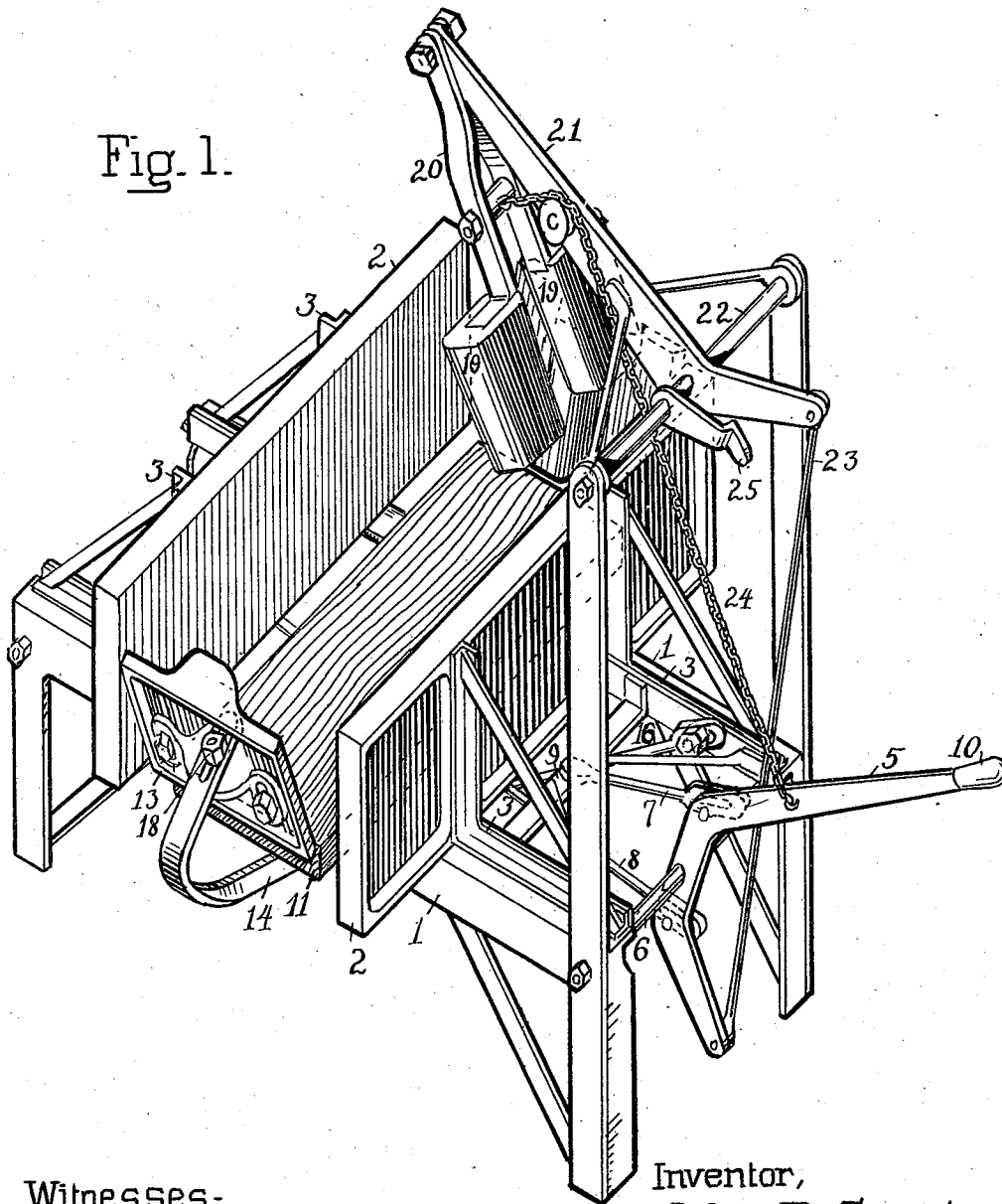


No. 857,159.

PATENTED JUNE 18, 1907.

J. R. COURTER.  
MOLD FOR CONCRETE BLOCKS.  
APPLICATION FILED MAY 19, 1906.

4 SHEETS—SHEET 1.



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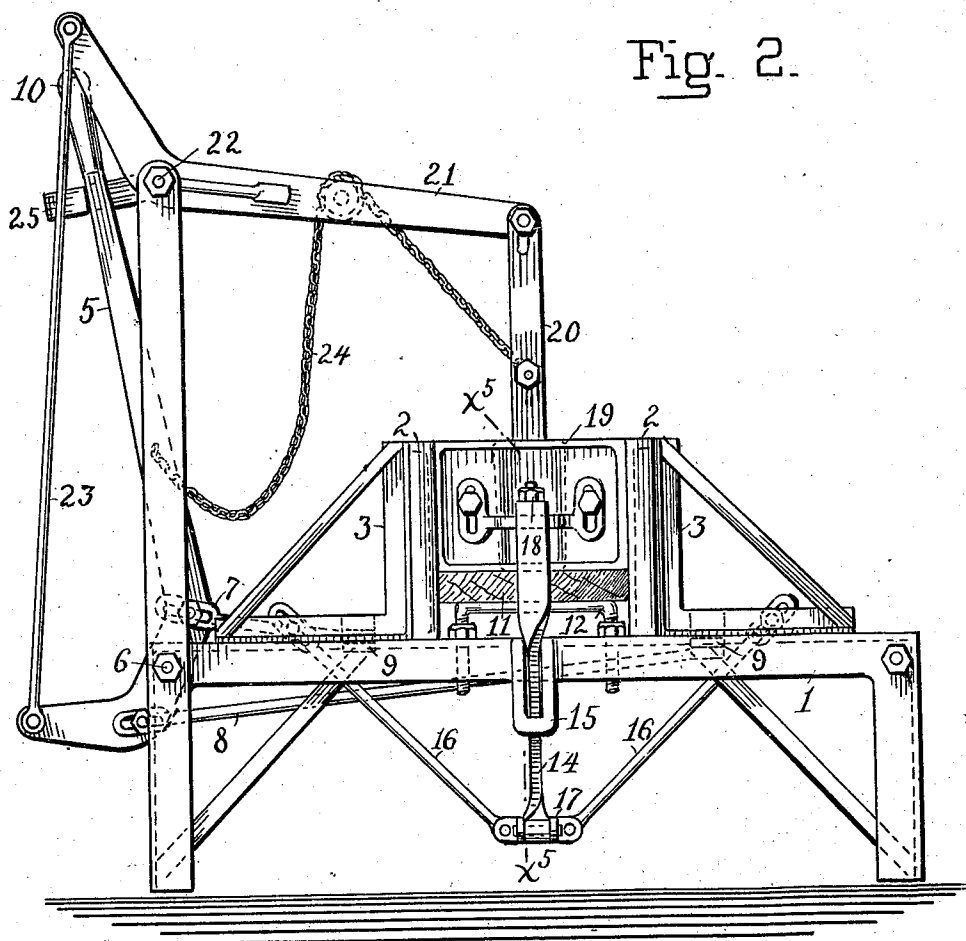
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4 SHEETS—SHEET 2.

Fig. 2.



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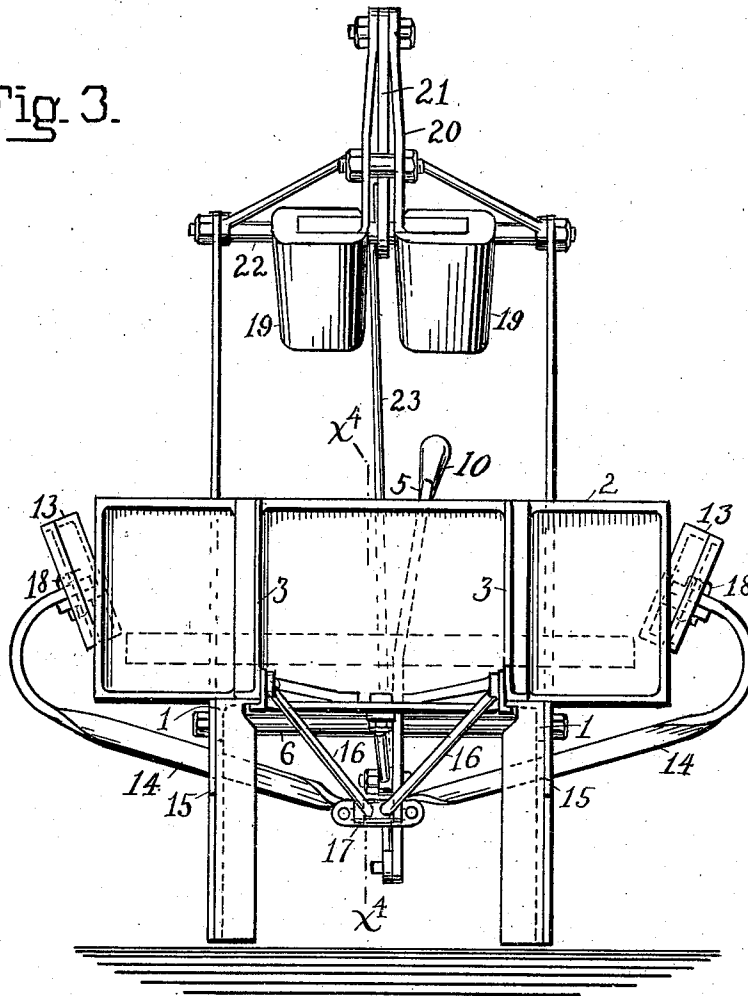
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4 SHEETS—SHEET 3.

Fig. 3.



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4 SHEETS—SHEET 4.

Fig. 4.

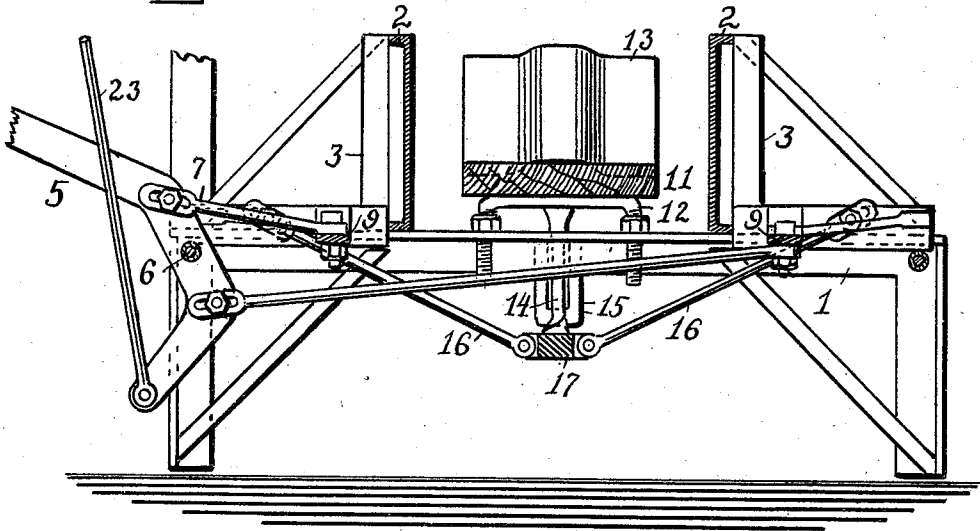
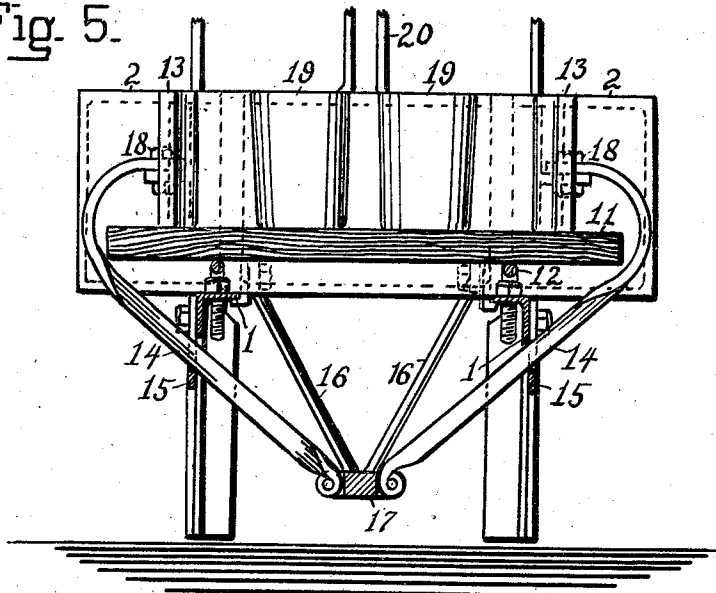


Fig. 5.



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# UNITED STATES PATENT OFFICE.

JOHN R. COURTER, OF MONTCLAIR, NEW JERSEY.

## MOLD FOR CONCRETE BLOCKS.

No. 857,159.

Specification of Letters Patent.

Patented June 18, 1907.

Application filed May 19, 1906. Serial No. 317,672

*To all whom it may concern:*

Be it known that I, JOHN R. COURTER, a citizen of the United States of America, and a resident of Montclair, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Molds for Concrete Blocks, of which the following is a specification.

This invention relates particularly to a mold, the sides of which are movable to and from each other for the purpose of closing and opening the mold. It is intended especially for the manufacture of concrete blocks for buildings. The apparatus is portable, can be taken to the building site, and blocks there made with a minimum of handling of blocks and material. The mold is constructed with an open top into which freshly mixed concrete is shoveled and tamped until the mold is filled even with its brim to form the blocks, after which the mold is unlatched and the sides moved away by the operation of a hand-lever so that the block may be lifted out and the mold made ready for forming another block.

One object of the invention is to so arrange the connections between the hand-lever and the plates forming the sides of the mold that the handle of the hand-lever and the mold may each be most conveniently positioned, the mold usually with its brim about two feet from the ground, so that it may be readily filled and the blocks lifted therefrom, and the handle at a higher level for convenient grasp by the hand. The mechanism operates both sides together and is of a kind that by the simple adjustment of links permits the modification of the mold for the purpose of varying the size of blocks formed therein.

A further object of the invention is to provide for the use of removable base boards or pallets in connection with the mold on which the blocks are formed and lifted from the machine and on which they remain until set. The pallets are of the same width, but longer than the blocks, so as to afford convenient hand holds at each end. They rest on adjustable parts carried by the supporting frame whereby the distance below the upper edges of the side plates may be changed, and the height of block which will be molded thereby adapted to the place where it is to be used. The end plates of the mold are constructed to overlie the pallet and be at the same time securely held in place against the

pallet and at the proper position for the formation of a block of the desired length. The mechanism provided for operating the end plates in opening the mold includes toggle links, which impart to the end plates a movement diagonally upward away from both block and pallet, which is followed by a tilting back and lowering at the ends of the pallet, thereby removing the end plates with a minimum of movement out of the way to permit of the lifting out or the insertion of pallets. Clamp connections, including bolts with their axis perpendicular to the face of the pallet, are provided between the end plates and the toggle links so that the end plates may be set at angles to the side plates while preserved in perpendicular relation to the pallet for molding blocks for curving walls or for use at the corners, as the octagon corners of a bay window. Provision is made for the mechanical withdrawing of the cores concurrently with the operation of the other parts on opening the mold through the operation of the same handle. In withdrawing the cores, they are first lifted vertically until clear of the block, and then swung transversely to give free access to the mold in lifting out blocks and in inserting pallets.

The entire mechanism is devised with a view to simplicity of construction and operation, and so that it will not become clogged at any point where cement would be likely to fall upon it.

In the accompanying four sheets of drawings, which form a part of this application—Figure 1 is a perspective view in open position of a mold embodying my invention. Fig. 2 is a side elevation of the mold in closed position. Fig. 3 is an end elevation of the mold in open position. Fig. 4 is a vertical section through the mold on the line  $x^4-x^4$  of Fig. 3, the mold being in open position and the suspension for the cores being broken away. Fig. 5 is a vertical section through the mold on the line  $x^5-x^5$  of Fig. 2, the mold being in closed position and the suspension for the cores being broken away.

The mold rests upon a supporting frame in which are two pieces of angle iron 1 1 laid horizontally and parallel with their ends bent downwardly at right angles to form the legs of the apparatus. Movable side plates 2 2 have angle brackets 3 3 attached at the rear of each and forming a fixed part thereof. The horizontal members of the brackets rest upon and slide on the horizontal members of

the supporting frame. A hand-lever 5 is fulcrumed at one end of the frame on a cross bar 6 and hence at the rear of one of the side plates and on the side of this side plate opposite from the other side plate. A rod 7 makes a connection between a point on the lever above the fulcrum with the near side plate, and a rod 8 underlies this side plate and makes connection between a point on the lever below the fulcrum with the opposite side plate. These connections are to cross braces 9 9 between the brackets of the side plates. They are slotted at the ends and the hinge bolts between the connections and the lever may be clamped at any points along the slots for the purpose of adjusting the mold for different sizes of blocks. The axis of the lever fulcrum is preferably about horizontal so that the lever may be directed upwardly and have its handle 10 at a convenient point for grasp by the operator, this being always much farther from the ground than the body of the mold.

Between the side plates is the pallet 11. This is conveniently a length of plank of the same width as the block to be molded, and a little longer than the length of the block. A large number of these pallets are required since each block is set aside on the pallet on which it is formed until it is set. Adjustable supports 12 12 are interposed between the pallet and the supporting frame. These consist of U-shaped rods, the legs of which have nuts threaded thereon, and project downwardly through holes in the horizontal members of the frame. By adjusting these nuts, the top of the pallet may be brought to any desired depth below the tops of the side plates which serve as gages in leveling the top of the molded block. This adjustment is particularly useful because in laying of a wall of a prescribed height the height of each block with a proper allowance for mortar should be an aliquot part of the height of the wall. End plates 13 13 for the mold are adjustably mounted at the ends of a set of toggle links 14 14. These toggle links underlie the horizontal members of the supporting frame and the pallet, except at their outer ends, which are inclined upwardly and project beyond the ends and above the level of the pallet to carry the end plates.

The toggle links are slidably supported intermediate of their ends from the supporting frame by U-shaped hangers 15 15 pendent from the horizontal members, and through which the toggle links thrust in an upwardly inclined direction when lifted at their point of connection, and the outer ends and end plates attached thereto have a movement in opening the mold first outward and upward, and then downward at the ends of the pallet, so as not to obstruct in taking pallets in and out of the apparatus. A second set of toggle links 16 16 connected between the side plates

crosses the toggle links between the end plates and the two sets are connected to each other at the point of connection of the toggle links of each set by reason of the hinging of all the links to a common block 17. The set of toggles between the side plates, so named for convenience and because of similarity of toggles in appearance, constitute in fact a mechanical element of a different character by reason of the fact that the links are operated by the side plates and serve as means for the communication of motion from the side plates to the end plates, the side plates being operated by the hand lever and connections to and from each other concurrently and independently of instead of through these links. These links are employed to impart a vertical movement to the middle point of the toggles between the end plates, and thereby operate the toggles and the end plates.

The end plates are attached to their supporting toggles by bolts 18 18, the axes of which are perpendicular to the pallet, which forms the base of the mold. These bolts clamp the parts together and permit the adjustment of the end plates to any desired angle for forming blocks with ends beveled with respect to the front and rear faces, but vertical with respect to the top and bottom faces, as may be required at angles in walls.

Cores 19 19 are provided and carried by a suspension 20 by which they are withdrawn from the mold. A core-extracting lever 21 is fulcrumed on a cross bar 22 between the upper ends of uprights which are fastened to the legs at one end of the frame. The long arm of the lever, when in a horizontal position, is directly above the mold and the core-suspension is pivoted thereto. A link 23 joins a short arm of this lever with an arm of the hand-lever so that on operation of the hand-lever the cores will be withdrawn concurrently with the operation of the side plates and end plates of the mold. The short arm of the hand-lever is so directed with respect to the direction of the connecting link between the two levers, that it will be at about right angles to the line of the link when the mold is closed, and will be brought toward the dead center when the hand-lever has been operated to open the mold. The cores are therefore elevated less rapidly during the latter part of the hand-lever movement. A chain 24 is connected between the core-suspension and the hand-lever for the purpose of swinging the cores to one side after they have been extracted. When the mold is closed the chain is slacked, and it is drawn taut and becomes an operative connection only during the latter part of the hand-lever movement when the cores have been fully extracted. When the mold is closed a latch 25, which is conveniently mounted on the cross bar which carries the

core-extracting lever, engages the shank of the hand-lever and locks the sides of the mold in place by reason of their rigid link connections with the hand-lever.

5 What I claim as new, and desire to secure by Letters Patent, is—

1. In a mold, the combination of a supporting frame, movable side plates, a lever located to one side of the side plates, and pitman connections independent of each other  
10 between each plate and the lever.

2. In a mold, the combination of a supporting frame, side plates mounted to slide on the frame, a lever fulcrumed in the frame  
15 to one side of the side plates, and pitman connections from the plates to points on the lever oppositely situated with respect to its fulcrum point.

3. In a mold, the combination of a supporting frame, movable side plates, a hand-lever located to one side of the side plates with its handle elevated above the level of the mold, and pitman connections independent  
20 of each other between each plate and the lever.

4. In a mold, the combination of a supporting frame, movable side plates and end plates supported from the frame, a set of toggle links between the side plates, a set of  
30 toggle links between the end plates, a connection between the two sets of toggle links at the points of connection of the links of each set, and means independent of the toggles for concurrently operating the side  
35 plates.

5. In a mold, the combination of a supporting frame, a removable pallet, end plates, positioned to wholly overlie the pallet in closing the mold, a set of toggle links connected  
40 at their outer ends to the end plates and slidably supported intermediate of their ends by the frame, and means acting at the point of connection of the links to operate them.

6. In a mold, the combination of a sup-

porting frame, a removable pallet, movable  
45 side plates and end plates, the end plates being positioned to wholly overlie the pallet in closing the mold, a set of toggle links between the side plates, a set of toggle links connected  
50 at their outer ends to the end plates and slidably supported intermediate of their ends by the frame, a connection between the two sets of toggle links at the points of connection of the links of each set, and means independent  
55 of the toggles for concurrently operating the side plates.

7. In a mold, the combination of a supporting frame, movable side plates, cores, an overhead suspension for the cores and means for concurrently operating the side plates  
60 and the suspension.

8. The combination of a supporting frame, a mold supported thereon, cores, a core-extracting lever mounted with its outer end above the mold, a suspension between the  
65 end of the core-extracting lever and the core, and actuating means connected with the core extracting lever to lift the cores and to swing the cores to one side, there being a slack connection between the operating  
70 means and the suspension.

9. The combination of a supporting frame, a mold with movable sides supported thereon, a hand-lever for actuating the movable  
75 sides, cores, a core-extracting lever mounted with its outer end above the mold, a suspension between the end of the core-extracting lever and the cores, a connection between the core-extracting lever and the hand-lever to lift the cores, and a slack connection be-  
80 tween the suspension and the hand-lever.

Signed by me at Montclair, New Jersey, this 18th day of May, 1906.

JOHN R. COURTER.

Witnesses:

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SAMUEL W. BALCH.