

April 26, 1927.

E. F. BRAMIN

1,626,447

CONCRETE BLOCK MOLDING AND SETTING MACHINE AND METHOD OF MOLDING

Filed March 25, 1926

3 Sheets-Sheet 1

Fig. 1.

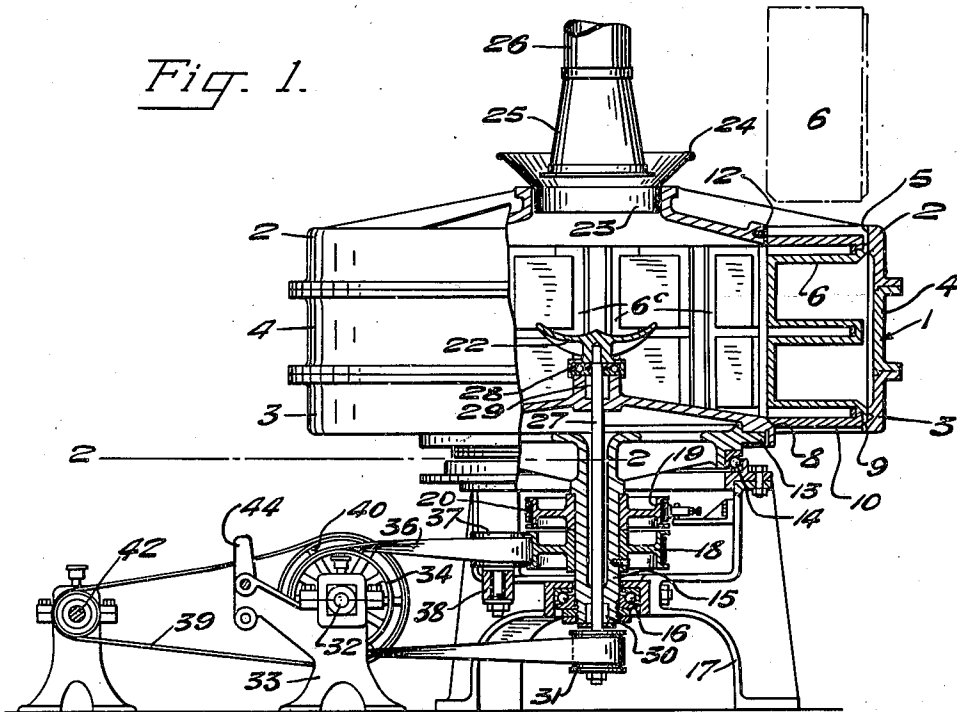
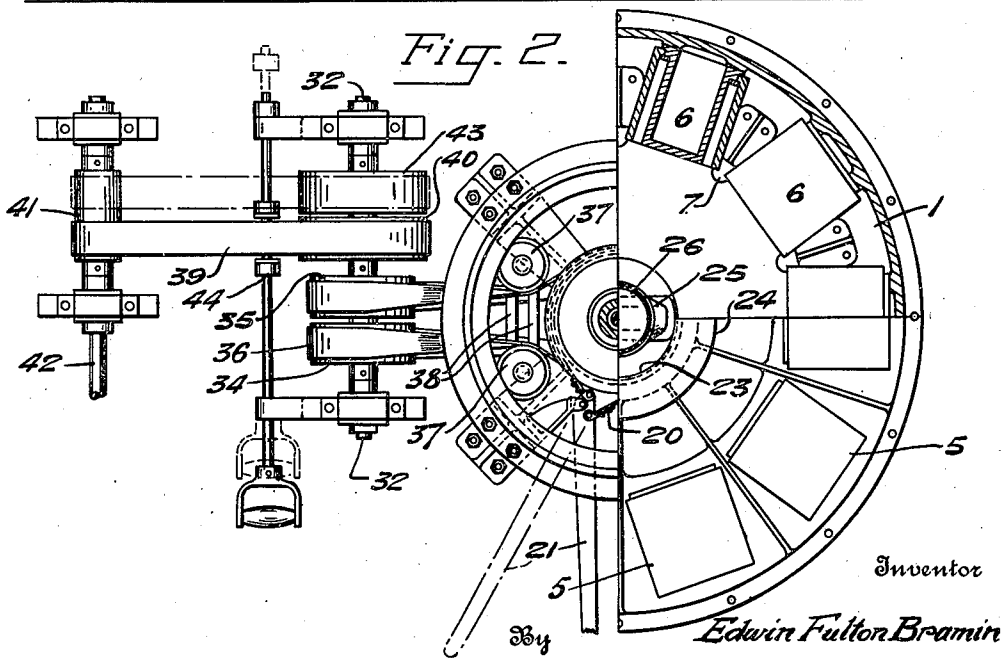


Fig. 2.



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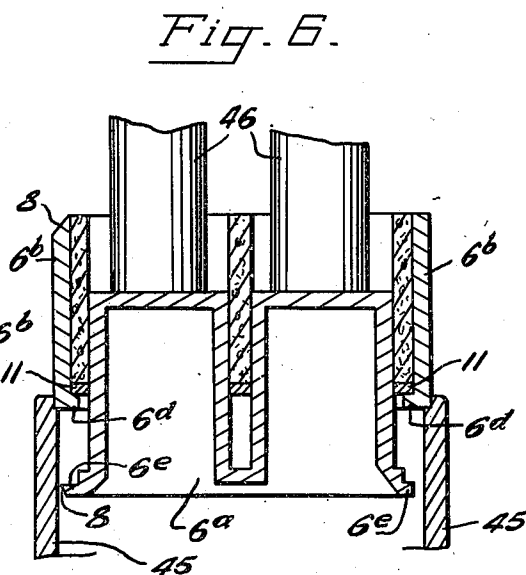
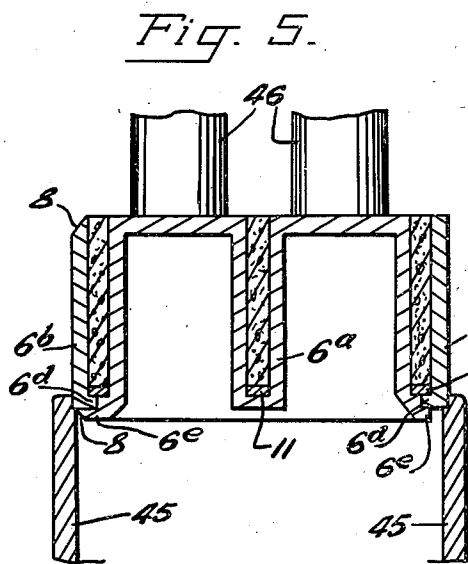
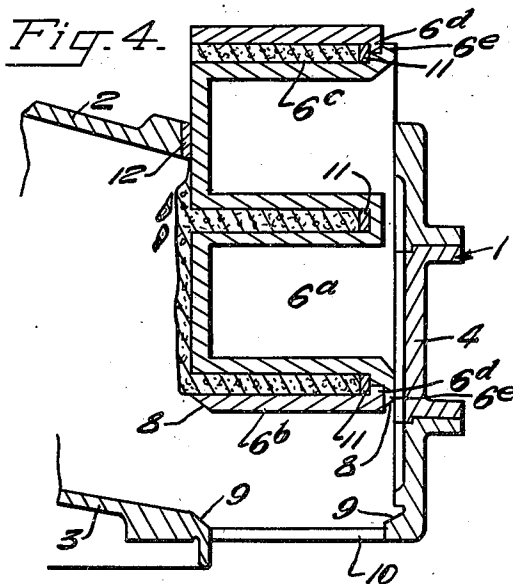
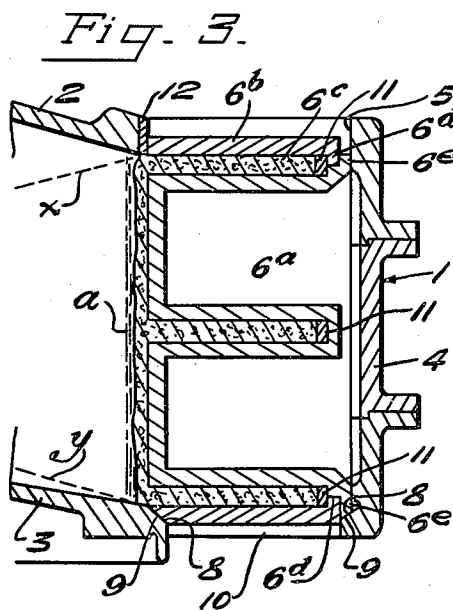
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CONCRETE BLOCK MOLDING AND SETTING MACHINE AND METHOD OF MOLDING

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3 Sheets-Sheet 2



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CONCRETE BLOCK MOLDING AND SETTING MACHINE AND METHOD OF MOLDING

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3 Sheets-Sheet 3

Fig. 7.

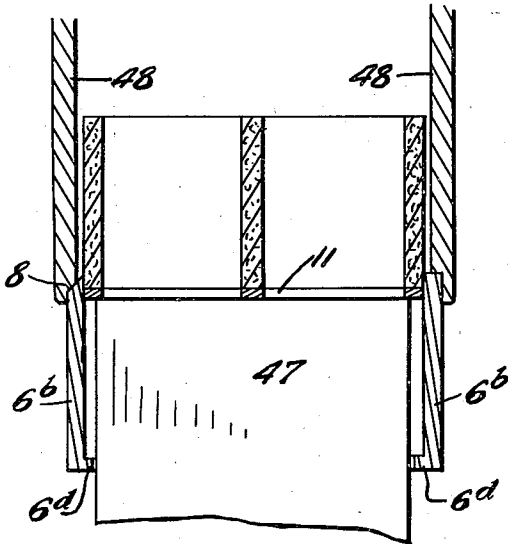


Fig. 8.

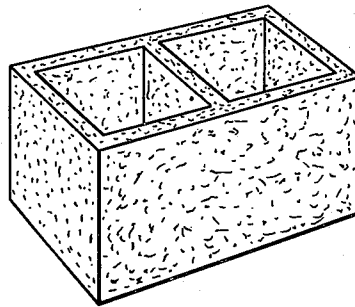


Fig. 9.

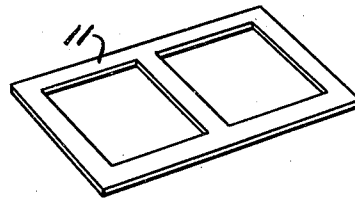
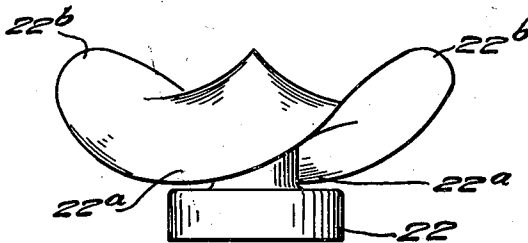


Fig. 10.



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CONCRETE-BLOCK MOLDING AND SETTING MACHINE AND METHOD OF MOLDING.

Application filed March 25, 1926. Serial No. 97,389.

The present invention relates to improvements in the art of making concrete blocks, and the primary object is to enable concrete blocks of improved qualities to be produced more quickly and with greater facility and less labor than heretofore.

One of the objects of the invention is the production of a concrete block by charging the plastic concrete mixture into a mold and submitting the mold and the concrete mixture contained therein to centrifugal action which will densify the concrete to eliminate the presence of voids in the resulting block and render it non-porous, and will remove all air and excess water from the concrete in the mold, thereby insuring rapid setting of the block.

Another object is to enable a plurality of molds to be charged uniformly and simultaneously from a distributing point to which the plastic concrete mixture may be supplied with facility as, for example, from a concrete mixer, whereby a plurality of concrete blocks of uniform density and quality will be produced simultaneously in a minimum period of time and with a minimum amount of labor.

Another object is to enable the surplus water extracted by centrifugal action from the molded block to be readily drained off and the block trimmed as the mold containing it is removed from the centrifugal machine.

A further object of the invention is to provide a novel and improved concrete block molding and setting machine wherein an annular battery of molds is inserted on the inside and against the circumferential wall of a rotating cylinder, and such molds operate in conjunction with a rotating distributor which constitutes mechanical means for charging the molds with concrete, the machine embodying mechanical means for forcing air and water from the concrete in the molds after they have been charged, means to secure an automatic control in charging the block molds, so that a proper balance of the machine may be maintained, and automatic means for dressing off the blocks as the charged molds are removed from the cylinder, and for draining off the surplus water extracted from the concrete in the molds, and embodying other features which enable the production of high quality concrete blocks free of voids and porosity at a reduced cost of manufacture resulting

from reduction in labor or increased production.

In the accompanying drawings:—

Figure 1 is a side elevation, partly in vertical section, of a concrete block molding and setting machine embodying the present invention and operative in accordance therewith.

Figure 2 is a view partly in plan and partly in section, a portion of this figure being shown in section on the line 2—2 of Figure 1.

Figure 3 is a vertical sectional view on an enlarged scale of one of the concrete block molds and the adjacent portion of the rotatable cylinder, the mold being shown in charging position in the cylinder and charged with concrete.

Figure 4 is a view similar to Figure 3 showing the manner of removing the charged mold from the cylinder and trimming the surplus concrete therefrom during the removal of the mold.

Figure 5 is a diagrammatic view in section showing the manner of placing the mold in a press to remove the core of the mold from the concrete block.

Figure 6 is a view similar to Figure 5 showing the core partly removed from the block.

Figure 7 is a diagrammatic view in section showing the manner of removing the outer member of the mold from the block.

Figure 8 is a perspective view of the finished block as it appears after removal from the mold.

Figure 9 is a detail perspective view of the frame for supporting the block during its removal from the mold.

Figure 10 is a detail perspective view, on an enlarged scale, of the distributor disk or head which charges the molds.

Similar parts are designated by the same reference characters in the several views.

The present invention is applicable generally to the molding and setting of plastic substances and especially to the molding and setting of concrete in the making of concrete blocks. The invention may be applied to the making of blocks of various kinds or forms. The machine shown in the accompanying drawings and hereinafter described in detail is of the form generally preferred in carrying out the invention, but it is to be understood that the invention is not restricted to a machine of the precise con-

struction shown as equivalent constructions may be used within the scope of the invention.

In the machine shown in the present instance, 1 represents a cylinder which is rotatable preferably in a horizontal plane or about a vertical axis. This cylinder is adapted to contain an annular series of block molds, and in order to enable the cylinder to accommodate molds of different sizes, it is preferably constructed in three sections; that is, an upper section 2, a lower section 3, and an intermediate or spacer section 4, the meeting edges of these sections being flanged, as shown, to receive uniting bolts. By using middle or intermediate sections of different heights, molds of different heights for the molding of blocks of different sizes may be accommodated.

The upper section 2 of the cylinder is formed with a series of rectangular openings 5 which are located immediately within the inner wall of the circumference of the cylinder and are suitably spaced circumferentially of the cylinder, these openings being of a size and shape to receive and guide the molds 6 as the latter are inserted and removed. Spacers 7 which are secured to the bottom section 3 of the cylinder extend upwardly between the molds and serve to guide the latter during their insertion and removal, to properly space the molds in operative position, and to fill any gaps which would otherwise exist between the inner edges of the molds. The molds, when in position in the cylinder, substantially fill and close the openings 5 in the top thereof, and the bottoms of the molds are bevelled as at 8 or otherwise formed to produce substantially liquid-tight joints with the bevelled or correspondingly-shaped surfaces 9 in the bottom section of the cylinder, openings 10 being provided in the bottom section of the cylinder immediately beneath the respective molds, which openings, however, are closed by the liquid-tight joints just described when the molds are in operative position.

The molds employed may be of different forms to suit the forms of the blocks to be made. As shown in the present instance, each mold comprises a core section 6^a and an outer or enclosing section 6^b, these sections forming the cavity 6^c which is filled with the concrete mixture in molding the block. A frame 11 of flat steel or other suitable material is provided to fit into the cavity of each mold and the outer mold section 6^b is formed with an in-turned flange 6^d against which this frame rests. The inner or core section 6^a of the mold is shaped to receive the flange 6^d and it is preferably formed with a flange 6^e which overlaps the flange 6^d. The inner edge of each hole 5 in the top of the cylinder is provided with a strip or blade

12 of steel or other suitable material, this strip or blade being so positioned that it will scrape the inner face of each mold as the latter is lifted upwardly or removed from the cylinder to the position shown, for example, by the dot-and-dash lines in Figure 1, the surplus concrete on the inner face of the mold being thus removed automatically incidental to the removal of each mold from the cylinder.

The cylinder is supported on a table 13, and this table is mounted on a bearing 14 which is preferably of the ball type, as shown. The table has a downwardly extending spindle 15 which is provided with a steady bearing 16 which is also preferably of the ball type, as shown. The bearings 14 and 16 for the rotatable table are mounted in a stationary frame 17 which may be of any suitable form. The spindle 15 for the table has a driving pulley 18 fixed thereto, and this spindle is also preferably provided with a brake drum 19 and a cooperating brake band 20, the latter being controlled by a brake lever 21 whereby the rotation of the cylinder may be quickly arrested after each molding and setting operation has been completed.

A distributor disk or head 22 is provided for charging the molds with the concrete mixture during rotation of the cylinder. This distributor disk is located co-axially with the cylinder and preferably substantially mid-way of the height of the molds. The distributor disk receives the concrete mixture through an opening 23 in the top of the cylinder, which may be surrounded by a funnel 24, the concrete mixture being supplied from any suitable source as, for example, a concrete mixer through a nozzle 25 attached to a supply conduit 26, the nozzle being preferably narrow or restricted.

The distributor disk revolves during the operation of the machine, for which purpose it is fixed to the upper end of a shaft 27, which is arranged co-axially within the spindle 15 of the rotatable cylinder, it being provided with a ball thrust bearing 28 and with roller bearings 29 and 30, a pulley 31 being fixed to its lower end in order that it may be driven.

The cylinder and the distributor disk are revolved simultaneously in opposite directions during the operation of the machine, and different driving means may be employed for this purpose. In the present instance, a counter-shaft 32 is employed, it being mounted in bearings in suitable brackets 33 and having a pair of belt pulleys 34 and 35 thereon. One of these pulleys, the pulley 34 in the present instance, is fixed to the counter-shaft while the other pulley 35 is loosely revoluble thereon. A single belt 36 is extended around the pulley 18 on the spindle 15 of the cylinder, the stretches of the

belt being then extended around the pulleys 34 and 35, respectively, and the belt is then extended around the pulley 31 on the lower end of the distributor disk shaft 27. Suitably positioned idler rollers 37 supported on brackets 38 may be employed to properly direct the belt with respect to the pulleys. By this arrangement, the cylinder will be revolved in one direction and the distributor disk will be revolved in the opposite direction, and preferably; at a relatively higher speed during rotation of the counter-shaft. The counter-shaft may be driven in different ways. For example, it is driven in the present instance by a belt 39 which passes over a pulley 40 which is fixed on the counter-shaft and a driving pulley 41 which is fixed on a suitable power shaft 42. The interruption of the drive of the cylinder and distributor head may be accomplished by interrupting the supply of power to the power shaft, or, as shown in the present instance, by shifting the belt 39 from the driving pulley 40 onto a loose pulley 43 on the counter-shaft, a belt shifter 44 being provided for this purpose.

The distributor disk which is shown in detail in Figure 10 is constructed with a top working surface which has two extreme vertical angles of discharge which alternate at 90° around the axis of the disk, the surface 22^a and a diametrically opposite surface on the disk forming the extreme downwardly inclined angle of the disk surface and a pair of surfaces 22^b which are diametrically opposite to one another and spaced 90° around the surface of the disk from the surfaces 22^a representing the extreme upwardly inclined angles of the disk surface, the opposite radii having similar angles and all a common center, so that the surface of the disk sweeps into an easy logarithmic curve from a straight extreme lower angle of discharge to the extreme upper angle of discharge. A cross-section through the distributing surface of the disk on a diameter which intersects the extreme upper angle of discharge is represented in Figure 1.

The molding of concrete blocks and the setting thereof are accomplished according to the present invention substantially as follows:

The molds 6 are placed in the cylinder through the respective openings 5 in the top thereof, so that the cavity 6^c in each mold is presented toward the center of the cylinder, the tops of the molds filling and closing the openings 5 and the bottoms of the molds seating around and closing the openings 10 in the bottom of the cylinder. Power is applied to the machine to revolve the cylinder in one direction up to the required speed, and simultaneously the distributor disk is revolved in an opposite direction up to the required speed which is

preferably higher than that of the cylinder. The concrete, which has been prepared, for example, in a standard mixer, is then supplied, in amount required, through a measuring box to the inside of the cylinder through the charging nozzle 25, this nozzle, which preferably terminates in an elongated restricted opening, serving to restrict the flow of the concrete and to distribute it over the surface of the distributor disk which is revolving at relatively high speed, this providing an easy uniform feed for distribution of the concrete to the molds.

As the molds are being revolved in an annular path and in one direction by the revolving cylinder and the distributor disk is being revolved in an opposite direction, the concrete will be thrown outwardly by the revolving distributor disk substantially uniformly around the axis of the distributor disk so that it will be distributed over the open faces of the molds, thereby sending equal charges to diametrically opposite molds, and charging all molds equally and thus retaining a proper balance of the rotating cylinder. Moreover, the upwardly inclined and downwardly sloping angles of the surfaces of the disk and the surfaces of the disk intermediate of the extreme upwardly inclined and downwardly sloping angles will cause the concrete to be discharged at varying angles from top to bottom of the mold, as is indicated by the lines X and Y which represent the extreme upper and lower angles, respectively, thus insuring complete and uniform filling of the mold cavities from top to bottom, and maintaining the balance of the rotating cylinder by uniform distribution of the concrete over the inner faces of the molds. As the concrete is thus fed to the rotating molds, it is forced into the mold cavities and the mechanical setting of the concrete is immediately started as the result of the centrifugal force which squeezes the water and air from the concrete and causes the concrete thus freed from water and air to settle to the outermost portions of the mold cavities due to its greater specific gravity, the water, owing to its lighter specific gravity accumulating as a film or layer, designated A in Figure 3, at the inner side of the concrete. Such setting of the concrete, although forced, is accomplished in the natural way, and as it makes it possible to exclude all air from the concrete, a substantially perfect block can be produced.

After the molds have been completely charged and the supply of concrete to the distributor disk cut off, the cylinder and the charged molds carried by it is permitted to continue rotating for a period of time sufficient to extract all air and excess water from the concrete in the molds, although sufficient water is permitted to remain in the

concrete to prevent it from bonding to and thus gripping the molds. Rotation of the cylinder is then stopped and the molds with their charges of concrete are removed from the cylinder by forcing them upwardly through their respective openings 5, each mold being thus brought substantially into the position shown by the dot-and-dash lines in Figure 1. As each mold is lifted incident to its removal from the cylinder, the joint between the bottom of the mold and the edge of the cylinder surrounding the bottom opening 10 therein is broken, and the excess water which was extracted from the charges of concrete in the molds and which settles on the bottom of the cylinder when rotation of the latter is stopped, will drain off from the cylinder through the respective bottom openings 10. Also, excess concrete which is used to insure full molds and which accumulates on the inner faces of the molds will be scraped off by the scraper blade 12 which is located at the inner edge of the top opening 5 for each mold as such mold is lifted incident to its removal, this action of the scraper blade being shown diagrammatically in Figure 4, and the excess concrete thus removed from the mold face drops to the bottom of the cylinder and it may be scraped out through the bottom openings 10 into a trough or wheel-barrow and thus salvaged and returned to the mixer for use in the molding of the next batch into blocks. After the molds have been removed from the cylinder, the latter may be thoroughly washed out and cleaned in preparation for the next operation.

The molded blocks are removed from the molds in any suitable way, although it is preferable to remove them as follows: Each mold containing a concrete block is placed on a box-like support 45 resting on the base of a suitable press so that the upper edge of this support which may be recessed, as shown, receives the outer or enclosing section 6^b of the mold, and the plungers 46 of the press which may be of a power type are brought into action against the core section 6^a of the mold whereby this core section is forced downwardly and out of the block which still remains in the outer section 6^b, as is indicated in Figure 6. During this operation, the frame 11 supports the block within the outer section. After the core section of the mold has been removed from the block, the latter, which is now contained in the outer mold section 6^b, is placed in another press, so that the frame 11 rests on the base block 47 of the press and the lower edge of the outer mold section 6^b overlaps the base block, and plungers 48 of the press which may be of any power type, are brought into action against the upper edges of the outer mold section 6^b, thereby forcing

the latter downwardly while the block is supported by the press base block 47. The outer mold section 6^b is thus removed from the block, the latter resting on the frame 11, which, in turn, rests on top of the press base block, and the finished block and its supporting frame may then be removed from the press, so that the block may be carried to a suitable place for final hardening. Figure 8 shows the molded or finished block, and Figure 9 shows the supporting frame removed therefrom. After washing and cleaning of the mold sections, they may be re-assembled and replaced in the cylinder preparatory to the next block molding and setting operation, which is performed by repeating the operations set forth above.

The machine may be readily adapted to accommodate molds of different heights to suit blocks of different sizes, by using intermediate cylinder sections 4 of different heights, and in using intermediate cylinder sections of different heights, different distributor disks having corresponding angles of discharge are preferably used in order to insure complete and uniform distribution of the concrete throughout the vertical heights of the molds.

The present invention provides a method or process whereby concrete blocks suitable for building and other purposes, which are substantially free from voids or porosity, may be made quickly and inexpensively. The method provided for charging liquid or plastic concrete mixture into the molds enables a large number of molds to be charged uniformly and simultaneously, and by distributing the concrete uniformly to the molds, disturbance of the running balance of the revolving cylinder which carries them is avoided and complete filling of all the molds is insured. By subjecting the liquid or plastic concrete charges in the molds to centrifugal action during the making up of such charges, elimination of air and surplus water is insured, thus enabling the production of blocks which are free from voids or are denser than blocks as heretofore made, and the setting of the blocks takes place more rapidly, thus enabling the blocks to be removed from the cylinder and from their molds immediately upon completion of the charging of the molds and the centrifugalizing thereof. The discharge of the surplus water extracted from the concrete charges from the cylinder and the removal of surplus concrete from the molds automatically or as an incident to the removal of the block-containing molds from the cylinder saves much time and labor. The machine as herein shown and described is well adapted to carry out the invention and is of the preferred form, but it will be understood that the invention is not restricted to a machine

of that particular construction or other or equivalent apparatus may be used in carrying out the invention.

I claim as my invention:—

1. The method of molding and setting concrete blocks which comprises revolving a mold for such blocks and concurrently projecting concrete in a path which moves back and forth across the cavity of the mold to charge it with concrete.

2. The method of molding and setting concrete blocks which comprises rotating a mold for such blocks in a circular path with its cavity facing toward the center of rotation, and concurrently projecting concrete from the center of rotation of the mold in a path which moves back and forth across the area of the cavity thereof.

3. The method of molding and setting concrete blocks which comprises rotating a mold for such blocks in a circular path while the cavity thereof is toward its inner side while projecting concrete back and forth across and throughout the height of the inner side of the mold.

4. The method of molding and setting concrete blocks which comprises rotating an annular row of molds for such blocks in a circular path, and projecting concrete simultaneously on various radii from substantially the center of rotation of the molds against the inner sides of the molds to charge the cavities thereof.

5. The method of molding and setting concrete blocks which comprises rotating an annular row of molds for such blocks in a circular path while the cavities in the molds are at their inner sides, and projecting concrete from substantially the center of rotation against the inner sides of the molds in paths which progress across the molds.

6. The method of molding and setting concrete blocks which comprises rotating an annular row of molds for such blocks in a circular path with the cavities of the molds at their inner sides, and projecting concrete centrifugally from the center of rotation of the molds against their inner sides in paths which shift angularly relatively to the plane of rotation of the molds.

7. The method of molding and setting concrete blocks which comprises rotating an annular row of molds for such blocks in a circular path with the cavities therein toward the center of rotation and projecting concrete centrifugally and substantially uniformly on various radii from the center of rotation and distributing the concrete so projected uniformly circumferentially and throughout the height of the row of molds.

8. The method of molding and setting concrete blocks which comprises revolving an annular series of molds having the openings of their cavities toward the center of rotation, feeding a stream of concrete in

fluid condition in a path substantially in alinement with said center of rotation, and distributing said concrete to the series of molds by projecting it outwardly from the stream and at varying angles to the plane of rotation of the molds.

9. A concrete block molding and setting machine comprising a rotary member carrying an annular series of block molds the cavities of which are open toward the center of rotation, and means located substantially at the center of rotation for projecting concrete therefrom simultaneously on various radii and thus charging the molds with concrete.

10. A concrete block-holding and setting machine comprising a rotary member carrying an annular series of molds the cavities of which are open at their inner sides, and means located toward the center of rotation to receive a supply of concrete and operative to project the same substantially uniformly on various radii and against the molds and thus charge them.

11. A concrete block molding and setting machine comprising a rotary member carrying molds, and means including a distributor located substantially at the center of rotation and operative to feed a stream of concrete and to project it substantially uniformly on various radii about said center toward the molds to charge them.

12. A concrete block-molding machine comprising molds arranged in an annular series and having openings at their inner sides leading to their cavities, and a distributor disk located toward the center of the series of molds to receive a stream of concrete and rotatable to project the concrete substantially uniformly on various radii toward the molds to charge them.

13. A concrete block-molding machine comprising a series of molds arranged around a common center and adapted to be charged from the sides toward said center, and a distributor located substantially at said center to receive a supply of concrete and rotatable to project the concrete outward toward the molds, the working face of the distributor being formed to cause discharge of the concrete at varying angles to its plane of rotation.

14. In a concrete block-molding machine comprising a series of molds arranged around a common center and adapted to be charged from the sides toward said center, a distributor for charging the molds with concrete from said center embodying a revolvable disk having a working surface having portions thereof extending at varying angles to its plane of rotation.

15. In a concrete block-molding machine having a series of molds arranged in series about a common center and adapted to receive concrete at their inner sides, a distribu-

tor mounted to revolve relatively to the molds on an axis coincident with said center and operative to receive and project concrete toward the molds to charge them.

16. In a concrete block-molding machine having a series of molds arranged in series about a common center and adapted to receive concrete at their inner sides, a distributor comprising a disk mounted to revolve on an axis coincident with said center and having a working surface different portions of which are inclined in opposite directions from the plane of the series of molds.

17. A concrete block-molding machine comprising a cylinder rotatable in a substantially horizontal plane, molds mounted in an annular row in the cylinder and rotatable therewith, said molds being removable through the upper side of said cylinder and resting therein by gravity, and means for charging the molds with concrete.

18. A concrete block-molding machine comprising a cylinder rotatable in a substantially horizontal plane and having a series of mold receiving portions which are open at their tops, a series of molds removably insertable through the tops of the mold-receiving portions in the cylinder and forming concrete-confining joints therewith, and means for charging the molds while in the cylinder with concrete.

19. A concrete block-molding machine comprising a cylinder revoluble in a horizontal plane and having mold receiving openings in its upper side and vent openings in its lower side, and molds adapted for insertion through the mold receiving openings and formed at their lower ends to close the vent openings.

20. A concrete-block molding machine comprising a revoluble cylinder having mold receiving openings therein, molds adapted for insertion and removal through said openings, means for charging concrete into the molds while in the cylinder, and a scrapper for removing surplus concrete from the molds during their removal from the cylinder.

21. A concrete block-molding machine comprising a charging cylinder having an upper mold receiving opening therein and a vent or discharge opening below it, a mold adapted for insertion and removal through said upper opening, and a scraper located adjacent to an edge of said upper opening and operative during removal of the mold, to remove surplus concrete therefrom.

22. A concrete block-molding machine comprising a revoluble mold carrying cylinder, a distributor therein for charging concrete into the molds, and an elongated charging nozzle for directing concrete onto the distributor.

23. A concrete block-molding machine comprising a revoluble mold carrying cylinder,

a revoluble concrete distributor mounted co-axially within the cylinder, and means including a common belt for revolving the cylinder and distributor concurrently in reverse directions.

24. A concrete block-molding machine comprising a rotatable mold carrying cylinder having bearings therefor and a hollow shaft co-axial with its center of rotation, and a distributor disk rotatable within the cylinder and having a shaft arranged co-axially within the hollow shaft of the cylinder.

25. In a concrete block-molding machine, a revoluble mold carrying cylinder, an anti-friction bearing supporting it, a hollow shaft connected to the cylinder and having an antifriction bearing for steadying it, and a revoluble distributor within the cylinder having a shaft arranged co-axially within the hollow shaft of the cylinder and supported by antifriction bearings.

26. In a concrete block-molding machine, the combination of a revoluble mold carrying cylinder having a driving pulley connected thereto, a revoluble concrete distributor within the cylinder and having a driving pulley connected to it, a driving shaft having pulleys which are respectively fixed and loose thereon, and a common driving belt engaging all of said pulleys and operative to revolve the cylinder and distributor conveniently in relatively reverse directions.

27. In a machine of the class described, the combination of a revoluble cylinder, an oppositely revoluble distributor therein, means for driving the cylinder and distributor and for interrupting such drive, and a brake operative on the cylinder for arresting its rotation.

28. In a machine of the class described, the combination of a revoluble mold carrying cylinder, a revoluble concrete distributor therein, means common to the cylinder and distributor for driving them, and means including a belt shifter for supplying power to and interrupting the supply of power to said driving means.

29. A mold carrying cylinder for concrete block-molding machines comprising end members to receive the respective ends of molds inserted therein, and an intermediate member between said end members removable to permit substitution of other intermediate members to accommodate the cylinder to molds of different lengths.

30. A concrete block mold comprising an outer enclosing section and an inner core section, the outer section having a flange thereon for supporting a block in the mold cavity therein and the inner section having a cooperating flange for supporting the outer section removably thereon.

31. A concrete block-mold comprising outer and inner sections which form a mold

cavity between them, the outer section having a flange thereon which permits removal of the inner section from the outer section and supports a block in the cavity in the
5 outer section.

32. A concrete block mold comprising outer and inner sections which form a mold cavity between them when assembled, and a block-supporting frame adapted to fit into
10 the mold cavity, the outer section having an inturned flange which cooperates with the inner section to space it and provides an abutment for the block supporting frame.

33. A concrete block-mold comprising
15 outer and core sections spaced to form the mold cavity between them, the outer section having an inturned flange to cooperate with

the core section to space the sections and the core section having an out-turned flange which laps the first-mentioned flange and
20 registers the sections.

34. A concrete block mold comprising outer and inner sections which form the mold cavity between them when assembled, and a block-supporting frame adapted to
25 fit into the cavity, the outer section having an inturned flange which cooperates with the inner section to space it and provides an abutment for said supporting frame, and the inner section having an out-turned flange
30 which laps the first-mentioned flange.

In testimony whereof I have hereunto set my hand.

EDWIN FULTON BRAMIN.