

March 19, 1935.

R. L. WILLIAMS

1,994,495

SUBMARINE SIGNALING TANK

Filed Oct. 22, 1932

FIG. 1

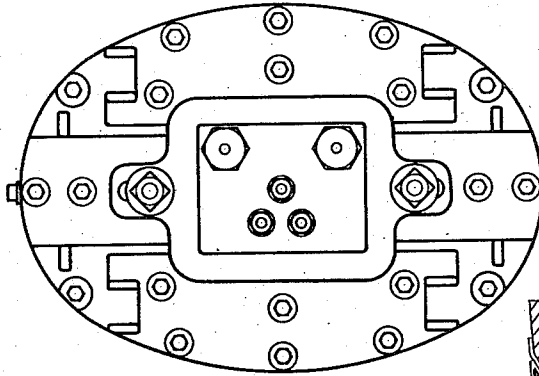


FIG. 3

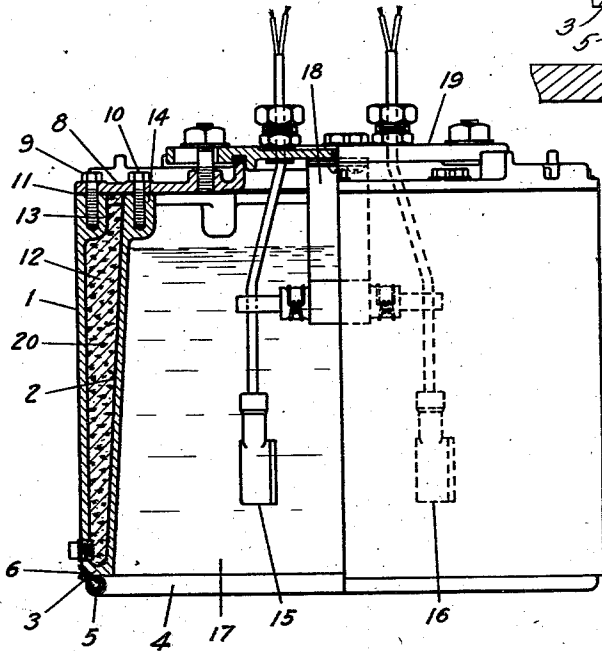
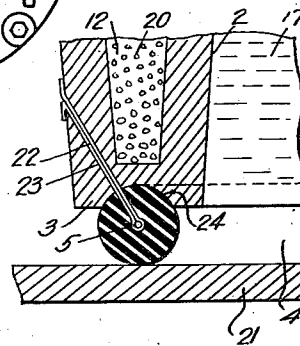


FIG. 2

INVENTOR

ROBERT L. WILLIAMS

BY

Eyckel Wolf
ATTORNEY

UNITED STATES PATENT OFFICE

1,994,495

SUBMARINE SIGNALING TANK

Robert Longfellow Williams, Newton, Mass., assignor to Submarine Signal Company, Boston, Mass., a corporation of Maine

Application October 22, 1932, Serial No. 639,115

4 Claims. (Cl. 181-0.5)

The present invention relates to a tank for the reception or transmission of subaqueous signals, and more particularly to such tanks which are installed in vessels for signaling purposes either for distance determination, direction finding or depth sounding.

Tanks for holding sound receivers have been in quite common use for many years. In such types of installations the sound receiver or transmitter tank is usually a cast iron container which is open at one end that abuts against the skin of the vessel. The edge of the open end is made watertight by some form of rubber gasket and the tank itself is held to the side of the vessel by bolts which press the tank to the vessel, as shown in the patent of R. F. Blake, No. 1,348,538, patented August 3, 1920. These tanks usually are provided with a cover through which the receiving equipment may be removed and are also provided with an opening whereby the tanks may be filled.

Tanks of this type are rather small and the sound vibrations which pass through the walls of the tank frequently disturb the reception in the receivers of the sounds which are desired to be picked up. In order to overcome these objectionable vibrations which pass through the walls of the tank, sound shields have been used which for the most part have been placed externally around the tank.

Such sound shields are of no great value in air since they can not prevent the sound energy from reaching the tank. In water they are somewhat more effective, particularly when placed about the tanks where the tank itself is positioned in a ballast or other liquid tank.

The difficulty for the most part with such installations is that the shields or sound screens are not easily secured and at best considerable opportunity is given for the sound to reach the receiving unit by traveling around the screen. Besides this, types of installations in which sound screens are used are quite expensive and are for the most part avoided.

In the present application the tank is constructed with a double wall of such a shape and construction that space is provided which may be filled with some sound insulating means. Tanks constructed according to the present invention provide complete sound insulation about the whole tank, at the same time presenting such a construction that it is difficult for transverse vibrations from outside the tank to affect the liquid within the tank itself.

The invention will be more clearly understood

in connection with the following description of the embodiment of the invention shown in the drawing in which Figure 1 shows a plan view of the tank; Figure 2 shows an elevation partly in section; and Figure 3 shows in enlargement the lower left-hand corner of the device shown in Figure 2 with the addition of the ship's skin.

In the drawing the tank comprises an external wall 1 and an internal wall 2 which are preferably cast as a single element in the form of a V-shaped cross section with the lower vertex 3 forming the edge abutting the side of the vessel. A watertight rubber gasket 4 may be mounted on the edge 3 by means of the wire 5 attached in a groove 6 in the external wall 1. A plate 8 is provided at the back of the tank which may be bolted to the edges of both the outer and inner walls by means of the bolts 9 and 10, respectively. Between the top plate 8 and the edges of the inner and outer walls a watertight gasket 11 may be inserted to make the inside of the tank watertight and also to prevent any water from getting into the space 12 between the outer and inner walls. The upper edges of the walls 1 and 2, as shown in Figure 2, may be enlarged in the shoulders 13 and 14 to provide a space to receive the bolts 9 and 10.

In Figure 3 the method by which the tank is held to the vessel is shown in greater detail. Here the rubber cylinder 4 sets in a groove 24 at the lower edge 3 of the tank. At the center of the rubber cylinder is a wire 5 and about this wire at various points around the tank cotter pins 22 are inserted which are passed through the hole 23 at the edge of the tank and which are turned over at the outer wall 1 as indicated in Figure 3. The skin or ship's side is here shown at 21. Any means may be employed for holding the tank itself to the side of the vessel and maintaining the rubber 4 under compression between the tank and the side of the vessel.

The sound receiving units 15 and 16 may be suspended in the liquid 17 by means of a support 18 attached to the center plate 19 mounted upon the upper plate 8 closing the outer end of the tank. In this fashion the whole receiving unit may be removed by removing the plate 19. The space between the outer and inner walls, as indicated in the figure, may be filled with some sound insulating material preferably pieces of ground cork 20 so that even though this space should be filled with water, it would still present a good sound insulating surface. The space 12 between the outer and inner walls extends entirely about the sides of the tank and presents a

continuous sound insulating space between the water within the tank and the external medium.

Extraneous sound approaching the tank from the sides must first penetrate the external wall, pass through the sound insulating medium and then affect the internal wall before being transmitted to the liquid medium within the tank.

Tanks of the present invention are proved particularly effective and economical in eliminating extraneous sound vibrations not only in installations where the tank is exposed to the open air, but particularly in such installations where the tank is surrounded by water or liquid.

Having now described my invention, I claim:

1. In combination with the side of a ship a subaqueous receiver or transmitting tank comprising a casing having an open side adapted to contact with the ship's side and double walls having its edges joined at the open side of the tank.

2. In combination with the side of a ship a subaqueous receiver or transmitting tank comprising a casing having an open side adapted to abut against the side of the ship, a double wall enclosing the open side, the double walls being close

together near the open end and being separated a greater distance at the end opposite the open end, having a greater separation away from the open end and a plate covering said latter end, said plate being fastened to both double wall edges.

3. In combination with the side of a ship a subaqueous receiver or transmitting tank comprising a casing having an open end adapted to abut the ship's side, a double wall having a common edge at the open end and widening apart at the opposite end, and a plate joined to the ends to form a watertight joint at said widened ends.

4. In combination with the side of a ship a subaqueous receiver or transmitting tank comprising a casing having an open end adapted to abut the ship's side, a double wall having a common edge at the open end and widening apart at the opposite end, a plate covering the end opposite the open end and joined to the ends to form a watertight joint with each wall and sound insulating means placed in the space between the walls.

ROBERT LONGFELLOW WILLIAMS.