W. T. CLARK.

CONCRETE COMPRESSED AIR CISTERN.

APPLICATION FILED JAN. 8, 1913.

1,068,383. Patented July 22, 1913.

Fig. 1.

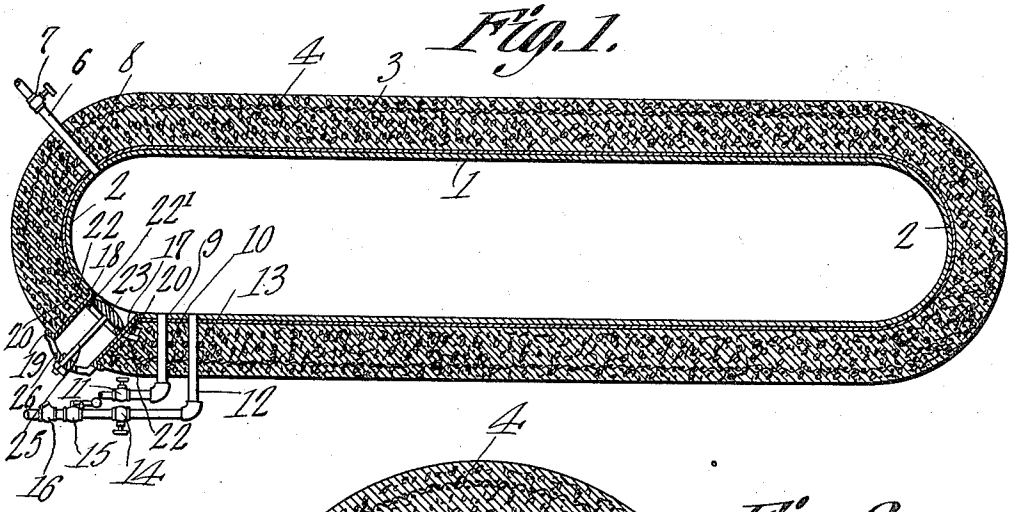


Fig. 2.

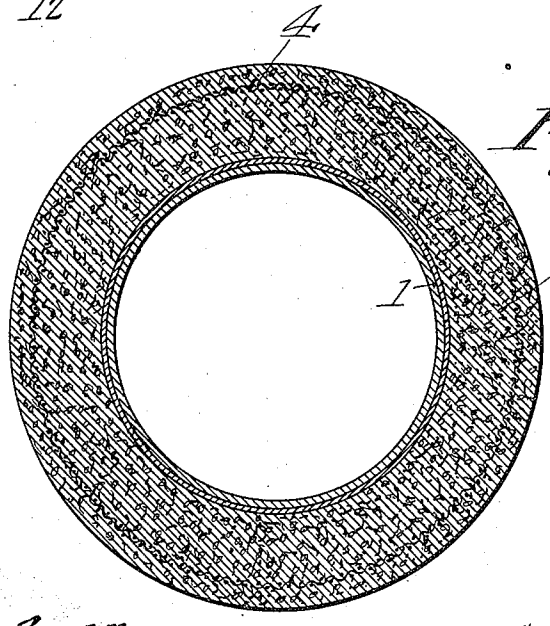
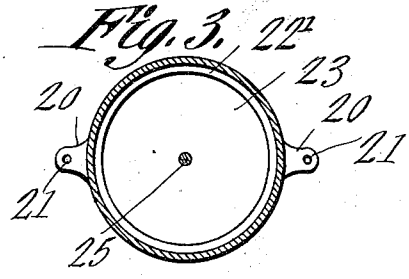


Fig. 3.



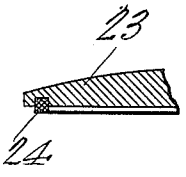


Fig. 4.

Witnesses

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CONCRETE COMPRESSED-AIR CISTERN.

1,068,383. Specification of Letters Patent. Patented July 22, 1913.

Application filed January 8, 1913. Serial No. 740,892.

To all whom it may concern:

Be it known that I, WILBUR T. CLARK, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Concrete Compressed-Air Cistern, of which the following is a specification.

This invention relates to an air tight, water cistern adapted to be used in connection with water supply systems.

The object of the present invention is to provide an improved construction in cisterns.

The cistern is formed of reinforced concrete and provided with a complete metallic shell inserted therein.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed, without departing from the spirit of the invention.

In the drawings accompanying this specification and forming a part thereof, the preferable form of my invention is illustrated, in which:—

Figure 1 is a cross sectional view in elevation of my improved cistern. Fig. 2 is a transverse cross sectional view thereof. Fig. 3 is a cross sectional view of the man-hole illustrated in Fig. 1. Fig. 4 represents a sectional detail view of the man-hole cover.

Referring to the drawing in which similar reference numerals designate corresponding parts throughout the several views, 1 is a complete metallic shell cylindrical in form and provided with the convex ends 2. The shell is disposed in a horizontal manner as illustrated in Fig. 1 and around which is built or formed the concrete 3. The concrete 3 is provided with a suitable reinforcement 4 which completely incloses the cylindrical shell. The reinforcing member 4 being a wire laced or other suitable material interlaced forming a wire mesh work as is the approved construction for concrete reinforcement. The concrete and reinforcement comprises a horizontal cylindrical tank or cistern with a complete metallic shell therein. The ends of the cistern or tank are convex and therefore adapted to withstand a maximum of pressure. The inner edge of the metallic shell is covered with a layer of concrete the surface of which is then covered with a suitable water resisting paint or enamel which protects and preserves the metallic shell.

Located at one end of the cistern and near the top thereof is the surface supply pipe 6 which is provided with a suitable shut-off valve 7. The pipe 6 is provided with the flange 8 which is embedded in the concrete cistern wall and the lower end of the said pipe engages the shell 1. Located at the bottom of the cistern is the liquid inlet pipe 9 which is provided with a flange or boss 10 engaging or embedded in a concrete wall the lower end of which pipe engages the shell and extends within the cistern. The water inlet pipe is provided with a suitable shut-off valve 11 which is of the usual type. The outlet pipe 12 is provided with the boss or flange 13 inserted in the concrete tank wall. The pipe also engages the cylindrical shell and extends within and flush with the inner surface of the cistern. The outlet pipe 12 is provided with the usual cut-off valve 14 a pressure safety valve 15 and check valve 16. The functions of which are to provide a release for the pressure in the tank if the latter rises to dangerous proportions.

In order to provide suitable means by which the cistern may be cleaned, a man hole is positioned at one end of the tank approximately at the bottom thereof, the said man-hole comprising a circular tube 17 which is provided with the inner flange 18 which contacts with a suitable opening provided in the metallic shell. An outer flange 19 is provided and contacts with the outer surface of the cistern. In order to further secure the man-hole in position suitable outstanding bosses 20 are provided in which are formed suitable apertures 21 into which are placed the tying rods 22. The bosses and the rods being inserted in the concrete or cement wall of the cistern. These man-holes are of a length approximately equal to the thickness of the cistern side wall as will be apparent upon referring to Fig. 1. Upon the inner wall of the man-hole adjacent the base thereof is an annular ring member 22′ against which is positioned the cover or man-hole lid 23 a section of which is illustrated in Fig. 4. In order that the cover or lid may fit air-tightly against the

retaining ledge or flange 22 a suitable gasket 24 is positioned within a recess formed in the cover adjacent the edge thereof it being noted in this connection that the lid or cover opens inward, this construction utilizing the effect of the pressure to maintain the lid or cover in an air-tight condition against the retaining ledge. Extending from the central portion of the cover 23 is a bolt 25 which extends outwardly and beyond the outer surface of the cistern. The outer end of which rod is provided with suitable threads. A standard 26 is provided with an aperture located centrally thereof, the edges of which, embrace and contact with the outer flange 19 of the man-hole 2. A suitable bolt nut is provided upon the outer extremity of the bolt rod 25 and contacts with the standard 26 by which means the man-hole cover or lid may be drawn tightly against the retaining ledge which may be likened to a valve and valve seat.

From the foregoing it will be understood that I have invented a horizontal cylindrical tank the ends of which are semi-spherical which therefore possess a maximum strength. The concrete cylindrical walls with their reinforcement provide a tank or cistern of great strength and the metallic complete shell located therein insures that the cistern or tank will be a liquid and air tight one. This metallic shell has been suitably protected by means of a wall of concrete the outer surface of which concrete or cement wall has been provided with a suitable water resisting paint or enamel. The man-hole of simple and efficient construction has been installed in one end of my improved cistern and allows for the ready ingress therein. Suitable pipes have been illustrated for supplying water to the tank for the supplying of air pressure there above and for the suitable outlet of the liquid or water therefrom.

Having thus fully disclosed the construction and advantages and operation of my improved air-tight tank or cistern what I claim as new and original with me is:—

A cistern comprising, cylindrical concrete side walls and spherical ends, a wire mesh reinforcement therefor and embedded therein, a unitary complete metallic shell disposed within the said concrete and defining a liquid-tight compartment, said metallic shell formed of thin material and adapted to retain a liquid out of contact with the concrete which forms the side walls and ends, a metallic man-hole tube extending through an opening formed in the said concrete side wall and effecting a liquid-tight joint with the said metallic shell, means for the closure of said man-hole, and means for supplying a liquid to said cistern, the delivering of the liquid from said cistern, and the supplying of a pressure above the liquid within the cistern.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

WILBUR T. CLARK.

Witnesses:
T. K. WILLIAMS,
R. C. LUTTLE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."