking the frame in either of its two positions; a spindle; a table carried by the spindle; two pattern boards mounted on the table, each pattern board being arranged to receive a flask; a supplemental frame; a spindle thereon mounted in the bearing in the other arm of the two-armed frame, said supplemental frame extending over the table; lever mechanism for raising and lowering the table; and lever mechanism for raising and lowering the supplemental frame.

2. The combination of a base; a standard thereon; a frame pivotally mounted on the spindle and having two arms; a bearing on each arm; a spindle mounted in one bearing; a table carried by the spindle; lever mechanism for raising the table and locking it in the raised position; a pattern board secured to the table and adapted to support a flask; a spindle mounted in the bearing of the other arm; a supplemental frame carried by said spindle; a lever pivotally mounted on the frame and having a pin; a slotted link pivoted to the supplemental frame, the pin on the lever extending through the slot; and an adjustable block on the link for limiting the amount of movement of the supplemental frame.

3. The combination of a base; a standard; a two-armed frame pivotally mounted in the standard; means for locking the frame in its two positions; a bearing on each arm; a spindle mounted in one bearing; a table carried by the spindle to which the pattern boards are secured; an operating lever; link and lever mechanism connecting the operating lever with the table so that when the operating lever is raised, it will elevate the table and will lock it in the elevated position; a spindle on the other arm; a supplemental frame mounted on the spindle; a sliding carrier mounted on the supplemental frame; a bed pivoted to the carrier and connected to the supplemental frame so that when the carrier is moved, the bed will turn

on its pivot so as to bring the flask clear of the mechanism; and mechanism for moving the supplemental frame toward and from the table.

4. The combination of a base; a standard thereon; a frame pivotally mounted on the standard and having two arms; a bearing in each frame; a spindle mounted in one bearing; a table carried by the spindle; lever mechanism adapted to the frame and connected to the table by which the table can be elevated and held in the elevated position; a spindle mounted in the bearing of the other arm; a supplemental frame carried by the spindle; a lever pivoted to the frame; a link pivoted to the supplemental frame and having an adjustable block thereon; and means on the lever which comes in contact with the block, said means being arranged to move the supplemental frame toward and from the table, the movement of the frame being limited by the block.

5. The combination in a molding machine, of a base; a standard thereon; a frame pivotally mounted on the standard and having two arms; a table; a spindle on the table extending through a bearing on one of said arms adapted to rest on the base; lever mechanism for raising and lowering the table and causing the spindle to strike the base; a pressure frame carried by the other arm; and means for moving said pressure device to compress the sand in the flasks.

6. The combination of a base; a standard; a bearing at the upper end of the standard; a frame having a trunnion mounted in the bearing and adapted to assume either of two positions; latch mechanism for locking the frame in either of its two positions; said frame having two arms; a bearing on each arm; a spindle mounted in one bearing; a table carried by the spindle; two pattern boards secured to the table, one for the cope and the other for the drag; lever mechanism on each side of the frame; a centrally located hand lever pivoted to the frame and connected to the lever mechanism; said hand lever being forked to span the frame; a pressure frame carried by the other arm; and means for actuating said frame to compress the sand in the flasks.

7. The combination of a base; a standard; a bearing at the upper end of the standard; a two-armed frame having a trunnion mounted in the bearing; a spindle mounted in one arm of the frame; a table carried by the spindle extending on each side of the frame; two pattern boards mounted on the table; clamps for securing the pattern boards to the table; one board adapted to receive a cope flask; the other board adapted to receive a drag flask; a supplemental frame; a spindle thereon mounted in the bearing in the other arm of the main frame; said supplemental frame extending over the table;

means for raising and lowering the table; and means for raising and lowering the supplemental frame.

8. The combination of a base; a standard; 5
a bearing at the upper end of the standard; a two-armed frame having a trunnion mounted in the bearing; a spindle mounted in one arm of the frame; a table carried by the spindle extending on each side of the 10
frame; two pattern boards mounted on the table; clamps for securing the pattern boards to the table; one board adapted to receive a cope flask and the other board adapted to receive a drag flask; a supplemental frame; a 15
spindle thereon mounted in a bearing in the other arm of the main frame; said supple-

mental frame extending over the table; means for raising and lowering the table; means for raising and lowering the supplemental frame; two sliding carriers mounted 20
on the supplemental frame; a bed pivoted to each carrier and connected to the main frame so that when the main frame is inverted, the carriers can be drawn out and the beds caused to swing on their pivots. 25

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

JOHN E. REIGNER.

Witnesses:

CLYDE T. MOYER,
WM. A. BARR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."