No. 795,370. PATENTED JULY 25, 1905.

J. W. SHONE.

MACHINE FOR MANUFACTURING HOLLOW BUILDING BLOCKS.

APPLICATION FILED FEB. 27, 1904.

2 SHEETS—SHEET 1.

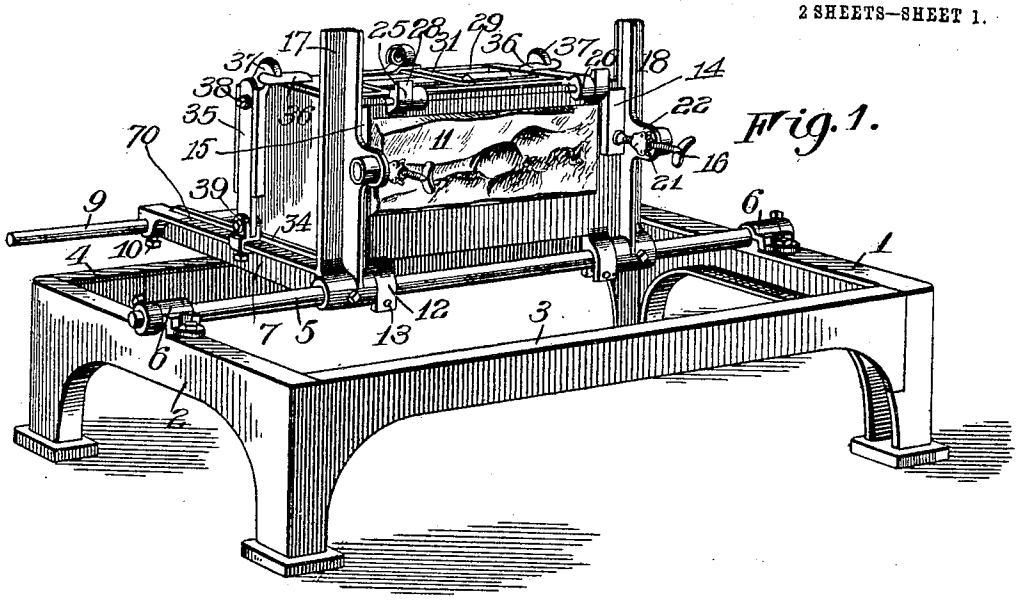

Fig. 1.

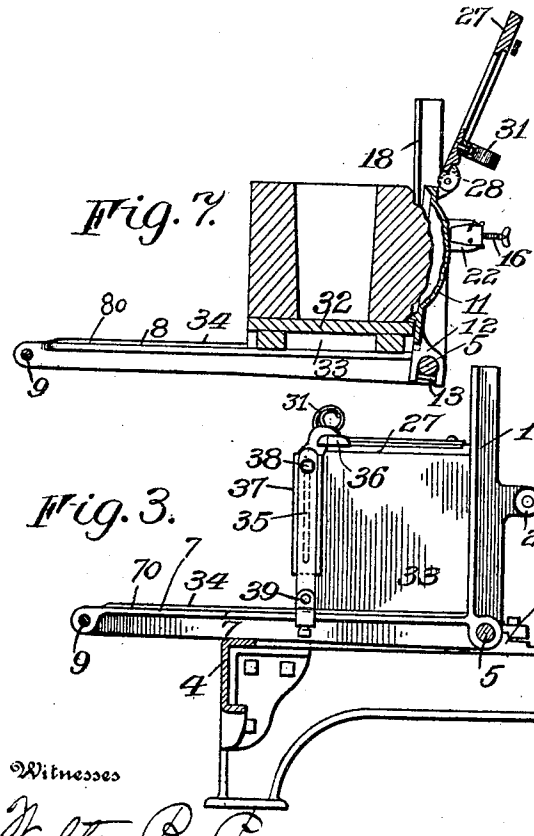

Fig. 7.

Fig. 3.

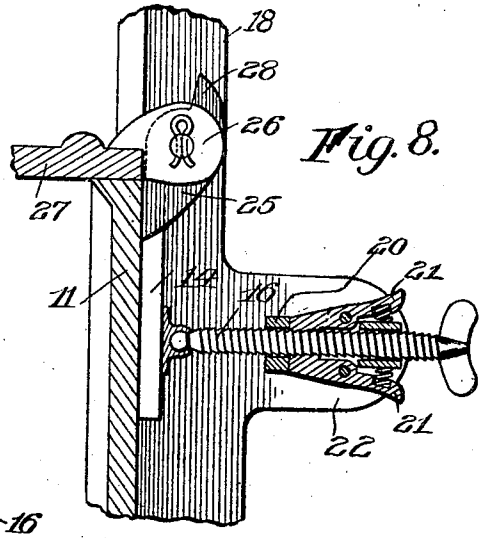

Fig. 8.

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2 SHEETS—SHEET 2.

Fig. 2.

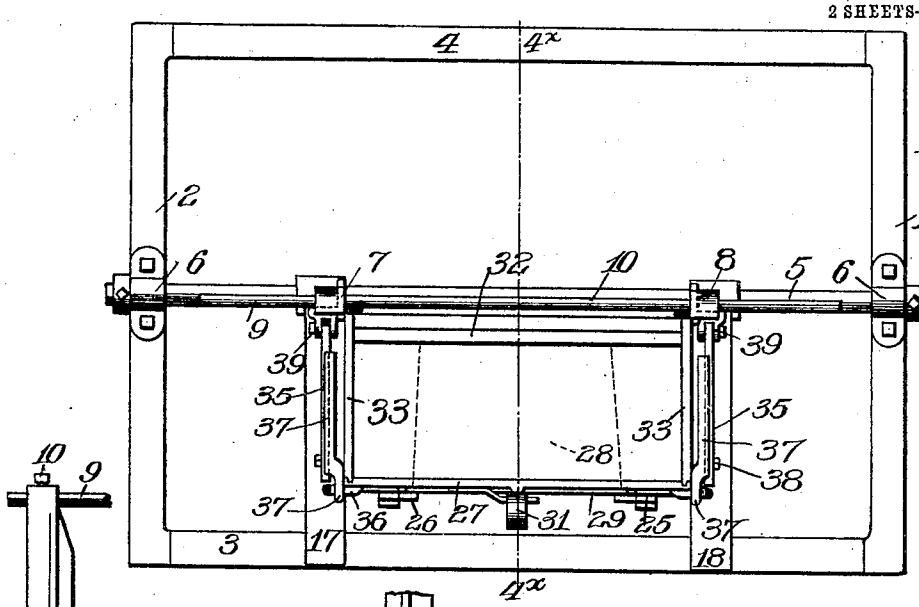


Fig. 5.

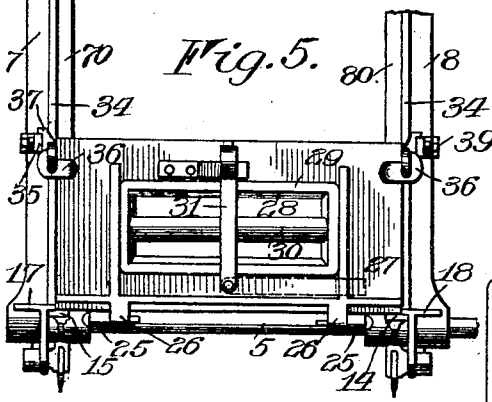


Fig. 6.

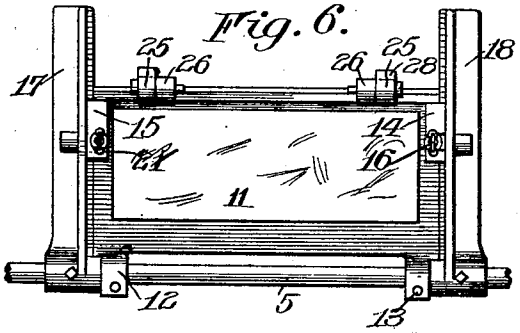
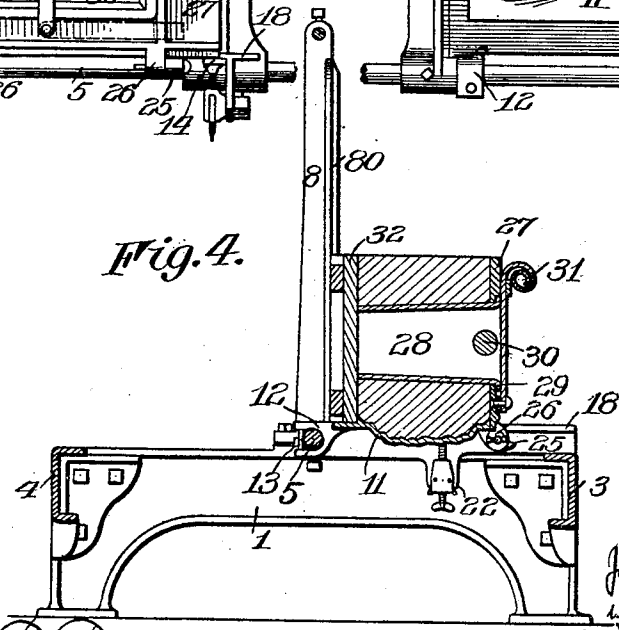


Fig. 4.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR MANUFACTURING HOLLOW BUILDING-BLOCKS.

No. 795,370. Specification of Letters Patent. Patented July 25, 1905.

Application filed February 27, 1904. Serial No. 195,525.

To all whom it may concern:

Be it known that I, JAMES W. SHONE, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Machines for Manufacturing Hollow Building-Blocks; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

My present invention has for its object to provide a machine for manufacturing artificial-stone or concrete building-blocks having their outer faces formed in imitation of cut or dressed stone, the parts of which are so arranged that the block may be formed with its face downward and when completed may be rotated onto one of its side faces and the inclosing sides of the mold-box removed and the block withdrawn therefrom without injury.

To these and other ends the invention consists in certain improvements and combination of parts, all as will be hereinafter described, and the novel features pointed out in the claims at the end of the specification.

In the drawings, Figure 1 is a perspective view of a machine constructed in accordance with my invention. Fig. 2 is a top plan view thereof. Fig. 3 is a side elevation thereof. Fig. 4 is a cross-sectional view on line $4^{\times}$ $4^{\times}$ of Fig. 2. Fig. 5 is a front elevation of the molding-box removed from the bed-frame, and Fig. 6 is a similar view of the mold-box looking in the direction indicated by the arrow in Fig. 3. Fig. 7 is a cross-sectional view similar to Fig. 4, showing the block in position about to be removed from the mold-box; and Fig. 8 is a detail view.

Similar reference-numerals in the several figures indicate similar parts.

In the construction of hollow concrete building-blocks the outer faces of which are formed in imitation of cut or dressed stone it is difficult to pack the mixture of silicious material into all the crevices when the mold-box is formed in such a manner that the face of the block extends vertically during the molding operation, and to overcome this difficulty I have employed a particular construction of mold-box, which is mounted upon a revoluble or tilting frame in such a manner that when the block is formed the outer face thereof is upon the lower side and when completed may be rotated onto one of its side faces and removed from the mold-box.

In the present embodiment of my invention I employ an open rectangular frame or support consisting of the end pieces 1 and 2 and the side pieces 3 and 4, between which latter extends a shaft 5, supported at its ends in bearings 6. Arranged on this shaft is a mold-box-supporting frame composed of the side pieces 7 and 8, the respective lower ends 17 and 18 of which project laterally, forming an open bottom on the frame and are adapted to rest upon the side portion 3 of the main frame or support when the parts are in their normal position. The side pieces 7 and 8 of the supporting-frame are provided with the faces 70 and 80, arranged at an angle of ninety degrees to the frame-bottom, and are adapted to support a removable side piece of the mold-box, as will be more fully described. Extending through the upper ends of the side pieces 7 and 8 is a rod or handle 9, secured by bolts 10 and operating as a handle, whereby the revoluble supporting-frame may be rotated on the shaft 5, the adjustable connections between the parts permitting the side pieces to be readily adjusted relatively to each other on the shaft 5, permitting mold-boxes of greater or less length to be employed.

The mold-box embodies the bottom or face-plate 11, formed with the inner concave or otherwise-shaped face, forming a matrix for molding the face of the block and having at one edge jaws 12, adapted to extend over the shaft 5 and to be secured thereto by cotter-keys or other fastening devices 13, and at its outer side the face-plate is provided with laterally-extending lugs or projections 14 and 15, adapted to engage beneath the overhanging edges of the laterally-extending ends 17 and 18 on the side pieces of the tilting frame and to be normally held rigidly in engagement therewith by means of a clamping device such as shown. However, as it is desirable to move the mold-box bottom or face-plate 11 relatively to the bottom of the supporting-frame to facilitate the removal of the molded block, as will be described hereinafter, I mount clamping devices on the arms 17 and 18, which engage the projections 14 and 15. These clamping devices are in the form of screws 16, coöperat-

ing with segmental nuts 20, carried on pivoted spring-operated fingers 21, arranged upon ears 22, as shown. At the outer edge of the mold-box bottom or face-plate are provided lugs or ears 25, to which are pivoted similar ears 26, formed on the outer side piece 27 of the mold-box, and also having the stops 28 thereon, with which the side piece 27 engages to limit its outward movement when the parts of the box are opened. The side piece 27 is provided with a central aperture, through which a core 28 of any desired form may be passed, said core having at its outer end a rim or flange 29 and the handle 30, by means of which it may be removed, and when placed in operative position the core is held securely by a pivoted locking-bar 31. Arranged in opposition to the outer side piece 27 is the removable side piece or pallet 32, supported upon the faces 70 and 80 of the arms 7 and 8. The end boards 33 extend over the ends of the pallet and are prevented from outward movement by means of ribs 34, formed on the faces of said arms, their opposite ends being let into apertures or grooves formed at the ends of the inner surface of the mold-box bottom or face-piece 11. In order to hold the mold-box in closed position, locking devices in the form of hooks 35 are pivoted on the arms 7 and 8, their outer ends being adapted to engage lugs or projections 36 on the outer side piece 27, as shown particularly in Fig. 3.

In the illustrations it will be noticed that the main frame or support and the revoluble frame thereon are somewhat larger than is required for a mold-box of the size illustrated, and it will be readily understood that by separating the side pieces 7 and 8 of the movable frame a mold-box of greater length may be attached thereto and that the height and width of the box may be correspondingly increased. The only changes which it is necessary to make is to increase the length of the hooks 35 by sliding the ends 37 thereof outwardly, securing them in position by means of bolts 38, and if the thickness of the block is to be increased and a mold-box of greater depth is employed the adjustable bearings 39, to which said hooks are pivoted, may be moved outwardly on their respective arms 7 and 8.

The operation of the machine will now be readily understood. The mold-box-supporting frame is rotated into the position shown in Fig. 4 and the face-plate 11 of the mold is secured rigidly thereto by the clamps coöperating therewith, and as the bolts 16, extending through the split nuts 20, are provided with a trapezoidal thread, they may be pushed inwardly through the nuts, only requiring a single turn, or partial rotation, to securely lock the parts together. The pallet 32 is then placed in position on the faces 70 and 80 and the end boards 33 inserted between said arms and the side piece 27, the parts of the mold-box being then secured by the hooks 35. The mold-box being supported in this position, is held face downward, and the operator may then conveniently lay the face of the block by tamping the mixture of the finer sand and cement into all the depressions and crevices in the face of the mold. This facing is then backed up by the usual coarser mixture of gravel and cement and the core 28 inserted and held in position by the strap or latch 31, permitting the remainder of the mold to be filled and the block completed. To remove the finished block from the mold-box, the operator rotates the frame into the position shown in Fig. 2, when after removing the core 28 and the hooks or locking devices 35 the side piece 27 of the mold-box may be rotated outwardly into engagement with the stops 28. By compressing the levers 21 the section of nuts 20 are disengaged from the bolts 16, allowing the latter to move outwardly and the face-plate 11 to rotate slightly on the shaft 5 relatively to the pallet 32 to free itself from the face of the block, as shown particularly in Fig. 7, permitting the block to be removed from the machine, when the parts may be again closed in readiness for a subsequent operation.

A molding-machine such as I have described possesses obvious advantages, the principal one of which is that the block during the molding operation is supported entirely upon its face, and as the tamping operations are all in a downward direction it is possible to produce blocks having faces containing the fine lines or tool-marks and the sharp projections in imitation of dressed stone. The core being introduced from the side and the block rotated a quarter of a revolution, it may be allowed to set and harden in its natural position with the core-aperture extending vertically. Further, as both the upper and lower surfaces of the block are formed against the side pieces of the mold-box they will be parallel and smooth, so that when employed for building purposes the blocks fit accurately upon each other.

I claim as my invention—

1. A mold for artificial-stone blocks embodying the connected bottom, sides and ends and adapted to be tilted on its side to discharge the block, said bottom forming a matrix for the face of the block and movable away from the face of the block when the latter is supported on its side to disengage it therefrom.

2. The combination with a mold-box embodying a bottom, end boards and sides, of a pivoted frame supporting the bottom and one of the sides and adapted to be rotated to upset the mold and means for adjusting the bottom on the frame to move it away from the supported side portion of the mold.

3. The combination with a mold-box em-

bodying a bottom, end boards and sides, of a pivoted frame supporting the bottom and one of the sides and adapted to be rotated to upset the mold, pivotal connections between the bottom portion of the mold and the supporting-frame and means for moving said bottom outwardly relatively to the frame.

4. The combination with a mold-box embodying a bottom, ends and sides, of a revoluble frame supporting the box and connections between the frame and said bottom for moving the latter outwardly when said box has been rotated onto one of its sides.

5. The combination with a mold-box embodying a bottom, ends and sides, of a revoluble frame having faces adapted to support the bottom and one of the sides of the mold, pivotal supports for the bottom arranged at one edge thereof and a device for securing the bottom to the frame.

6. The combination with a support, a shaft thereon and a revoluble frame mounted on the shaft, of a mold-box bottom journaled on the shaft and movable independently thereon, devices for detachably connecting said bottom to the frame, and side and end pieces supported on the frame and coöperating with the bottom.

7. The combination with a support, a shaft thereon, and a mold-box embodying a bottom, sides and ends, of a frame composed of side portions relatively movable on the shaft and adapted to support the bottom and one of the sides of the mold, pivotal connections between the shaft and said bottom and clamping devices for securing the ends of the bottom to the side portions of the frame.

8. The combination with a support, a shaft thereon and a frame arranged on the latter and a mold-box side piece supported on the frame, of a mold-box bottom pivoted to the shaft, means for adjusting it on its pivot relatively to the frame, a second side piece hinged to bottom, means for holding it in operative position and end boards coöperating with the two side pieces.

9. The combination with a support, a shaft thereon and a frame arranged on the latter having faces extending at right angles to each other, a mold-box side piece supported on one of the faces and a mold-box bottom carried on the other face, of a second side piece arranged in opposition to the first, end boards coöperating with said sides and means for supporting the parts in their normal position.

10. The combination with a support, a shaft thereon and a frame arranged on the latter having faces extending at right angles to each other, a mold-box side piece supported on one of the faces and a mold-box bottom journaled on the shaft and connections between it and the other face, of a second side carried on the bottom and adapted to open outwardly thereon, end boards coöperating with said sides and means for holding the parts of the mold-box in operative position on the frame.

11. The combination with a support, a shaft thereon and a frame arranged on the latter having faces extending at right angles to each other, a mold-box side piece supported on one of the faces and a mold-box bottom journaled on the shaft and adjustable connections between it and the frame whereby said bottom may be moved relatively to the other face, of a second side carried on the bottom and having a limited outward movement thereon, end boards coöperating with said side pieces and devices on the frame for temporarily holding the parts of the mold-box in operative position.

12. The combination with a support, a frame journaled thereon comprising relatively adjustable side portions having faces arranged at right angles to each other, of a mold-box side piece supported on one of said faces, a mold-box bottom arranged between the side portions of the frame and adjustable devices for moving it relatively to the other face, a second side piece arranged in opposition to the first and end boards coöperating with said side pieces.

13. The combination with a support, a frame journaled thereon and a mold-box side supported on the frame, of a mold-box bottom, means for supporting it at right angles to said side piece, a second side piece arranged in opposition to the first, means on the frame for holding it in operative position and end boards coöperating with the two side pieces.

14. The combination with a support, a frame journaled thereon and a mold-box side supported on the frame, of a mold-box bottom, means for supporting it at right angles to said side piece, a second side piece arranged in opposition to the first, and pivoted at the outer edge of the bottom, stops on the latter for limiting its outward movement, locking devices on the frame for holding said side piece temporarily in operative position and end boards coöperating with said side pieces.

15. The combination with a support, a frame journaled thereon having ribs, a mold-box side piece supported on said frame, and a mold-box bottom, of means for securing the bottom in an angular position relative to side piece, a second side piece arranged in opposition to the first having recesses in its face, end boards engaging said recesses and the ribs on the frame and locking devices for holding the parts of the mold-box in operative position.

16. The combination with a support, a frame journaled thereon, a mold-box side piece supported on said frame and a mold-box bottom, of means for adjustably securing the bottom in an angular position rela-

tive to said side piece, a second side piece supported on the bottom, devices on the frame for locking it in operative position and end pieces coöperating with the side pieces.

17. The combination with a support, a frame journaled thereon, a mold-box side piece supported on said frame and a mold-box bottom, of means for adjustably securing the bottom in an angular position relative to said side piece, a second side piece supported on the bottom, and provided with an aperture, and a removable core extending therethrough, devices for locking said side portion in operative position on the frame and end boards coöperating with the side pieces.

18. The combination with a support, a frame journaled thereon embodying the open bottom and a vertically-extending side, a mold-box side piece supported on the side of the frame, and a mold-box bottom arranged in the open bottom of the frame, and provided with projections adapted to engage therewith, of a clamping device adapted to secure the bottom to the frame, a second mold-box side journaled on the bottom and stops for limiting its outward movement, end boards coöperating with the side pieces and locking devices for holding the parts of the mold-box in operative position.

19. In a machine for molding blocks the combination with a revoluble frame having two mold-supporting surfaces arranged at an angle, of a mold mounted on the frame and embodying the bottom, sides and ends, the said bottom forming a matrix for the face of the block and supported upon one of the surfaces of the frame when in position to mold the block, and one of said sides being removable and supported upon the other extension of the frame when tilted to the position for discharging the block.

20. In a machine for forming building-blocks, the combination with a mold-box comprising a bottom provided with a matrix for forming the face of the block, side pieces, one of which is removable, and end pieces, of a revoluble frame supporting the bottom and extending over the removable side of the mold-box, said frame being adapted to rotate the latter to turn the block and support it in position of rest on the removable side piece with its face extending in a vertical plane.

21. In a machine for forming building-blocks, the combination with a mold-box comprising a bottom provided with a matrix for forming the face of the block, side pieces, one of which is provided with an aperture, of a core adapted to be inserted in a horizontal plane through the aperture in the side of the box and a revoluble frame for supporting the mold-box and rotating it to turn the face of the molded block and the core into a vertical position.

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