June 19, 1923. 1,459,327

O. S. FLATH

STORAGE TANK

Filed Nov. 30, 1921

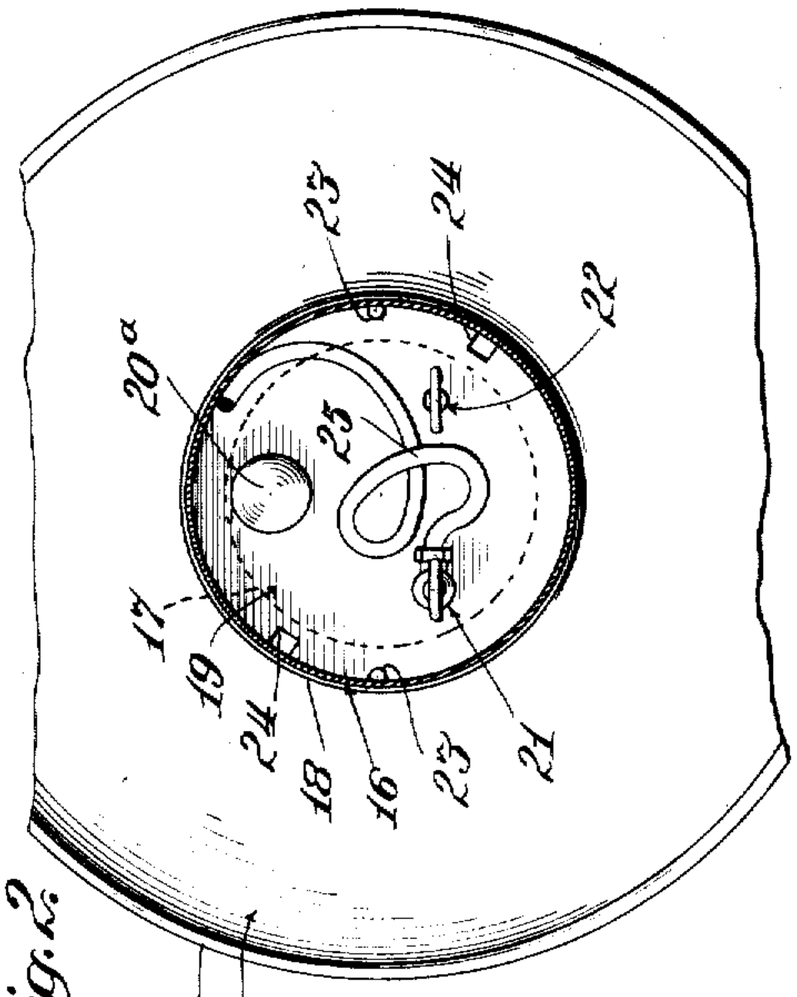

Fig. 2.

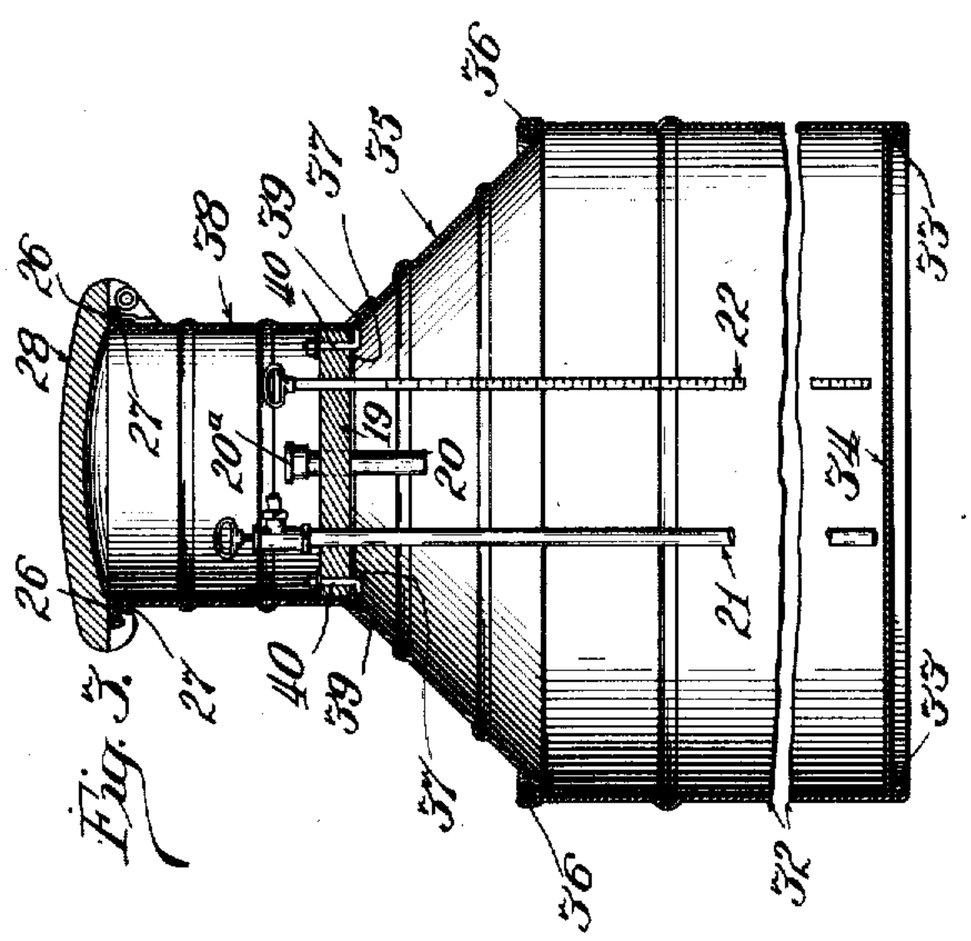

Fig. 3.

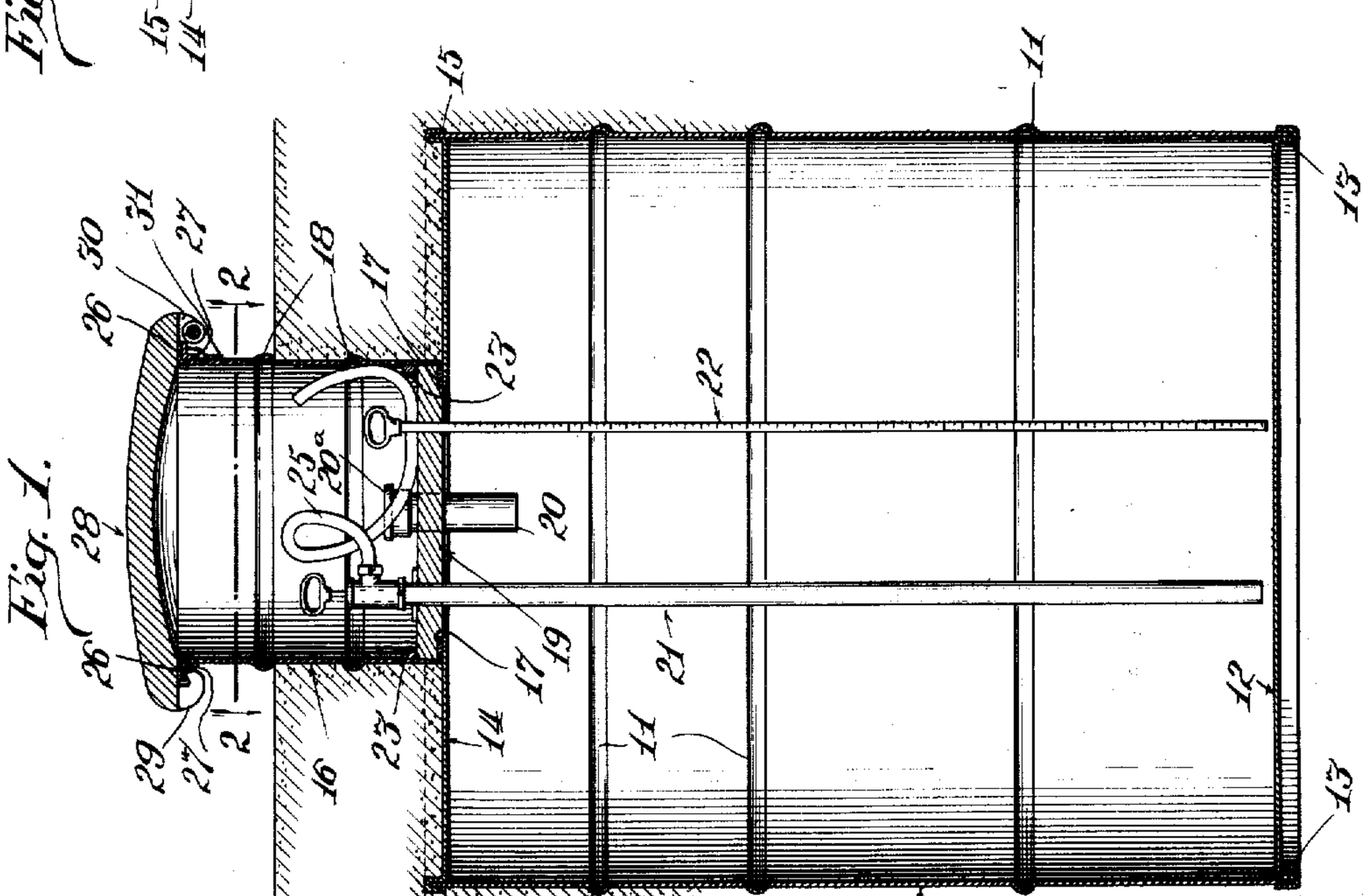

Fig. 1.

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UNITED STATES PATENT OFFICE.

OTTO S. FLATH, OF CHICAGO, ILLINOIS.

STORAGE TANK.

Application filed November 30, 1921. Serial No. 518,778.

To all whom it may concern:

Be it known that I, OTTO S. FLATH, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Storage Tanks, of which the following is a description, reference being had to the accompanying drawing, which forms a part of my specification.

My invention relates more particularly to tanks for the storage of oil, namely the type of tank which is intended to be submerged or buried in the ground with the exception of the upper part of the dome or neck of the tank, which part is provided with a suitable cover.

The object of my invention is to provide a tank constructed entirely of metal and formed to provide a self-sustaining or reenforced tank having a dome or neck which is provided with an inner cover member adapted to support a filling tube, a pump whereby the oil is extracted from the tank, and also a measuring or indicating gauge; the inner closure member assisting in retarding the evaporation of the contents and the escape of the vapors when the outer or main cover is opened.

The objects and advantages of my invention will all be more readily comprehended from the detailed description of the drawing, wherein:—

Figure 1 is a vertical sectional view of one form of my improved tank.

Figure 2 is a cross sectional view taken on the line 2—2 of Figure 1 looking in the direction of the arrows.

Figure 3 is a sectional view, with portions broken away, of a modified form of tank.

The invention relates to a tank adapted for the storage of oils and more particularly for the storage of gasoline and is intended to be sunken or buried in the ground up to a point where merely the upper end of the neck or dome will be exposed above the ground so that access to the tank may be had.

The invention, in its specific embodiment as disclosed in Figure 1, comprises the side wall 10 consisting preferably of a metallic shell or cylinder having corrugations as at 11 disposed circumferentially thereabout at suitable intervals apart for the purpose of reenforcing the side walls. The lower end of the shell or cylinder 10 is provided with a metallic bottom 12 which is preferably made with the substantially U-shaped peripheral flange 13 adapted to receive the side wall between the legs or portions of the flange; the bottom and side wall being welded or otherwise suitably secured together to provide a fluid-tight joint; the flanging at the same time reenforcing the tank at the lower or bottom end thereof.

Instead of employing the circumferential corrugations as shown, the side wall may be reenforced in any other suitable manner or by differently disposed corrugations or ribs.

The top of the main portion of the shell or tank, in the cylindrical construction shown in Figure 1, comprises a metallic disc 14 having its periphery preferably flanged to provide the inverted U-shaped formation shown at 15 adapted to fit over the upper end of the shell or side wall and to be welded or otherwise suitably secured thereto so as to provide a fluid-tight connection. The top wall or disc 14 is apertured as shown in Figure 1 to provide a passage for the elements later to be described. The tank is provided with a separately formed dome or neck 16, the lower end whereof is preferably bent inwardly and arranged parallel with the portion of the top 14, adjacent the opening therein thereby enabling the neck to be secured to the body portion by welding or otherwise and also provide an inwardly disposed flange 17. The dome or neck 16 is also constructed of sheet metal and preferably reenforced by crimping or corrugating it circumferentially as shown at 18. By constructing the neck with an inwardly, disposed flange at the lower end, arranged parallel with the top of the tank, a flange of double thickness is provided and the tank given extra reenforcement at the juncture of the tank and neck. The flange or shoulder 17 is intended to also constitute a support or seat for an inner cover member or plate 19 which is apertured at suitable points to receive a filling tube 20, a suitable hand operated pump 21, and also a measuring gauge or member 22. The inner cover member 19 has the openings therein so formed and the elements just referred to so secured thereto, to-wit the filling tube, pump and measuring gauge, that they may all be lifted out of the tank upon the removal of the inner cover member 19. In order that the inner cover member 19 may be firmly held or secured in place, the dome or neck 16 of the construction shown in

Figure 1 and on the inner circumference thereof is provided with suitable lugs 23, 23, which may be integral with or secured to the neck, preferably at diametrically opposite points and arranged in a plane slightly above the inner cover member 19 when the latter is on its seat. The inner cover member, at diametrically opposite points, is notched at 24 to permit the cover member to be slipped over the lugs 23 when inserted into place or removed from its seat on the inwardly disposed flange or shoulder 17; while a slight turn given to the cover member when on its seat will shift the notches out of register with the lugs 23 and cause the cover to be locked in place.

It will be understood that the pump 21 is intended to be provided with a suitable hose as indicated at 25 which latter may be coiled about within the dome or neck 16 when not in use.

The upper end of the dome or neck 16 is preferably flared or flanged outwardly as shown at 26 and provided with a metallic ring, preferably right angular in cross-section, as shown at 27; the flange and ring being arranged to provide a flat bearing surface for an outer cover member 28. The ring 27 is also adapted to provide means for securing the cover in place, which is accomplished by providing one side of the outer cover 28 with a lip or lug 29 adapted to fit about the flanged ring; while the opposite side of the outer cover member 28 may be provided with a downwardly disposed lug or lip 30 adapted to extend into juxtaposition with an outwardly disposed ear or lobe 31 secured to the side of the dome or neck 16. The lug or lip 30 and the lobe or ear 31 are both shown apertured to receive a suitable lock after the lip 29 at the opposite side of the cover has been placed into interlocking relation with the ring 27, and thus prevent the unauthorized removal of the outer cover member 28.

In Figure 3 I show a modified form of my improved tank particularly in so far as the formation of the top or dome portion thereof is concerned; the tank in this construction consisting of the side wall 32, which may be made substantially similar to the side wall 10 in the construction shown in Figure 1; reenforced by ribs or corrugations or in any other suitable manner. The side wall 32 is shown at its bottom with an upturned portion or edge at 33 to receive the downwardly bent or flanged periphery of the bottom 34 therebetween, to enable the bottom and side wall to be welded or otherwise secured together to form a fluid-tight joint. The top of the tank shown in Figure 3 consists of an upwardly sloping wall or dome portion 35 suitably secured to the side wall 32, as for example by bending the lower end of the dome portion 35 into the substantially inverted U-shape formation shown at 36, to fit about the upper end of the side wall 32 and permit the same to be soldered, welded or otherwise secured in place. The upper end of the sloping top 35 is bent inwardly in a horizontal direction to provide the inner shoulder or supporting flange portion 37 on which the neck portion 38 rests and is secured. In order to provide means for more securely fastening the neck 38 to the sloping dome portion 35, I have shown the lower end of the neck 38 flared outwardly to provide the downwardly disposed flange portion 39 arranged to overlap the upper end of the dome portion and suitably secured thereto by welding, soldering or otherwise; the flange 39 also assisting to reenforce the tank at this point. The inwardly disposed portion or flange 37 of the sloping dome portion 35 is adapted to extend within the neck 38 to provide a support for the inner cover member 19 which may be identical in construction with the cover member 19 in Figure 1 and be provided with the filling tube 20, pump 21 and measuring gauge 22. By turning the metal inwardly at the juncture of the dome and neck portion, a cover seat is provided, thereby obviating the necessity of securing a separate flange or ring at said point. The inner cover member 19, in this construction, is shown secured in place by means of suitable bolts 40, 40, which may be in the nature of hook-bolts arranged to pass through the inner cover member 19 and form operative relation with the flange or shoulder 37 by having the hook-ends extend beneath the flange 37 and brought into gripping engagement therewith through the screwing up of the nuts on the upper ends of the bolts as shown.

The upper end of the neck 38, like the neck 16, is shown flared or flanged outwardly at 26 and preferably provided with the ring 27, shown right angular in cross-section, to provide a flat surface whereby proper contact with the outer cover member 28 may be made to prevent the escape of the oil vapors; the cover member 28 being secured in place in a manner similar to that shown in Figure 1 so that unauthorized access to the tank interior may be prevented. The tank in Figure 3, like that in Figure 1, is also intended to be constructed entirely out of sheet metal and to be buried in the ground so as to merely expose the upper end of the neck with the outer cover.

My improved tank is more especially intended for the storage of gasoline and the like, in a considerable quantity, and in such manner that danger of explosion will be practically eliminated; as the tank is intended to be submerged or buried in the ground preferably outside of a building or garage, with the outer cover securely locked in place to prevent unauthorized access while

permitting the cover to be easily removed when desired for the purpose of refilling the tank through the supply pipe 20 after removing the filling-pipe cap 20ª. The upper end of the supply pipe 20 being preferably threaded for the cap 20ª, will also permit a hose-coupling to be screwed thereon, thereby enabling the tank to be filled by means of a hose leading from the supply wagon or tank at a distance therefrom, if desired.

The side walls of the tanks and dome or neck portions have been shown reenforced by means of circumferentially disposed corrugations, but it will be readily understood that the reenforcement of the side walls of the tank, as well as the dome or neck portions, may be accomplished in any other suitable manner. The improved tank has been illustrated with the orifice in the top smaller in diameter than the inner diameter of the neck or dome so as to leave a portion of the top adjacent to the orifice extending into the neck or dome to provide a seat for the inner cover, but it will be understood that the inner cover support may be obtained in a different manner, as for example by having the flange portion 17 consist of a separate metallic member welded or otherwise secured in place; and instead of employing the metallic ring 27 about the upper orifice of the neck or dome, the flat seat or contacting surface for the outer cover member 28 may be obtained by merely employing the flanged upper end 26 of the neck; the ring 27, however, assisting in reenforcing the upper end of the neck. It will be understood that the neck or dome is preferably constructed to permit the inner cover member 19 to be lifted therethrough when necessary.

I have described what I believe to be the simplest embodiments of my invention, especially adapted for the purpose hereinbefore stated and have described the invention in terms merely employed as terms of description and not as terms of limitation, as structural modifications are possible and may be made without, however, departing from the spirit of my invention.

What I claim is:—

1. As an article of manufacture, a tank comprising a self-supporting fluid-holding metallic shell or wall provided with a neck portion, a horizontally disposed shoulder or flange at the inner orifice thereof, an inner cover member seated on said shoulder and provided with a filling tube, a measuring gauge and a pump communicating with the lower end of said tank, means whereby the inner cover member is locked in place, and an outer cap or cover member adapted to be locked to the outer end of said neck portion.

2. A tank of the character described, comprising a self-supporting fluid holding metallic shell or wall, the top whereof is orificed, a self-supporting metallic neck portion flanged at its lower end and secured to said top so as to provide an inwardly disposed shoulder at the lower end of said neck portion, an inner cover member seated on said shoulder and provided with a filling tube and a pump, means secured on the inside of said neck portion whereby the inner cover member is locked in place, and an outer cap or cover member adapted to form interlocking engagement with the upper end said neck portion.

3. A tank of the character described, comprising a reenforced metallic shell or wall, provided with a reenforced dome or neck portion, an inwardly disposed flange arranged at the lower end of the dome or neck portion, an inner cap, adapted to be seated on said flange provided in its periphery with notches or grooves, lugs arranged on the interior of said neck or dome portion, in a plane above said flange, adapted to register with said notches or grooves, whereby the inner cap may be held on its seat when said notches or grooves are out of register with said lugs, said inner cap being provided with a filling tube, a pump and a measuring gauge, all supported and carried thereby, and an outer cover member or cap adapted to be locked on the outer orifice of said dome or neck portion.

4. A tank of the character described, comprising a self supporting fluid holding metallic shell or body unit, the top whereof is orificed, a self-supporting metallic dome or unit disposed on the top of said body unit and flanged at its lower end, with the flange arranged parallel with the top of the body unit and disposed inwardly and secured thereto to reenforce the tank and provide a supporting seat, the upper end of the dome unit being provided with a reenforcing ring adapted to provide a horizontally disposed flat surface and being provided with an apertured lobe or ear, an outer cover member having a downwardly and inwardly disposed lug adapted to interlock with said reenforcing ring and an apertured lug adapted to extend adjacent to said apertured lobe or ear to be locked thereto, and an inner cap adapted to be seated on said seat at the lower orifice of said dome or neck, said inner cap being provided with a filling tube, a pump and a measuring gauge.

5. A tank of the character described, comprising a fluid holding metallic shell or body unit, a metallic dome or neck unit flanged at its lower end, with the flange arranged parallel with the adjacent portion of the body unit and secured thereto to provide a reenforcing inwardly disposed portion to constitute a cover-seat, while the upper end of the dome or neck unit is also flanged to provide a cover-seat, an inner cover seated on said first mentioned cover-

seat and removably locked thereto, said cover being provided with a pump, a measuring gauge and a filling tube, an outer cover seatable on said second mentioned seat, means whereby said outer cover may have interlocking engagement with one side of the upper flanged end of the dome or neck unit, and registering means on the last mentioned cover and the dome or neck unit to permit said cover to be locked in place.

6. A tank of the character described, comprising a fluid-holding metallic shell or body unit, a metallic dome or neck unit, the abutting portions of the body unit and neck unit being formed to extend parallel and be secured together, the neck unit being provided in its interior with a projecting portion adapted to constitute a cover seat, an inner cover member adapted to be seated on and secured to said seat, said cover member being provided with a filling tube, a pump and a measuring gauge, the with a laterally disposed portion to provide an outer cover seat, an outer cover member seatable on said laterally disposed portion of the neck unit, and means whereby the outer cover member may be locked in place.

7. A tank of the character described, comprising a reenforced metallic shell or body unit provided in its top with an opening, a reenforced metallic neck or dome unit superposed on said body unit about the opening therein, cover-supporting means within the neck unit, an inner cover member seated on said means and removable through said neck unit, an outer cover member for the neck unit, and means whereby the outer cover member is removably locked in place.

OTTO S. FLATH.

Witnesses:
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F. A. FLORELL,

Certificate of Correction.

It is hereby certified that in Letters Patent No 1,459,327, granted June 19, 1923, upon the application of Otto S. Flath, of Chicago, Illinois, for an improvement in "Storage Tanks," an error appears in the printed specification requiring correction as follows: Page 4, after line 22, claim 6, insert the words *upper end of the neck unit being provided;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 17th day of July, A. D., 1923.

[SEAL.]

WM. A. KINNAN,
Acting Commissioner of Patents.