

Sept. 8, 1925.

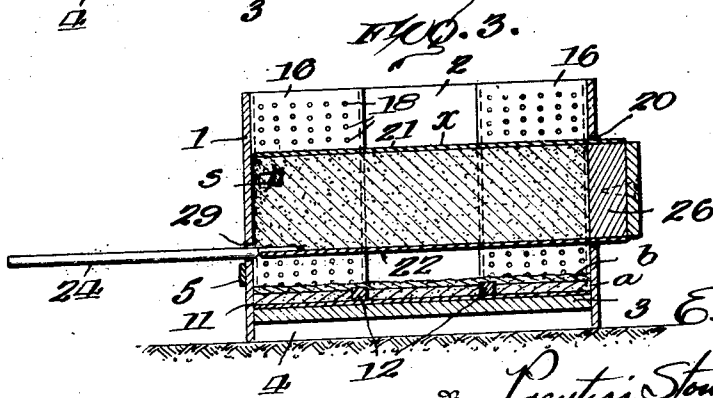
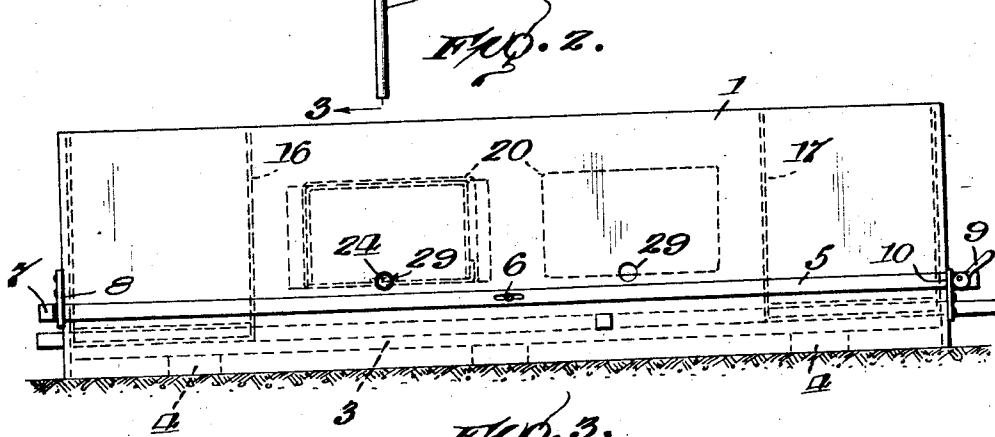
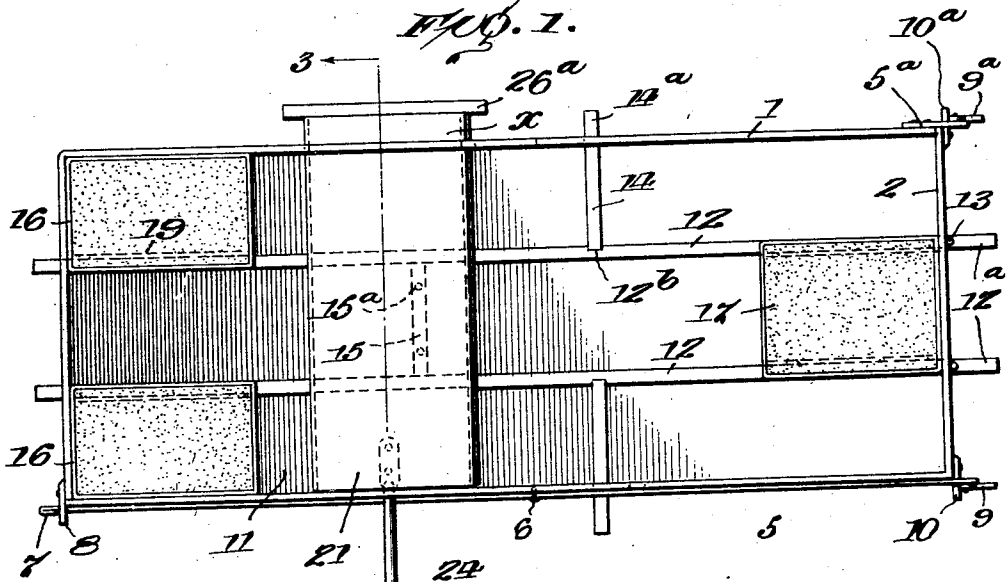
1,552,711

E. M. LANE

MEANS FOR FORMING CONCRETE BLOCKS

Filed Jan. 19, 1922

2 Sheets-Sheet 1



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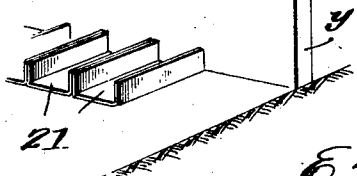
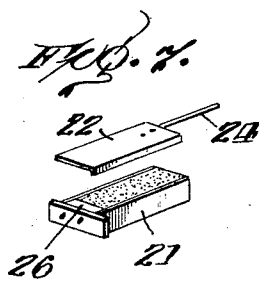
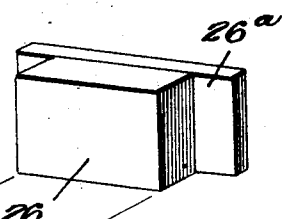
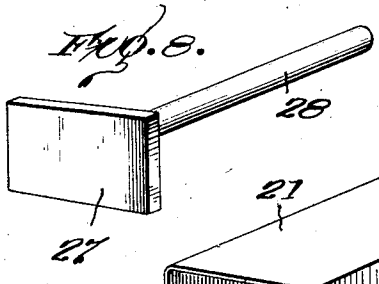
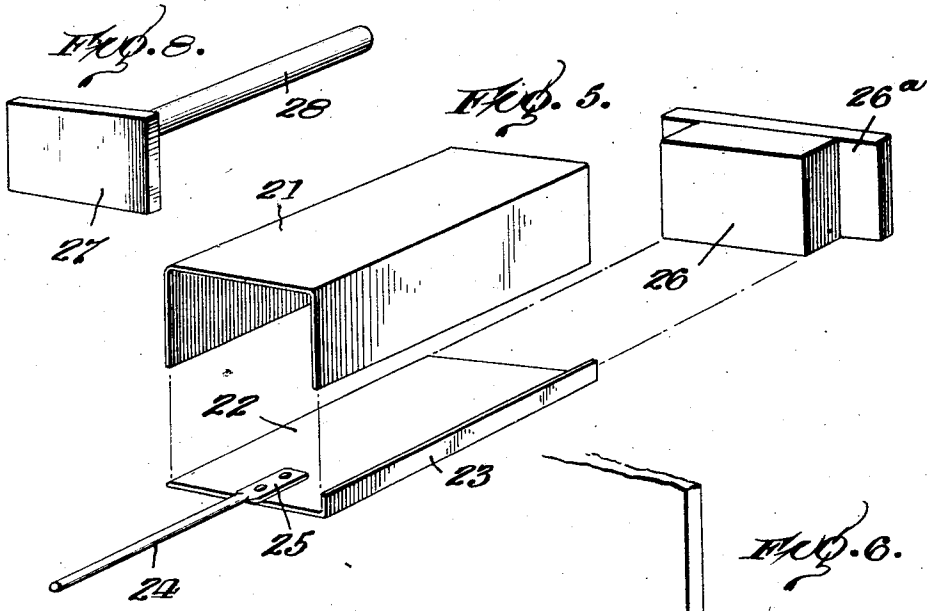
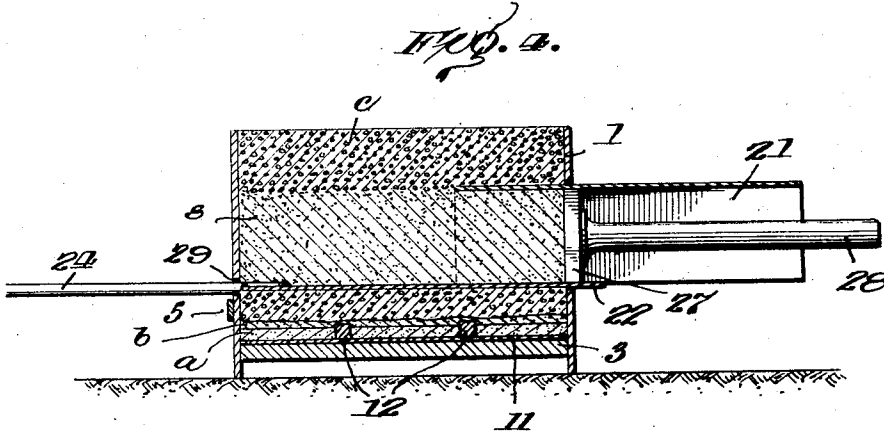
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MEANS FOR FORMING CONCRETE BLOCKS

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2 Sheets-Sheet 2



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Patented Sept. 8, 1925.

1,552,711

UNITED STATES PATENT OFFICE.

EDWARD M. LANE, OF TALLAHASSEE, FLORIDA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO MULTI-BRICK CORPORATION, OF DOVER, DELAWARE, A CORPORATION OF DELAWARE.

MEANS FOR FORMING CONCRETE BLOCKS.

Application filed January 19, 1922. Serial No. 530,420.

To all whom it may concern:

Be it known that I, EDWARD M. LANE, a citizen of the United States, residing at Tallahassee, in the county of Leon and State of Florida, have invented certain new and useful Improvements in Means for Forming Concrete Blocks, of which the following is a specification.

This invention relates to the manufacture of artificial stone blocks and in some of its aspects may be regarded as an improvement upon the apparatus covered by my prior Patent No. 919,891, granted April 27, 1909.

In such prior patent was shown and described means for inserting a sand core in a mold in place of the usual rigid core commonly employed in this class of apparatus to form openings in the finished blocks. It has been found in practice, however, with the core box and support shown in said prior patent, that it is very difficult, if not impossible, to withdraw such support without mutilating or displacing the sand core. There is a marked tendency of the sand to buckle or bulge upwardly when the support is withdrawn.

One of the main objects of the present invention, therefore is to devise an improved core box so constructed as to prevent the above mentioned buckling or bulging of the sand core. To this end, I have now provided a core box having four sides, as distinguished from the three-sided or U-shaped core box or support disclosed in my said prior patent. With my improved construction it is possible to readily withdraw the box from the mold without in any way distorting or displacing the sand core.

Both my former patent and the present invention relate to the art of making concrete blocks from a wet or quaking mixture, as distinguished from the so-called "dry" mixture, and the purpose of the sand core is to absorb the water from such a quaking mixture so as to cause it to solidify or harden quickly. The present invention seeks to still further improve upon this idea of absorbing the water, and to this end, it contemplates the provision of additional core members consisting of containers filled with sand or other absorbent material, such core members being disposed at right angles to the said sand core and spaced therefrom. By the use of a plurality of sand cores and a

plurality of such absorbent core members properly spaced, the result is obtained that every part of the body of wet concrete in the mold is reasonably close to one or the other of the absorbent cores or core members. In this way the excess water is rapidly removed from all parts of the mass.

Another object of the present invention is to devise improved means for forming a building block having a face simulating brick work, and to this end I propose to place ribs or strips in the bottom of the mold and disposed at right angles to each other in the proper relation to produce in the block longitudinal and transverse grooves in imitation of the mortar joints of brick work.

A still further object of the invention is to provide means whereby a perfectly smooth face can be produced on a block formed from a wet or quaking concrete mixture. I have found that this result can be obtained by lining the inside of the mold adjacent that part of the block on which a smooth face is to be produced, with a sheet of absorbent material, whereby all air bubbles and water globules are eliminated.

In order that the various features of my invention, and the means of carrying the same into effect, may be readily understood reference is had to the accompanying drawings forming part of this specification, and in which:—

Figure 1 is a plan view of an improved mold constructed in accordance with my invention and arranged to produce imitation brick work, one core box being shown in position therein;

Figure 2 is a side elevation thereof;

Figure 3 is a transverse section substantially on the line 3—3 of Figure 1, but showing the mold as partially filled with concrete;

Figure 4 is a sectional view similar to Figure 3, but showing the mold as entirely filled with concrete, and illustrating a portion of the core box as partly withdrawn;

Figure 5 is a perspective view of my improved core box, showing the parts thereof separated for the sake of clearness;

Figure 6 is a view on a smaller scale illustrating how the core containers are placed when being filled with sand;

Figure 7 is a perspective view on a smaller

scale showing the core box when filled with sand and ready for insertion in the mold; and

5 Figure 8 is a perspective view of an improved stripper which I employ for holding the sand core in position while the box is withdrawn.

Referring to the drawings in detail, my improved mold comprises a rectangular structure consisting of side walls 1, end walls 2, and a bottom or pallet 3 supported on cleats 4. The side walls preferably enclose the bottom or pallet, as shown in Figure 3. The mold is preferably formed in two separable sections each comprising a side and an end wall. On one side wall is pivotally mounted at 6, a bar 5 having at one end a head 7 adapted to engage the catch 8 carried by one end wall and having at its other end a cam or eccentric locking device 9 adapted to engage a catch 10 carried by the other end wall. At the other corner of the mold are provided two interlocking catches 5^a and 10^a, the former carrying a cam or eccentric 9^a which engages the latter, thus holding the parts in assembled relation. Any other method of assembling or locking the mold parts together may be employed if desired.

10 In order to absorb the water and air bubbles which inevitably form in wet concrete, I line the bottom of the mold with a sheet 11 of absorbent material, such as blotting paper, cardboard or the like. I find that when wet concrete is poured upon this absorbent surface all bubbles are completely eliminated with the result that the face of the block, when a fine sand concrete is used, is absolutely smooth and, if colored red, closely resembles pressed brick. While I prefer to use this absorbent sheet it will of course be understood that the invention as a whole is not limited to its use, as this sheet may be dispensed with in some cases.

15 In order to form in the lower face of the block grooves simulating the mortar joints of brick work, I provide a pair of suitably spaced ribs or strips 12 extending longitudinally of the mold and supported by the bottom thereof, such strips resting upon the absorbent sheet in cases where the absorbent sheet is employed. These strips or ribs 12 extend through aligned openings in the opposite end walls of the mold and are thus held in position. The ends preferably project beyond the walls of the mold, as indicated at 12^a, and pins 13 may be set in the longitudinal groove. These strips 12 form the longitudinal groove in the face of the block. The transverse grooves, in simulation of the mortar joints of brick work, are formed by ribs 14 and 15, suitably positioned. The ribs 14 extend through openings in the side walls of the mold and have

their outer ends projecting as indicated at 14^a, while their inner ends preferably engage notches 12^b formed in the strips 12. Thus the ribs 14 are securely held in position. The single strip or rib 15 is received between the two ribs 12 and may be held in position by means of dowel pins 15^a entering the bottom of the mold. This strip or rib 15 will usually adhere to the block when the same is removed from the mold.

70 In order to produce a block simulating a series of bricks laid as usual with broken joints, it is necessary to form in the ends of the blocks, recesses or notches equal in length to the width of a brick in order that the blocks when formed may be properly assembled and interlocked to imitate crosses of brick work. In the mold shown in Figure 1 I have provided for the formation of six brick faces, arranged in three rows of two bricks each. Thus, in order to form the notches at the end of the block for interlocking with the next adjacent block to simulate brick work, it is necessary to provide two spaced core members at one end of the mold, positioned in the corners thereof, and a single core member at the opposite end of the mold positioned centrally thereof.

These core members may consist of wooden blocks, sheet metal forms, or other rigid material, but I preferably construct them of sheet metal containers 16 and 17 having perforated walls as indicated at 18, and filled with sand or other absorbent material. These containers have bottoms, but open tops, like a cup, and in use are supported upon the bottom of the mold. The lower corners of the containers are formed to fit around the strips or ribs 12, as indicated at 19 in Figure 1. I have found that by the use of sand or other loose granular material in containers having foraminous walls in place of solid core members, the water is readily absorbed from the surrounding concrete and the solidification or hardening of such concrete is greatly expedited. In short, the use of these absorbent core members, in addition to the horizontal sand cores shown in my prior patent, make it possible to produce a block containing six standard size brick faces and made from wet or quaking concrete, by reason of the fact that such a block will harden or solidify within a few minutes after being poured.

Formed in one side wall of the mold are one or more openings 20 for the reception of the core boxes now to be described, two of such openings being shown.

My improved core box is designated in its entirety by the reference character *x*, and is best shown in detail in Figure 5. By reference to this figure it will be seen that the box comprises a U-shaped or three-sided former or container 21 similar to that shown in my prior patent, and preferably formed

of sheet metal, and, in addition, a plate 22 which cooperates with the container to form a fourth side of my improved core box. One longitudinal edge of the plate 22 is

5 provided with a flange 23 to assist in positioning the plate on the container.

In order to support the plate 22, and thus the entire core box, when the same is inserted in the mold, I provide a rod or bar

10 24 secured to one end of the plate 22, as indicated at 25, and extending in the same plane. This rod, when the core box is inserted in the mold, is adapted to enter and slide through a hole 29 formed in the side

15 wall of the mold. The end of the core box opposite the rod 24 can be closed by means of a block 26 which snugly fits within the end of the core box and is provided with a stop flange or shoulder 26^a.

20 With the above description of the construction of my improved apparatus the operation thereof will now be explained. The containers 21 are preferably placed in a row on a suitable support, with their ends

25 abutting the wall *y*, as shown in Figure 6. When in this position they can be readily filled with sand. One of the containers is then lifted, the block 26 inserted in one end thereof, as shown in Figure 7, and the plate

30 22 placed on top of the container like a cover.

The core box thus formed and filled with sand is then inverted so that the plate 22 constitutes the bottom thereof, and in this

35 inverted position the core box is inserted in the mold through one of the openings 20. As it is inserted the rod 24 enters the opening 29 as above described, and serves as a support for the box.

40 Figure 3 shows the box after it has been fully inserted in the mold.

Before inserting the core box in the mold, however, I preferably pour into the mold a very wet fine sand concrete mixture, suitably

45 colored if desired, to form the face of the block, only an amount of such mixture being used as is necessary to form a comparatively thin layer *a*. Upon the top of this layer I then preferably sprinkle another

50 layer *b* of comparatively dry material, as for example a so-called dry concrete mixture consisting of fine sand and cement in slightly moist condition. This layer *b* thus serves to absorb the moisture from the layer *a* and

55 causes it to rapidly harden.

After the thin layers *a* and *b* have been placed in the mold, as described, and after the core box *x* has been inserted as shown in Figure 3, the wet concrete mixture forming the body of the block is poured in. This mixture fills the mold and occupies the spaces between the horizontal core box *x*

60 and the vertical core members 16 and 17. As soon as the mold has been filled with concrete, as indicated at *c* in Figure 4, the

core box can be withdrawn. This withdrawal is effected in the following manner. The block 26 is first removed from the projecting end of the box, and in its place is

70 inserted a stripper 27 of the same dimensions, and having a handle 28 by means of which it may be held. This stripper is placed against the end of the mass of sand in the core box so as to hold it against displacement and the portion 21 of the core box

75 may then be withdrawn, as shown in Figure 4. The sand core *s* is then in direct contact with the concrete and rests on and is supported by the plate 22. This plate 22 may, however, now also be withdrawn in the same

80 manner, the rod 24 serving to support it until it has passed well beyond the opposite wall of the mold.

When the plate 22, as well as the former 21 of the core box, have finally been removed, the sand core remains in the mold in contact with and entirely surrounded by the concrete, and these sand cores, in combination with the vertical core members 16

85 and 17, serve, as above described, to rapidly absorb the moisture from the concrete and cause it to quickly solidify.

Within a few minutes after pouring, the block is sufficiently hard to permit the mold being taken apart. The newly formed block

90 may then be permitted to stand upon the bottom or pallet 4 for the necessary length of time, until it is sufficiently hard to be removed. The sand core can then be knocked out, and the core members 16 and 17 removed.

Prior to taking the mold apart, however, the ribs or strips 12 and 14 are removed by withdrawing them longitudinally. The

105 transverse strips 14 are first taken out and then the strips 12 may be readily removed. By removing the strips in this way, all danger of cracking or marring the edges of the grooves in the face of the blocks is

110 avoided.

What I claim is:

1. The combination with a mold having an opening in a side wall thereof, of a core box movable through said opening into

115 and out of the mold, said core box comprising a three-sided container having open ends, and a separable plate cooperating with said container to form the fourth side of the box.

2. The combination with a mold having an opening in a side wall thereof, of a core box movable through said opening into the mold, said core-box comprising a three-sided container having open ends, and a separable plate cooperating with said container to close the fourth side thereof, said

125 container and plate being independently removable from the mold through said opening.

3. The combination with a mold having

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- an opening in a side wall thereof, of a core box movable through said opening into and out of the mold, said core box comprising a three-sided container having open ends, a
- 5 separable plate cooperating with said container to form the fourth side of the box, and means for supporting said box in a horizontal position in the mold above the bottom thereof.
- 10 4. The combination with a mold having an opening in a side wall thereof, of a core box movable through said opening into and out of the mold, said core box comprising a three-sided container having open ends, a
- 15 separable plate cooperating with said container to form the fourth side of the box, and means at the side of the mold opposite said opening for supporting said box in a horizontal position.
- 20 5. The combination with a mold having an opening in a side wall thereof, of a core box movable through said opening into and out of the mold, said core box comprising a three-sided container having open ends, a
- 25 separable plate cooperating with said container to form the fourth side of the box, and means at the side of the mold opposite said opening for supporting said plate in a horizontal position.
- 30 6. The combination with a mold having an opening in a side wall thereof, of a core box movable through said opening into and out of the mold, said core box comprising a three-sided container having open ends, a
- 35 separable plate cooperating with said container to form the fourth side of the box, and means for supporting said box in a horizontal position in the mold comprising a rod secured to said plate, the wall of the mold
- 40 opposite said opening having a hole through which said rod freely passes.
7. The combination with a mold having an opening in a side wall thereof, of a core-box movable into the mold through said
- 45 opening, said core-box comprising a pair of separable sections, and means carried by one of said sections to engage the wall of the mold opposite said opening to support the core-box in horizontal position.
- 50 8. The combination with a mold having an opening in a vertical wall thereof, of means for inserting a sand core in said mold through said opening, said means comprising an elongated closed container having open
- 55 ends and freely movable through said opening into and out of the mold, and means for retaining the sand core in the mold as the container is withdrawn.
- 60 9. The combination with a mold having an opening in a vertical wall thereof, of a core box movable with a contained core of granular material into the mold through said opening, said core box being open at its ends only and comprising a pair of separable
- 65 sections, and said sections being independently removable from the mold through said opening without displacing the core.
10. The combination with a mold having an opening in a vertical wall thereof, of a core box movable into the mold through said
- 70 opening, said core box comprising a core-forming container having an open end, and a separable plate cooperating with said container to constitute a bottom therefor.
11. The combination with a mold having
- 75 an opening in a side wall thereof, of means for inserting a sand core in said mold through said opening, said means including a core-forming element, and means for supporting said core in horizontal position after the core-forming element has been with-
- 80 drawn.
12. The combination with a mold having an opening in a side wall thereof, of a core box movable through said opening into and
- 85 out of the mold, said core box comprising a three-sided container having open ends, a separable plate cooperating with said container to form the fourth side of the box, and means for temporarily closing one of
- 90 the open ends of said four sided box before the same is inserted into the mold.
13. The combination with a mold having an opening in a side wall thereof, of a core box movable through said opening into and
- 95 out of the mold, said core box comprising four sides and having open ends, and a block for temporarily closing one of said open ends before the box is inserted into the mold.
- 100 14. The combination with a mold having an opening in a side wall thereof, of a core box movable through said opening into and out of the mold, said core box comprising
- 105 four sides and having open ends, a block for temporarily closing one of said open ends before the box is inserted into the mold, and a stripper adapted to be inserted into such end after the block is removed, said stripper
- 110 serving to engage the sand core and prevent its displacement while the said box is withdrawn from the mold.
15. The combination with a mold having an opening in a side wall thereof, of a core box movable through said opening into and
- 115 out of the mold, said core box comprising four sides and having open ends, a block for temporarily closing one of said open ends before the box is inserted into the mold, and a stripper shaped to fit within the end of
- 120 said box in place of said block, when the latter is removed, preparatory to withdrawing the box from the mold.
16. The combination with a mold having an opening in a side wall thereof, of a core box movable through said opening into and
- 125 out of the mold, said core box comprising four sides, and having open ends, and a stripper shaped to fit and adapted to be inserted in the outer open end of the core-
- 130

box to retain the core in position as the box is withdrawn from the mold.

17. The combination with a mold having an opening in a side wall thereof, of a core box movable through said opening into and out of the mold, said core box comprising a three-sided container having open ends, and a separable plate cooperating with said container to form the fourth side of the box, said box being inserted in the mold in a horizontal position, with said plate lowermost.

18. The combination with a mold having an opening in a side wall thereof, of a core box movable through said opening into and out of the mold, said core box comprising a three-sided container having open ends, a separable plate cooperating with said container to form the fourth side of the box, and means for supporting said box in the mold in a horizontal position with said plate constituting the bottom thereof on which the core rests.

19. The combination with a concrete mold, of a core member therefor comprising a container having substantially rigid foraminous walls filled with absorbent material.

20. The combination with a concrete mold, of a core member therefor comprising a container formed of perforated sheet metal, and filled with sand.

21. The combination with a horizontal, open top mold, of a core member therefor comprising a cup-shaped container having foraminous walls, and a bottom resting upon the bottom of the mold, said container being filled with absorbent material.

22. The combination with a mold for concrete blocks, of cores of absorbent material extending both horizontally and vertically entirely therethrough, the horizontally extending core being spaced from the bottom of the mold, and said cores being spaced apart, whereby the water contained in a wet mixture is quickly absorbed throughout all parts of the block.

23. The combination with an open top concrete block mold, of a pair of cores of absorbent material extending vertically from top to bottom thereof, and spaced apart, and another core of absorbent material extending horizontally through said mold at a point between said vertical cores, and spaced from the bottom.

24. The combination with a horizontal, open top concrete mold, of removable ribs supported by the bottom of said mold, the walls of the mold having openings through which the ends of said ribs project, and through which the ribs may be withdrawn after the mold has been filled with concrete.

25. The combination with a horizontal, open top concrete mold, of separable ribs supported by the bottom of the mold, and extending both longitudinally and trans-

versely thereof, at right angles to each other, and the side and end walls of the mold having openings through which said ribs may be withdrawn.

26. Means for forming a concrete block having a face simulating brickwork comprising an open top, horizontal mold, removably spaced ribs supported on the bottom of the mold for forming longitudinal imitation mortar joints between the bricks, and another rib detachably secured to such bottom, and extending between the first mentioned ribs and positioned to form a transverse imitation mortar joint between the bricks.

27. The combination with a horizontal, open top concrete mold, of removable ribs supported by the bottom of said mold, the walls of the mold having openings through which said ribs may freely pass.

28. The combination with an open top mold box for making building blocks having a face to simulate brick work, of a removable imitation-mortar-joint-forming strip disposed within the box, one wall of the box having an opening in which said strip is received, the end of the strip projecting outside of the box beyond said wall, whereby said strip may be withdrawn after the box has been filled with plastic material.

29. The combination with an open top mold box for making building blocks having a face to simulate brick work, of a plurality of associated but separable, removable strips mounted within the box to form imitation mortar joints, the walls of the box having openings through which said strips are received.

30. The combination with a horizontal, open top mold box for making building blocks having a face to simulate brick work, of a plurality of separable, independently removable strips, disposed at an angle to each other within the box to form imitation mortar joints and means to position said strips within the mold.

31. The combination with a horizontal open top mold box for making building blocks having a face to simulate a plurality of building units, of separable independently removable, imitation-mortar-joint-forming strips disposed at an angle to each other within the box adjacent said face of the block, and means to position said strips within the mold box.

32. A concrete mold in which the mold cavity is partially defined by substantially rigid walls having behind them a mass of absorbent material, such walls being provided with openings through which water may pass to the absorbent material.

33. A concrete mold in which the mold cavity is partially defined by rigid foraminous walls having behind them a backing of loose absorbent material.

34. A mold for wet concrete having rigid walls formed partly of perforated sheet metal, with a body of sand beyond and in contact with said sheet metal portions.
- 5 35. The combination with a horizontal, open top mold box for making building blocks having a face to simulate brick work, of a removable imitation-mortar-joint-forming strip disposed within the box adjacent the face of the block, and rectangular cores mounted in the box to form brick spaces at the ends of the block, one edge of said cores being shaped to form a notch or recess to receive said strip.
36. The combination with an open top, horizontal mold for forming smooth face concrete blocks, of a sheet of absorbent paper covering the bottom of the mold, and on which the concrete is deposited.
- 10 In testimony whereof I affix my signature.

EDWARD M. LANE.