

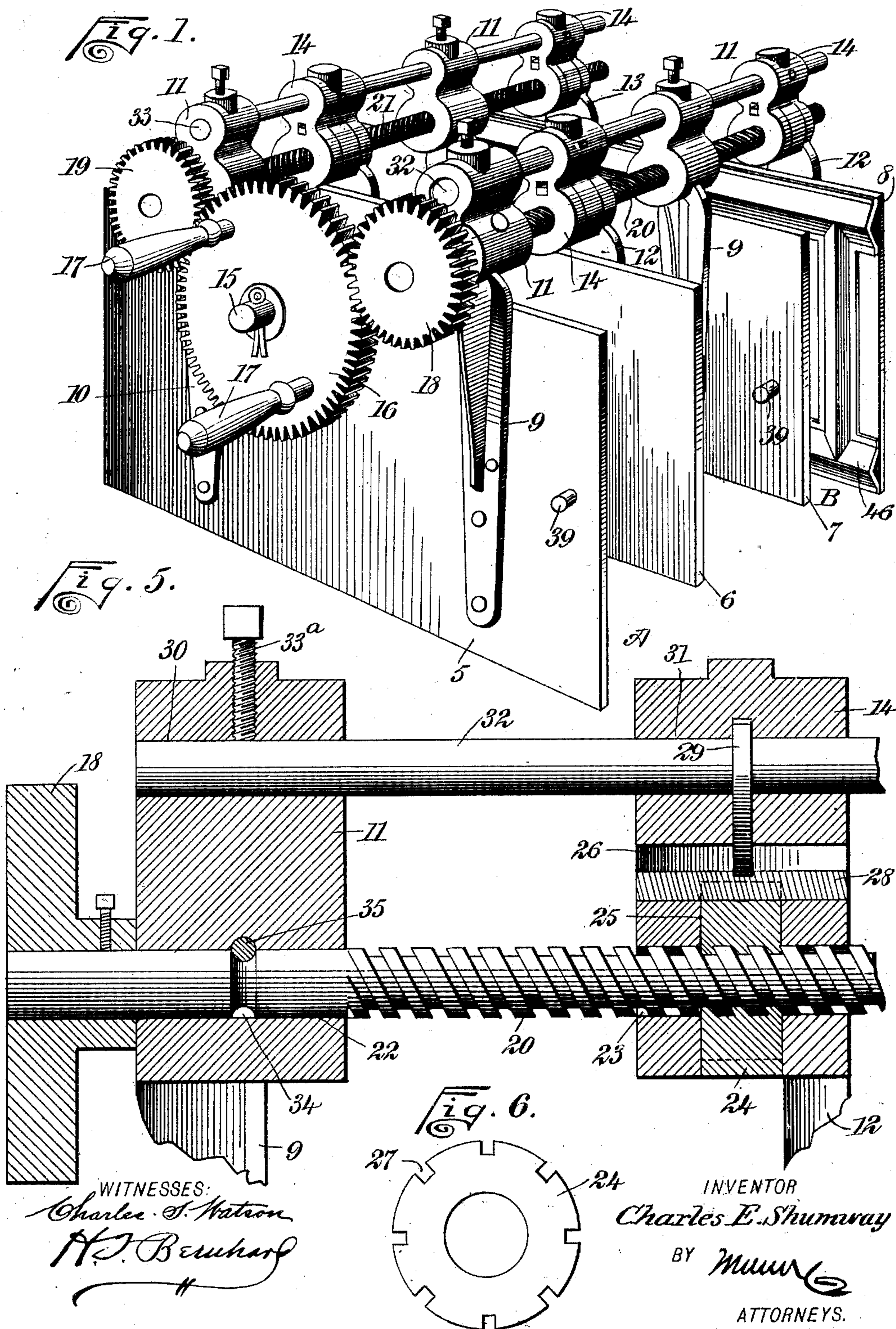
No. 759,031.

PATENTED MAY 3, 1904.

C. E. SHUMWAY.
MOLD FOR CONCRETE WALLS.
APPLICATION FILED MAY 14, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



UNITED STATES PATENT OFFICE.

CHARLES E. SHUMWAY, OF ALBION, MICHIGAN.

MOLD FOR CONCRETE WALLS.

SPECIFICATION forming part of Letters Patent No. 759,031, dated May 3, 1904.

Application filed May 14, 1903. Serial No. 157,073. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. SHUMWAY, a citizen of the United States, and a resident of Albion, in the county of Calhoun and State of Michigan, have invented a new and useful Improvement in Molds for Concrete Walls, of which the following is a full, clear, and exact description.

My invention relates to improvements in molds for concrete walls; and the object that I have in view is to provide an improved machine by which a double wall, with an air-space between the adjacent or parallel courses, may be rapidly and economically constructed by unskilled labor.

A further object is to provide means for quickly separating the members, to the end that the machine may be withdrawn from a freshly-set section of the wall without disturbing the concrete mixture, to key the several sections together as they are formed, and to make provision for molding the corners of the structure, as well as to mold round buildings, such as silos.

Further objects and advantages of the invention will appear in the course of the subjoined description, and the novelty will be defined by the annexed claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of my molding-machine for making concrete walls. Fig. 2 is a plan view showing two of the machines in position for molding a concrete wall and the corner thereof. Fig. 3 is a detail perspective view showing a gate adapted to be used at one end of each molding chamber or space. Fig. 4 is a detail perspective view of a type of hopper adapted to be used in connection with the machine shown by Fig. 1. Fig. 5 is a vertical cross-section, on an enlarged scale, through a part of the machine, showing one pair of the plates thereof. Fig. 6 is a detail view of a locking member adapted for use in connection with each of a series of nuts for adjusting the movable plates or members of the mold; and Fig. 7 is a detail view of the pattern plate or member 8 con-

structed with strips to form a water-table, said strips being bolted to the inner face of said plate or member.

In carrying my invention into practice I employ two pairs of members, indicated at 5 6 7 8 by Fig. 1 of the drawings. The mold therein shown is designed for producing straight sections of a double wall, and in this embodiment of the invention the members 5, 6, 7, and 8 consist of flat straight plates, of metal or other suitable material, said plates being assembled in parallel relation and being of any desired length and width. The plates 5 and 7 of the two pairs are non-adjustable as respects movement with relation to the plates 6 and 8, and these non-adjustable plates 5 7 are provided with upstanding brackets 9 10, each bracket terminating at its upper extremity in a head 11. The adjustable members 6 8 of the molding-machine are provided with similar brackets 12 13, and these brackets are provided with heads 14 at their upper ends.

One of the outside members—as, for example, the member 5—is equipped with a stub shaft or axle 15, on which is mounted a master-gear 16, said master-gear having suitable cranks or handles 17 for its convenient manipulation by hand. The master-gear is disposed between and has intermeshing engagement with gear-pinions 18 19, which are secured on one end of screw-threaded shafts 20 21. Each shaft is threaded continuously in one direction, either right or left hand, as desired. The threaded shafts 20 21 pass loosely through suitable openings 22 23, which are provided in the lower parts of the heads 11 14 of the two pairs of members 5 6 and 7 8, respectively. The shafts 20 21 are thus adapted to turn freely in the heads 11 of the non-adjustable members 5 7; but these shafts serve as the means for imparting the lateral adjustment to the members 6 8 of the two pairs, for which purpose the heads 14 of said adjustable members 6 8 are constructed to receive suitable nuts 24. (Shown more clearly by Figs. 1, 5, and 6 of the drawings.) The heads 14 on the adjustable members 6 8 are forked or slotted vertically at their lower portions, as indicated at 25 in Figs. 1 and 5, and these

heads are also provided with transverse slots 26, the latter having communication with the vertical slots 25. A circular nut 24 is placed in the vertical slot 25 of each head 14 on the adjustable member 6 or 8, said nut 24 having a screw-threaded opening which is adapted to have engagement with one of the threaded shafts 20 or 21. The nut 24 is also provided with a series of notches 27 in its peripheral edge and with one of these notches is adapted to engage a pin or key 28, (see Fig. 5,) whereby the key is adapted to hold the nut against rotation in the lower slotted part of the head 14. This key 28 may be withdrawn from engagement with the notched edge of the nut when it is desired to allow said nut to rotate with the threaded shaft for adjusting the machine to walls of different thicknesses; but normally the key is held in interlocking engagement with the nut by the employment of a spring 29, the position of which is indicated by Fig. 5. As shown by said figure, the spring is in the form of a flat or leaf spring arranged in a suitable cavity or opening of the head 14, and said spring engages with the key to normally hold it in a notch of the circular nut.

The heads 11 and 14 are extended above the shafts 20 21, and in the upper parts of these heads are provided transverse openings 30 31, the latter being parallel to the openings 22 23 of said heads. In these openings 30 31 of the heads are fitted the guide rods or stems 32 33. These rods or stems pass loosely through the heads 14 of the adjustable members 6 8; but the heads 11 of the non-adjustable members 5 7 are provided with clamping-screws 33^a, which are adapted to be tightened against the rods 32 for supporting said rods in position to serve as guides for the heads 14 of the adjustable members. Any suitable means may be employed to hold the screw-shafts 20 21 against sliding in the heads 11 of the non-adjustable members 5 7; but, as shown by Fig. 5, these screw-shafts are provided with annular grooves 34 at points within the heads 11, said heads being equipped with keys or pins 35, which enter the annular grooves 34, so as to confine the screw-shafts against endwise displacement and permit said screw-shafts to turn freely on their axes when the gears 18 19 are rotated by the operation of the master-gear 16.

The parallel members 5 6 and 7 8 provide mold cavities or spaces A B between themselves and an intermediate space C between the members 6 7 of the two pairs. (See Fig. 2.) The mold-cavities A B at one end of the molding-machine are adapted to be closed by suitable doors or gates, one of which is shown by Fig. 3. The door or gate 36 is assembled in abutting engagement with the end of the companion mold members 5 6 or 7 8, and this door is adapted to be held in place by any suitable means—such, for example, as the strap or keeper 37, having slotted ends 38 fitted into

engagement with the studs or pins 39, which are fastened to the members 5 6 or 7 8. The door or gate 36 is adapted to be forced tightly in place by a wedge 40 or its equivalent, and this door is provided on the inner side or face with a dovetailed groove or channel 41, said channel facing the mold cavity or space A or B and having communication therewith. The dovetail shape of the channel is not essential, and I may use a channel of any shape, thus permitting me to use a door adapted to be hinged to one of the members.

Concrete material of any suitable nature is adapted to be supplied to the mold-chambers A B by a hopper, one form of which is shown by Fig. 4. This hopper consists of a plate 42, having depending members 43 44, said members and the plate being preferably cast in a single piece of metal. The members 43 44 taper in downward directions, and said individual members are shown by Fig. 4 as diverging downwardly in order that the concrete mixture may be properly delivered to the mold-chambers A B when the hopper is placed in position on the machine.

In Figs. 1 and 2 of the drawings I have shown a molding-machine having its two pairs of members formed by flat parallel plates; but the shape or contour of these members may be modified, according to the shape it is desired to give to the concrete wall. In Fig. 2 I have also represented a machine having right-angular members, the same being indicated at 5^a, 6^a, 7^a, and 8^a. It will be understood that each member consists of two portions disposed at right angles to one another, and these members are assembled in such relation that the portions thereof assume parallel positions, as clearly shown by Fig. 2. The members are provided with heads adapted to receive the screw-shafts and the guide-rods, substantially as hereinbefore described in connection with the machine shown by Fig. 1, and the screw-shafts of the machine having right-angular members are provided with gears 18^a 19^a, having intermeshing engagement with a master-gear 16^a, the latter being supported on a suitable plate or strap 45, attached to the mold member 5^a. The mold-spaces A B at one end of the molding-machine (shown by Fig. 2) are adapted to be closed temporarily by gates 36^a, having dovetailed channels on their inner faces, said gates being confined in place by suitable straps 37^a. I would have it understood, however, that the straight or right-angular form of the mold members is not material, because these mold members may have a segmental shape or any other contour conforming to the wall which it is desired to produce.

In using my machine it is placed in position at the place where it is desired to erect the concrete wall. The members 5 6 and 7 8 are adjusted the proper distance apart by operating the master-gear, which rotates the shafts

20 21, and the latter operate the nuts 24 to space the members 6 8 properly with respect to the members 5 7. The gates 36 are now applied at one end of the mold and the hopper is placed in position over the machine. A suitably-tempered concrete mixture of any desired or appropriate materials is now supplied to the hopper, the diverging members of which direct the material into the mold spaces or chambers A B. The material is tamped in these mold-spaces, and it is allowed to set or harden, the material filling the dovetailed channels 41 of the gates 36, whereby sections D E, having dovetailed tongues d , are produced, as shown by Fig. 2, an intervening air-space C being left between the molded sections D E of the double wall. The master-gear 16 is now turned in the proper direction to rotate the screw-shafts 20 21 and move the nuts 24 in directions which will withdraw the adjustable members 6 8 laterally with respect to the non-adjustable members 5 7 of the mold. The adjustable mold members 6 8 may thus be moved to the positions shown by full lines in Fig. 2 without disturbing the molded sections of the concrete wall, after which the machine should be withdrawn and placed in a new position at the end portions of the wall-sections D E, so as to mold other sections F G of the wall. The sections of the wall have interlocking engagement owing to the dovetailed tongues receiving the plastic material of adjacent wall-sections. If it is desired to mold the corner of a wall, the machine shown by Fig. 2 having the angularly-shaped members 5^a to 8^a, inclusive, should be employed.

One of the members of the mold may be provided with a pattern-surface adapted to produce a suitable pattern on the outer wall E resembling stonework, bricks, or any other desired surface. As shown by Fig. 1, the member 8 of the mold is provided on its inner side with the pattern-surface 46.

I do not restrict myself to the arrangement of the screw-shafts relatively to the plate-like members of the molding-machine, because they may be arranged either straight across the straight plates or diagonally across the angular plates, as shown by the drawings, or in any equivalent manner which will secure proper alinement of the end portions of the plates when the machine is opened or closed, each member being of the same length.

The pattern-surface may be applied permanently to the inner face of the outside member 8 or this pattern-surface may be removable, the pattern being of a character which will produce any suitable ornamentation in the surface of the work, such as a water-table, drip-cap, and molded projections in endless variety. It is evident that the pattern-surface may be provided on a length of wood or metal attached to the member 8 by studs of the pattern length passing through holes in

said member and secured by thumb-nuts on the outside of said member.

Adjustment of the plate or member 8 may be made by revolving the nuts in the heads of this member for a suitable distance, after which the spring-dogs should be replaced, and the member 8 again acts as a clamp by revolving the master-gear.

The width of the members is not material, and in some instances I prefer to make the members 5 8 somewhat wider than the members 6 7 by two or more inches. The extra width of these members 5 8 is at the lower side of the machine in order that when the machine is closed in a condition to receive the plastic material said widest plates 5 8 will be clamped against the upper portions of foundation or sections of the wall previously built in order to secure alinement and stability of the machine.

The service of a machine constructed in accordance with my invention enables me to produce double concrete walls with rapidity and at small expense, said wall having a continuous air-space which greatly retards if it does not prevent the passage of heat, cold, and moisture. The concrete mixture is prevented from becoming displaced during the operation of molding a wall, thus leaving the latter in a smooth and clean condition. One advantage of the invention is that it may be used for producing frost and vermin proof silos, and it may also be advantageously used in the construction of water-tanks, the portions of the double wall being joined and finished by a cement top, and the space between the portions of the wall receiving a metallic flue. The construction of the tank allows the space between the walls to be used for the circulation of heat designed to prevent the contents of the tank from freezing in very cold weather. The walls may be bound or tied together by any suitable style of metallic binding devices—such, for example, as a wire running around the building and cemented in place by the succeeding cores of the material, thus materially strengthening the walls.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A machine for molding concrete walls, having two sets of members arranged to produce mold-chambers separated by an intervening space, and means for simultaneously adjusting corresponding members of each set relatively to other non-adjustable members of the respective sets.

2. A machine for molding double concrete walls with an intervening space, consisting of two sets of members which are assembled to form intervening mold-chambers separated by a space, and means for simultaneously adjusting one member of each set with relation to the companion members of the sets.

3. A machine for molding double concrete

walls, consisting of two sets of members, one member of each set being adjustable laterally with relation to the companion member of the set, means for guiding the adjustable members laterally with respect to the non-adjustable members, and means for simultaneously adjusting the movable members of the sets.

4. A machine for molding double concrete walls, consisting of two sets of members, one member of each set being adjustable laterally with respect to the companion member of the set, guide-rods attached to the non-adjustable members of the sets and slidably engaging with said adjustable members, and screw-shafts connected with the adjustable members of the sets for simultaneously moving the same.

5. A machine for molding double concrete walls, consisting of sets of members, one member of each set being laterally adjustable relatively to the companion member of the set, guide-rods attached to the non-adjustable members and slidably engaging with the adjustable members, screw-shafts and means for rotating the same, and nuts carried by the adjustable members and having threaded engagement with said screw-shafts.

6. A machine for molding concrete walls, consisting of a series of members, perforated heads on said members, guide-rods attached to heads of the non-adjustable members and slidably engaging with heads of the adjustable members, nuts carried by the heads of the adjustable members, and screw-shafts engaging with said nuts.

7. A machine for molding concrete walls, having a series of members each provided with a head, guides attached to the heads of the non-adjustable members, nuts carried by the heads of the adjustable members, means for making said nuts fast with said heads, and screw-shafts having threaded engagement with said nuts.

8. A machine for molding concrete walls,

having a series of members, heads attached to the members, means for holding certain non-adjustable members in fixed relation, screw-shafts passing through the heads of the members, means for holding said screw-shafts against endwise movement in the heads of the non-adjustable members, and nuts carried by the heads of the adjustable members and having threaded engagement with said shafts.

9. A machine for molding concrete walls, having a series of members, means for adjusting certain of the members, and doors or gates clamped removably to the members and closing the mold-chambers at one end of the machine.

10. A machine for molding concrete walls, having sets of members one of which is provided on its inner side with a pattern-surface, and means for simultaneously adjusting certain members of each set laterally with respect to other complementary members of the respective sets.

11. A machine for molding concrete walls, having a series of members, means for adjusting certain members laterally with respect to other members, and end gates provided with key-channels on the faces which oppose the mold-chambers between complementary members of the machine.

12. A machine for molding concrete walls, having two sets of adjustable members, means for adjusting one member of each set laterally with respect to the companion member of the set, and a hopper for delivering concrete material to the mold-chambers formed by the complementary members of the sets.

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

CHARLES E. SHUMWAY.

Witnesses:

EMORY LAMB,
REUBEN W. PAGE.