Jan. 15, 1935. I. STEES 1,987,874

APPARATUS FOR MOLDING CEMENTITIOUS BLOCKS

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Fig. 1.

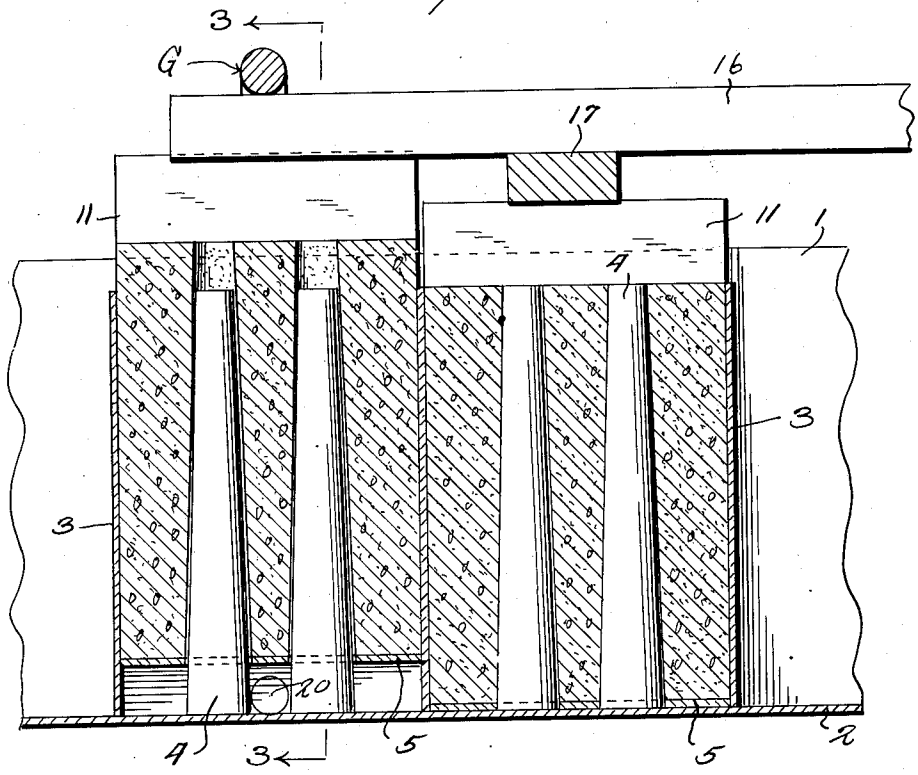
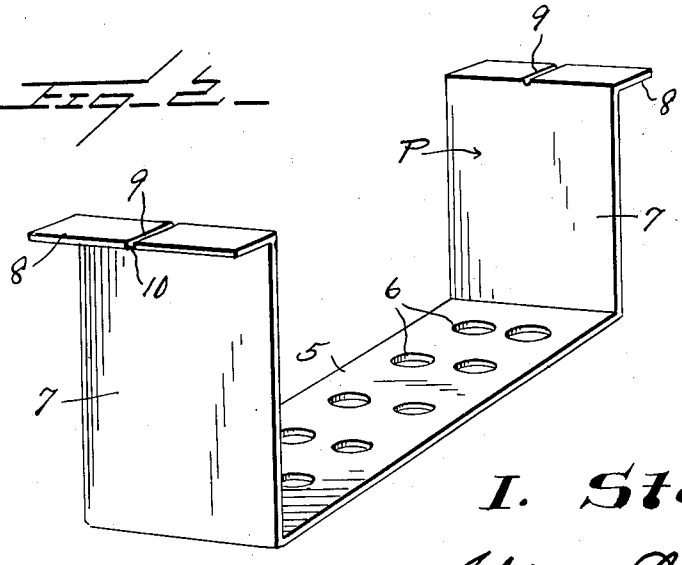


Fig. 2.



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Fig. 3

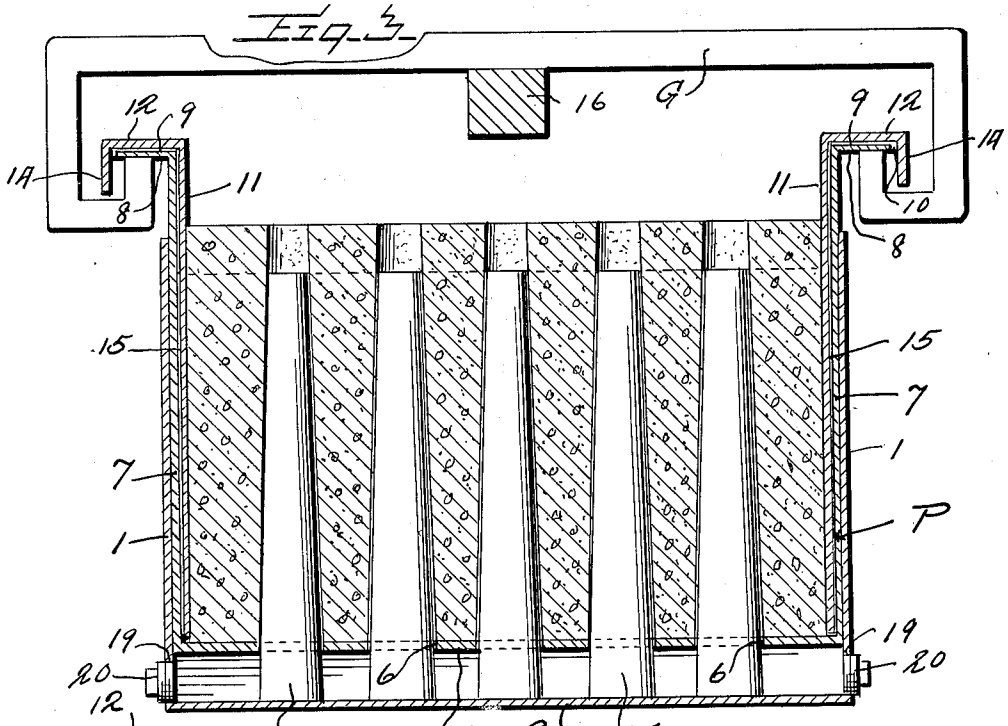
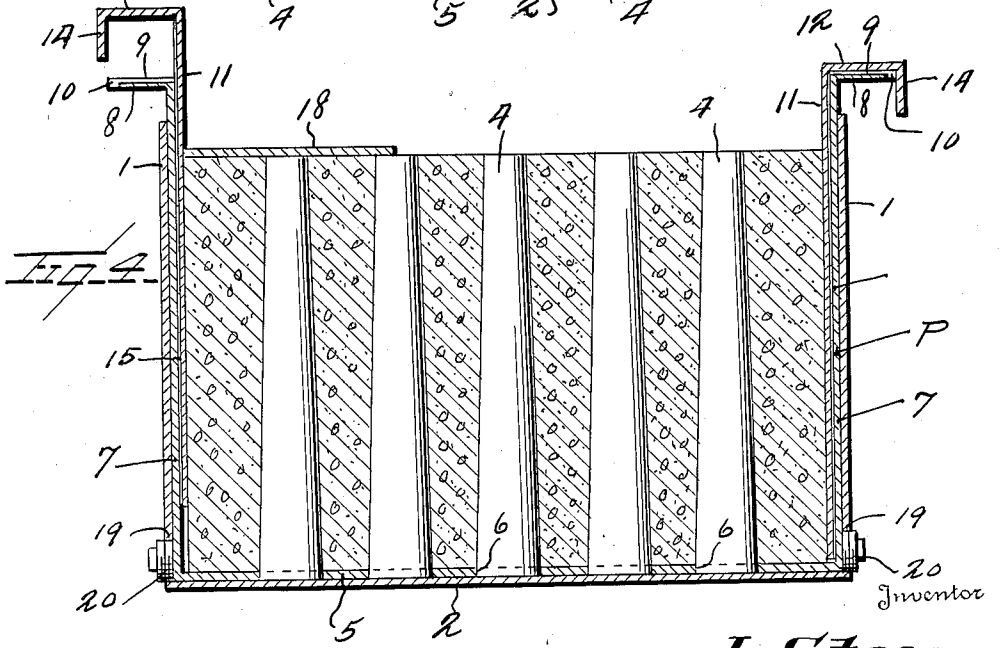


Fig. 4



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APPARATUS FOR MOLDING CEMENTITIOUS BLOCKS

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4 Claims. (Cl. 25—120)

This invention relates to a method and apparatus for molding cementitious blocks, and it is primarily an object of the invention to provide novel means whereby there may be effectively produced a block of this kind of a perforated type and wherein the material or mix is poured into the mold in what is known to the trade as "liquid".

Another object of the invention is to provide a method and apparatus for the production of perforated cementitious blocks wherein pins are employed to produce the desired perforations or openings together with means allowing the ready release of the block after setting but while still green from the pins with a consequent easy and effective removal of the block from the mold.

The invention also has for an object to provide a method and apparatus for molding an initially liquid cementitious material into a perforated block and wherein the block when removed from the mold but still resting on a palette may dry out within a minimum of time.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved apparatus for molding cementitious blocks whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of my invention will hereinafter be definitely claimed.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:—

Figure 1 is a view partly in section and partly in elevation illustrating a mold constructed in accordance with an embodiment of my invention and also illustrating several steps of the method;

Figure 2 is a view in perspective of the palette as herein employed;

Figure 3 is a sectional view taken substantially on the line 3—3 of Figure 1 with certain of the parts in elevation;

Figure 4 is a view somewhat similar to Figure 3 but showing certain of the parts in different positions and also illustrating further steps of the method.

As disclosed in the accompanying drawings, the mold proper comprises side walls 1 of desired dimensions and which have their lower marginal portions connected by a bottom wall 2. Resting upon the bottom wall 2 and interposed between and connected to the side walls 1 are the spaced partition plates 3 whereby the mold is divided into a plurality of molding chambers. It is preferred that the partitions 3 have their upper edges terminate below the upper edges of the side walls 1.

Carried by and extending upwardly in desired placement from the bottom wall 2 within each of the molding chambers are the pins 4 inwardly tapering from their lower to their upper ends. These pins are of preferred diameters and have their upper ends flat and flush with the upper edges of the partition walls 3.

Each of the molding chambers is adapted to have placed therein a palette P. This palette comprises a plate 5 which when in applied or working position rests directly upon the bottom wall 2 of the mold chamber and the plate 5 is provided with the properly positioned openings 6 through which the pins 4 within a mold chamber are directed. These openings 6 are each of a diameter substantially equal to the diameter of the base end portion of the pin 4 which passes through such opening.

The palette P is of a width and length to snugly fit within a mold chamber and the ends thereof are defined by the upstanding plates 7 extending entirely thereacross and of a length terminating a desired distance above the side walls 1 of the mold. The upper end portions of these plates 7 are defined by the outstanding flanges 8 substantially perpendicular to the plates 7 and at its central portion each of these flanges 8 has disposed transversely thereacross the vent groove or channel 9 for a purpose to be hereinafter more particularly referred to. As particularly illustrated in Figure 2 it is to be noted that each of these channels or grooves 9 terminates in a notch or recess 10 provided in the outer longitudinal edge of the flange 8. Each of the plates 7 of the palette P is adapted to have disposed over its inner ends a separable or auxiliary end plate 11, the upper marginal portion of which being provided with an outstanding flange 12 which engages or rests from above upon the flange 8 of the associated end wall or plate 7 whereby the plate 11 is suspended or supported in applied position.

The outer margin of the flange 12 is defined by a depending flange 14 which butts the outer edge of the flange 8 whereby effective means are provided for initially holding the plate 11 in desired applied or working position or, namely, to assure the plate 11 initially when applied having close contact with its associated end plate 7 of the palette P. Each of these plates 11 in its rear

face and at substantially the transverse center of the plate is provided therealong from end to end with a vent groove or channel 15 the upper end of which when the plate 11 is applied registering with the vent groove or channel 9 of a flange 8 of the palette. It is also to be noted that each of the plates 11 is of a length to terminate slightly above the bottom wall 2 of the mold chamber when said plate 11 is in applied or working position.

The flanges 8 of the palette P are adapted to have engaged therewith from below a suitable grapple G so that uniform strain or pull may be imposed upon the opposite end portions of the palette P when it is desired to remove said palette and the block set thereon from within a mold chamber. As herein disclosed, this grapple G is carried by an end portion of a lever 16. This lever 16 is engaged at a desired point intermediate its ends with a fulcrum strip or bar 17, the end portions of which being adapted to be set upon the flanges 8 of a palette within a mold chamber adjacent to a mold chamber from which the palette P and its set block is to be lifted or removed.

By producing a block in accordance with my improved method and apparatus the palette P is first positioned within a mold chamber with the plate 5 in direct contact with the bottom wall 2 of such chamber and the pins 4 of the chamber directed through the openings 6 as is clearly illustrated by the right hand portion of Figure 1 of the accompanying drawings. The separate or auxiliary end plates 11 are then applied in proper position with respect to the end plates 7 of the palette P whereupon the cementitious material in liquid form is poured within the mold chamber and smoothed or topped off in the regular way by a striker plate 18. The striker plate 18 is of a length to extend entirely across the mold chamber and its working margin constitutes a straight edge as is well known. In Figure 4 of the drawings this striker plate 18 is illustrated but in such figure the plate is shown as being employed for a purpose other than smoothing or topping off the material after being poured within the mold chamber.

The grooves or channels 15 and 9 allow the ready escape of any air which might otherwise be trapped within the mold chamber with the possible result of affecting the quality or character of the molded block.

The material is allowed to set within the mold chamber for a period of from four to six hours in a temperature of approximately seventy degrees. At this time the material has set but is still in a green state although it has sufficiently solidified to allow without injury its further handling. The grapple G is then engaged with the flanges 8 of the palette P and by proper action of the levers 16 the grapple G is caused to slightly lift the palette P and the block as particularly illustrated at the left hand side of Figure 1 and in Figure 3. This action effects a separation or a breaking of the material from the pins 4. The palette P with the block thereon is then allowed to again lower upon the bottom wall 2 of the mold chamber whereupon the supplemental or auxiliary plates 11 are removed and which step is indicated at the left hand side of Figure 4 of the drawings. In removing each of these plates 11 the striker plate 18 is placed upon the top of the block with its straight edge in close contact with the inner face of the plate 11. This assures the desired withdrawal of the plate 11 without creating a lip or ridge at the upper end edge of the block.

Before removing the plates 11 the grapple G is removed but returned into desired contact with the flanges 8 after such removal of the plates 11. The lever 16 is then operated to lift the palette P and the block set thereon. After the palette has been raised a desired distance by the lever 16 an operator may readily grasp the flanges 8 and continue the further required lifting of the palette P to manually remove the same entirely from the mold chamber.

The consistency of the cementitious material at the time of the removal of the palette and the block thereon from within the mold chamber is such as to assure the walls of the openings through the block as provided by the pins 4 being smooth.

After the palette P with the block thereon has been removed the palette is set preferably upon crossed cleats so that circulation of air may be had through the openings 6 of the plate 5 of the palette P and the perforations or openings formed in the block and, in addition to this, it is to be stated that air will readily flow between the end faces of the block and the end plates 7, said spaces being the result of the removal of the plates 11. It is, therefore, to be understood that the block is subjected to effective drying action. After the block has been further dried as desired the block is removed from the palette to allow such palette to be again employed.

In the present embodiment of my invention and as particularly illustrated in Figure 1 of the drawings in using the lever 16 the fulcrum strip or bar 17 is rested upon the flanges 12 or 8 of the plates 11 and 7 respectively within a mold chamber adjacent to the mold chamber in which the palette P and block thereon is being lifted.

The lower end portions of the side plates 1 at substantially the transverse center of each of the mold chambers are provided with the openings 19 normally closed by the plugs 20 preferably threaded within the openings 19. In cleaning a mold chamber, which is generally done by a stream of water under pressure, the removal of the plugs 20 facilitates this cleaning operation as the desired flushing will be materially facilitated by flow out through the openings 19.

From the foregoing description it is thought to be obvious that an apparatus for molding cementitious blocks constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that my invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason I do not wish to be understood as limiting myself to the precise arrangement and formation of the several parts herein shown in carrying out my invention in practice except as hereinafter claimed.

I claim:—

1. A molding apparatus comprising a mold chamber having side and end walls and a bottom wall, upstanding pins carried by the bottom wall, a palette adapted to snugly engage within the mold chamber and to rest upon the bottom wall thereof, said palette having openings for the passage of the pins and having end walls terminating above the adjacent walls of the mold chamber when the palette is resting upon the bottom wall of the mold chamber, the upper portions of the end walls of the palette having means allowing pull to be imposed upon the end walls to raise the palette up along the pins and free of the mold chamber, and separate auxiliary plates for place-

ment within the mold chamber to overlie the end walls of the palette.

2. A molding apparatus comprising a mold chamber having side and end walls and a bottom wall, upstanding pins carried by the bottom wall, a palette adapted to snugly engage within the mold chamber and to rest upon the bottom wall thereof, said palette having openings for the passage of the pins and having end walls terminating above the adjacent walls of the mold chamber when the palette is resting upon the bottom wall of the mold chamber, the upper portions of the end walls of the palette having means allowing pull to be imposed upon the end walls to raise the palette up along the pins and free of the mold chamber, and separate auxiliary plates for placement within the mold chamber to overlie the end walls of the palette, said supplemental plates having means allowing the same to be withdrawn independently of the palette.

3. A molding apparatus comprising a mold chamber having side and end walls and a bottom wall, upstanding pins carried by the bottom wall, a palette adapted to snugly engage within the mold chamber and to rest upon the bottom wall thereof, said palette having openings for the passage of the pins and having end walls terminating above the adjacent walls of the mold chamber when the palette is resting upon the bottom wall of the mold chamber, the upper portions of the end walls of the palette having means allowing pull to be imposed upon the end walls to raise the palette up along the pins and free of the mold chamber, and separate auxiliary plates for replacement within the mold chamber to overlie the end walls of the palette, the upper portions of the end walls of the palette and of the supplemental plates having coacting means for maintaining the supplemental plates in applied position.

4. A molding apparatus comprising a mold chamber having side and end walls and a bottom wall, upstanding pins carried by the bottom wall, a palette adapted to snugly engage within the mold chamber and to rest upon the bottom wall thereof, said palette having openings for the passage of the pins and having end walls terminating above the adjacent walls of the mold chamber when the palette is resting upon the bottom wall of the mold chamber, the upper portions of the end walls of the palette having means allowing pull to be imposed upon the end walls to raise the palette up along the pins and free of the mold chamber, separate auxiliary plates for placement within the mold chamber to overlie the end walls of the palette, and air venting channels extending along the faces of the supplemental plates of the palette opposed to the adjacent walls of the mold chamber.

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