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2,618,402

LEAK PATCHING DEVICE FOR TANKS

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Fig. 1.

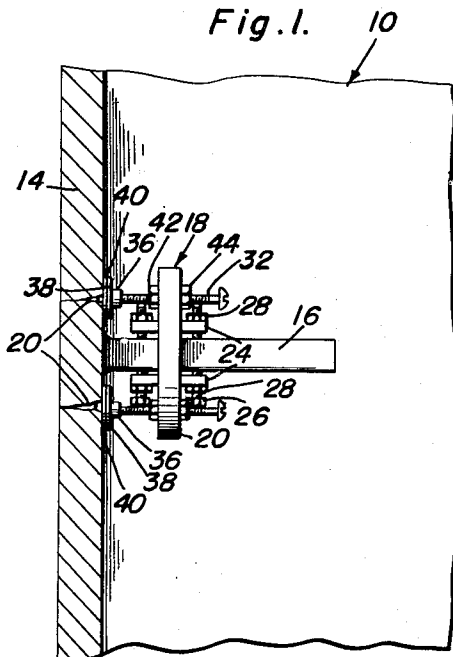


Fig. 2.

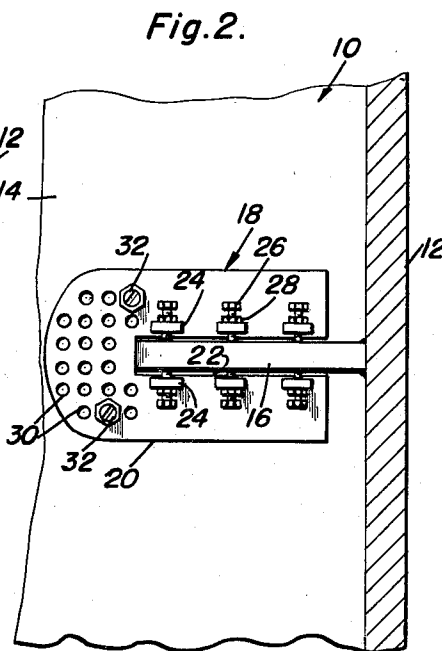


Fig. 3.

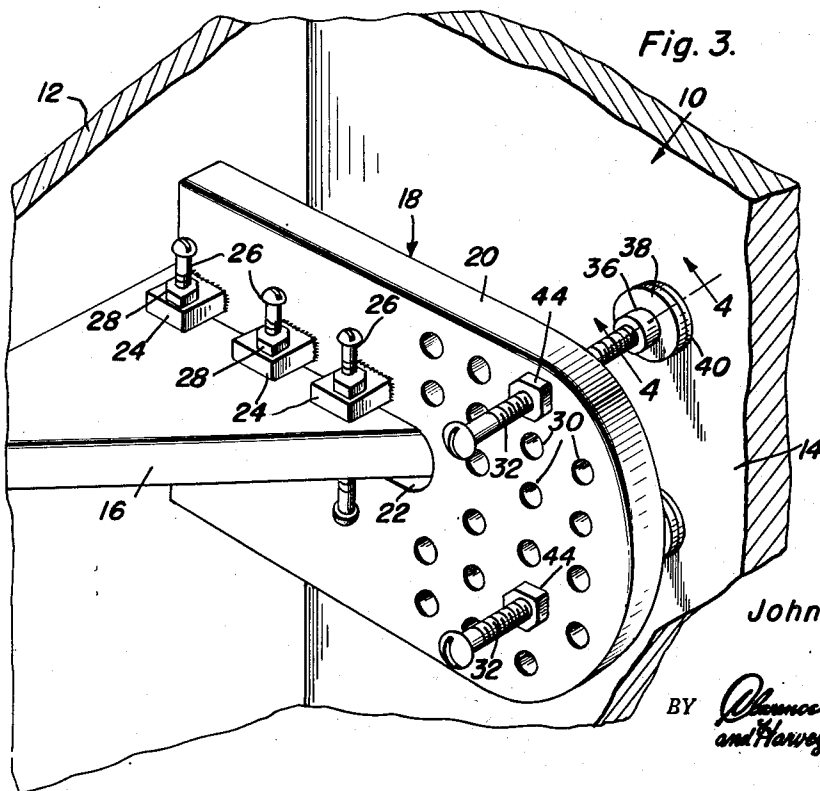
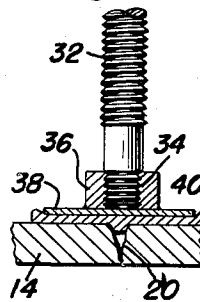


Fig. 4.



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LEAK PATCHING DEVICE FOR TANKS

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4 Claims. (Cl. 220-24)

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This invention relates to new and useful improvements and structural refinements in leak patching devices for tanks, particularly oil tanks of tankers or similar vessels, and the principal object of the invention is to provide a very simple and highly dependable means for patching a tank leak.

In this connection, it may be briefly explained that a tanker is usually provided with a plurality of tanks carrying different grades of oil, and if a leak develops in a bulkhead separating two adjacent tanks, the different grades of oil become contaminated by intermixing. The tank bulkheads are usually reinforced by triangular gussets, and it is a common occurrence for the bulkheads to crack in the immediate region of the gussets, as a result of internal strain in the ship's structure incident to its movement. The instant invention is particularly adapted for patching the leaky bulkhead in an efficient manner which does not require the use of any drill, welding equipment or other similar tools producing heat or sparks, such as could cause an explosion of oil vapor within the tank.

Some of the advantages of the invention reside in its simplicity of construction, as aforesaid, in its dependable operation, and in its adaptability for installation in many different locations in the area of the gusset reinforcement on the bulkhead.

With the above more important objects and features in view, and such other objects and features as may become apparent as this specification proceeds, the invention consists essentially of the arrangement and construction of parts as illustrated in the accompanying drawings, in which:

Figure 1 is an elevational view of the invention installed in a tank, the bulkhead of the latter being shown in section;

Figure 2 is an elevational view, taken at right angles to the illustration of Figure 1;

Figure 3 is a perspective view of the subject shown in Figures 1 and 2; and

Figure 4 is a fragmentary sectional detail, taken substantially in the plane of the line 4-4 in Figure 3.

Like characters of reference are employed to designate like parts in the specification and throughout the several views.

Referring now to the accompanying drawings in detail, the general reference character 10 designates the interior of a tank including a side wall 12 and a bulkhead 14 which is reinforced to the side wall by a triangular gusset 16.

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The invention resides in the provision of a patching device designated generally by the reference character 18, such as may be conveniently employed for "plugging" or patching one or more leaky cracks 20 in the bulkhead 14 (or in the side walls 12, if necessary), the device 18 embodying in its construction a flat, substantially U-shaped plate 20 which affords a recess 22 so that the plate may be positioned on the gusset 16 in straddling relation, while being spaced from the bulkhead 14 which is to be patched.

A plurality of pairs of screw-threaded lugs 24 are secured by welding, or the like, to one side of the plate 20 adjacent the opposite longitudinal edges of the recess 22, and if desired, the same arrangement of lugs may be provided at the relatively opposite side of the plate 20, as is clearly shown in Figure 1.

The lugs 24 are adapted to receive pairs of opposing clamping screws 26 which are tightened into firm, clamping arrangement with the gusset 16 and are securely locked by suitable nuts 28, abutting the lugs 24, as shown.

In this manner, the plate 20 is rigidly sustained in spaced parallel relation to the bulkhead 14, and the plate is provided with a series of apertures 30 to selectively receive one or more clamping studs 32. The actual number of studs employed depends upon the number of leaks which are to be patched, and each stud is provided at the end of its shank with a screw threaded portion 34 having mounted thereon a boss 36 of a flat, circular pressure pad 38.

A suitable gasket 40 is interposed between the bulkhead 14 and the pressure pad 38, and a nut 42 is positioned on the stud 32 at the side of the plate 20 adjacent the bulkhead, so that by simply tightening this nut, the gasket 40 may be forced into the crack 20 to permanently seal the same against leaks. In addition, a lock nut 44 is provided on the stud 32 at the relatively opposite side of the plate 20, so as to prevent the stud from becoming loosened.

It will be apparent from the foregoing that as many studs and pressure pads with gaskets may be employed as there are leaks to be patched, and by virtue of the provision of the plurality of apertures 30, additional studs may be applied when further leaks develop, all this being effected without the use of any drills or welding equipment, but only by employing a simple screw driver and wrench.

It is believed that the advantages and use of the invention will be clearly understood from

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the foregoing disclosure and accordingly, further description thereof at this point is deemed unnecessary.

While in the foregoing there has been shown and described the preferred embodiment of this invention, it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

Having described my invention, what is claimed as new is:

1. A clamp-type device for patching a leaky area in a wall of a tank having a gusset secured perpendicularly thereto, said device comprising a flat substantially U-shaped plate adapted to be positioned in spaced parallel relation to a tank wall and affording a recess for receiving a gusset therein, a set of opposing gusset clamping screws provided on said plate and having

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their axes parallel thereto, a clamping stud extending through said plate, a pressure pad carried by said stud and a tank wall engaging gasket adapted to be interposed between a leaky area in a tank wall and said pad.

2. The device as defined in claim 1 together with lock nuts provided on said stud at the opposite sides of said plate.

3. The device as defined in claim 1 wherein said plate is provided with a plurality of apertures to selectively receive said stud.

4. The device as defined in claim 1 together with a set of screw-threaded lugs provided in opposing relation on said plate at the opposite longitudinally edges of said recess, said lugs being perpendicular to the plate and having the respective clamping screws positioned therein.

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No references cited.