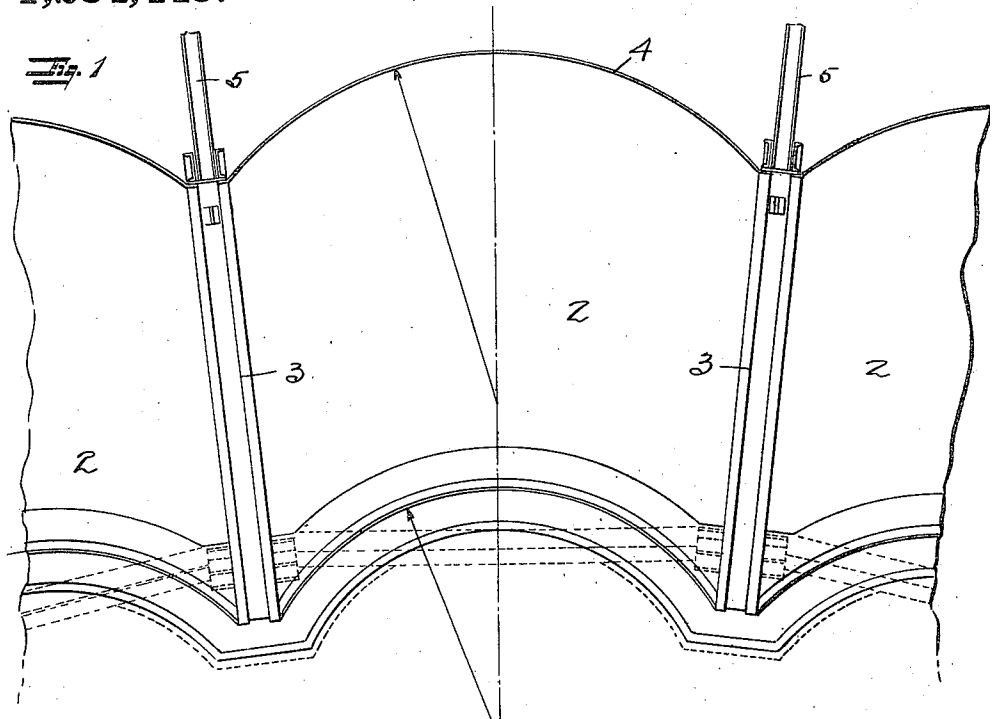
H. B. POST.

WALL CONSTRUCTION.

APPLICATION FILED MAY 13, 1916.

1,284,445. Patented Nov. 12, 1918.

Fig. 1



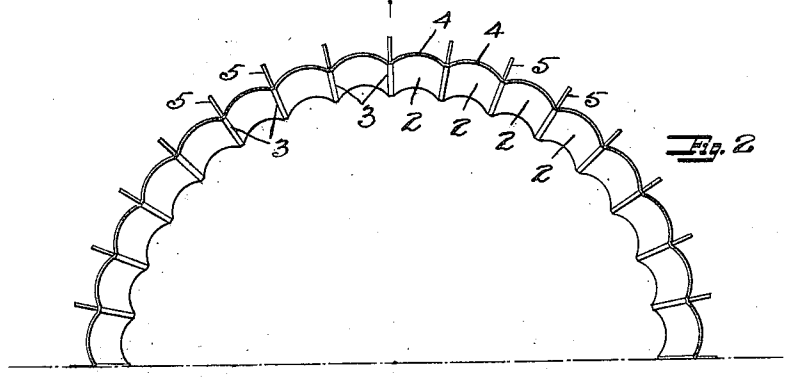


Fig. 2

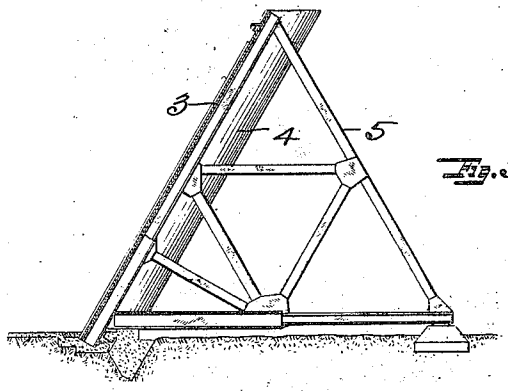


Fig. 3

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UNITED STATES PATENT OFFICE.

HENRY B. POST, OF PALO ALTO, CALIFORNIA.

WALL CONSTRUCTION.

1,284,445. Specification of Letters Patent. Patented Nov. 12, 1918.

Application filed May 13, 1916. Serial No. 97,287.

To all whom it may concern:

Be it known that I, HENRY B. POST, a citizen of the United States, and a resident of Palo Alto, Santa Clara county, State of California, have invented a certain new and useful Wall Construction, of which the following is a specification.

The invention relates to metallic walls for large liquid storage tanks or reservoirs and to liquid storage retaining walls in general.

An object of the invention is to provide a metal wall construction for large liquid storage tanks or reservoirs.

Another object of the invention is to provide a wall of the class described which is composed of a plurality of wall units.

A further object of the invention is to provide a metallic wall construction which will withstand the imposed strains encountered in large tanks and reservoirs at a comparatively low cost.

The invention possesses other advantageous features, some of which, with the foregoing, will be set forth at length in the following description, where I shall outline in full that form of the invention which I have selected for illustration in the drawings accompanying and forming part of the present specification. In the drawings I have shown one specific form of the wall construction of my invention, but it is to be understood that I do not limit myself to such form, because many modifications therein may be made without departing from the scope of my invention as set forth in the appended claim.

In the drawings:

Figure 1 is a plan or top view of a portion of the wall of my invention, showing one wall unit or section in full and portions of the adjoining sections.

Fig. 2 is a plan or top view on a smaller scale of one-half of a circular tank employing the wall of my invention.

Fig. 3 is a side elevation of a wall unit and its supporting means, showing one form of tank construction.

In liquid storage tanks or reservoirs, the tension on the wall at any point is equal to the pressure of the liquid at that point multiplied by the radius of the wall, and since these large tanks are usually circular in form, the radius of the wall is equal to the radius of the tank. The increase in tension due to the increase in radius is such that the critical size in oil tanks from a cost standpoint is reached at a capacity of 55,000 barrels, that is, it is much cheaper to build two 55,000 barrel tanks, than one tank having a capacity of 110,000 barrels. By the use of the wall of my invention a tank of any capacity may be economically constructed, the relative cost decreasing as the capacity increases.

The wall of my invention is composed of a series of units or sections 2, each unit comprising a section of a frustum of a cone, the smaller radius of the frustum being at the bottom of the wall. The lateral edges 3 of each section diverge from each other upwardly and outwardly, the amount of divergence depending upon the difference in radius of the frustum at the top and bottom of the wall. When all of the wall units or sections are identical, the complete wall is circular in form, as shown in Fig. 2 and the lateral edges 3 are radially disposed, but when the sections are not identical, that is, when the divergence of the sections are not equal, a wall having a curvature other than that of a circle is formed. On account of the structure of each section, that is, on account of the fact that the wall of each section is a section of a frustum of a cone whose lateral edges slope upwardly and outwardly, the complete wall of my invention must be curved and this curvature may be circular or otherwise, depending upon the form of the sections.

The wall 4 of each section is formed of metal, sprung outwardly in the form of an arch, the radius of the arch at the bottom being less than the radius of the arch at the top. Since the tension on the arch at any point is equal to the pressure at that point multiplied by the radius of the arch at that point, it follows that the tension on the arch is independent of the radius of the tank. Proceeding downwardly in the tank, the pressure increases, but the radius of the arch decreases, so that the tension is not a simple function of the depth. Therefore, the thickness of the wall 4 is independent of the diameter of the tank and is a function only of the depth and the radius of each individual arch. Assuming the span at the bottom of each section to be constant, the tension in the arch becomes less as the size of the tank is increased, due to the fact that the angle of divergence of the lateral edges becomes less and hence the projection of the

arched surface on the inclined plane containing the lateral edges becomes less. The wall is supported exteriorly by suitable trusses 5, there being one truss arranged at the juncture of each two wall sections and on account of the inclination of the wall sections, the overturning effect of the liquid in the tank is less and consequently, the truss may be smaller and lighter than if the wall were vertical. The truss is suitably anchored and suitable liquid tight joints are formed between the wall sections and at the bottom of the tank.

A wall of this construction also possesses considerable salvage value, since it is formed of sections which may be disconnected and moved to other localities and again set up.

I claim:

A storage tank for oil and the like, comprising a series of independently formed sections, each of said sections comprising a sheet of metal bent or sprung longitudinally throughout the length thereof so as to form a concave surface, and said sheets gradually increasing in width toward one end thereof whereby the radius increases uniformly toward said end, means for detachably connecting said strips at the edges whereby to form a continuous annular side wall for the tank of gradually increasing diameter from the base to the top of the tank and with the concave surfaces disposed inwardly to contact with the contained liquid and resist the internal pressure, and external buttresses or trusses suitably supported at the base of the tank and adapted to engage the strips at each joint therebetween.

In testimony whereof, I have hereunto set my hand at San Francisco, California, this 2nd day of May 1916.

HENRY B. POST.

In presence of—
H. G. PROST.