May 31, 1927. 1,630,826

S. H. BROOKS

GAS TIGHT CABLE SUPPORT FOR TANKS

Filed Nov. 15, 1926

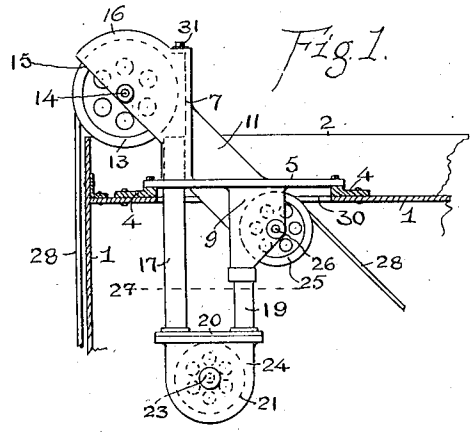


Fig. 1.

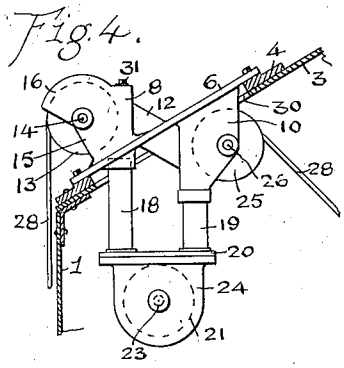


Fig. 4.

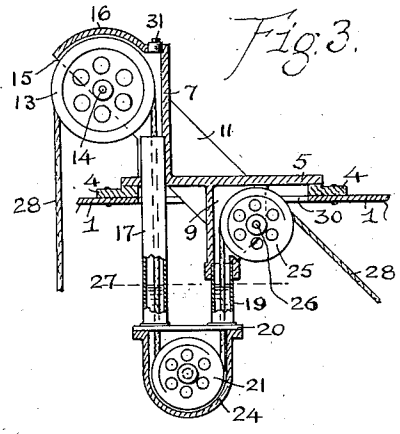


Fig. 3.

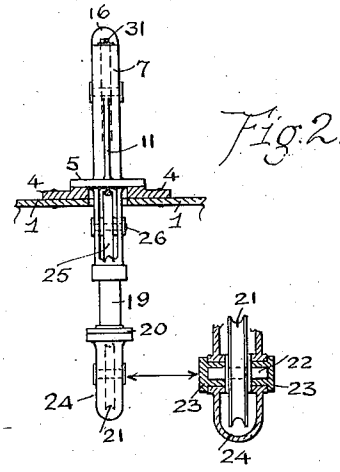


Fig. 2.

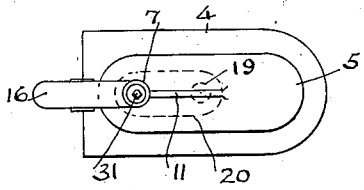


Fig. 5.

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UNITED STATES PATENT OFFICE.

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GAS-TIGHT CABLE SUPPORT FOR TANKS.

Application filed November 15, 1926. Serial No. 148,598.

My invention relates to improvements in gas-tight cable supports for tanks, and it more especially consists of the features pointed out in the annexed claims.

The purpose of my invention is to provide means for passing a swing pipe cable into a gas-tight tank so as to seal the opening against leakage of gas from the tank; that is simple in construction; that does not have a projecting box seated on top of the tank; that further provides easily accessible means for re-sealing the case.

With these and other ends in view, I illustrate in the accompanying drawing such instances of adaptation as will disclose the broad underlying features of my invention without limiting myself to the specific details shown thereon and described herein.

Figure 1 is a side elevation of a case attached to a flat roof.

Fig. 2 is a rear elevation of Fig. 1.

Fig. 3 is a side elevation in section of Fig. 1.

Fig. 4 is a side elevation of a case adapted to a conical roof.

Fig. 5 is a top plan view of Fig. 1.

In practically carrying out my invention I may use any desired alternatives of construction which the exigencies of various service conditions may demand.

In attaching my gas-tight cable supporting case to a flat top tank 1 or to a conical top 3, an opening 30 is made of the required size. Around this opening a flange 4 is secured. On top of this flange 4, I secure my gas-tight sheave case on flat roofs by means of a base flange 5, and for conical roofs a similar flange 6.

The only part of my cable supporting case that projects above the roof of a tank 29 is the standard 7 in the case of a flat roof, and a standard 8 in the case of a conical roof. These standards are respectively braced to the bases 5 and 6 by the ribs 11 and 12. Each of the standards 7 and 8 have side flanges 15 and a top or cover flange 16. Between the flanges 15 and beneath the cover flange 16 the upper sheave or guide 13 is placed so as to rotate on its spindle 14.

On the under side of the base 5 or the base 6, a support 9 for the flat roof type and a similar support 10 adapted for conical roofs may be formed integrally with their respective bases 5 and 6. The supports 9 and 10 have a recess cast therein in which the intermediate sheave 25 is located. This sheave rotates on its axis 26. To the bottom end of the projections 9 and 10, a pipe 19 is attached. It communicates directly with the sheave recess in the said supports. Its lower end is welded or otherwise attached to a horizontal tube plate 20. Beneath the tube plate 20 an enclosed casing 24 is secured in which the lower sheave or a suitable guide 21 is placed. This sheave rotates on its spindle or axis 22 which has bearing in the self sealing bushings 23. In the case of a flat roof a tube 17 reaches from the support 7 to the tube plate 20, to which it may be welded or otherwise secured. In the case of a conical roof a shorter tube 18 is used because of the slope of the roof.

It is of course understood that my sheave supporting case is also adaptable to other types of tank roofs. When flat tank roofs are used a water seal flange 2, shown in Fig. 1, is placed around the entire top circumference of the tank.

A cable 28 is attached to any desired form of windlass placed near the bottom of a tank (not shown), which cable passes over the upper sheave down through tubes 17 or 18 into the lower sheave casing 24, around one half of the lower sheave 21 and up through the tube 19 over the intermediate sheave 25, or over any form of alternative cable guide, and thence to the swing pipe located within the tank (not shown). From this it will readily be seen that as the cable is wound or unwound from its windlass the swing pipe is correspondingly raised or lowered.

In order that the passing in and out of the cable 28 will not allow the escape of any accumulated gases within the tank, I fill the lower sheave casing 24 with oil or any other sealing medium which overruns the capacity of the casing 24 and rises in the tubes 19 and 17 or 18 to approximately the level shown by dotted line 27 on Fig. 3. The sealing agent may be introduced through an opening formed at the top of the projections 7 or 8, which opening may be closed by any desired plug or cap 31. It will be seen that the pressure of the sealing medium in the casing 24 and its attached tubes will completely prevent the escape of gas from the

tank. By placing the "seal" entirely on the inside of the tank it is safeguarded against meddling of any sort whatever. It is of course understood that the tubes 17 and 18 are respectively connected to the bases 5 and 6 in a gas-tight manner, and since these bases are also attached to the flanges 4 in a gas-tight manner there is no chance for any of the gas within the tank to escape.

What I claim is:

1. In cable supports for tanks, a tank structure having an opening therethrough, a closure for the opening, a cable sheave mounted on the closure outside of the tank, a plurality of sheaves attached to the closure on the inside of the tank, an enclosed casing for the lowermost interior sheave, a plurality of vertical passageways connected with the casing, a sealing medium in the casing and extending into the passageways, and a movable cable in engagement with the several sheaves one of said sheaves directing the cable through the sealing medium.

2. In cable supports for tanks, a tank structure having an opening therethrough, a closure for the opening, a tortuous passage within the tank connected to the closure, a sealing medium in such passage, cable guiding means surrounded by the sealing medium, an auxiliary cable guide supported by the closure on the inside of the tank, another cable guide attached to the closure on the outside of the tank, and a movable cable adapted to engage the several guides and simultaneously to be held in contact with the sealing medium.

3. In cable supports, a suitable tank structure having an opening therethrough, a gas-tight closure therefor, a plurality of sheaves supported by the closure within the tank, another sheave supported by the closure on the outside of the tank, an enclosed casing for one of the interior sheaves, separate passageways leading from the casing toward a pair of cooperating sheaves, a sealing medium in the casing and the passageways to prevent escape of gas from the tank, and a cable movable in both directions through the sealing medium and in engagement with the several sheaves.

4. In cable supports, a suitable tank structure having an opening therethrough, a closure for the opening, a liquid sealed passageway through the closure positioned inside of the tank, a cable movable into and out of the tank through the sealed passageway, and cooperating guideways for the cable inside and outside of the tank.

5. In gas-tight cable supports for tanks, a tank structure having an opening therethrough, a liquid sealed gas-tight closure for the opening, a passageway through the closure, means positioned within the tank adapted to automatically maintain such passageway gas-tight, a cable movable through such passageway, and means attached to the closure for guiding the cable on the outside and the inside of the tank.

6. In cable supports, a gas-tight tank having an opening in its structure, a unitary closure for the opening comprising cable guides on both sides of the closure, and a liquid sealed gas-tight passageway through the same adapted to receive the cable.

7. In cable supports, a gas-tight tank having an opening in its structure, a cable passing through the opening, and a liquid seal closure for the opening admitting the cable therethrough in a gas-tight manner.

In testimony whereof I affix my signature.

STEPHEN H. BROOKS.