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MACHINE FOR MAKING CONCRETE BLOCKS.

APPLICATION FILED FEB. 1, 1909.

954,367. Patented Apr. 5, 1910.

2 SHEETS—SHEET 1.

FIG 2

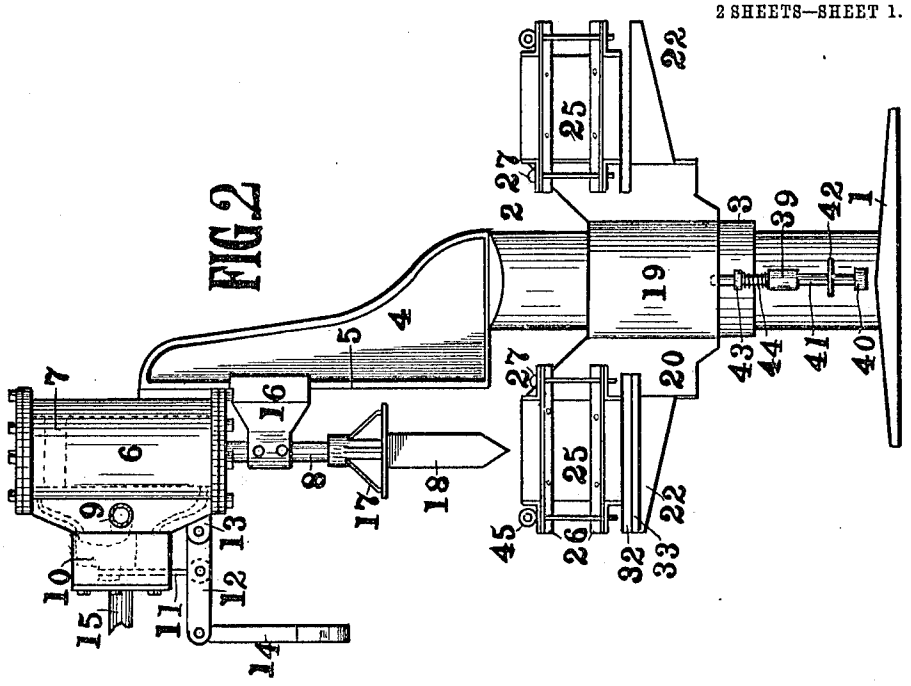
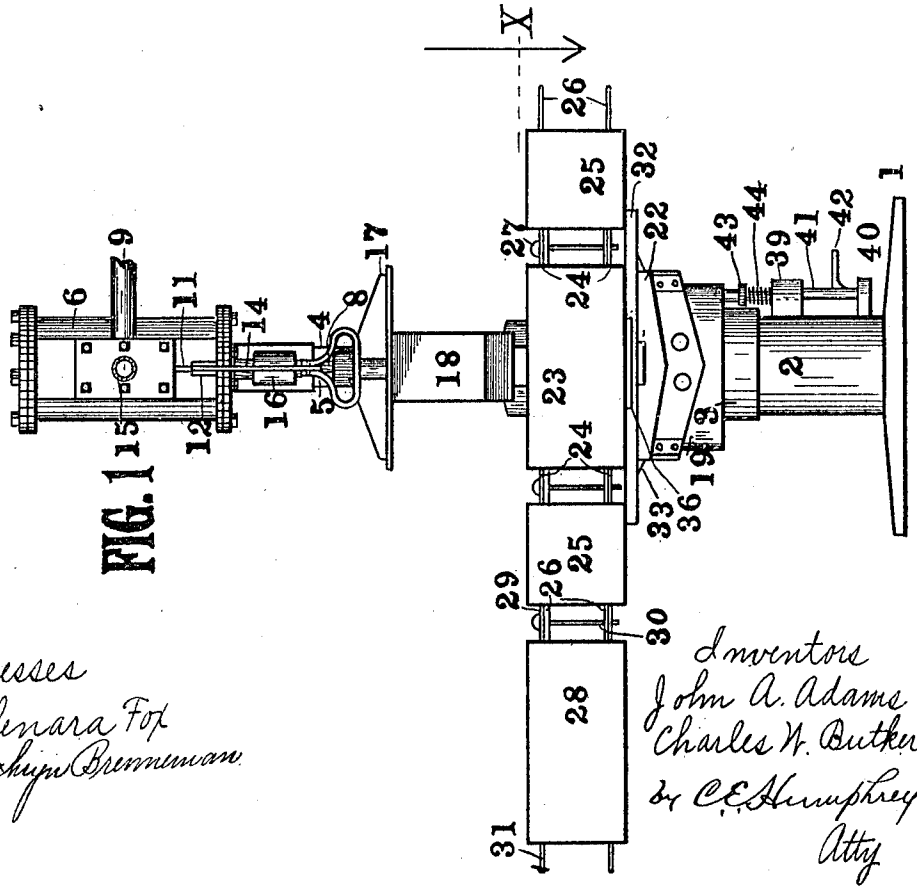


FIG. 1



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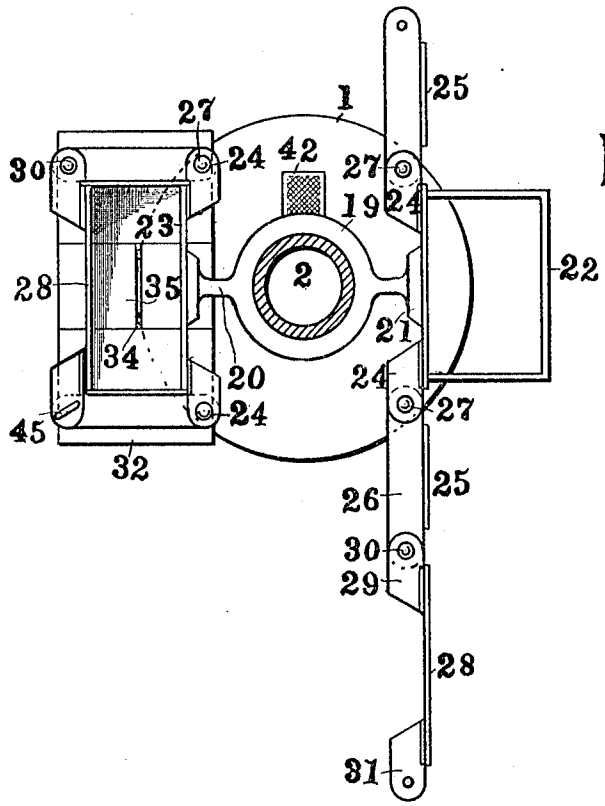

FIG. 3

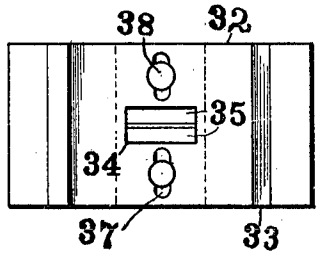

FIG. 4

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UNITED STATES PATENT OFFICE.

JOHN A. ADAMS AND CHARLES W. BUTKER, OF WARWICK, OHIO; CHARLES BUTKER ADMINISTRATOR OF SAID JOHN A. ADAMS, DECEASED.

MACHINE FOR MAKING CONCRETE BLOCKS.

954,367. Specification of Letters Patent. Patented Apr. 5, 1910.

Application filed February 1, 1909. Serial No. 475,455.

To all whom it may concern:

Be it known that we, JOHN A. ADAMS and CHARLES W. BUTKER, citizens of the United States, residing at Warwick, in the county of Summit and State of Ohio, have invented new and useful Improvements in Machines for Making Concrete Blocks, of which the following is a specification.

This invention relates to improvements in machines for making concrete blocks and the object thereof is to provide a machine having mechanical means for tamping the material into blocks and also with means for simultaneously forming an opening therein.

The invention further contemplates providing the device with a plurality of molds capable of being horizontally revolved to bring them successively under a plunger for tamping the material and the formation of an opening therein, during which operation each mold not directly under or in engagement with the plunger may be emptied of its completed block and refilled with a suitable material for the formation of another block.

A still further object is to provide the device with an improved pallet constituting the bottom of the mold provided with slidable gates or members adapted to be separated and forced apart to receive that portion of the plunger which forms the opening in the block, said pallet provided with an opening of sufficient size to freely receive the plunger and to fit the latter so closely as to prevent the escape of material from the same.

With the foregoing and other objects in view, the invention consists in the novel construction, combination and arrangement of parts constituting the invention to be hereinafter specifically described and illustrated in the accompanying drawings which form a part hereof wherein is shown the preferred embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

In the drawings, in which similar reference numerals indicate like parts in the different figures: Figure 1 is a view in front elevation of a concrete block machine embodying this invention showing one of the molds opened to permit the withdrawal of a completed block therefrom. Fig. 2 is a view in side elevation looking from the right of Fig. 1, also showing both molds in a closed position. Fig. 3 is a sectional view on line X of Fig. 1; and, Fig. 4 is an inverted plan of a pallet employed in connection with this device.

Referring to the drawings in detail, 1 designates a base from which extends upwardly a standard having a cylindrical portion 2 the medial portion of which is provided with an enlarged portion or collar 3. Preferably formed integral with the cylindrical portion 2 of the standard and extending upwardly therefrom is a head 4 having a forward edge 5 constituting a guide for a purpose to be hereinafter described. Secured to the upper end of the head 4 is a vertical cylinder 6 provided with a piston 7 bearing a piston rod 8. An operating fluid is admitted to the cylinder 6 through an inlet 9 which is controlled by an ordinary "D" valve 10 operated by means of a valve stem 11 manipulated by means of a lever 12 pivoted on an ear 13 attached to the cylinder. The outer end of the lever 12 is provided with an operating handle 14 by which the "D" valve 10 is shifted in position. The fluid used in operating the piston 7 escapes through the medium of a pipe 15. Connected to the piston rod 8 is a cross head 16 adapted to slide on the guide 5 whereby the outer or free end thereof is held against transverse or lateral movement.

Mounted on the lower end of the piston rod 8 is a head 17 from which depends a plunger or mandrel 18 provided with a wedge-shaped lower end, as shown in the drawings for the purpose of forming in the block made by this machine a suitable opening such as is customarily employed in blocks of this character. Surrounding the cylindrical portion 2 of the standard is a shiftable carrier consisting of a sleeve 19 from which projects a plurality of radial wings 20, the outer ends of which are provided with vertically-extended T-shaped heads 21, to the lower ends of which are secured a skeleton shelf or table 22. Secured to the upper portion of each of the heads 21 is a fixed plate 23 which constitutes one of the sides of the mold. This plate has

secured to its rear face two pairs of laterally-projecting apertured lugs 24. The ends of the molds are formed by two plates 25, each provided with cross bars 26 secured on the outer faces thereof, which cross bars are provided with apertures to receive pivoting bolts 27 by which the cross bars 26 and end members of the molds are hinged to the side plate 23. Secured to the projecting cross bars 26 of one of the end plates is a complementary side plate 28 provided with projecting lugs 29 having apertures to receive a pin 30 extending through registering apertures in the cross bars 26. The outer or free end of the plate 28 is provided with a pair of apertured lugs 31 so positioned that when the mold is folded together or set up in the manner shown in Fig. 2, the apertures in the lugs 31 will register with the apertures in the outer free ends of the cross bars 26 of the end plate 25 on the opposite side of the fixed plate 23. When the members composing the mold are set up or are in operative relation to receive material they will be arranged as shown in Fig. 2 and when opened to permit the removal of a finished block from the mold they will be arranged as shown in Figs. 1 and 3.

Adapted to be mounted on the shelf or table 22 is a pallet 32 comprising a plate of suitable material having on its under face a pair of guiding strips 33 which are adapted to engage the outer side faces of the shelf or table 22 and be thereby accurately positioned with respect to the mold and the plunger 18. The pallet 32 which forms the bottom of the mold when positioned on the shelf or table 22 will be so disposed with respect to the mold that the lower edges of the members thereof will rest upon and form a comparatively snug joint or union therewith to prevent the escape of material from which the blocks are to be formed. The central portion of the pallet is provided with an opening 34 of a size to freely receive the plunger 18 and this opening is normally closed through the medium of a pair of transversely-shiftable gates 35 seated in a transversely-extending groove 36 formed in the upper surface of the pallet 32. The bottom of the groove or channel 36 is provided with a pair of slotted openings 37 through which extend headed pins 38 depending from the gates 35 whereby these gates are prevented from being unintentionally displaced or separated from the pallet 32. These gates are so arranged as to have their inner ends substantially meet on the central longitudinal line of the pallet 32 and thereby approximately close the opening 34. Before filling the mold with material for the formation of a block, these gates are closed as shown in Figs. 3 and 4 and sufficient material is placed therein to form the block and as the plunger 18 descends the wedge-shaped lower end will enter the slight space intervening between the inner ends of the gates 35 and force them apart sufficiently to permit the plunger to descend and as the plunger continues its descent the body portion thereof fills the opening 34 and prevents any escape of material therefrom.

Mounted on the cylindrical portion 2 of the standard are a pair of apertured bearings 39 and 40 the apertures of which are in alinement with each other to constitute bearings for a vertically-shiftable shaft 41 provided with a pedal 42 and a collar 43 between which and the bearing 39 is a spring 44 the tendency of which is to force upwardly the shaft 41. The function of this shaft 41 is to constitute a lock the carrier to accurately position the molds with respect to the plunger, and in order to carry into effect this function, the under face of the sleeve 19 is provided with suitably positioned recesses to receive the upper end of the shaft 41 and these recesses are so placed in the under face of the sleeve that the molds will be accurately positioned with respect to the plunger 18. In order to release the shaft 41 from engagement with the sleeve 19 the operator places his foot on the pedal 42 and forces down the shaft 41 out of engagement with the sleeve 19, thereby releasing the same and permitting the horizontal revolution of the molds.

In operation the members are arranged as shown in Fig. 2 with the molds closed. The mold which is not in alinement with the plunger 18 is then filled with suitable material to form a block, after which the shaft 41 is released and the sleeve 19 bearing the molds is given a semi-rotation which brings the filled mold under the plunger, and the shaft 41 is permitted to engage in a suitable opening in the sleeve 19 which effectually locks the mold in position. The operator then grasps the handle 14 and by manipulating it causes a reciprocal movement of the head 17 and plunger 18, driving the latter down through the material in the mold until the wedge-shaped end of the plunger has forced the gates 35 apart and formed or cored an opening in the material. Simultaneously with the formation of the opening in the block, the under surface of the head 17 tamps or compacts the material held within the mold so firmly as to make the same approximately self-sustaining. The pin 45 which holds the sides of the mold together is then withdrawn permitting the sides thereof to be swung apart into the open position shown in Fig. 1 The pallet 32 is then withdrawn and the block is subsequently removed therefrom. While this operation is taking place a pallet is placed on the shelf or table 22 on the opposite side of the machine and the mold thereon simultaneously filled with material ready for the

next operation, after which the last mold filled is swung to a position under the plunger and the operation repeated.

What we claim and desire to secure by Letters Patent, is:—

1. A machine for manufacturing concrete blocks comprising a standard, a shiftable carrier mounted upon the lower portion of said standard and provided with a wing, a mold comprising front and rear walls and a pair of end walls, said rear wall fixedly secured to said wing, said end walls pivotally connected to the ends of the rear wall and said front wall pivotally connected to one of said end walls and adapted to be detachably connected to the other of said end walls, a skeleton shelf fixed to said wing and disposed at right angles with respect to and arranged below said rear wall, a removable pallet mounted upon said shelf and constituting the bottom of the mold and provided with an opening, a pair of shiftable gates connected with the pallet and normally closing the opening therein, a plunger having a wedge-shaped lower end arranged over the mold, and means for moving the plunger downwardly through the material contained in the mold, said wedge-shaped lower end of said plunger shifting said gates whereby the plunger will extend a sufficient distance below the mold to provide the block with an opening extending entirely therethrough, said gates constituting means for sustaining the material within the mold prior to the operation of the plunger.

2. A machine for manufacturing concrete blocks comprising a standard, a shiftable carrier mounted upon the lower portion of said standard and provided with a wing, a mold comprising front and rear walls and a pair of end walls, said rear wall fixedly secured to said wing, said end walls pivotally connected to the ends of the rear wall and said front wall pivotally connected to one of said end walls and adapted to be detachably connected to the other of said end walls, a skeleton shelf fixed to said wing and disposed at right angles with respect to and arranged below said rear wall, a removable pallet mounted upon said shelf and constituting the bottom of the mold and provided with an opening, a pair of shiftable gates connected with the pallet and normally closing the opening therein, a plunger having a wedge-shaped lower end arranged over the mold, means for moving the plunger downwardly through the material contained in the mold, said wedge-shaped lower end of said plunger shifting said gates whereby the plunger will extend a sufficient distance below the mold to provide the block with an opening extending entirely therethrough, said gates constituting means for sustaining the material within the mold prior to the operation of the plunger, and means carried by the standard and adapted to engage said carrier for maintaining it from movement during the operation of the plunger through the mold.

3. A machine for manufacturing concrete blocks comprising a standard, a shiftable carrier mounted upon the lower portion of said standard and provided with a plurality of radially extending wings, a plurality of molds each comprising front and rear walls and a pair of end walls, said rear walls fixedly secured to said wings, said end walls pivotally connected to the ends of the rear walls, and the front wall of each mold connected to an end wall and adapted to be detachably connected to the other end wall of its respective mold, a skeleton shelf fixed to each of said wings and disposed at right angles with respect to a rear wall of the mold and arranged below said rear wall, a removable pallet mounted upon each of said shelves and constituting the bottom of a mold and provided with an opening, a pair of shiftable gates connected to each of the pallets and normally closing the opening in its respective pallet for sustaining the material within its respective mold from which the block is formed, a plunger having a wedge-shaped lower end arranged over one of the molds when the latter is positioned for molding the block, said carrier adapted to be shifted to alternately position the molds below the plunger, and means for moving the plunger downwardly through the material contained in that mold arranged under the plunger, said wedge-shaped end of said plunger shifting the gates whereby the plunger will extend a sufficient distance below the mold to provide the block with an opening extending entirely therethrough.

4. A machine for manufacturing concrete blocks comprising a standard, a shiftable carrier mounted upon the lower portion of said standard and provided with a plurality of radially extending wings, a plurality of molds each comprising front and rear walls and a pair of end walls, said rear walls fixedly secured to said wings, said end walls pivotally connected to the ends of the rear walls, and the front wall of each mold connected to an end wall and adapted to be detachably connected to the other end wall of its respective mold, a skeleton shelf fixed to each of said wings and disposed at right angles with respect to a rear wall of the mold and arranged below said rear wall, a removable pallet mounted upon each of said shelves and constituting the bottom of a mold and provided with an opening, a pair of shiftable gates connected to each of the pallets and normally closing the opening in its respective pallet for sustaining the material within its respective mold from which the block is formed, a plunger having a wedge-shaped lower end arranged over one

of the molds when the latter is positioned for molding the block, said carrier adapted to be shifted to alternately position the molds below the plunger, and means for moving the plunger downwardly through the material contained in that mold arranged under the plunger, said wedge-shaped end of said plunger shifting the gates whereby the plunger will extend a sufficient distance below the mold to provide the block with an opening extending entirely therethrough, and means carried by the standard and engaging the carrier for locking it in its shifted position.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

JOHN A. ADAMS.
CHARLES W. BUTKER.

Witnesses:
GLENARA FOX,
C. E. HUMPHREY.