May 8, 1934. W. LINNMANN, JR 1,958,055

TANK STRUCTURE

Filed March 26, 1931

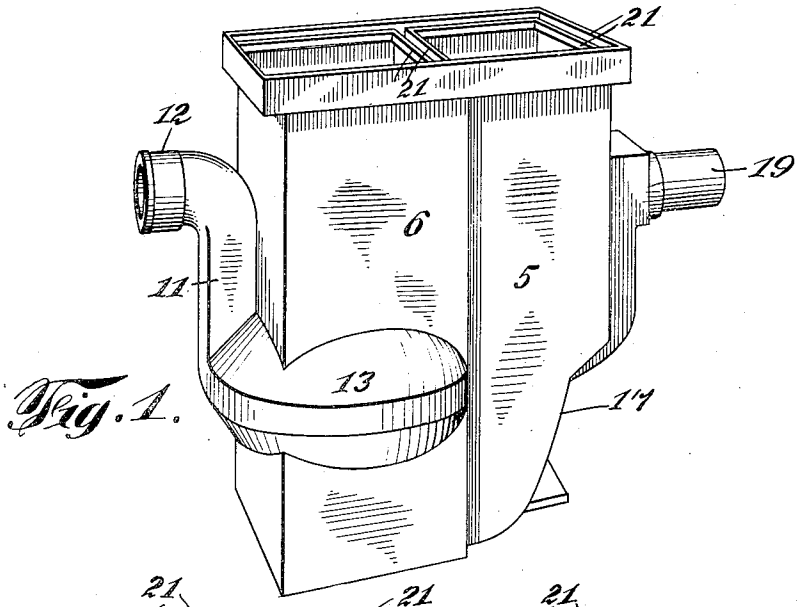


Fig. 1.

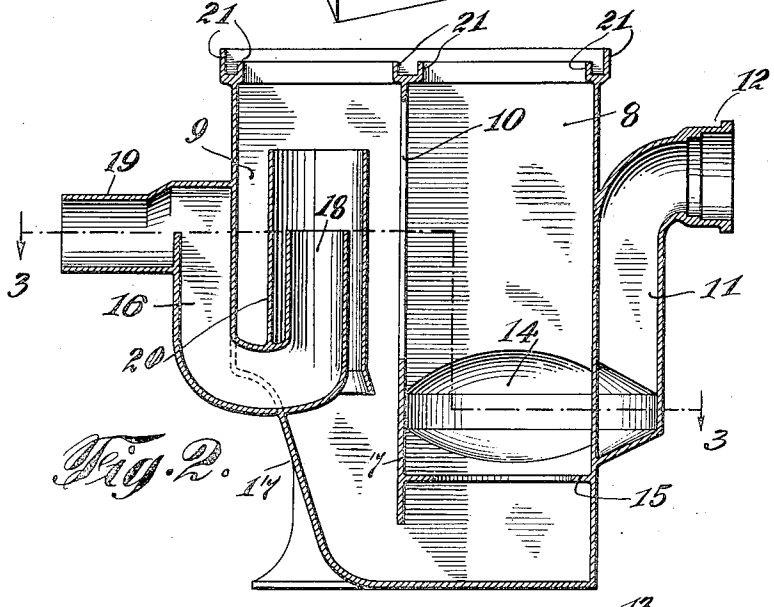


Fig. 2.

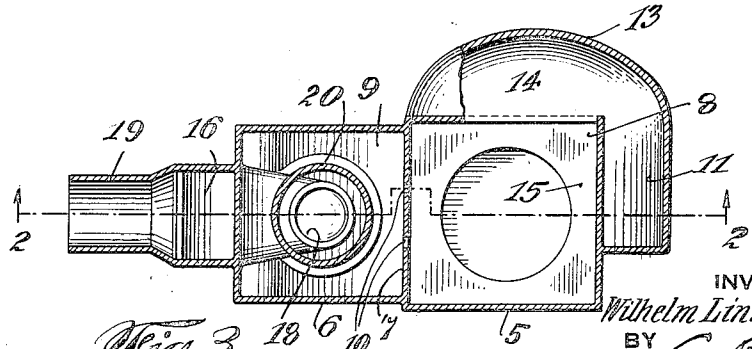


Fig. 3.

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TANK STRUCTURE

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4 Claims. (Cl. 210—56)

This invention relates to tank structures, and more particularly to a tank structure designed for use in connection with apparatus for separating liquids of different specific gravities, such for instance as that shown in Patents Numbered 1,655,191 and 1,671,115, issued to me respectively on January 3, 1928, and May 29, 1928.

It is the primary object and purpose of my present invention to provide a simple, inexpensive and durable tank structure of this kind which, while of large capacity, is so constructed and proportioned that comparatively little excavation is required in mounting or installing the tank in operative position in the ground.

It is a more particular object of this invention to provide the tank structure in the form of a one piece integral casting having inlet and outlet conduits and opposite walls of the tank structure being common to the respective conduits.

It is another object of the invention to provide said tank structure with an integral vertical partition dividing the interior thereof into communicating inlet and outlet chambers, and the wall of the inlet chamber being formed with a lateral enlargement expanded to afford an entry chamber of relatively large cross sectional area for the liquid.

A further object of the invention is to provide in conjunction with an upwardly extending part of the outlet conduit, an integrally formed guide means for a valve carrying float.

It is a further general object of my invention to provide such a one piece integrally formed tank structure wherein the inlet and outlet chambers thereof are provided at their upper ends with suitable cover receiving means, and which will be comparatively light in weight so that it may be readily transported and properly installed in operative position with a minimum of manual labor.

With the above and other objects in view, the invention consists in the improved tank structure, and in the form, construction and relative arrangement of its several parts, as will be hereinafter more fully described, illustrated in the accompanying drawing, and subsequently incorporated in the subjoined claims.

In the drawing, wherein I have disclosed one simple and practical embodiment of my invention, and in which similar reference characters designate corresponding parts throughout the several views,—

Figure 1 is a perspective view illustrating a preferred embodiment of my improved tank structure;

Fig. 2 is a vertical sectional view taken substantially on the line 2—2 of Fig. 3, and

Fig. 3 is a horizontal sectional view taken substantially on the line 3—3 of Fig. 2.

The novel tank structure forming the subject matter of this application to be hereinafter described in detail, is particularly designed for the separation and recovery of benzol, gasoline or other refined oils of relatively low specific gravity from water, such liquid mixtures being an unavoidable incident to the operation of modern public garages and being usually carried off through the drains. The tank structure wherein this separation of the liquids is effected is, in such particular application of the invention, intended to be arranged in an excavation in the ground, and proper connections made between the inlet of the tank and the collecting sump or drain in the garage floor, and between the waste water outlet of the tank and a sewer connection. For a detailed understanding of the functional operation of the apparatus whereby the proper separation of the refined mineral oil from the water is effected, reference may be had to my issued patents above referred to.

For the purpose of the present disclosure, I have illustrated in the accompanying drawing, a tank structure which is of general rectangular form in horizontal cross section. This tank structure may be conveniently described as consisting of the two parts designated 5 and 6 separated by the vertical division or partition wall 7 into a liquid receiving or inlet chamber 8 and an outlet chamber 9. The wall 7 terminates at its lower end above the bottom wall of the tank, thus affording communication between the lower ends of the chambers 8 and 9, said partition wall also being provided in its upper portion with one or more slots as indicated at 10 through which the liquids may freely pass from the chamber 8 into the chamber 9.

The inlet conduit 11 extends vertically along one side wall of the part 5 of the tank, said wall constituting a common separating wall between the conduit 11 and the chamber 8. The upper end of this conduit is laterally extended and formed with a hub shown at 12 to receive the end of a pipe connection, (not shown) extending from the floor drain. The lower end of the conduit 11 is likewise integrally formed with a laterally protruding extension 13 of one wall of the rectangular part 5 of the tank which extends at right angles to the dividing wall between the conduit 11 and chamber 8, as clearly shown in Fig. 3 of the drawing. This laterally

projecting part 13 forms an enlarged entry chamber 14 connecting the lower end of the conduit 11 with the chamber 8 so that the velocity of the in-flowing liquid will be reduced, giving the sedimentary matter contained therein the opportunity to immediately precipitate from the liquid and into a suitable collecting pail or vessel, which is removably supported upon a flange indicated at 15 which projects inwardly from the walls of the part 5 of the tank below said expansion chamber.

The outlet for the waste water generally indicated at 16 is located at the opposite side of the tank structure with respect to the inlet 11 and includes an outer vertical part, the inner side wall of which is formed by the vertical wall of the tank. This outlet conduit is of substantially U-shaped form and is integrally joined at its base to the lower upwardly extending obliquely inclined wall 17 of the tank chamber 9. The inner upwardly extending leg 18 of said outlet conduit is substantially centrally positioned within the chamber 9. A lateral connecting nipple 19 is integrally formed with the upper end of the outer vertical leg of the conduit 16 and with the side wall of the tank and is adapted for connection with the end of a pipe leading to a sewer or other point of disposal of the waste water.

Preferably, I also integrally form with the intermediate portion of the U-shaped outlet conduit 16, an upwardly extending tubular part 20 which constitutes a guide for a valve carrying float (not shown). The valve is adapted to close or seal the upper open end of the vertical leg 18 of the conduit in the manner explained in my issued patents. The tubular part 20 is of appreciably greater diameter than the conduit leg 18 and is open at its lower end as shown, so that the water may pass upwardly through the tubular member 20 and overflow into the upper open end of the leg 18 of the outlet conduit.

At the upper ends of the chambers 8 and 9, there is integrally formed with the walls thereof and with the upper end of the partition wall 7 vertically disposed spaced flanges 21 which provide grooves or channels to receive marginal flanges on suitable cover plates (not shown). These cover plates may be sealed in closed position in any preferred manner so that their upper surfaces will be substantially flush with the ground surface.

From the above description considered in connection with the accompanying drawing, it will be seen that I have provided a tank structure for use in connection with the apparatus of my issued patents, which may be produced in the form of a one piece integral casting. Thus, the time and labor incident to the assemblage of a number of separate parts is eliminated, and the cost of production appreciably reduced while at the same time the tank structure as a whole will be of comparatively light weight and the dimensions thereof restricted as far as possible for a tank of predetermined capacity. Thus, comparatively little excavation would be required in installing the tank and making the necessary connections with the liquid inlet and discharge pipes.

I have herein disclosed an embodiment of my present improvements which has been found to be entirely satisfactory in actual practice. Nevertheless, it will be understood that the essential features of my present disclosure might also be incorporated in other alternative mechanical structures, and I therefore, accordingly reserve the privilege of resorting to all such legitimate changes therein as may be fairly embodied within the spirit and scope of the invention as claimed.

I claim:

1. A tank structure of the character described comprising a one piece integral casting having a central vertical partition dividing the interior thereof into communicating inlet and outlet chambers, inlet and outlet conduits for said chambers integrally formed with the walls thereof, said inlet chamber being provided intermediate of its ends with an integrally formed laterally and outwardly projecting entry chamber, and the wall of said entry chamber being integrally connected with the wall of the inlet conduit.

2. A tank structure of the character described comprising a one piece integral casting having a vertical partition wall dividing the interior thereof into inlet and outlet chambers, and the walls of the inlet chamber intermediate of its ends being laterally projected to form an entry chamber, an inlet conduit integrally formed with the wall of the inlet chamber and opening into the same through said entry chamber, and a substantially U-shaped outlet conduit integrally formed with the wall of the outlet chamber of the tank and having an inner vertically disposed leg extending upwardly into said outlet chamber.

3. A tank structure of the character described comprising a one piece integral casting having a vertical partition wall dividing the interior thereof into inlet and outlet chambers, and the walls of the inlet chamber intermediate of its ends being laterally projected to form an entry chamber, an inlet conduit integrally formed with the wall of the inlet chamber and opening into the same through said entry chamber, a substantially U-shaped outlet conduit integrally formed with the wall of the outlet chamber of the tank and having an inner vertically disposed leg extending upwardly into said outlet chamber, and a tubular part integrally formed with the wall of said outlet conduit surrounding said inner leg thereof and extending above the same.

4. A tank structure for the separation of liquids of different specific gravities, comprising an integral casting provided with a vertical partition wall dividing the interior thereof into inlet and outlet chambers and terminating at one end short of the bottom of said chambers, an inlet conduit integrally formed with the wall of the inlet chamber and opening into the same, a substantially U-shaped outlet conduit integrally formed with the wall of the outlet chamber of the tank and having an inner vertically disposed leg extending upwardly into said outlet chamber, and a tubular part integrally formed with the wall of said outlet conduit surrounding said inner leg thereof and extending above the same, the base of said U-shaped outlet conduit integrally resting on an upwardly extending obliquely inclined lower portion of the chamber wall.

WILHELM LINNMANN, JR.