Dec. 11, 1923. 1,476,684

F. A. BLACK ET AL

FLUSH TANK MOLD

Filed June 13, 1921 3 Sheets-Sheet 1

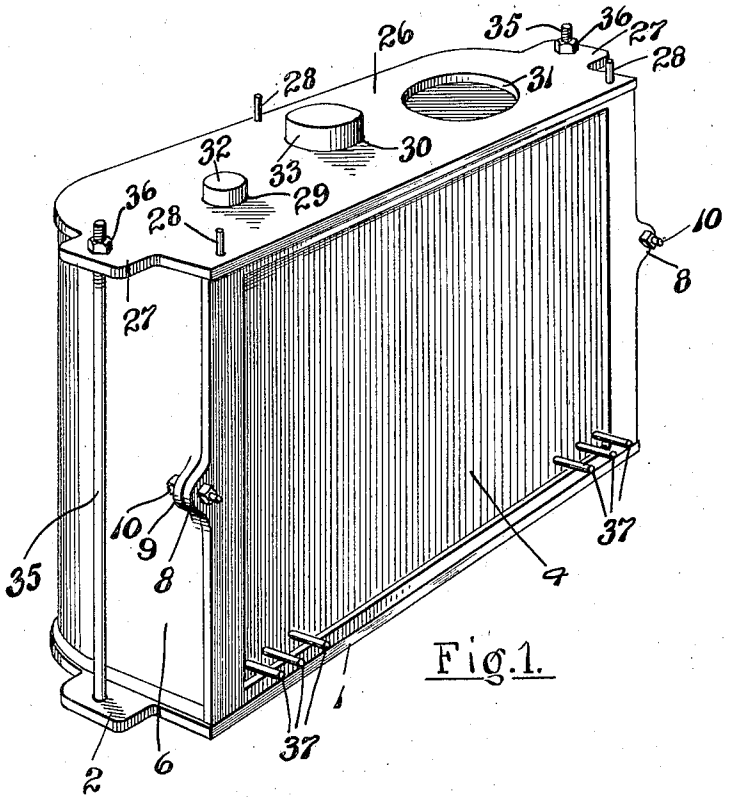


Fig. 1.

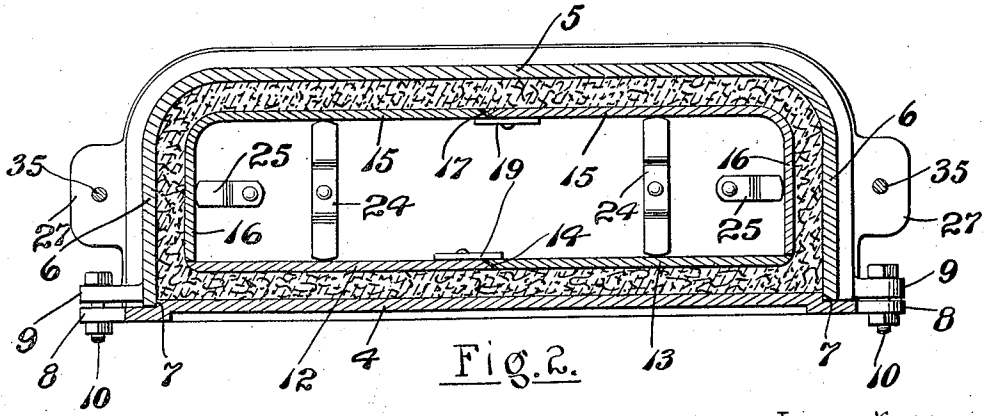


Fig. 2.

Inventors.
Frank A. Black and
Fred D. Stanly
By Frank E. Lawrance, Jr.
Attorney.

Dec. 11, 1923. 1,476,684

F. A. BLACK ET AL

FLUSH TANK MOLD

Filed June 13, 1921 3 Sheets-Sheet 2

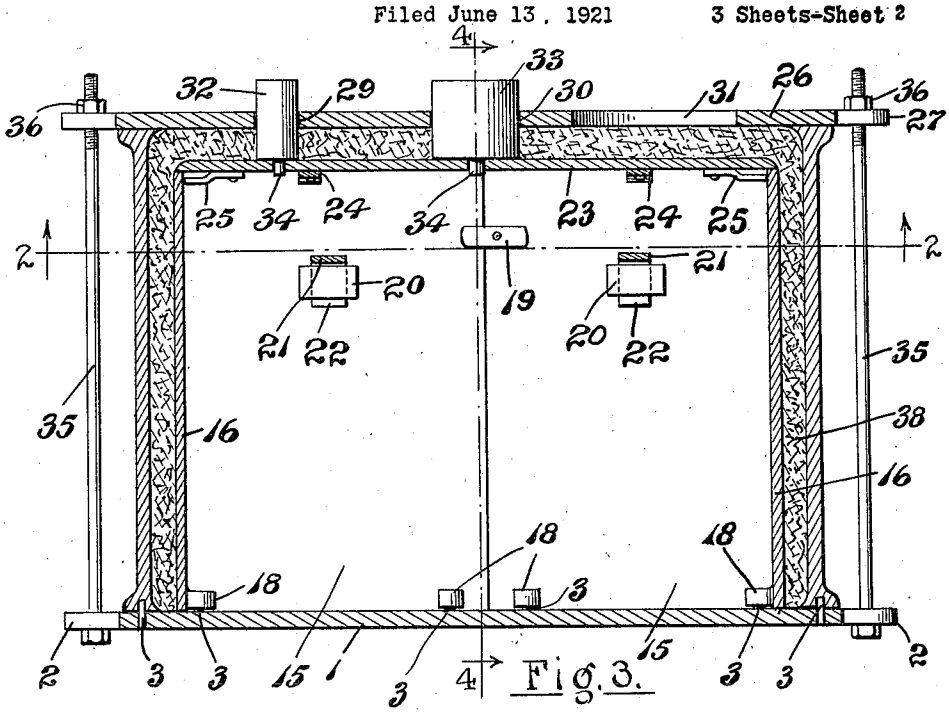


Fig. 3.

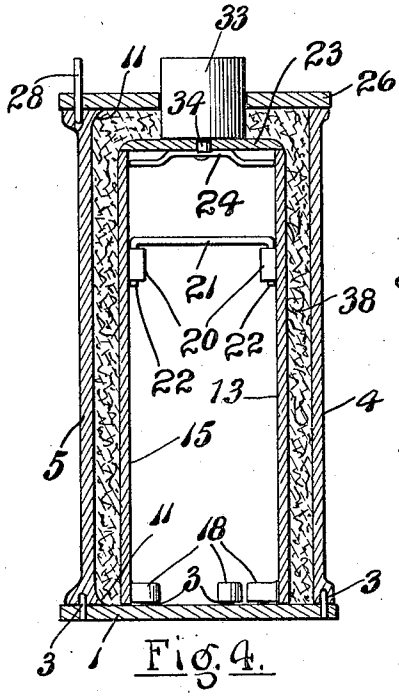


Fig. 4.

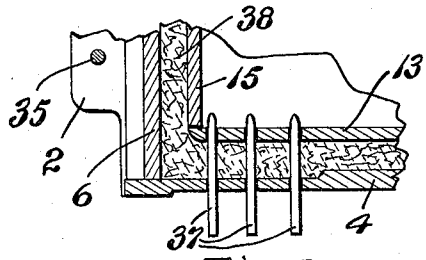


Fig. 5.

Inventors
Frank A. Black and
Fred D. Stanly.
By Frank E. Liverance, Jr.
Attorney.

Dec. 11, 1923. 1,476,684

F. A. BLACK ET AL

FLUSH TANK MOLD

Filed June 13, 1921 3 Sheets-Sheet 3

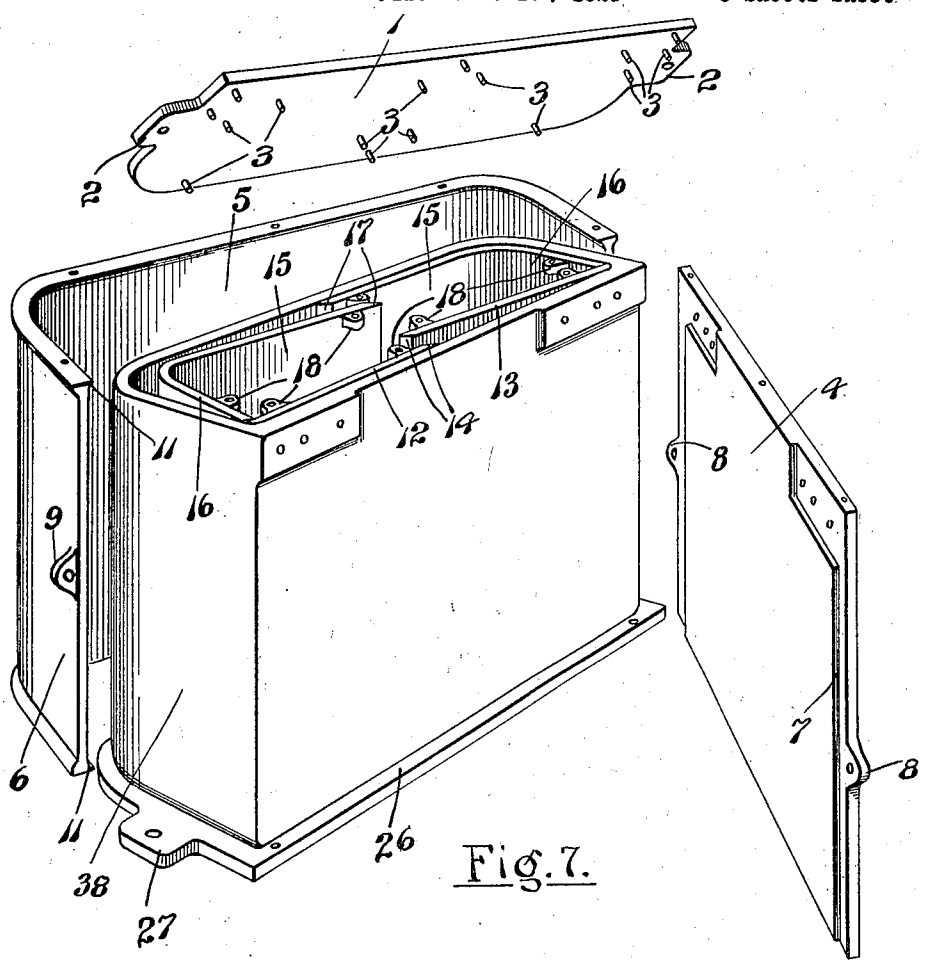


Fig. 7.

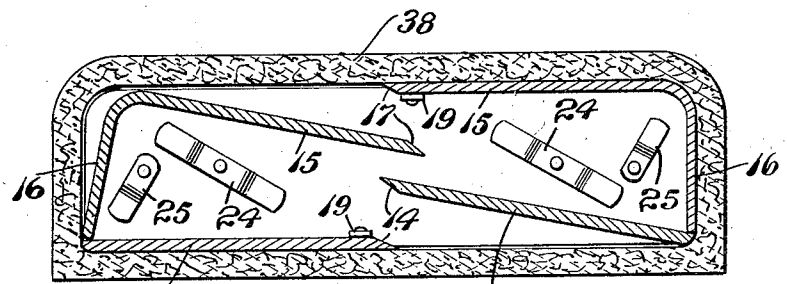


Fig. 6.

Inventors
Frank A. Black and
Fred D. Stanly.
By Frank E. Liverance, Jr.
Attorney.

Patented Dec. 11, 1923. 1,476,684

UNITED STATES PATENT OFFICE.

FRANK A. BLACK, OF DETROIT, AND FRED D. STANLY, OF GRAND RAPIDS, MICHIGAN.

FLUSH-TANK MOLD.

Application filed June 13, 1921. Serial No. 477,329.

To all whom it may concern:

Be it known that we, FRANK A. BLACK and FRED D. STANLY, citizens of the United States of America, residing at Detroit and Grand Rapids, respectively, in the counties of Wayne and Kent and State of Michigan, have invented certain new and useful Improvements in Flush-Tank Molds; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a novel construction of mold for the moulding of tanks and particularly flush tanks. Tanks of this character are comparatively narrow in width and of relatively great depth and in the formation of the same from plastic cementitious material, we have devised a novel collapsible form of mold which may be readily assembled and held in position for the entrance of the material therein, and which, after the composition has hardened and set may be as easily disassembled and removed from the tank made and thereafter again used for the production of other tanks. The invention comprises many novel constructions and arrangements of parts for effectively attaining the above described ends, together with many others not at this time specifically stated, but which will appear fully and in detail as understanding of the invention is had from the following description, taken in connection with the accompanying drawings, in which,

Fig. 1 is a perspective view of the mold completely assembled and ready for the pouring of the plastic cementitious composition therein.

Fig. 2 is a horizontal section substantially on the plane of line 2—2, of Fig. 3, looking upwardly in the direction indicated by the arrows.

Fig. 3 is a vertical section taken lengthwise and substantially centrally of the mold shown in Fig. 1.

Fig. 4 is a transverse vertical section therethrough substantially on the plane of line 4—4, of Fig. 3.

Fig. 5 is a fragmentary horizontal section near the lower end and at the rear side of the mold.

Fig. 6 is a horizontal section through the tank formed by the mold, the inner or core portions of the mold being shown in partly disassembled relation to each other, and

Fig. 7 is a perspective view of the tank made and the parts of the mold used, the same being more or less disassembled and shown in inverted position.

Like reference characters refer to like parts in the different figures of the drawings.

The mold comprises an outer shell and an inner core, each made up of a number of parts. In the construction of the outer shell, a base 1 is used from which, at each end, a wide ear 2 projects, while from one side a plurality of pins 3 extend upwardly as shown in Fig. 3. Associated with this base is a vertical back 4 and a member including a front 5 with sides 6 turned therefrom toward the back and coming into contact engagement therewith when the back and said member are vertically positioned on the base. The back 4 and the member associated therewith have openings in their lower edges into which certain of the pins 3 extend and it will be noted that the back 4 on its inner side is thickened at portions thereof to make shoulders 7, the edges of the sides 6 seating at the angles made by said shoulders, thereby making a tight joint which does not permit of the escape of the cementitious material when it is placed in the mold. The back 4 and sides 6 are provided with ears 8 and 9, respectively, which have openings therethrough for the passage of a bolt 10 through each pair of the ears coming together for securely holding the parts together yet permitting their disengagement whenever desired by merely removing the bolts. At both its upper end and lower end, the member including the front 5 and sides 6 is slightly thickened and formed on its inner side with curved surfaces 11 to obviate sharp corners on the tank made in the mold, as is evident.

Within the outer shell thus made an inner hollow core is placed. In the construction of the core two back members 12 and 13 are used, being formed with bevelled edges 14 where they come together, and the core is completed by two members each including a front section 15 and a side section 16, the adjacent edges of the front sections being bevelled, as indicated at 17. These inner

core members are all formed with inwardly projecting lugs 18 adjacent their lower edges in which openings are made for the reception of certain other of the pins 3 on the base 1 so located that the core members when put in place will be spaced apart from but parallel to the back, front and sides of the outer shell. The bevelled edges 14 of the back members 12 and 13 overlap each other and, likewise, the bevelled edges at 17 on the front section 15 overlap each other, while the rear edges of the side sections 16 come against the inner sides of the back sections 12 and 13 at the outer edges thereof, as best shown in Fig. 2. Turn buttons 19 are pivotally mounted on the section 12 and on one of the front sections 15 and may be turned to pass over the bevelled edges at 14 and 17 to hold the same together. In addition each of the sections 12 and 13 and 15 is provided on its inner side with a loop 20 and brace bars 21 having down-turned ends 22 are disposed between the loops, the ends 22 of the bars inserting into the loops positioned oppositely to each other and serving to hold the upper portions of the core against movement toward each other from pressure of the composition when it is introduced into the mold.

The core is completed by a cover plate 23 of a size to completely cover the open end of the core and the edges of the members forming the core. Two bars 24 are pivotally connected to the under side of the plate 23 at a point midway between their ends, the bars being of a length that when turned to pass directly across the plate, the ends of the bars bear against the inner sides of the core sections 12, 13 and 15. Also, two buttons 25 are pivotally mounted on the under side of the cover plate, one adjacent each end thereof, being so positioned that when turned outwardly the ends of the buttons bear against the end sections 16 of the core, this means serving to further brace the core so that it is rigid against pressure of the composition, and also making tight joints between the adjacent edges of the parts making up the core so as to prevent leakage of the composition at the joints. It is to be understood that in putting the form together the parts are first placed in inverted position, as shown in Fig. 7, thereby permitting the operation of the buttons 25 and the bars 24, and the attachment of the cross bars 21, after which the form is turned to the position shown in Figs. 1, 3 and 4, and a cover 26 placed thereover. This cover has outwardly extending wide ears 27, similar to the ears 2 on the base 1 and is held in place by pins 28 which pass through openings in the cover and into properly positioned holes in the upper edges of the parts making up the outer shell of the mold.

The cover 26 has three openings 29, 30 and 31 therein in the first two of which plugs 32 and 33 are inserted, each at its lower end having a pin 34 to enter a suitable opening therefor in the core cover 23 as best shown in Fig. 3. The form is releasably bound together by headed rods 35 passing through openings in the ears 2 and 27 and threaded at their upper ends to receive nuts 36, thereby securely holding the outer shell together.

The composition is entered into the mold through the opening 31 and is of freely flowing plastic nature so that it completely fills all of the space between the inner core and the outer shell. The outer shell is first disassociated by removing the nuts 36, removing the plugs 32 and 33 and the pins 28, also removing the pins 37 which are inserted through the back 4 and into the sections 12 and 13 of the core, after which the mold is inverted so as to rest the same on the plate 26, the bolts 10 then being removed. With the parts thus disconnected, the plate 1 and the back 4, together with the part comprising the front 5 and sides 6 of the outer shell may be readily taken apart and away from the tank 38 which has been made. The core members may then be separately removed, after turning the various bars 24 and buttons 19 and 25 to inoperative positions and removing the cross bars 21. This leaves a complete tank with openings in the bottom where the plugs 32 and 33 were positioned, and also with openings in the back near the upper edge where the pins 37 were positioned. These latter openings are of utility in attaching the tank to a wall or other support where it is to be used, and those in the bottom are for the installation of the different fixtures which go with the tank, as will be readily understood.

A mold made in the manner described is very practical and efficient for the production of flush tanks. A smooth tank on both the inside and outside is made in a single piece and at a relatively low cost. No particular finish is required other than coating it with a water proof veneer of proper composition. The cover plate 26 serves to keep the under side of the bottom perfectly smooth except at the entrance opening 31 and this portion of the bottom of the tank can be readily smoothed when the mold is filled. The mold can be used over and over indefinitely for the quantity production of the tanks. In practice the core and shell of the mold are made of metal, preferably, aluminum, though any type of metal can be used, aluminum being preferred because of its lightness. The mold is rigid when assembled and the tank may be of uniform thickness, no irregularities in thickness occurring, while for getting the tank from the mold, the mold is easily disassembled. All of these features combine to make the mold one of practical merit. The appended

claims define the invention and we consider ourselves entitled to all forms of structure coming within their scope.

We claim:

1. A mold comprising an outer shell formed of a plurality of separable pieces, means for detachably connecting the same together, pins projecting upwardly from the bottom side or base of the outer shell, an inner core formed of a plurality of separable back and front and side pieces positioned on the base in spaced apart relation from the back, front and sides of the outer shell, said core pieces having lugs at their lower edges to join with said pins, a cover for the core pieces spaced from the upper side of the shell, and means to detachably secure the core pieces together, substantially as described.

2. A construction containing the elements in combination defined in claim 4, said cover plate for the shell having three openings therethrough, and a plug filling each of two of the openings and provided at its lower end with a pin passing through the core cover plate, substantially as described.

3. A core for a mold comprising two back plates having bevelled overlapping adjacent edges, means for holding said plates from lateral separation, two members each including a front and a side section having overlapping bevelled adjacent edges, means for holding said members from lateral separation, a base plate, means on the plate with which said back plates and members of the core have detachable connection, a cover plate for the core resting on the upper edges of said back plates and front and side members of the core, bars pivotally mounted on the under side of the cover plate adapted to be turned to engage with the inner sides of the back and front of the core, buttons pivotally mounted on the under side of the cover plate adapted to be turned to engage with the inner sides of the sides of the core, and bars detachably connected at their ends to and disposed between the front and back of the core, substantially as described.

4. A core for a mold comprising two back plate sections having adjacent edges bevelled and overlapping, a button on one section mounted to turn and pass in front of the adjacent portion of the other section, two combined front and side sections also having adjacent edges bevelled and overlapping, a button on the front section of one of said members likewise adapted to be turned to pass across to the other section, bars detachably connected at their ends to and disposed between the front and back of the core, and a cover plate for the core detachably secured in fixed relation thereto, substantially as described.

In testimony whereof we affix our signatures.

FRANK A. BLACK.
FRED D. STANLY.