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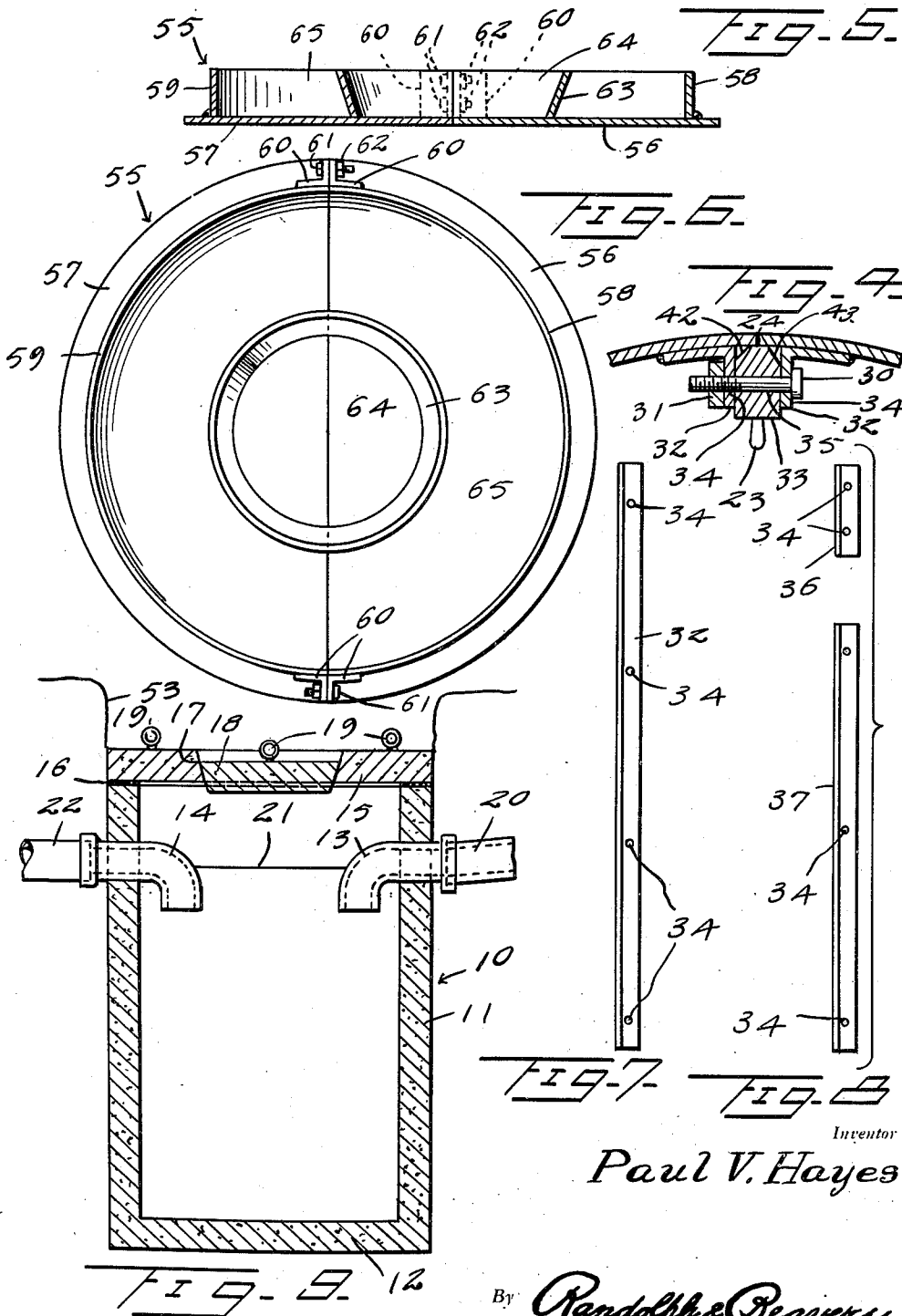
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SEPTIC TANK FORMING MEANS

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SEPTIC TANK FORMING MEANS

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This invention relates particularly to new and improved means for building concrete type septic tanks.

An important object of the present invention is to provide a sectionalized form comprising a plurality of steel parts which readily may be set up and assembled in the hole dug for the tank prior to pouring concrete thereabout and thereafter loosened and removed when the concrete sets up, thereby leaving a septic tank of permanent construction.

Another object is to provide a septic tank form of the aforescribed character having provision for insertion therein of the sewer tile necessary for connections to the tank prior to pouring the concrete whereby the tile is desirably and permanently set in the concrete wall of the tank when the concrete has hardened and the form is removed.

Another object is to provide a sectionalized form which readily may be loosened and removed in the case of concrete septic tanks employing 90° L's of vitrified tile or other suitable L's.

An additional important object is to provide new and improved forming means for cement type septic tanks wherein the septic tank may be completely formed in one concrete pouring operation with the connectors therefor set in place and the lid and cover for the tank completely formed in another concrete pouring operation facilitating progressive construction throughout.

Still another object is to provide new and improved septic tank forming apparatus by means of which cement type septic tanks of permanency due to freedom from deterioration may be easily installed at a minimum of expense.

Still other objects, features and advantages of the present invention will become more clearly apparent as the description proceeds, reference being had to the accompanying drawings wherein:

Figure 1 is a plan view of the septic tank forming means according to the preferred embodiment of the invention;

Figure 2 is a sectional view taken along the line 2—2 of Figure 1;

Figure 3 is a sectional view taken along the line 3—3 of Figure 2;

Figure 4 is a fragmentary sectional view illustrating the manner of securing adjacent form segments or sections together;

Figure 5 is a central sectional view of the lid and cover forming means;

Figure 6 is a plan view of the lid and cover forming means;

Figure 7 is a view in elevation of one of the

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angle irons comprising the section securing means;

Figure 8 is a view in elevation of the pair of angle irons employed on each form section having an opening therein to receive a tile connector therethrough, and

Figure 9 is a central sectional view of a completed septic tank which has been formed according to the principle of the present invention.

Referring now to the drawings for a more complete understanding of the invention and more particularly to Figure 9 thereof, there is shown thereon a septic tank which is constructed according to the principle of the present invention and generally designated by the numeral 10.

Tank 10 comprises a cylindrical wall 11 and bottom 12 of uniform thickness in the order of four inches, the outer diameter of the wall being in the order of forty four inches and the inner diameter being in the order of thirty six inches. The wall and bottom are formed in one-piece of an integral and unitary mass of concrete with the 90° L's 13 and 14 of vitrified tile or other suitable L's being molded into the wall, as shown, as the concrete is poured about the sectionalized form hereinafter to be described.

Tank 10 is closed at the top with a one-piece concrete lid 15 in the form of a ring which is cemented to the upper surface of wall 11 as at 16 to form a sealed joint therewith. The inner surface 17 of the lid is of frusto-conical configuration and forms a mating or complementary surface for the peripheral surface of the one-piece concrete manhole cover 18 whereby the tank is sealed at its top when the cover is in place to close the manhole, as shown. Both the lid and cover preferably have eye-bolts 19 embedded therein to facilitate handling of these parts which are simultaneously molded in the same form, hereinafter to be described in detail.

Whereas but one septic tank 10 has been disclosed herein, it will be understood that two such tanks are employed to provide a complete septic tank arrangement wherein the sewage flowing through the downwardly inclined duct 20 enters the first tank through L 13. By bacterial action the sewage material within the tank decomposes into gases, liquids and silty soil-like mineral particles. The denser mineral particles settle on the bottom of the tank in the form of sludge while some lighter particles rise with the gases and a scum is maintained in the first tank at a level indicated at 21 which is above the openings in L's 13 and 14. L 14 communicates with one of the L's of the second tank by way of a hori-

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zontal duct 22, whereby fluid passes into the second tank and is maintained at approximately the same level as the scum in the first tank. In the latter chamber or second tank it will be recognized that bacterial action will continue but in lesser degree than in the first tank due to the materials contained therein having already undergone some purification processes. Upon entrance of any additional sewage into the tanks fluid from the second tank passes therefrom through a downwardly inclined duct which is joined with the other L of the second tank (not shown).

By reason of the foregoing construction and arrangement, the chambers provided for bacterial action are watertight and also the gases are restrained in their escapement, conditions which are beneficial and preferred for numerous reasons well known to those skilled in the art. Moreover, it will be readily appreciated that the foregoing construction, while being simple and readily formed by the apparatus presently to be described, is rugged and has the quality of permanency due to the one-piece or unitary construction throughout the components thereof.

The form for making wall 11 and bottom 12 is generally designated by the numeral 25 and comprises a cylindrical wall of sheet steel divided into panels or quadrants 26, 27, 28 and 29 which are detachably secured together by a plurality of suitable bolts 30 and nuts 31 therefor. To this end, the bolts are carried by angle irons 32 which are secured to adjacent edges of quadrants 26 and 27 and 28 and 29, the angle irons 32 being secured to the quadrants preferably by welding and with each angle iron spaced approximately one-half inch from the edge of the quadrant individual thereto whereby a space is provided between each of the adjacent pairs of the angle irons. Spacer strips 33 are respectively inserted in these spaces to prevent bending of the angle irons as the bolts are drawn up tight and to seal the elongated space 24 (Figure 4) between the quadrants where their adjacent edges nearly meet, and particularly between quadrants 26 and 27 and similarly between quadrants 28 and 29 they are also employed for the purpose of removing them when dismantling procedure is under way to relieve the quadrants from stress. Suitable holes 34 and 35 are formed respectively in angle irons 32 and spacer strips 33 to receive bolts 30 therethrough, and a closed loop connection 23 is secured onto spacer strip 33 inserted between quadrants 26 and 27 and also onto spacer strip 33 inserted between quadrants 28 and 29 to receive a hook (not shown) for applying force to remove the spacer strips from their respective positions.

The adjacent edges of quadrants 27 and 28 and 26 and 29 are similarly detachably secured together except that two lengths of angle irons 36 and 37 are employed adjacent each of these edges in order to provide a space therebetween in which complementary halves of the circular openings 38 and 39 are formed to receive the L's 13 and 14. Spacer strips 40 and 41 preferably are chamfered as at 42 and 43 (Figure 4) to facilitate entrance of the spacer strips between the angle irons.

The angle irons extend just short of the upper edges of the quadrants to provide space for finish strips 44 which reinforce the upper edges of the quadrants, each strip preferably being welded to the quadrant individual thereto. Similarly, reinforcing strips 45 are secured adjacent the

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bottom edges of the quadrants, being spaced approximately one-half inch therefrom. In addition to strengthening the bottom of the form, strips 45 may be used as an inside concrete finish level "go-by mark," and, when needed, may be used as a pry-catch for loosening the form upon dismantling and removal thereof.

Round bar handles 46 are secured diametrically to at least two of the quadrants for convenience in lifting and positioning the form, the handles here being shown secured to quadrants 27 and 29.

Three pairs of diametrically disposed eye-lugs 47 and 48 are secured respectively to panels 26 and 28 and spaced approximately 85° from openings 38 and 39 therein. Similarly, three pairs of identical lugs 49 and 50 are secured respectively to panels 27 and 29 and spaced approximately 85° from openings 39 and 38 therein. These lugs are used to receive the right angle ends 51 of a turnbuckle generally designated 53, one or more of the turnbuckles being employed to strengthen the form during pouring of the concrete thereabout and for loosening the quadrants when the form is dismantled, as will presently be described.

In the use of form 25 in building septic tank 10, the form is either assembled and thereafter lowered and adjusted for position in the hole 53 therefor which has previously been dug properly so as to provide the desired dimensions and shape of the finished tank, or, when desired, the form may be assembled within the hole, in either case the L's 13 and 14 are properly inserted and positioned within openings 38 and 39 therefor. When the form has been properly positioned within the hole and maintained therein by any suitable means such, for example, as a suspension device (not shown), the concrete is then poured around the form whereby the desired thickness of concrete wall 11 and bottom 12 results.

After the concrete has hardened sufficiently all of bolts 30 are first removed and also spacer strip 33 between the quadrants 26 and 27 and spacer strip 33 between the quadrants 28 and 29 are removed. Three turnbuckles 52 are then attached to the three pairs of eye-lugs 49 and 50 and adjusted sufficiently to pull the edges of quadrants 27 and 29 spaced 90° from the L's 13 and 14 inwardly whereby these quadrants are disjoined from quadrants 26 and 28. When these quadrants are thus relieved and disjoined, they are easily shifted away from the L's protruding inside the tank. In most cases this action will also free quadrants 26 and 28 whereby they also may be shifted away from the L's. In the event that panels 26 and 28 should not become free concurrently with the loosening of panels 27 and 29, the turnbuckles may be attached to lugs 47 and 48 and adjusted in the foregoing manner to loosen panels 26 and 28.

In Figures 5 and 6, the form for making lid 15 and cover 18 is disclosed and designated generally by the numeral 55. This form comprises a circular plate formed in halves 56 and 57. Welded to the plate halves 56 and 57 respectively are complementary ring halves 58 and 59 thereby forming a ring which produces the outer circular periphery of lid 15. Angle irons 60 are welded to the plate and ring halves to provide means for detachably securing them together as a unit. Adjacent angle irons 60 being provided with registering openings to receive suitable bolts 61 having nuts 62. A frusto-conically shaped ring 63 is set concentrically

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within the ring 58, 59 to form the complementary surfaces 17 of the lid and cover.

Thus, when the concrete is poured into the space 54 enclosed by ring 63 and into the space 65 between ring 63 and ring halves 58 and 59, the lid 15 and cover 18 are formed therewithin and are readily separated by removing bolts 61 and dividing the plate and ring halves after the concrete has hardened.

From the foregoing, it should now be apparent that a septic tank arrangement and forming means therefor has been provided which is well adapted to fulfill the aforesaid objects of the invention, and, whereas but a single embodiment thereof has been disclosed in particularity which gives satisfactory results, it is my intention in the appended claims to cover all such additional embodiments, changes, and modifications commensurate with the scope and spirit of the invention.

What I desire to secure by Letters Patent of the United States is:

1. A sectionalized form for building thereabout a cement type septic tank having integrally formed bottom and cylindrical side walls with 90° L's embedded therein in diametrically opposed relation comprising, in combination, a cylindrical metallic wall conforming to the inner surface of said tank side wall and having a pair of openings for insertion of said L's therein, said metallic wall being fabricated from quadrant panels having adjacent edges extending longitudinally of the cylindrical wall, two pairs of said adjacent edges respectively terminating at the edges of said openings in the metallic wall whereby complementary halves of the openings are provided in adjacent panels, means for detachably securing the adjacent edge portions of said panels together, and adjustable tensioning means detachably secured to a pair of diametrically opposed panels in substantial spaced relation from said complementary openings therein for drawing said panels together as the tensioning means is adjusted after said securing means between adjacent edge portions of the panels have been removed and concrete has been poured and hardened about the form.

2. A sectionalized form for building thereabout a cement type septic tank having integrally formed bottom and cylindrical side walls with 90° L's embedded therein in diametrically opposed relation comprising, in combination, a cylindrical metallic wall conforming to the inner surface of said tank side wall and having a pair of openings for insertion of said L's there-

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in, said metallic walls being fabricated from quadrant panels having adjacent edges extending longitudinally of the cylindrical wall, two pairs of said adjacent edges respectively terminating at the edges of said openings in the metallic wall whereby complementary halves of the openings are provided in adjacent panels, a plurality of pairs of angle irons secured to the inner surfaces of said panels adjacent said pairs of adjacent edges thereof respectively, the pairs of angle irons individual to said pairs of panel edge portions having said openings therein being divided at the openings to permit insertion of the L's therein, a plurality of spacers for insertion respectively between said pairs of angle irons, a plurality of bolts and nuts therefor carried by said angle irons for securing said pairs of angle irons together with said spacers interposed therebetween, a pair of handles carried respectively on the inner surfaces of a pair of diametrically opposed panels, a plurality of lugs carried on the inner surfaces of the panels and adjacent the edge portions thereof not having said openings therein, and a plurality of turnbuckles having right angularly bent rod ends adapted to be received respectively in the lugs of a pair of diametrically opposed panels.

3. A sectionalized form according to claim 2 but further characterized in that strengthening metallic strips are secured respectively to the upper and lower edges of each quadrant panel internally thereof.

4. A sectionalized form according to claim 2 but further characterized in that a loop is secured to each of said spacers to facilitate withdrawal thereof from between the angle irons.

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