Feb. 21, 1928. 1,660,021

J. H. WIGGINS

LIQUID STORAGE TANK

Original Filed Feb. 15, 1926

Fig. 1.

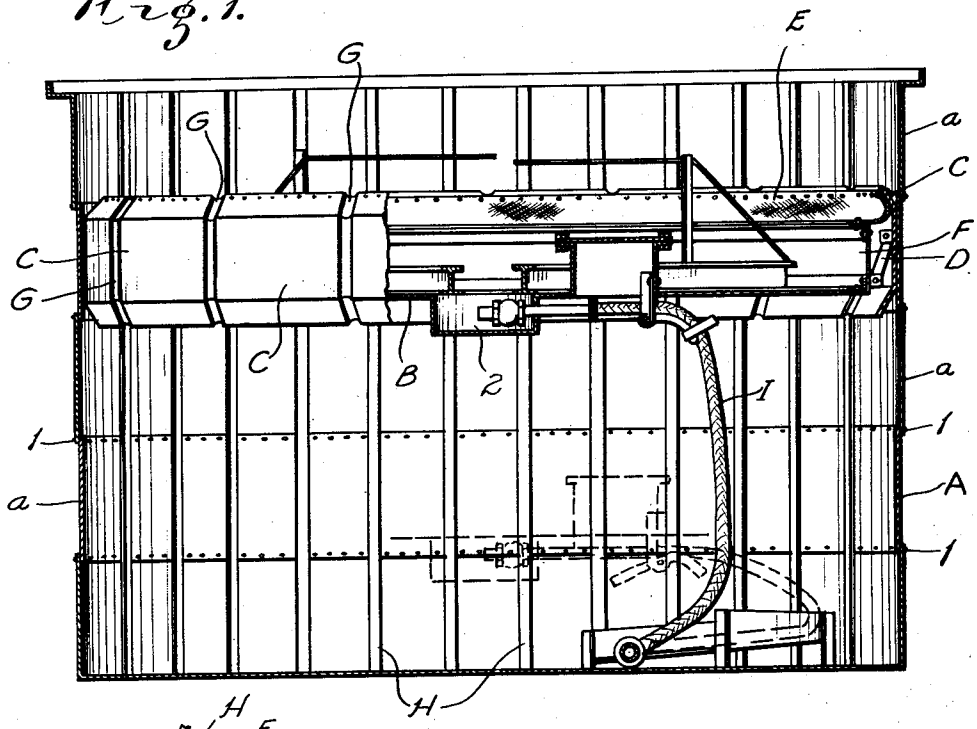


Fig. 2.

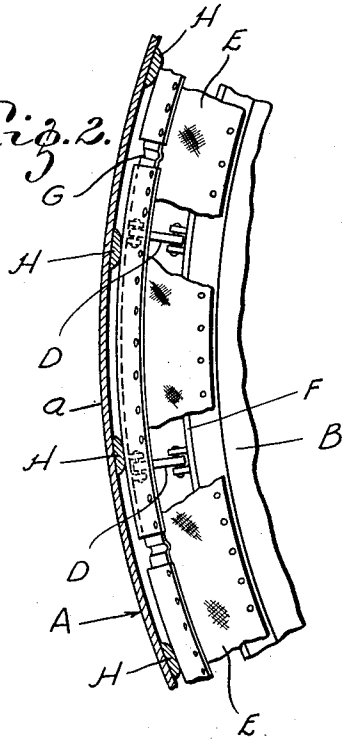


Fig. 3.

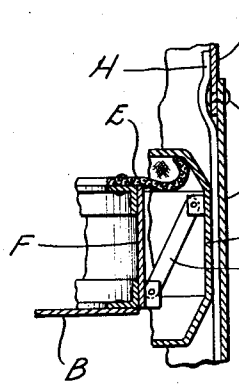
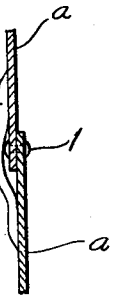


Fig. 4.



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UNITED STATES PATENT OFFICE.

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LIQUID-STORAGE TANK.

Original application filed February 15, 1926, Serial No. 88,308. Divided and this application filed November 20, 1926. Serial No. 149,635.

This application is a division of my pending application for patent Serial No. 88,308, for liquid storage tank, filed February 15, 1926, and relates to tanks of the type that comprise a floating deck or roof supported by the liquid in the tank and provided at its peripheral edge with a sealing means that slides over the inner surface of the side wall of the tank when the deck rises and falls, due to variations in the level of the liquid in the tank.

The side walls of liquid storage tanks of the general type above mentioned are usually made up of metal plates whose horizontal edge portions are lapped and riveted together, and considerable trouble has resulted from the sealing means at the peripheral edge of the deck catching on the horizontal edges of the plates and on the heads of the rivets in the side wall when the deck rises and falls, due to variations in the liquid level.

The object of my invention is to provide a liquid storage tank of the general type mentioned which is so constructed that the sealing means at the peripheral edge of the floating deck will be sure to slide freely over the inner surface of the side wall of the tank when the deck rises and falls.

Figure 1 of the drawings is a vertical transverse sectional view of a liquid storage tank constructed in accordance with my invention, showing the floating deck or roof partly broken away so as to more clearly illustrate the construction of same.

Figure 2 is an enlarged top plan view of a portion of the sealing means at the peripheral edge of the deck, showing the rubbing bars on the side wall of the tank in cross section.

Figure 3 is an enlarged vertical sectional view, illustrating how the rubbing bars on the side wall of the tank prevent the sealing means at the peripheral edge of the deck from catching on the horizontal edges of the plates and on the heads of the rivets in the side wall; and

Figure 4 is a detail sectional view, illustrating another means that can be used to insure the sealing means of the deck sliding freely over the inner face of the side wall of the tank.

Referring to the drawings which illustrate the preferred form of my invention, A designates the side wall of the tank, which is of circular shape in outline and made up of metal plates *a* whose horizontal edge portions are lapped and connected together, usually by rivets, and B designates the floating deck or roof of the tank which normally rests upon and is supported by the liquid in the tank. The deck B is of less diameter than the side wall of the tank, and the annular space between the peripheral edge of said deck and the side wall of the tank is closed by a sealing means of any preferred type of construction, but which is herein illustrated as being composed of segmental shoe members C supported by swinging links or hangers D, carried by the deck B, and a flexible closure E, usually formed of a gas-tight fabric, attached to the upper edges of the shoe members C and to a rim F that projects upwardly from the peripheral edge of the deck B, as shown more clearly in Figure 3, the adjacent ends of the shoe members C being joined together by flexible elements G, which are usually formed from pieces of gas-tight fabric, as shown in Figure 2.

When the level of the liquid in the tank varies, the deck B rises and falls, and in order to insure the shoe members C sliding freely over the inner face of the side wall A of the tank, I provide said side wall with a means that effectively prevents said shoe members from catching on the horizontal edges of the plates *a*, or on the heads of the rivets 1 in said side wall. Usually, said means will be formed from continuous, vertically-disposed rubbing bars H on the inner surface of the side wall A of the tank that bridge the horizontal joints in said side wall, as shown in Figure 3, and thus insure the shoe members C sliding over said joints and over the rivets 1 in same, without liability of catching, sticking or in any way interfering with the rise and fall of the deck B. It is not essential, however, that said means consist of continuous rubbing bars H, for if desired, short rubbing bars H′ provided with beveled ends can be arranged over the horizontal joints in the side wall of the tank, as shown in Figure 4. By constructing the tank in this manner I correct or overcome a thing which heretofore has been a serious problem in oil storage tanks of the type in which the upper end of the tank is closed by a floating deck or roof provided at its pe-

ripheral edge with a sealing means that is adapted to slide over the inner surface of the side wall of the tank.

The deck is provided with a drainage means of the kind described and claimed in my pending application for patent Serial No. 88,308, for liquid storage tanks, filed February 15, 1926, which drainage means comprises a sump 2 arranged preferably at the center of the deck for receiving and collecting rain that falls on the deck, and a flexible conduit I for conducting the water out of said sump, constructed and arranged so that it will coil in a certain quadrant when the deck moves downwardly towards the bottom of the tank and will uncoil when said deck rises or moves upwardly.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A liquid storage tank provided with a floating deck or roof that is normally supported by the liquid in the tank, a sealing means carried by said deck that acts upon the side wall of the tank, and means on said side wall for insuring said sealing means sliding freely over the inner face of said side wall when the deck rises and falls.

2. A tank for storing liquids provided with a side wall made up of plates connected together by horizontal joints, a floating deck or roof supported by the liquid in the tank and provided with a sealing means that is adapted to act on the side wall of the tank, and means for insuring said sealing means riding freely over the joints in the side wall of the tank.

3. A tank for holding liquids having a side wall provided with horizontally-disposed joints, a floating deck or roof that is normally supported by the liquid in the tank, and devices on the inner face of the side wall of the tank that bridge the joints in said side wall, and thus insure the sealing means on the deck sliding freely over said side wall when the deck rises and falls, due to variations in the level of the liquid in the tank.

4. A liquid storage tank provided with a floating deck or roof that is normally supported by the liquid in the tank, shoe members at the peripheral edge of the deck that slide over the inner face of the side wall of the tank, and vertically-disposed rubbing bars on the inner face of said side wall which prevent said shoe members from catching on projections on said side wall.

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