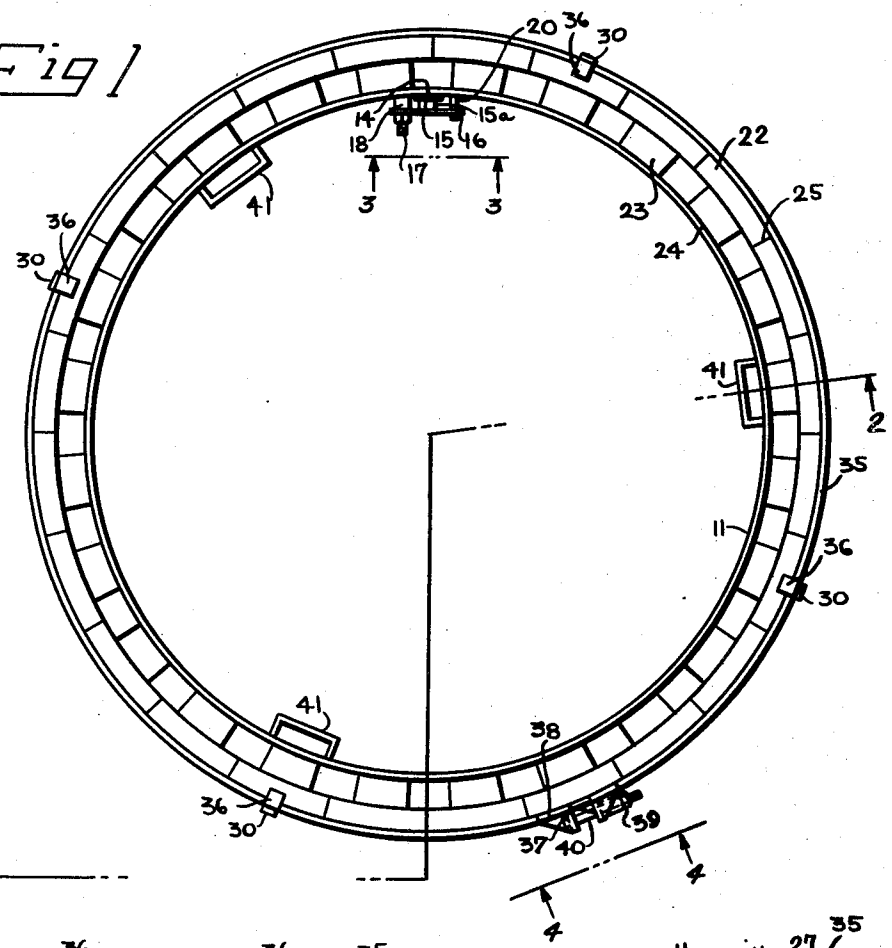
April 26, 1955 H. L. CARLSON 2,706,841

CONCRETE MOLDS

Filed Oct. 23, 1950 2 Sheets-Sheet 1

Fig 1



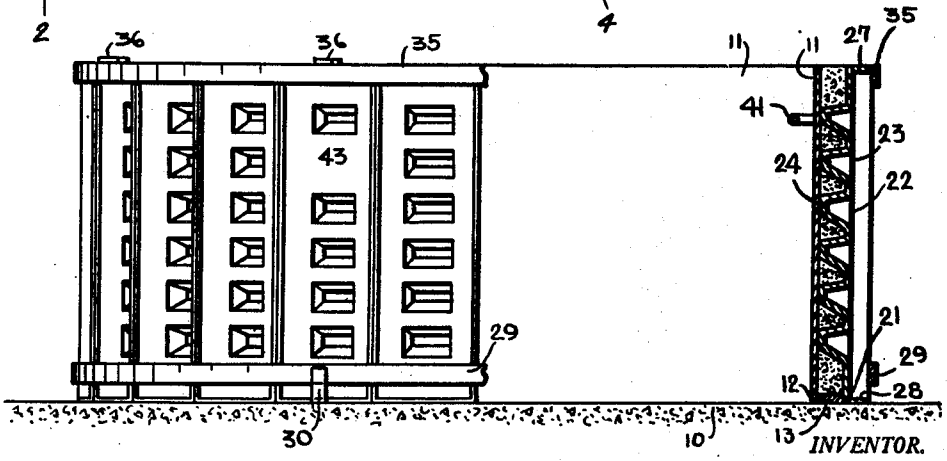


Fig 2

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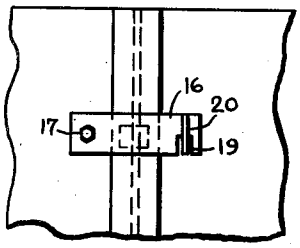

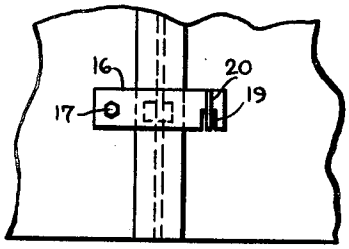

Fig 3

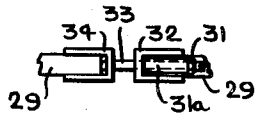

Fig 4

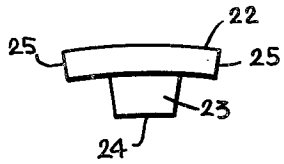

Fig 7

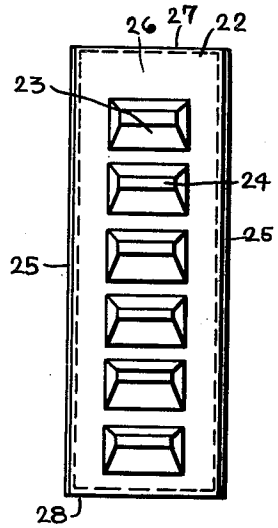

Fig 5

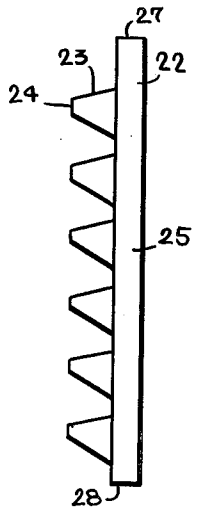

Fig 6

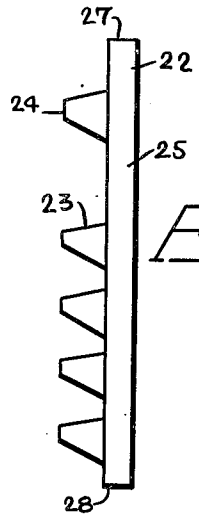

Fig 8

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2,706,841

CONCRETE MOLDS

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Application October 23, 1950, Serial No. 191,677

1 Claim. (Cl. 25—124)

This invention relates to concrete molds, and is herein described in some detail as embodied in a mold especially adapted to form tank members with reticulated walls, such as large cesspool units.

Cesspool tanks are usually built in situ from small block units and require much time and labor in erecting them, partly because of the many individual motions needed in handling and setting the blocks.

When depths exceed eight feet there is always the possibility of cave-ins of soil, endangering the lives of men who are building the pool tank. It is frequently necessary to build pools at depths ranging from twelve to twenty-four feet in order to reach good soil for drainage or to successfully receive the discharge from basement floor drains or toilets.

At such depths the constructing of block pools becomes extremely hazardous to the lives of the men at work on them.

To reduce this hazard it becomes necessary to either widen the excavation at the top and slope the sides to the natural angle of repose or to go to the expense of sheathing and bracing to prevent cave-ins, and in small areas or close to adjacent structures sheathing has often been necessary to protect the lives of the workmen laying the blocks and protect adjacent property.

According to the present invention the foregoing and other hazards and objections are overcome and a mold easily operated by one man is provided which yields a tank well adapted for the purpose in hand.

In the form shown, the mold is well adapted to produce pre-cast continuous cylindrical wall sections or units suitable for cesspool or drainage basin use, and of such size that few units are needed to provide a complete structure.

In the form shown a large number of drainage openings of relatively large size provides a strong yet light cylinder, easily handled and readily portable so that it is well adapted to be quickly installed. It has been found possible to so shape the openings as to eliminate the danger that earth can enter the pool from the outside, yet the openings provide ample drainage.

It has been possible to devise a mold which is easily and readily set up, even by a single workman so as to be ready to pour, and easily and quickly stripped as soon as the concrete has acquired an initial set. Thus the mold is well adapted for use in small communities where labor is not always available and demand is "spotty."

When so stripped the form can be immediately reassembled and reused for pouring another wall section, and both stripping and reassembling require little time and little labor.

In the form shown the mold includes a number of easily lifted segments that fit simply and closely so that excessive leakage is avoided while the wet concrete is being poured.

In the accompanying drawings:

Fig. 1 is a plan view of the mold set up for pouring;

Fig. 2 is a side view on the broken line 2—2 of Fig. 1;

Fig. 3 is a fragmentary broken enlarged view of latches holding the inner mold member;

Fig. 4 is a view on the broken line 4—4 of Fig. 1;

Fig. 5 is a face view of an outer mold panel;

Fig. 6 is a side view of the same;

Fig. 7 is a top view of the same;

Fig. 8 is a side view of a special panel for providing a strong point for lifting the molded unit.

In the form shown the workman sets up on a platform

10 an inner cylindrical mold face 11 of 3/16 sheet metal so as to lie against the inner edge 12 of an annular metal pallet 13 lying on the concrete platform 10.

In the form shown the cylinder 11 is closed where the vertical edges 14 of its plate abut, by a projecting lap plate 15 which may be welded to one edge 14 so as to lie against the face of the cylinder plate and project over and lie behind the opposite abutting edge 14, thus preventing any leaking of concrete between edges 14.

The edges 14 are shown as held in position during casting by top and bottom latches each including a notched latch member 16 pivoted on a lug 17 projecting from the cylinder 11 and preferably spaced from it by a thick washer 18.

The latch member then may catch in the notch of the lug 20 and by lying flat against the striking bar 15*a* cause the cylinder 11 to present a substantially smooth surface for molding the concrete unit.

Then the workman sets on the platform 10 against the outer edge 21 of the pallet 13 a mold unit 22, preferably an aluminum plate with projecting cores 23 which have curved surface ends 24 adapted to lie snug against the curved face of the cylinder 11.

The units 22 are shown with deep side edge flanges 25 which when set up lie on radii of the cylinder 11 so that when the units are all set up their faces 26, between and around their cores 23, form a tight outer cylinder facing the cylinder 11.

The units 22 are further stiffened by top and bottom flanges 27, 28, with the result that as the units rest on the platform 10, they stand alone touching the cylinder 11, resting on the flat bottom flange 28.

Before pouring the concrete into the mold formed by the cylinder 11, the faces 26, and the cores 23, the units 22 are secured in position by tightening a compression metal band 29 adjacent their bottom flanges 28.

The compression band 29 is shown as supported a little above the platform 10 by welded-on downwardly projecting lugs 30, say four spaced lugs 30, and as adapted to be tightened by screwing a nut 31 upon bolt 33 against the end collar 32 of the band. Thus nut 31 screws up against a short spacing sleeve 31*a*, draws on the bolt 33 extending from the opposite end collar 34 of the band 29 and projecting through the end 32, and tightens the band 29.

The units 22 are shown as further held by a top compression band 35, near the top of the units 22, and held against dropping by four spaced welded-on legs 36, bent over to overhang the tops of the units 22. The top band 35 as shown in Fig. 1, is provided with opposing end collars 37, 38 and is adapted to be tightened by a nut 39 screwed up against the end 37 and turning on a bolt 40 projecting from the collar 37 through the collar 38.

The panels or units 22 are preferably made of cast aluminum about ½ inch thick. The cores, which are integral parts of the panels, are in depth equal to the thickness of the object being formed, which is usually four inches. The cores are wedge shaped and taper from the base to the small end on all sides. At the base of the core, where it joins the panel face the usual size is 8 inches in width and 4 inches in depth. In depth the core tapers from 4 inches at the base to one inch at the small end. The bottom face usually has a slope of 2½" vertical in 4 inches horizontal and the top face usually has a slope of ½ inch vertical in 4 inches horizontal. In width the cores taper from 8 inches at the base to about 7 inches at the small end. This taper is made equal on both sides of the core. A satisfactory taper on the side faces of the core is obtained by causing those faces to be parallel with the faces of the side flanges of the panel. The panel units now being employed weigh between 40 and 50 pounds and are easily set up and dismantled by one man.

When the cylinder 11 is locked by its latch 16 and the units are locked by their bands 29, 35, the workman "pours" in the wet freshly mixed concrete. It has been found that a properly proportioned and thoroughly mixed Portland cement concrete readily flows around and between the cores on the assembled panels. This action is usually assisted by rodding the concrete in the vertical open spaces between the vertical rows of cores. This

action can, of course, be accomplished by the use of mechanical concrete vibrators. A 1:2:3 concrete of cement, sand and minus ¾ gravel was satisfactory.

After standing some six hours in favorable weather, say 80° or 78° F. a properly chosen cement concrete mixture has hardened enough to remove the mold members.

The workman then loosens the bands **35**, **29**, loosens the cylinder **11** by knocking up the latch **16** to free it, springing the edges **14** so they overlap, by a pinch bar, if need be, and lifting out the cylinder **11**.

To thus lift the cylinder **11** it is provided with three spaced lifting handles **41** adapted to be engaged by a lifting rig suspended from the derrick to lift and remove the cylinder **11**.

When the cylinder **11** is out of the way and the bands **29** and **35** are removed, the workman loosens the panels **22** by driving against the end face of a top core and of a bottom core, which are now exposed, with a hammer through an interposed block of wood. This action immediately frees the panels but leaves them in standing position.

Then the panels **22** may be removed, the cylinder **11** set upon another platform **10** against another annular pallet **13**, the panels **22** set up against the cylinder, tightened up by the same, or extra tension bands **29** and **35**, and a second unit molded in the forms thus set up.

The panels **22** have been described above with cores **23**, but usually it is desirable to provide a cesspool unit that requires no special devices for lifting it. This end has been attained by omitting one core **23** from three of the panels **22**, so that three equally spaced panels **22** in each set of panels, each lack a core **23**, preferably one row below the top row, see Fig. 8.

As shown in Fig. 2 at **43**, solid concrete replaces an opening. It is found that a unit thus made may be lifted from its platform **10** at the end of 24 hours by engaging the lifting rig in the openings below the space marked **43**. The same lifting points are used for rehandling cesspool sections at excavations.

The cesspool unit is usually made a little less than 8 feet in diameter, to avoid legal limitations on highways, and a convenient height is three to four feet or a little more, so that the unit is readily portable by truck and readily handled by a small one-man lifting rig, if need be.

Having thus described one embodiment of the invention in some detail, what is claimed is:

The combination of a cylindrical central mold member and a surrounding mold member comprised of a plurality of thin panel members having vertical edge flanges projecting from one face of each panel adapted to abut flanges of adjacent panels in radial planes of the inner mold to retain liquid concrete, to resist pivoting of panel about a vertical axis, to avoid overlapping of adjacent panels; a series of tapering cores projecting from each panel to butt against the central mold member to produce molded openings through the object cast and providing the sole means of holding the panels apart from the central mold member, curved ends on the panel cores several inches wide circumferentially to provide contact several inches wide circumferentially between each core and the central mold member to prevent the panel from pivoting about a vertical axis, the cores of a panel overbalancing the flanges projecting from the opposite face of the panel so that the panel leans against the central mold member and stands alone, and removable band members encircling the panels adapted to be tightened to hold the panels together with core ends abutting the inner mold member.

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