March 30, 1954 M. W. OVERHULSE 2,673,459

JOINT BETWEEN PRECAST CONCRETE SLABS

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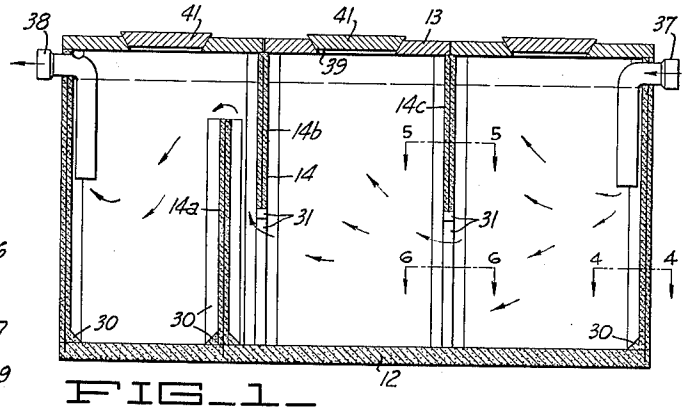


FIG_1_

FIG_2_

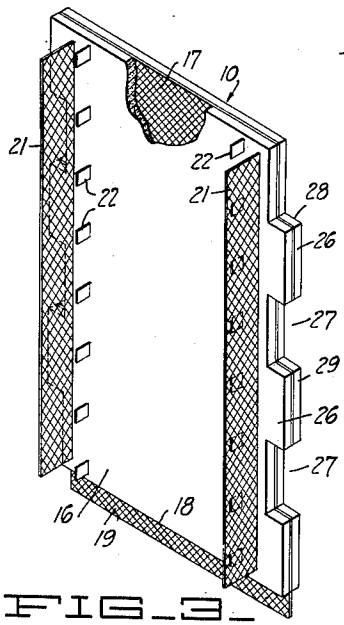


FIG_3_

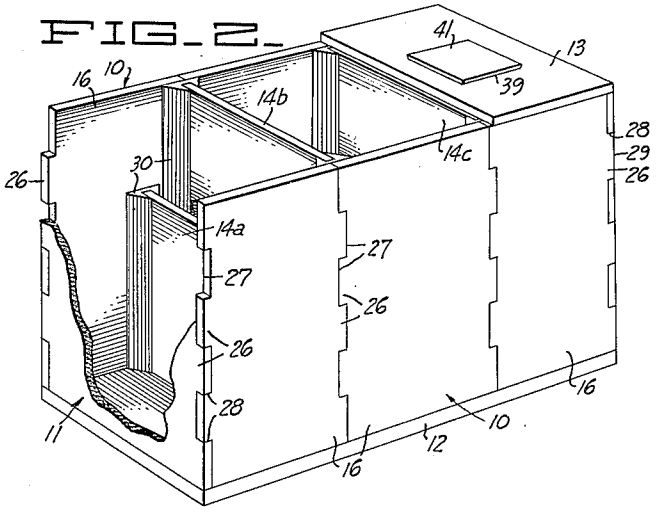
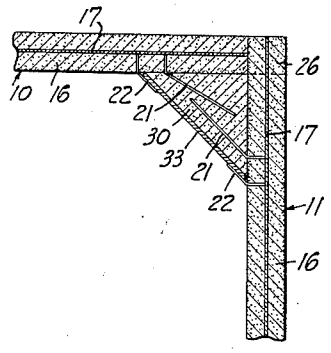


FIG_4_



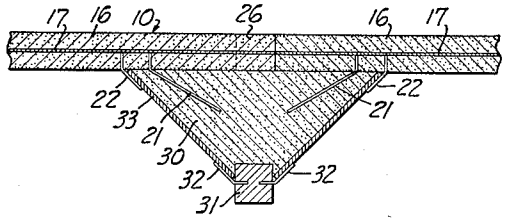
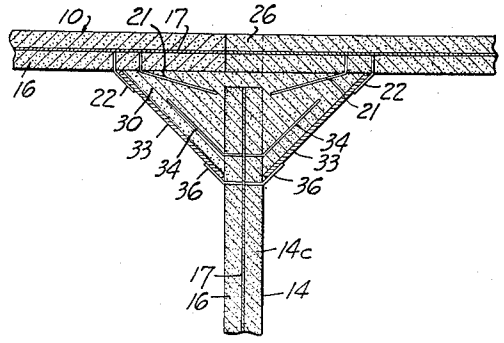


FIG_6_

FIG_5_



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JOINT BETWEEN PRECAST CONCRETE SLABS

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1 Claim. (Cl. 72—9)

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This invention relates to the construction of tanks and particularly to the construction of underground tanks, such as septic tanks, from prefabricated concrete slabs.

While many underground tanks have been built from prefabricated units of various kinds, all of those of which I have knowledge have been subject to various disadvantages including, by way of example, difficulty of installation and difficulty of maintenance and repair. For example, prefabricated units have been difficult to handle and have required skilled labor during construction. Furthermore, the junctions or joints between the various prefabricated parts have provided weak points where breakage or leakage is apt to occur. The effect of the weakening of such underground units will, of course, be obvious. Seepage causes settling and washing away of the supporting earth. Lack of support for the walls of the tank then occurs at a point, which, having already been weakened, is not in condition to continue to carry the strain.

It is an object of the present invention to provide a simple type of prefabricated concrete slab from which tanks of various lengths and widths may be built by the use of the same basic slab.

It is a further object of this invention to provide means whereby the slabs may be joined together in such a manner that the entire completed structure forms, in effect, a single cast member.

It is a further object of this invention to provide means whereby the slabs may be joined together in such a manner that the defects heretofore described will not be inherent in the device.

Other objects and advantages of the present invention will appear from the following specification taken in conjunction with the accompanying drawings in which—

Figure 1 is a cross-sectional view of a septic tank manufactured from my concrete slabs;

Figure 2 is a perspective view, partly cut away, of a septic tank manufactured from my concrete slabs;

Figure 3 is a three-quarter view of a concrete slab, partly cut away, incorporating my invention;

Figure 4 is detail taken along the line 4—4 of Figure 1;

Figure 5 is a detail taken along the line 5—5 of Figure 1; and

Figure 6 is a detail taken along the line 6—6 of Figure 1.

As illustrated in Figure 1, conventional underground septic tanks consist of side and end walls 10 and 11, a floor 12, a top 13 and a plurality of baffles 14 which are suitably secured to the side walls 10 or the floor 12.

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As illustrated in Figure 3, my preformed concrete slab 16 is provided with a central reinforcing web 17 which, as illustrated in Figure 3, is preferably formed of expanded metal or wire mesh. The reinforcing web 17 extends the entire length and width of the slab 16 and projects from the lower end 18 of the slab 16 forming a strip 19 of expanded metal or wire mesh, whose purpose will more fully hereinafter be explained.

Adjacent the side edges of the slab 16, I also provide a pair of identical strips 21 of expanded metal or other reinforcing material. The strips 21 extend substantially the entire length of the member 16 and extend perpendicularly from the surface of the slab 16, as shown. Adjacent each of the strips 21 of reinforcing material I have provided a row of clips 22 which are likewise embedded in the reinforced concrete member 16. The clips 22 are spaced from each other and are preferably made of some readily deformable metallic material such as copper, etc.

The top and bottom edges of the slab 16 are straight except, however, for the strip 19 extending from the bottom edge 18 of the slab. The side edges of the slab 16, however, are tenon and mortise type. The tenons 26 are of the same length as the adjoining mortises 27 whereby, as illustrated, for example, in Figure 2, when a number of the members 16 are joined, the tenons 26 and mortises 27 cooperate to provide a substantially tight junction. In addition, the upper shoulders 28 of the tenons 26 are substantially square. For this reason when a pair of members 16 is joined to form a corner, the tenons and mortises cooperate substantially as illustrated in Figures 2 and 4, whereby the faces 29 of the tenons 26 are flush with the adjacent outside surfaces of the slabs 16.

A septic tank, as illustrated in Figures 1 and 2, may be constructed from the precast units 16 in generally the following manner: A suitable excavation is made. A sufficient number of slabs 16 are provided and are joined along their vertical side edges in such a manner that the tenons and mortises 26 and 27 cooperate to support the slabs 16 and form side and end walls 10 and 11. The extending sections 19 of expanded metal extend downwardly. The floor 12 may then be poured. It is obvious that when the floor 12 is poured, the wet mix will engage the sections 19 and form a bond therewith. In addition, a slight

finishing bevel 30 may be provided to strengthen the corner joint between the walls 10 and 11 on the one hand and the floor 12 on the other. The upper surface of the base 12 may be troweled to form a substantially smooth and flat surface.

The baffles are also precast. However, they are rectangular in shape and are formed of concrete reinforced with a central web of expanded metal. Baffles 14 are slightly shorter in length than the inside width of the completed tank and are shorter in height than the inside height of the completed tank. The baffles 14 are then positioned within the walls 10 and 11 and the floor or base 12. The baffle 14*a*, it will be noted, extends upwardly from the base 12 and is secured thereto by the bevels 30 adjacent its base. The baffles 14*b* and 14*c* are substantially identical and are adapted to be mounted in the tank in the following manner: It will be noted that the baffles 14*b* and 14*c* extend downwardly from the roof 13 but do not reach the floor 12. A pair of wooden strips 31 are spaced a short distance outwardly from the wall 10 and extend upwardly from the base 12. Strips 31 are provided with a number of deformable clips 32 substantially identical to the clips 22 provided on the slabs 16. The vertical strips 21 of expanded metal are bent inwardly substantially as shown, for example, in Figures 5 and 6. A strip of plywood or any other suitable material 33 is positioned generally as shown in Figures 5 and 6 and the clips 22 and 32 are deformed, as shown, to retain the same generally in the position illustrated. The baffles 14*b* and 14*c* are positioned with their lower edges 14*d* resting upon the upper ends of the strips 31. The baffles 14*b* and 14*c* are provided with reinforcing webs generally as illustrated and are also provided with outwardly extending strips 34 formed of reinforcing material and with a plurality of clips 36. The form material 33 extends upwardly and its upper end is retained in position by the clips 22 and 36. Cement is then poured into the space between the forms 33 and the walls 10. As the cement sets, the joint between the adjacent blocks 16 and the baffles 14*b* and 14*c* sets and hardens. In this manner the baffles 14*b* and 14*c* are positioned. The members 33 and 31 may be removed if it is found desirable although their being allowed to remain has no harmful effects.

A corner joint between the walls 10 and 11 is formed generally as illustrated in Figure 4. The strips 21 are bent in substantially as shown and a piece of plywood or other suitable form material 33 is positioned generally as shown and retained in place by the clips 22. Cement is then poured into the corner behind the form 33 which, after the cement has hardened, may or may not be removed, depending upon the wishes of the individual constructing the tank.

Suitable inlet and outlet pipes 37 and 38 may be provided. The top 13 may be provided with a number of manholes 39 which are provided with suitable covers 41.

From the foregoing it will be obvious that I have invented a type of concrete slab construction which is particularly adaptable for use in connection with underground septic or storage tanks, for example.

It should be noted that by virtue of the tenon and mortise construction, substantial strength is originally provided. However, by virtue of the strips of reinforcing material 21, which are cast integrally with the blocks 16, further reinforcing means are provided when additional wet concrete is poured either to form a joint as illustrated in Figures 5 and 6 or a corner as illustrated in Figure 4. It is also obvious that the size of the tank to be formed may be readily altered to suit particular conditions. For example, by the use of varying numbers of blocks in the formation of the walls, the tank may be lengthened or shortened. My precast slabs 16, therefore, provide the readily useable means for forming walls of varying lengths. In this manner and by the use of the same materials an almost unlimited adaptability is obtained. The use of blocks 16 together with the baffle members 14, together with a quantity of wet mixed cement is all that is needed for the production of a suitable tank. The tank may thus be formed speedily and with the minimum of skilled labor. In addition, the advantages of water-tight junctions and corners is obtained. Furthermore, the additional concrete which is poured on the job to form a leak-proof joint or corner in addition forms a support or anchorage for the baffles.

I claim:

A structural joint comprising: a pair of reenforced concrete slabs securely positioned upon a concrete bottom member and having adjacent edges extending along said joint and a third reenforced concrete slab positioned at right angles to said pair of slabs and in the vertical plane of said joint and spaced from said bottom member, the edges of said pair of slabs having complementary interengaging notches and projections locking said edges against relative movement longitudinally of said joint, a row of spaced retaining clips embedded in each of said pair of slabs adjacent and parallel to said joint and projecting from corresponding faces of said slabs, a row of spaced retaining clips embedded in opposite faces of said third reenforced concrete slab adjacent to said joint and projecting from each face of said slab, means for spacing said third reenforced concrete slab from said bottom member comprising a structural member of approximately the same width as said slab and provided with spaced retaining clips embedded in opposite sides thereof and projecting from opposite faces thereof, a pair of form members, each of said form members extending along but spaced from said joint and having one of its edges abutting one of said pair of slabs and the other of its edges abutting the said third slab and said structural member, said retaining clips engaging the side edges of said form members to hold said members in position to define an enclosed space extending along said joint, separate reenforcing elements having portions embedded in each of said slabs respectively and terminal portions extending into said enclosed space, said enclosed space being filled with hardened bonding material.

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