

No. 753,377.

PATENTED MAR. 1, 1904.

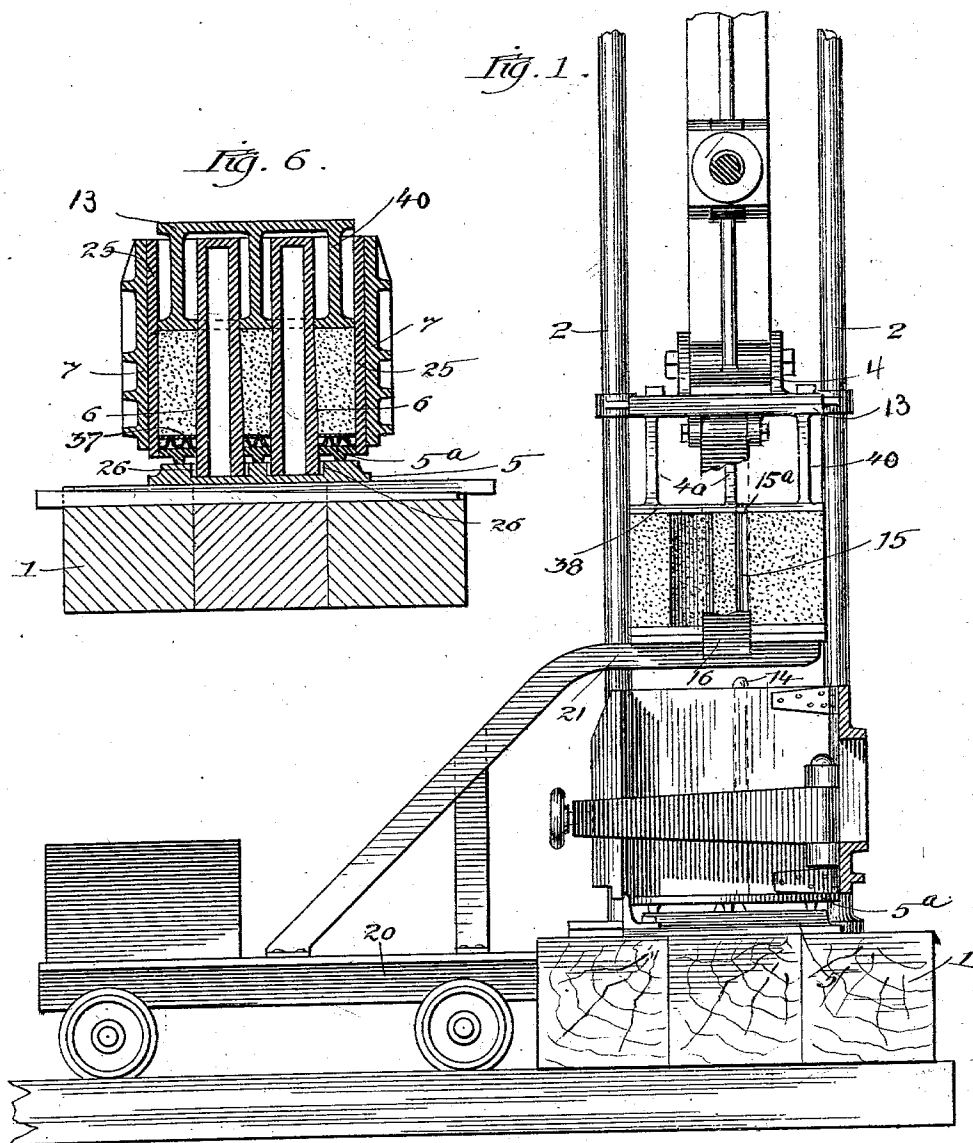
W. L. DOW.

MACHINE FOR MOLDING BUILDING BLOCKS OR STONES.

APPLICATION FILED MAR. 4, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses:

Frank Blunckard
Fred B. Fischer

Inventor:

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Attorneys.

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3 SHEETS—SHEET 2.

Fig. 5.

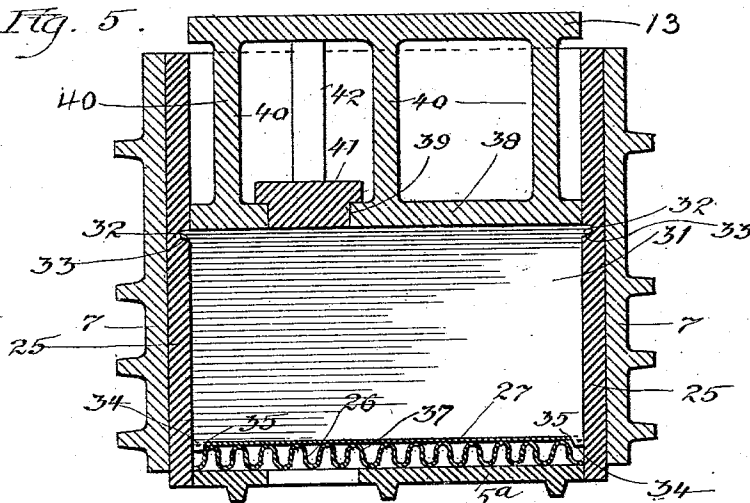
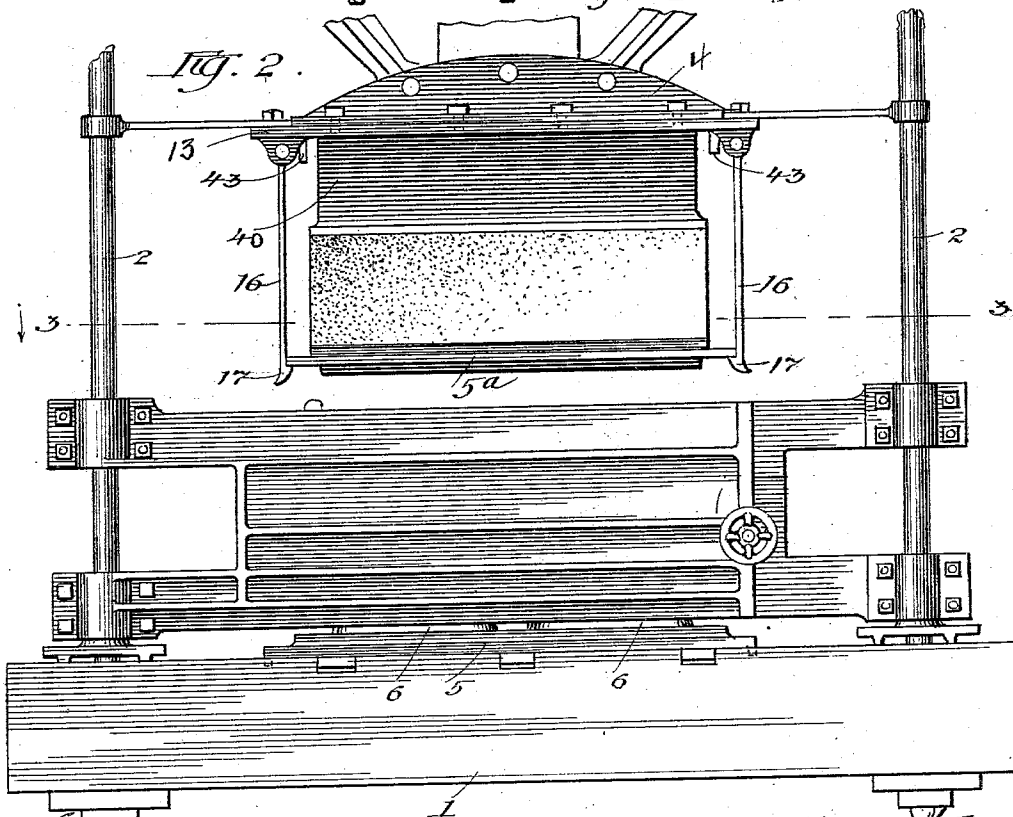


Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

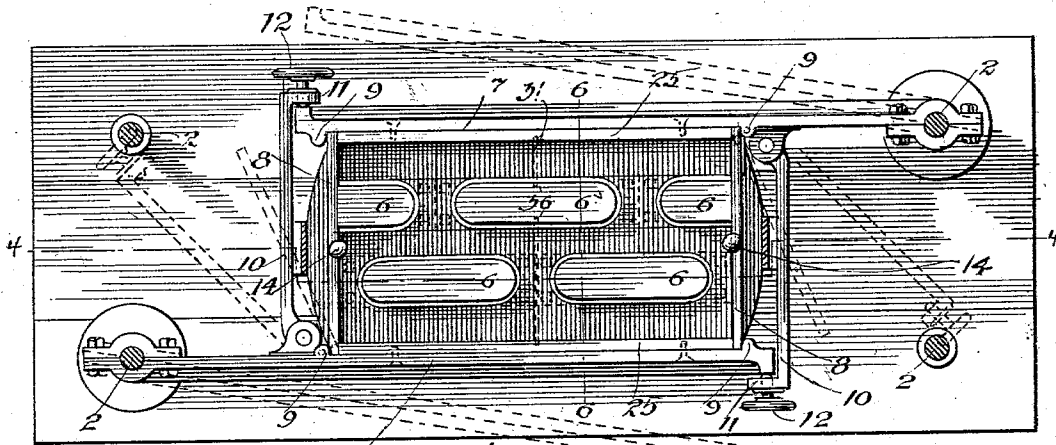
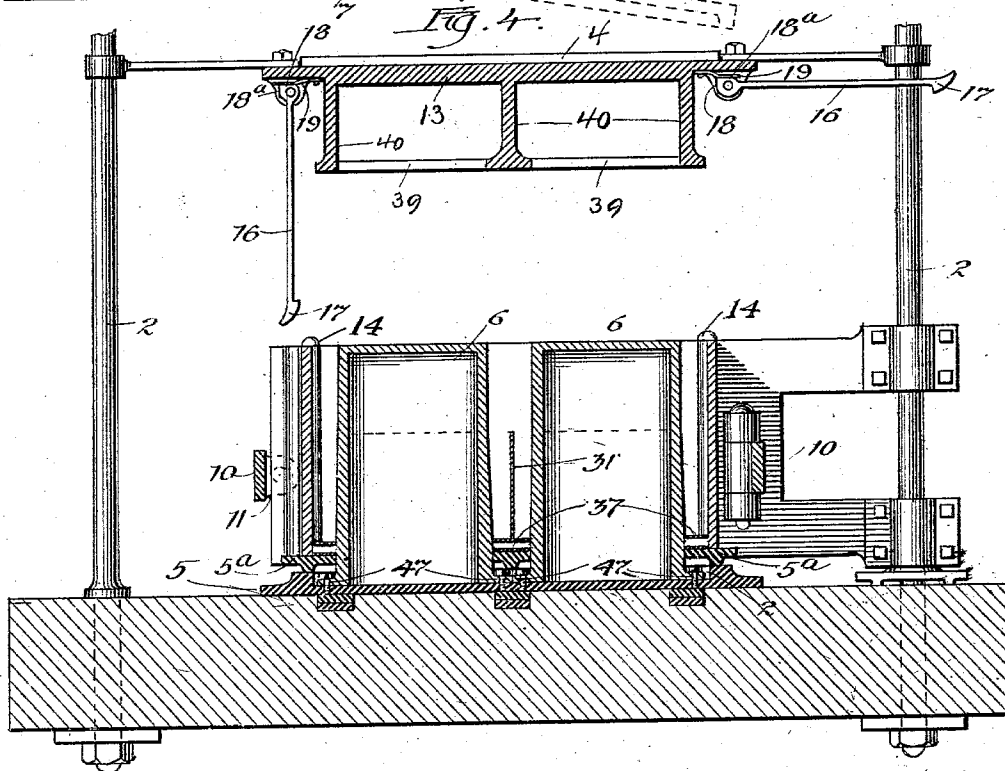


Fig. 4.



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UNITED STATES PATENT OFFICE.

WALLACE L. DOW, OF SIOUX FALLS, SOUTH DAKOTA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO MIRACLE PRESSED STONE COMPANY, A CORPORATION OF SOUTH DAKOTA.

MACHINE FOR MOLDING BUILDING BLOCKS OR STONES.

SPECIFICATION forming part of Letters Patent No. 753,377, dated March 1, 1904.

Application filed March 4 1903. Serial No. 146 180. (No model.)

To all whom it may concern:

Be it known that I, WALLACE L. DOW, a citizen of the United States, residing at Sioux Falls, in the county of Minnehaha and State of South Dakota, have invented new and useful Improvements in Machines for Molding Building Blocks or Stones, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The purpose of this invention is to provide an improved mechanism for molding building-stone.

It consists in the features of construction set out in the claims.

In the drawings, Figure 1 is a side elevation of a machine of the nature of a press having the upper part broken away and containing my invention. Fig. 2 is a side elevation of a portion of the same machine, eliminating the operating parts of the press. Fig. 3 is a horizontal section taken above the die or mold, only the corner-posts or strain-rods and the latch-bars being shown in section, as at the plane 3 3 on Fig. 2. Fig. 4 is a section at the line 4 4 on Fig. 3, showing also the plunger in elevated position in vertical section at the same plane. Fig. 5 is a detail section through the mold and plunger at the plane of a parting-diaphragm employed with one of the cores removed. Fig. 6 is a section transversely through the mold and plunger with the latter at the lowest position, as at the plane indicated by the line 6 6 on Fig. 3.

My invention relates, chiefly, to the structure of the die; but in the preferred form of construction it includes also some features of the press or machine in which the die is operated, and I have therefore shown the entire press, of which, however, the operating devices are such as are well known and constitute no part of my invention, and it may be understood that any operating devices of adequate efficiency may be employed. In such a press the base 1 is connected by corner strain rods or posts 2 2 2 2 with a head, (not shown,) by which the operating devices are carried, said operating devices being connected to the follower 4, which is guided vertically on the

strain-rods and forced by the operating devices down toward the base to operate the die, which may be located between the base and the follower. The die comprises a bed-plate 5, mounted fixedly on the base 1 of the press. Rigid with such bottom element there are cores 6 6 6 6, projecting upwardly to form the desired cavities in the molded body. The bottom of the die-cavity is formed by a cast-iron platen 5", which is apertured to admit the cores and which rests on the bed-plate. The four sides of the mold-cavity are adapted to be laterally moved to close up the cavity and to open it for relieving the molded body when the latter is to be removed. Two opposite sides, preferably the longer sides 7 7, are pivotally connected to the diagonally opposite strain-rods 2 2 of the press, and so adapted to swing outward for opening the die. The other two sides 8 8 are hinged to said sides 7 7, respectively, and at both their vertical edges they are engaged behind lugs 9 9 on the inner faces of the sides 7 7, respectively, and they are thereby stopped positively against outward movement so long as the two sides 7 7 are themselves restrained from swinging outward. For the latter purpose there is hinged to each of the longer sides 7, at a pivotal line outside the pivot of the hinges which connect said side to the side 8, latch-bars 10 10, having each a nose 11, which engages outside the end of the opposite side plate 7 and which has a clamp-screw 12, which may be set up tight against said outer edge to hold the two sides 7 7 bound firmly against the ends of the sides 8 8. The die is thus as to its four lateral walls positively locked together. A false bottom 37 is provided for the mold-cavity. This bottom is apertured to admit the cores 6 6. It fits accurately within the four lateral walls, so that it corresponds exactly to the dimensions of the bottom surface of the block to be molded in the die, and the molded body when formed is supported on this false bottom over its entire bottom area. The purpose of this false bottom being to support the molded body when it is removed from the mold and during the process of drying, cheapness of the ma-

terial and construction is important, because a large number of such lining-plates or false bottoms are necessary in the continuous operation of the machine. I have successfully employed 5 wood for this purpose; but a more desirable structure is shown in the drawings, comprising a finely-corrugated sheet-metal element 26 and a plain metal plate 27, covering it and secured to the corrugations, preferably by soldering. 10 The depth of the mold above the false bottom is from a quarter to a third more than the intended vertical dimension of the block when compressed to the desired degree of hardness or density, so that the plunger 13 of the 15 follower descending and entering between the four lateral walls may reduce the volume in that proportion. The cores 6 6 are tapered, narrowing from the bottom upward to the plane of the upper surface of the molded body 20 when fully compressed, the taper being only sufficient to permit the cores to withdraw, and from that point upward the cores are without taper the plunger 13 having untapered apertures to permit the upper ends of 25 the cores to telescope within it, fitting closely enough to prevent the material being forced up around the cores to any substantial extent.

The edges of the molded block are designed to be formed with vertical grooves 15 to receive retaining-keys or cement, which will 30 harden to form such keys in erecting the blocks in a wall, and these grooves are produced by vertical ribs 14 14 on the side plates of the mold. I take advantage of these ribs 35 to provide means for guiding the plunger 13 accurately into the mold-cavity by extending the ribs up a little distance above the upper edge of the mold sides on which they are formed and beveling them off at the inner side 40 at such protruding portion, so that upon entering the grooves 15^a 15^a, which are necessarily made in the side of the plunger to accommodate the ribs 14, they cause the plunger to enter the mold-cavity without danger of 45 striking the mold sides, even though in general the guidance of the plunger on the strain-rods is inaccurate.

For the purpose of lifting the molded body out of the mold after the process of molding 50 by compression is completed and after the sides having been unlatched are swung away, leaving the molded body clear and resting only upon the bottom plate, I provide latches 16 16, which are suspended pivotally from the 55 follower and have at their lower ends bevel-nosed hooks 17 17, which by their bevel are adapted to encounter the ends of the bottom plate 5^a and engage thereunder, so as to lift said bottom plate and the molded block thereon when the follower rises. The upper end 60 of the latch above its pivot to the follower has two flat surfaces 18 18^a at an angle to each other, and a flat spring 19, secured to the follower, presses downward upon the end of the 65 latch. When the latch is in position to re-

ceive the pressure upon the face 18, the spring holds the lower hooked end of the latch inward in position to encounter the edge of the bottom plate by its inclined nose, as described, and to snap back into engagement under it. 70 When the latch is swung outward so far that the spring presses upon the flat face 18^a, such pressure tends to hold the latch at the outer position to which it may be thus swung, and it will be understood that the swinging of the 75 latch past an intermediate point between the two positions described causes the action of the spring on the flat face toward which it most directly presses to complete the swinging movement to either limit. 80

For the purpose of removing the molded body when it has been lifted out of the mold I employ a truck 20, having an overhanging platform 21, which may be run under the platen when the latter is held in elevated position by the latches, and said latches being 85 disengaged the platen lodges on the truck-platform, carrying the molded body, and the truck being withdrawn leaves the press ready for another operation, a second platen being 90 substituted, while the molded body still resting on the false bottom is removed from the platen, leaving the latter ready for use again in the press.

For the purpose of producing upon the face 95 of the molded block any desired ornamental imprint or upraised ornamentation the inner faces of any one or more of the side walls of the mold are formed by lining-plates 25 25, which are secured to the said walls, respectively, by screws, so as to be easily removable. 100 When the block is to be made with plain surfaces, these lining-plates will be made perfectly plain; but for the purpose of an ornamented block the reverse of the ornamentation desired will be formed on the lining-plate. 105

For forming blocks which may be used at the end or corner of a wall it is necessary to remove the core, which would form the half-length cavity at the end of the block. It is 110 also necessary to produce half-length blocks for the customary uses in ordinary construction of walls. For this purpose it is desirable to partition the mold, and the proper 115 form of half-length block for terminating a wall—i. e., without the end cavity—is most conveniently made by removing the middle core and partitioning the mold crosswise through the position of such core. For this 120 and other reasons it is desirable to have the cores detachable. In order that this may be done conveniently and securely, I form the bed-plate 5 with channels 26 on the upper face, and I make the cores with lugs 47 at the lower 125 ends, through which bolts may take to bind them to the bed-plate, and I set the cores in the channels so that the lugs and bolts which secure them are below the general level of the upper surface of the bed-plate, and thus do 130

not interfere with the bottom platen, which is lodged on the bed-plate, as described. When it is desired to mold a block without the end cavity or without one or more of the other usual cavities, the core which forms the cavity to be dispensed with being detached from the bed-plate, a lining-plate made without the aperture corresponding to the removed core is substituted for the regular form. When two half-length blocks, each with a solid end—*i. e.*, without the half-length cavity at the end—are to be molded, the middle core being detached from the base, a false bottom is employed without the corresponding aperture and having secured to it a partition-plate 31, of sheet metal, extending across the entire mold-cavity to the height of the compressed block. The upper corners of such partition-plate may have slight lugs 32 32, which take into correspondingly-slight recesses 33 33, made in the side walls 7 7, to insure the erect position of the partition-plate. These recesses 33 33, besides being very slight, are at the extreme upper limit of the space occupied by the compressed block, and they will not form any perceptible projection in a block which may be formed in the mold when the partition is not employed. The plunger evidently need not be apertured to accommodate the partition, because at its lowest position it only reaches the upper edge of the latter, and the material which is forced down by the plunger is readily severed by the partition as it is compressed. When it is desired to partition the cavity to form two half-length blocks without removing the core, thus making the half-length blocks each with a half-length cavity at each end, similar partition-plates may be held in position by having their lower edges respectively engaged with the false bottom by slight projections 34 34, entering correspondingly-slight notches or punctures 35 35 at the edges of the top plate of the false bottom, and similar projections at the upper corners engaging one in the recess 33 in the side wall and the other in a corresponding recess 36 in the core.

The plunger 13 is preferably of skeleton construction, comprising a face-plate 38, having apertures 39 39, corresponding to the several cores of the die or mold, and reinforced by vertical ribs or webs 40 40, extending longitudinally only at the margins and between the apertures, the plungers being thus open from end to end between the reinforcing-webs. When any core is removed from the mold for the purpose above described, the aperture corresponding thereto in the face-plate of the plunger must be closed, and for this purpose I provide plugs or blocks 41, adapted to fit the several apertures, respectively, and to be introduced thereinto from above between the reinforcing-ribs and stopped at the upper surface of the face-plate with the lower surface flush with the lower

surface of said plate. These blocks may be bound in place by wooden keys 42, introduced above them, respectively, and of suitable length to extend up to the top web of the plunger and be driven tightly into place. To insure the plunger coming to the end of its movement into the die with its upper face parallel with the bottom plate, so as to produce the rectangular block desired, I provide at each end of the plunger two projections 43 43, near the corners, respectively, which encounter the upper edges of the end plates 8 8 when the plunger at either end reaches the proper limit of its movement. At whichever end or corner the projection 43 first encounters the end plate the plunger is fulcrumed, and its further movement is limited to the corners at which the projections have not yet become stopped on the end plate. This insures the desired result of parallel opposite faces, even if there should be some variation in the density or compactness of the material at different parts of the mold-cavity, which might otherwise tend to prevent this result.

I claim—

1. In a machine for molding building-blocks, a die or mold form comprising, in combination with a fixed supporting-base having rigid with it cores for forming the cavities in the block; a platen bottom plate having apertures to correspond with the cores; two opposite lateral walls pivoted with respect to the base at a distance from the mold-cavity, and having beads forming exterior stops within which the other two opposite lateral walls are lodged, and means for clamping the two pivoted walls together onto the ends of the other two walls.

2. In a machine for molding building-blocks, a die or mold form comprising, in combination with a fixed supporting-base having rigid with it cores for forming the cavities in the block, a bottom platen apertured to correspond with the cores; two opposite lateral walls pivoted with respect to the fixed base, adapted to swing above the platen, the other two opposite walls connected to the first two walls respectively at one end, said first two walls having beads forming exterior stops within which the ends of the other two walls are lodged; a false bottom about which the four walls close up, and means for locking the four walls rigidly together about said false bottom.

3. In a machine for molding building-blocks, a die or mold form comprising a fixed supporting-base; cores rigidly connected with the base and extending up therefrom, for forming cavities in the block; lateral walls pivoted vertically and adapted to swing outward from the mold-cavity, and a false bottom or lining-plate about which the four walls close together, adapted to be removed from the mold with the molded body and means for lifting the false bottom to carry up the molded body thereon.

4. In a machine for molding building-blocks, a die or mold form comprising a fixed supporting-base having rigid with it cores for forming the cavities in the block; a bottom platen supported on the base having apertures corresponding to the cores and adapted to be lifted bodily from the base; lateral walls pivoted with respect to the fixed base at a distance from the mold-cavity and adapted to swing outward from the mold-cavity to clear the bottom platen; a follower-head and a plunger carried thereby for entering the mold-cavity to compress the molded body; latches carried by such follower adapted to engage the bottom platen beyond the mold-cavity when the lateral walls are swung clear of said platen, whereby the follower carries up the bottom platen and the molded body thereon clear of the lateral walls.

5. In a machine for molding building-blocks, a die or mold form comprising a fixed supporting-base having rigid with it cores for forming cavities in the block; lateral walls adapted to be closed up around the cavity by horizontally-swinging movement, and means for locking them together rigidly; a plunger for closing up the mold-cavity above; two opposite walls of the mold having each a vertical rib to form a vertical groove in the molded body, the plunger having a corresponding groove to accommodate the rib, said ribs being projected above the upper edges of the mold-walls to which they pertain, and beveled on the inner side, whereby they engage the grooves in

the plunger to guide the latter into the mold-cavity.

6. In a die or mold form for molding building-blocks, a false bottom adapted to be removed with the molded body from the cavity, formed of corrugated sheet metal having a plain plate united to the crests of the corrugations at the side toward the mold-cavity.

7. In a die or mold form for molding building-blocks, a fixed supporting-base having cores for forming the cavities in the block, detachably united rigidly to the base; a plunger for closing up the mold at the top and compressing the substance therein, comprising a bottom plate apertured to admit the cores and vertical reinforcing-ribs extending in one direction back from the plate between the apertures; blocks for closing the apertures adapted to be introduced between the ribs and let down into the apertures from above and stopped on the upper side of the plate, and means for binding such blocks downward into the apertures, whereby any core may be removed to cause the omission of any aperture in the molded block, and the corresponding aperture in the plunger may be closed.

In testimony whereof I have herereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 26th day of February, A. D. 1903.

WALLACE L. DOW.

In presence of—

M. GERTRUDE ADY,
FRED, G. FISCHER.