Oct. 8, 1963 A. DI TULLIO ETAL 3,106,044

PRE-CAST SECTIONAL CONCRETE SEPTIC TANK

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Fig. 1

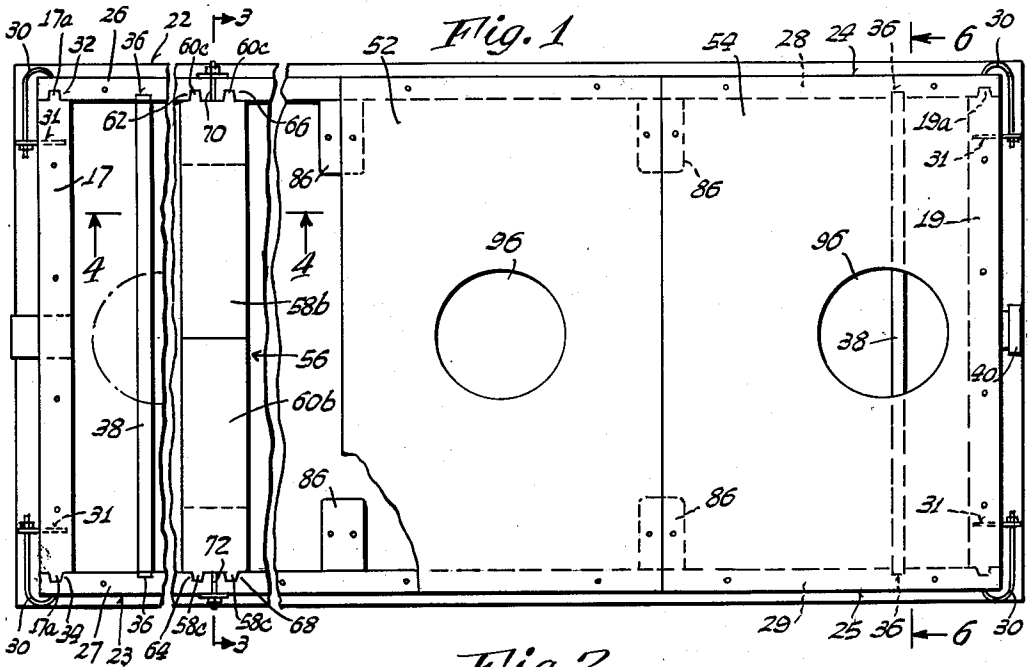
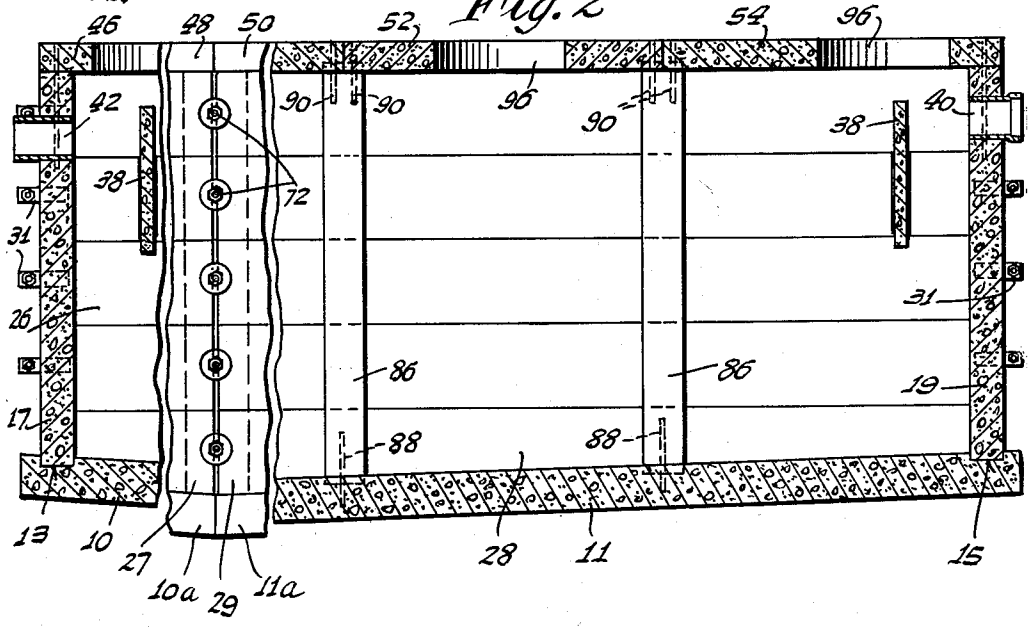


Fig. 2



INVENTORS
Alfred Di Tullio
Elio S. Di Tullio
Patsy Di Tullio

BY Hebner & Lehmann

AGENT

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Fig. 3

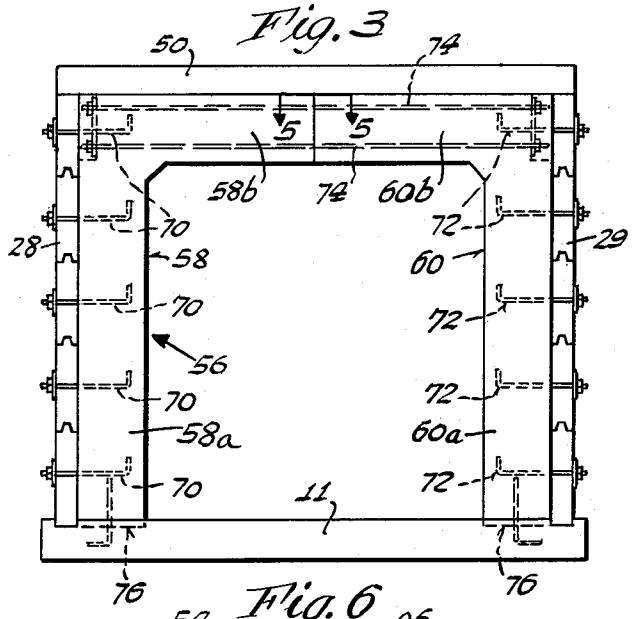


Fig. 4

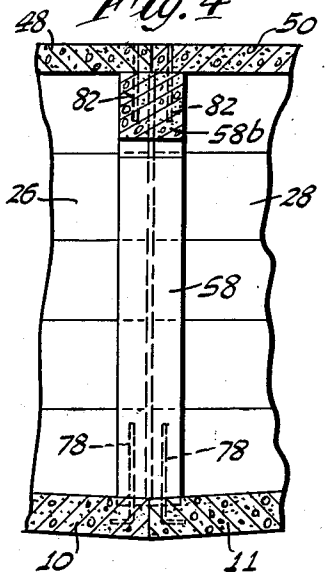


Fig. 6

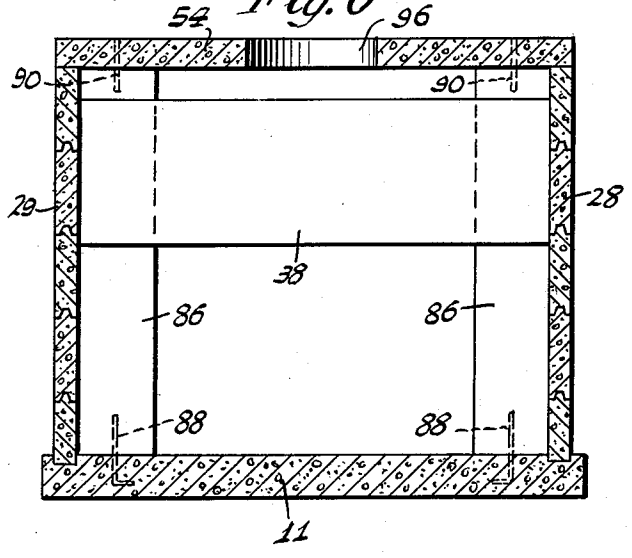
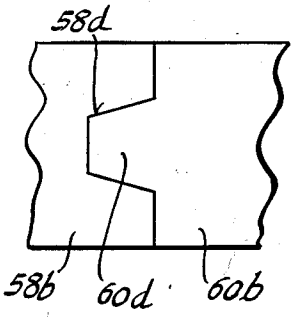


Fig. 5



INVENTORS
Alfred Di Tullio
Elio S Di Tullio
Patsy Di Tullio

BY H. Gibner Lehmann
AGENT

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PRE-CAST SECTIONAL CONCRETE SEPTIC TANK

Alfred Di Tullio, 253 Marion St., Bridgeport, Conn., Elio S. Di Tullio, 38 Smith Place, Trumbull, Conn., and Patsy A. Di Tullio, 25 Cleveland Ave., Bridgeport, Conn.

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3 Claims. (Cl. 50—13)

This invention relates to pre-cast or pre-fabricated septic tanks, and more particularly to tanks of this type which are fabricated of a multiplicity of individual parts or components.

An object of the invention is to provide a novel and improved pre-fabricated or pre-cast concrete septic tank wherein a plurality of individual tank sections or units are assembled or coupled to each other, thereby to obtain an increased total tank capacity made up of multiples of a single unit or section.

Another object of the invention is to provide an improved pre-cast septic tank as above set forth, wherein simple yet effective joint means is incorporated to secure together the tank sections or units.

A further object of the invention is to provide an improved pre-fabricated concrete septic tank of the type outlined, wherein the fabrication of the parts or components at a manufacturing point or location and the assembly of the same to each other on the job, either as separate units or multiple units may be readily carried out with a minimum amount of time and effort, and without requiring appreciable skill.

Still another object of the invention is to provide an improved pre-fabricated concrete septic tank in accordance with the foregoing, wherein the side walls are constructed of individual planks and have novel internal stiffening means to prevent inward collapse of the said walls.

A feature of the invention resides in the provision of a novel sectional concrete septic tank wherein the large majority of the components may be readily mass produced at a manufacturing location in production type molds, including the novel joint means and novel internal stiffener means.

Other features and advantages will hereinafter appear.

In the accompanying drawings similar characters of reference are used to designate like components throughout the several views, in which:

FIGURE 1 is a top plan view with portions of the cover removed, of a multiple-unit pre-cast sectional concrete septic tank as provided by the invention.

FIG. 2 is a view partly in vertical section and partly in side elevation of the multiple-unit septic tank shown in FIG. 1.

FIG. 3 is a transverse vertical section, taken on the line 3—3 of FIG. 1.

FIG. 4 is a fragmentary inside elevational view and vertical sectional view, the section being taken on the line 4—4 of FIG. 1.

FIG. 5 is a fragmentary top plan view of a junction member or yoke, looking in the direction of the arrows 5—5 of FIG. 3.

FIG. 6 is a transverse vertical sectional view, taken on the line 6—6 of FIG. 1.

Referring first to FIGS. 1, 2 and 3, the present improved multi-section pre-cast or pre-fabricated concrete septic tank comprises a pair of flat, rectangular base slabs 10 and 11 which are disposed end-to-end and located in slightly inclined positions, with their lowermost end portions 10*a* and 11*a* in abutting relation. The remote ends of the base slabs 10 and 11 have transverse grooves 13 and 15 in which are disposed the lower edge portions of rectangular end walls 17 and 19. The end walls 17 and 19 are keyed to the base slabs 10 and 11 respectively by means of the grooves 13 and 14.

Considering FIG. 1, it is seen that the end walls 17 and 19 have at their side edges vertically extending tongues 17*a* and 19*a* respectively, by which the end walls are keyed and joined to multi-part side walls 22, 23, 24 and 25. The side walls 22, 23, 24 and 25 are constituted of horizontally extending planks 26, 27, 28 and 29 respectively said planks being placed edge-to-edge and the lowermost planks being recessed in the base portions 10 and 11, as indicate for example in FIGS. 3 and 6. The planks 26, 27, 28 and 29 have tongue-and-groove connections at their engaging horizontal edges as seen in FIGS. 3 and 6 also.

Referring again to FIG. 1 it is seen that the planks 26 and 27 have grooves 32 and 34 respectively, for receiving the vertical tongues 17*a* of the end wall 17, by which the planks are keyed to the said end wall. A similar construction exists at the end wall 19. The horizontally extending planks 26, 27, 28 and 29 may be secured to the end walls 17 and 19 by draft means in the form of threaded hooks 30, carried by anchorage plates 31 imbedded in the end walls, as shown in FIGS. 1 and 2. Preferably, as illustrated in FIG. 2, the lowermost planks 26, 27, 28 and 29 have a tapering width or depth, by which their bottom edges conform to the slope of the base slabs 10 and 11 while enabling all of the upper planks to be substantially horizontal in spite of the sloping base slabs.

Considering FIGS. 1 and 2, certain of the side planks 26–29 may be provided with inwardly disposed vertically extending grooves 36 to accommodate transversely extending baffles 38 disposed in the upper end portions of the multi-unit tank structure. The end wall 19 may have a usual type of inlet fitting 40, and the ends wall 17 may have a usual type of outlet fitting 42, as seen in these figures.

Top slabs 46, 48, 50, 52 and 54 may be provide, arranged to rest on the end walls 17 and 19 and on the side walls 22, 23 24 and 25. While five such top slabs are indicated in the figures, it will be understood that each tank section may have three top slabs making a total of six top slabs in all. For the sake of clarity of illustration portions of the left tank section shown in FIGS. 1 and 2 have been broken away, and the top slab not shown has been included in the broken-away portion of the left tank section.

In accordance with the present invention, there is provided a novel, effective and advantageous yet extremely simple joining means in the form of a junction yoke, by which the left and right tank sections or units illustrated in FIGS. 1 and 2, are permanently joined end-to-end, utilizing an interlocking novel construction involving the said junction yoke. In FIG. 3 the junction yoke is shown as in the form of an inverted U-structure, being indicated generally by the numeral 56. The junction yoke 56 is preferably formed of a pair of inverted L-shaped members 58 and 60, said members having respectively upstanding portions 58*a* and 60*a*, and horizontally extending uppermost portions 58*b* and 60*b*. Referring to FIG. 1, the upstanding portions 58*a* and 60*a* of the L-shaped members 58 and 60 have pairs of parallel, vertically extending keys or tongues 58*c* and 60*c* respectively, said tongues being accommodated in vertically extending keying grooves 62, 64, 66 and 68 of the side planks 26, 27, 28 and 29 respectively.

The upright portions 58*a* and 60*a* of the yoke members 58 and 60 are further provided with clamping members or anchor bolts 70 and 72 respectively, said bolts extending outwardly between the adjoining edges of the side planks and carrying suitable circular washers and nuts by which the side planks may be securely pulled and held against the vertically extending portions 58 and 60.

As seen in FIG. 3, it is preferred that at least one anchor bolt be provided for each of the side planks which make up one half or one unit of the septic tank.

Referring to FIG. 5, the upper horizontal portions 58*b* and 60*b* of the yoke members 58 and 60 have a tongue-and-groove connection comprising a groove 58*d* and a tongue 60*d* whereby the said upper portions are accurately aligned and keyed to each other. Also, extending through the said upper portions are tie rods 74 provided with suitable nuts, by which the two yoke members 58 and 60 may be securely fastened to each other and prevented from separation.

Considering FIG. 3, the base slabs 10 and 11 are provided with rectangular recesses 76, to accommodate the lower extremities of the upright portions 58*a* and 60*a* of the junction yoke 56. As seen in FIG. 4, the base slabs 10 and 11 are preferably provided with upwardly extending dowels 78, which are received in the lower portions of the uprights 58*a* and 60*a* of the yoke 56, thereby to further securely anchor and position the junction yoke with respect to the base slabs.

Also, as shown in FIG. 4, the two L-shaped members 58 and 60 of the junction yoke 56 are provided with upwardly extending dowels 82, arranged to be received in cooperable recesses provided in the adjoining top slabs 48 and 50 of the two tank units.

Further, in accordance with the invention, novel and advantageous internal stiffening posts 86 are provided within the tank units, said posts extending vertically along the insides of the plank-type side walls 22, 23, 24 and 25 and providing a vertical bracing of the same. The stiffening posts 86 have recesses in their lower portions, to receive rigid dowels 88 disposed in the base slabs 10 and 11, and the upper end portions of the stiffening posts 86 have pairs of dowels 90 arranged to be received in suitable recesses in the top slabs of the tank unit.

As seen in FIGS. 2 and 6, the stiffening posts 86 are recessed into the base slabs 10 and 11, to more effectively locate and key the posts. By such construction a strong reinforcement is had at the interior of the planks, by which the side walls 22–25 thereof are able to withstand considerable external forces, such as occur when backfilling is done around the tank unit.

The various cast concrete components making up the multiple section septic tank are provided with reinforcing steel insert rods or bars, as is the usual practice in reinforcing cast slabs and cast elongate structural concrete members. The particular organization and arrangement of the reinforcing bars constitutes no part per se of the present invention, and details of the same are accordingly not shown herein to any great extent.

As seen in FIG. 1, the top slabs 46–54 may be provided with clean-out openings 96 of any usual type, to be normally covered by suitable closures in the conventional manner.

It will now be understood from the foregoing that we have provided a novel and improved pre-cast or prefabricated multi-section or multi-unit concrete septic tank which may have appreciably great capacity, and which is so arranged that the capacity is roughly a function of the number of tank units which are assembled end-to-end. While two such units are illustrated and described herein, it will be understood that additional units may be added where greater capacities are required. The assembled and joined tank units are securely attached to each other with the interlocking yoke or joining means illustrated, and the fabrication of the components, except for the base slabs, may be readily carried out in a plant having special equipment which is especially adapted to the casting and fabrication of such components. The components may be readily handled and transported to the job, and assembled at the job location, using base slabs which have been laid at such location. The various components are interlockingly joined, and may be made to accurately interfit, whereby a sturdy and leakproof tank construction is had. The construction is seen to be relatively simple, and to embrace a minimum number of pieces while at the same time retaining great ruggedness and strength.

Variations and modifications may be made within the scope of the claims, and portions of the improvements may be used without others.

We claim:

1. A pre-cast concrete sectional septic tank comprising, in combination:

(*a*) a flat, rectangular, pre-cast concrete base slab construction having grooves in its upper surface, extending along the four peripheral edges;

(*b*) two opposite pre-cast concrete end walls set in those grooves of the base construction which are located at the end peripheral edges thereof,

(*c*) opposite, parallel pre-cast concrete side walls set in said grooves of the base construction which are located at the side peripheral edges thereof, each of said side walls comprising:

(1) two sets of pre-cast elongate concrete wall planks of the type having a greater width than thickness and having parallel side faces, the planks of the sets being disposed end-to-end and in each set the planks having equal lengths and equal thicknesses, extending horizontally and being disposed on edge one above another with their juxtaposed end edges disposed in planes which are normal to the side faces of the planks, said edges being located all in solely two vertical rows respectively at the two juxtaposed end edges of the sets, the juxtaposed end portions of the planks of the sets having separate and individual keying means comprising formations having oppositely disposed sloping sides, said keying means being located at the side faces of the planks, all portions of said keying means being spaced inward an appreciable distance from the end edges of the planks, said means extending entirely for the full widths of the sides of the planks and, in each set being in alignment, said aligned keying means of the sets being located in two vertical, spaced rows spaced inward from the end edges and characterized by said opposite sloping sides being in alignment and continuations of each other,

(2) an upright pre-cast concrete inverted L-shaped connector member extending along the said juxtaposed end portions and having two spaced-apart, separate elongate keying wedge means comprising formations having oppositely disposed sloping sides, said keying wedge means being cooperable with said keying means of the planks and extending vertically for the full length of the member, said wedge means being disposed inward of the opposite side edges of the member an appreciable distance and being engaged respectively with and closely interfitting the said separate keying means to effect tight joints therewith,

(3) clamping means engaged with the connector member and said end plank portions, clamping the same in tightly wedged, immovable assembled relation to maintain said tight joints,

(*d*) said base slab construction having recesses in its upper surface, in which recesses the lower ends of the connector members are received and positioned against relative movement,

(*e*) said inverted L-shaped connectors together forming an inverted U-shape and having their upper extremities abutting each other,

(*f*) a tie rod extending through the upper portions of the L-shaped connectors, securing the same together,

(*g*) said end walls and side walls having cooperable

keying means to position the walls with respect to each other,

(*h*) a flat, rectangular pre-cast concrete top cover slab construction resting on said side walls, end walls and L-shaped connectors, and

(*i*) positioning means engaged with said walls and top slab construction, preventing the latter from shifting sidewise out of place.

2. A tank as in claim 1, wherein:

(*a*) the top slab construction comprises a plurality of separate flat, rectangular pre-cast concrete cover slabs having clean-out openings,

(*b*) said inverted L-shaped connectors support a pair of juxtaposed edge portions of the said cover slabs.

3. A tank as in claim 1 wherein:

(*a*) stiffening posts are provided at the insides of the side walls between the ends of the planks of the sets,

(*b*) said base slab construction has recesses in its upper surface, in which recesses the lower ends of

the stiffening posts are received and positioned against relative movement.

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