

Oct. 19, 1943.

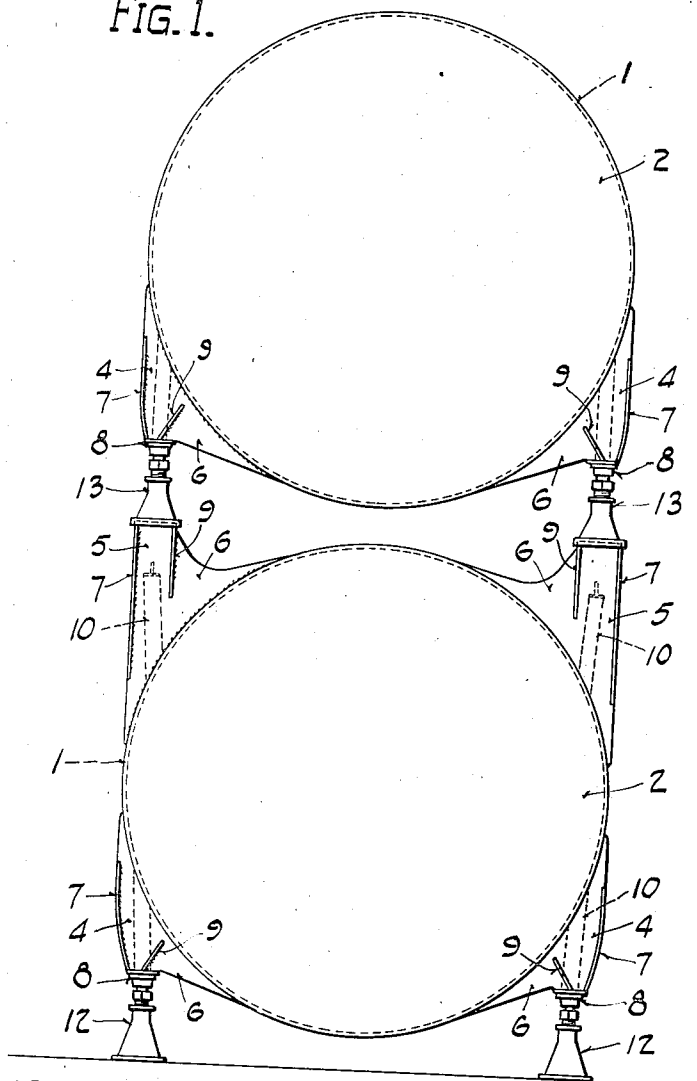
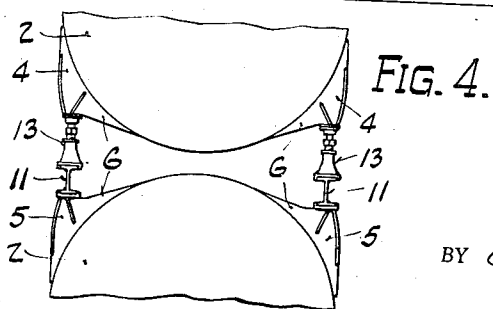
E. P. STROTHMAN
DOUBLE DECK TANK STRUCTURE

2,332,410

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2 Sheets-Sheet 1

FIG. 1.



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FIG. 2.

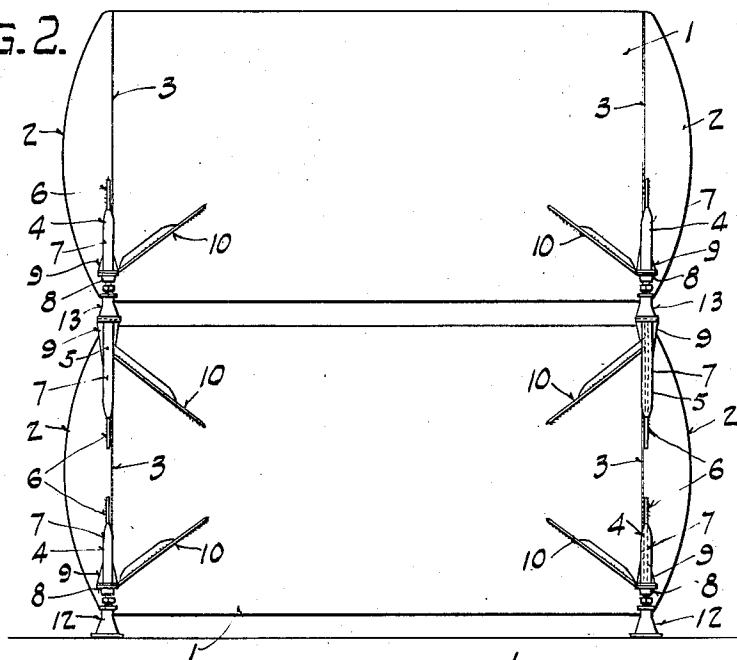
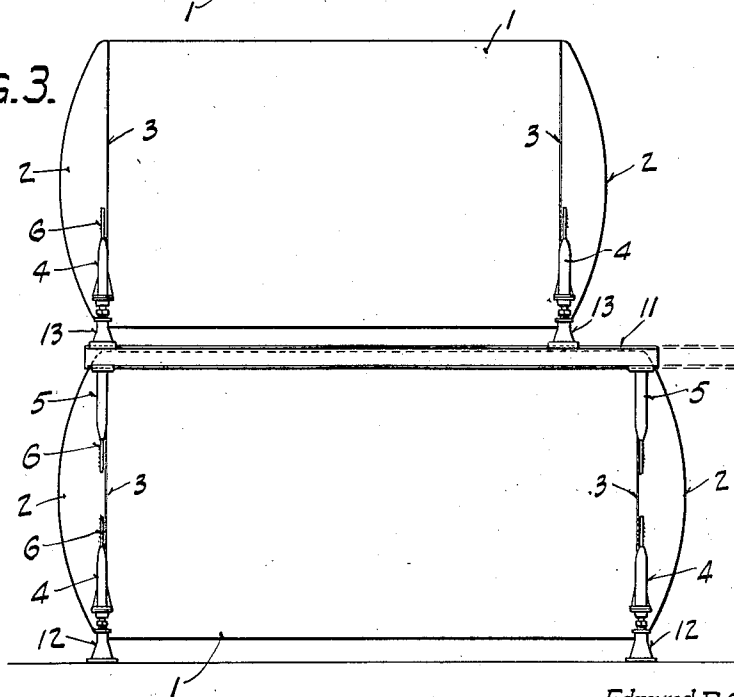


FIG. 3.



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UNITED STATES PATENT OFFICE

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DOUBLE DECK TANK STRUCTURE

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a corporation of New York

Application December 9, 1940, Serial No. 369,207

3 Claims. (Cl. 220—97)

This invention relates to vessels for the storage of beer or other liquids.

One of the objects of the invention is to provide vessels so supported that one may be superimposed over another and its weight transmitted through the walls of the latter with consequent economy of space in a storage house.

This and other objects of the invention will be clear from the following detailed description and the accompanying drawings in which:

Figure 1 is an end elevation of superimposed vessels constructed in accordance with this invention;

Fig. 2 is a side elevation;

Fig. 3 is a side elevation of a modified embodiment; and

Fig. 4 is a fragmentary end elevation of Fig. 3.

Cylindrical vessels or tanks lined with vitreous enamel or with other lining materials are widely used for the storage of beer and other liquids. The construction of stock houses to house a maximum of tank storage capacities with a minimum expenditure for the building and supports for the vessels, presents problems of considerable magnitude. Many of these are eliminated by the present invention according to which vessels are arranged in superimposed tiers, the lower vessel being provided with means for supporting the upper to permit spacing the vessels at the minimum clearances required for accessibility.

Each vessel is composed of a cylindrical shell section 1 and heads 2 united to the shell by welds 3. The lower vessel has two downwardly extending brackets 4 at each head, and two upwardly extending brackets 5 at each head. The upper vessel has only downwardly extending brackets 4 corresponding to and resting upon the respective brackets 5.

Each bracket comprises a fin 6 edge welded to the head at the knee or knuckle of the head. A stiffening flange 7 is preferably welded to the outer edge of the fin, and a bearing seat 8 is welded or otherwise secured to the lower edge of the fin and flange. The fin may be further stiffened against buckling by stiffeners 9 welded to the bearing seat and fin. Alternatively, a cast bracket of suitable shape may be used instead of one which is constructed by welding a number of component parts together. In some cases, braces 10 are desirably provided extending diagonally from the bearing seats on the brackets to the cylindrical shell of the vessel and welded to it along a curved line. In other cases, as shown in Fig. 3, the braces may be omitted.

Fig. 3 also shows a construction in which beams

11, extending longitudinally of the tank, rest on the upper brackets 5 of the lower tank for supporting the upper tank. This is particularly useful where due to the building framework it is necessary to make the upper tank shorter than the lower tank or where it is possible to make the upper tank longer than the lower tank.

The lower vessel is supported at its four corners by adjustable pedestals 12 which rest upon the floor of the stock house or supporting beams or girders. The upper vessel is supported on adjustable pedestals 13 between the upwardly extending brackets on the lower vessel and the downwardly extending brackets on the upper vessel. The adjustability of the pedestals provides for leveling the vessels.

The weight of the upper vessel and its contents is transferred through the heads of the lower vessel to its supports. It has been found that dished heads of the kind customarily used on vessels of this character possess a high degree of rigidity and excellent load transferring properties. In some cases the heads for the lower vessel may be made somewhat thicker than those for the upper, but in other cases, depending largely upon the size of the vessels and the thickness of metal used for their construction, this is by no means necessary.

The invention is particularly adapted for use in connection with the vitreous enamelled tanks that are widely used for the storage of beer. The load is carried without deforming either the upper or lower tank to an extent that will cause injury to the enamel lining.

I claim:

1. In combination with a pair of horizontally positioned cylindrical vessels one above the other, a pair of downwardly extending brackets at each head of each vessel, each bracket comprising a fin edge-welded directly to the head only along a substantially circumferential line thereof and a bearing seat secured to the fin; a pair of substantially similar but upwardly extending brackets disposed independently of said lower brackets and spaced above the same on each head only of the lower vessel, all of said brackets lying substantially entirely between the vertical planes tangential to the side walls of the respective vessels, and means positioned between the bearing seats on the upwardly extending brackets of the lower vessel and the downwardly extending brackets of the upper vessel to support the upper vessel, the weight of the upper vessel being transmitted through the walls of the lower vessel between the upper and lower brackets thereof.

2. In combination with a pair of horizontally positioned cylindrical vessels one above the other, a pair of downwardly extending brackets at each head of each vessel, each bracket comprising a fin edge-welded directly to the head only along a substantially circumferential line thereof and a bearing seat secured to the fin, a pair of substantially similar but upwardly extending brackets disposed independently of said lower brackets and spaced above the same on each head only of the lower vessel, all of said brackets lying substantially entirely between the vertical planes tangential to the side walls of the respective vessel, and beams extending longitudinally of the tanks and supported on the upper brackets of the lower tank for receiving the lower brackets of the upper tank and supporting the latter, the weight of the upper vessel being transmitted through the walls of the lower vessel between the upper and lower brackets thereof.

3. In combination with a pair of horizontally

positioned cylindrical vessels one above the other with their axes parallel, a pair of downwardly extending supporting brackets at each head of each vessel, each bracket comprising a fin edge-welded directly to the head only along a substantially circumferential line thereof and a bearing seat secured to the fin, a pair of substantially similar but upwardly extending brackets disposed independently of said lower brackets and spaced above the same on each head only of the lower vessel, all of said brackets lying substantially entirely between the vertical planes tangential to the side walls of the respective vessel, the downwardly extending brackets on the upper vessel registering with the upwardly extending brackets on the lower vessel and being supported thereby, and the weight of the upper vessel being transmitted through the walls of the lower vessel between the upper and lower brackets thereof.

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