

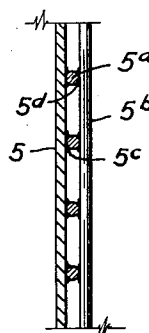
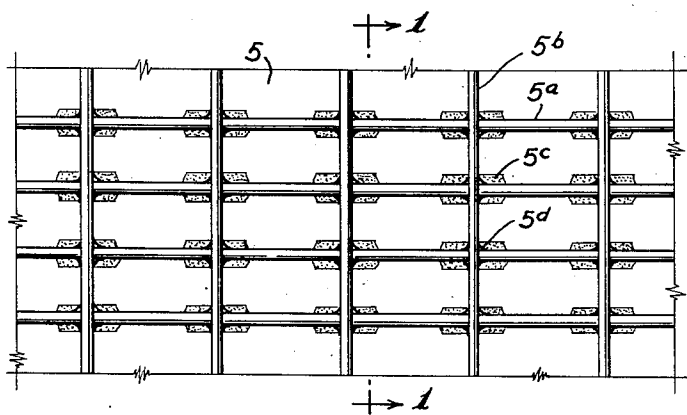
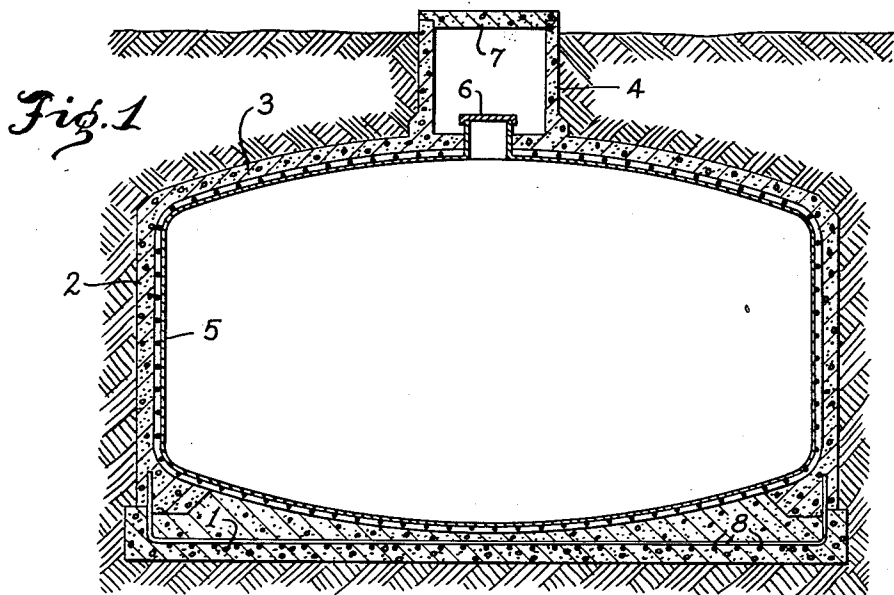
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2,382,171

UNDERGROUND STORAGE TANK

Filed Aug. 24, 1942



INVENTOR

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UNITED STATES PATENT OFFICE

2,382,171

UNDERGROUND STORAGE TANK

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Application August 24, 1942, Serial No. 456,120

2 Claims. (Cl. 72-14)

This invention relates to improvements in underground storage tanks, particularly to tanks which are intended for storage of highly inflammable liquids such as gasoline, fuel oil and the like.

The tank is circular in plan, being composed of two domes, one serving the base and one for the roof or ceiling. The two domes are connected by a continuous wall, circular in plan. Several forms of this invention could be shown, but the preferred design is shown in the accompanying drawing, in which

Figure 1 is a radial vertical section, all radial vertical sections are similar.

Figure 2 is a detail of lining construction.

Figure 3 is a section of lining construction taken on lines 1-1 in Figure 2.

In all views similar numerals refer to similar parts.

Numeral 1 indicates the base proper of the tank, which in this case is formed of concrete.

Numeral 2 indicates the outside wall.

Numeral 3 refers to the ceiling dome.

Inspection shaft wall is represented by numeral 4.

Tank lining is represented by numeral 5. This lining is made of sheet metal. Symbols 5a and 5b represent metal rod reinforcing, of shell lining. These rods are welded to lining proper in overlapping grid form by welds 5c and 5d. Welds 5c are staggered in relation to the shell, welds 5d generally occur at every intersection of the rods similar to well known welded metal fabric.

Numeral 6 refers to metal cover of manhole, and numeral 7 refers to pit cover. Concrete reinforcement in base is indicated by numeral 8. This reinforcement is generally conventional.

The object of this invention is to produce a tank which would be easy to erect in the field particularly under war conditions, and at the same time permit construction of permanent tanks by prestressing the shells by filling the tank with water during construction, as noted in my former patent applications for underground tanks Serial No. 423,167, filed December 16, 1941 and Serial No. 438,794 filed April 13, 1942. Such

grid layout of welded rods stiffens the shell to a high degree eliminating need of internal bracing during construction, incidentally this rod grid system also serves as anchor for the shell to the concrete. This construction proposed is so strong and stiff that only very thin protective and stiffening shell of concrete is necessary, of the order of three or four inches, for a 100,000 gallon tank. This in many cases could be applied like plaster or sprayed with a special gun and so eliminating major part of form work.

For small tanks concrete envelope, including foundation slab could be eliminated.

The amount of reinforcement, size, shape and general arrangement of rods, as well as the shape and general proportions of domes shown may be changed to suit varied field conditions.

Having now described by invention, I claim:

1. A tank structure comprising a cylindrical side wall and domed bottom and top walls wherein the walls are composed of a thin metal lining, a series of spaced parallel bars welded at intervals directly to and in continuous contact with the outside of the metal lining, a series of spaced parallel bars at right angles to said first series of bars and welded thereto at each crossing, and a shell of concrete applied to the outside of said walls and encasing said bars to form a unitary reinforced concrete continuous metal lined wall structure.

2. A method of constructing a tank comprising the steps of fabricating out of sheet metal a liquid-tight cylindrical lining having a dome shaped top and bottom, welding a series of vertically spaced circumferential reinforcing rods directly to the outer surface of said lining and welding another series of horizontally spaced axial reinforcing rods to said first series of rods at their points of intersection therewith, prestressing the resulting shell by filling the same with liquid, applying concrete to the shell to cover the same and encase the rods therein while the shell is filled, and maintaining said shell in said filled condition until the said concrete has set.

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