Dec. 11, 1934. G. H. CLAY ET AL 1,984,175

TANK TRUCK FILLING PLUG

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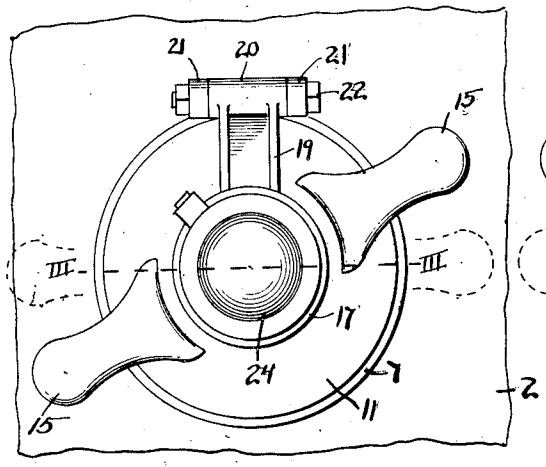


Fig. 1.

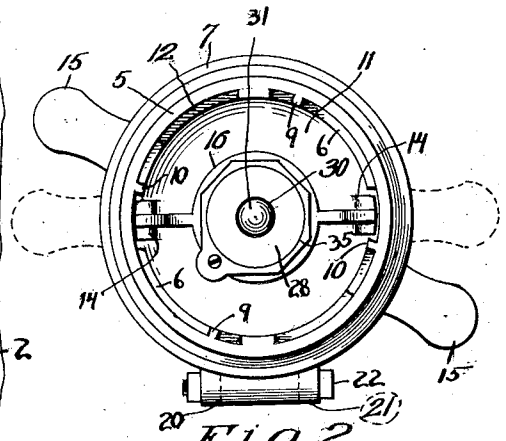


Fig. 2.

Fig. 3.

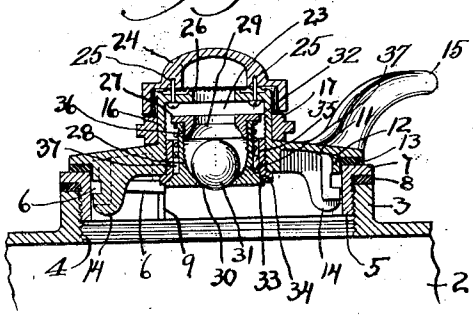


Fig. 4.

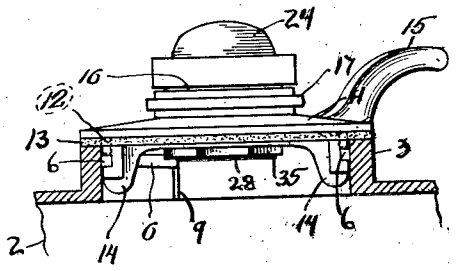
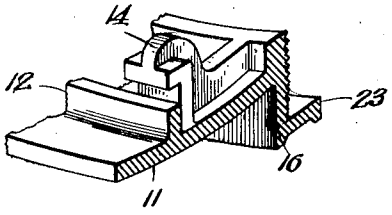
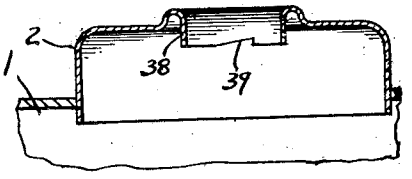


Fig. 6

Fig. 5.





Inventors

G. H. Clay and H. W. Bailey

By Thorpe Thorpe

Attorneys

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TANK TRUCK FILLING PLUG

George H. Clay and Harry W. Bailey,
Kansas City, Mo.

Application October 22, 1932, Serial No. 639,071

1 Claim. (Cl. 220—24)

This invention relates to tank truck plugs and the primary object of the invention is to produce a plug which can be quickly applied in or withdrawn from operative position, as compared with the conventional screw plug which must be turned around several times to secure it in or remove it from operative position, means being also provided to make the plug adapted for use with the standard threaded plug openings now in common use.

Another object is to provide a quick opening plug with a gravity operated ball valve having a double seat, the ball in its normal position holding the tank sealed against vapor loss, but being adapted to be unseated on the development of internal pressure appreciably above that of the atmosphere. Also, should the tank overturn from a wreck or the like, the ball unseats from its normal position and seats on the other valve seat to prevent loss of the contents of the tank.

A further object of the invention is to produce a valve mechanism which opens to admit air into the tank should a vacuous or low pressure condition develop therein.

With the general objects named in view and others as will hereinafter appear, the invention consists in certain novel and useful features of construction and organization of parts as hereinafter described, and in order that it may be fully understood reference is to be had to the accompanying drawing, in which:—

Figure 1 is a top plan view of a fragment of a standard tank for the storage or conveyance of gasoline and the like, equipped with a plug construction embodying the invention mounted in the usual threaded neck opening.

Figure 2 is an inverted plan view of the plug construction.

Figure 3 is a vertical section on the line III—III of Figure 1.

Figure 4 is a view similar to Figure 3, but with the plug in elevation and rotatably interlocked with the neck of the tank dome instead of with a ring screwed into the neck of the dome as provided for in the preceding figures.

Figure 5 is a perspective view of a fragment of the cap disposed in inverted position.

Figure 6 is a modified type of dome construction.

Referring to the drawing in detail, 1 is a truck tank provided with a dome 2 having a circular top opening surrounded by an upstanding cylindrical neck 3 which is internally threaded as at 4 in Figures 1 to 3 inclusive. Threaded into said opening is a ring 5. The ring 5 and the tank neck 3 of Figure 4 are provided with a series of internal inclined locking cam ribs 6.

The ring 5 at its upper end is formed with an outwardly extending annular flange 7 overlying and applying pressure on a gasket 8 carried by the top edge of the filling neck 3 to seal the parts against vapor loss.

The filling neck 3 of Figure 4, or the ring 5, as the case may be, is not only provided with the internal clamp ribs 6, but is also provided with stop ribs 9 and 10, the former being disposed adjacent the lower part of the cam ribs and the latter being spaced from the cam ribs at the tops thereof where the cam surfaces are highest.

For closing the opening of the neck, a plug is employed which is constructed as follows: 11 is a cap having a depending circular boss 12 fitting snugly in the neck or ring above ribs 6 thereof, and encircling said boss 12 is a gasket 13 to be clamped by the cap down on the upper end of the flange 7 or upon the top of the filling neck 3 in the type of construction shown in Figure 4.

The cap has opposite depending hooks 14 whose terminals underlie and are spaced from the boss 12 a distance slightly greater than the depth of the ribs 6, which hooks, when the cap is free to uncover the neck opening, stand in the space between the ribs 6 and the respective stops 10. The cap has outwardly projecting handles 15 whereby it may be turned to cause the hooks to engage the ribs 6 or to withdraw from such engagement, and by which the lid or cap can be conveniently swung to or from position over the neck of the tank.

To provide for such movement, the cap has an upstanding cylindrical extension 16 encircled by a collar 17, and the latter has an arm 19 terminating in a horizontal sleeve 20 fitting between a pair of ears 21 formed on or secured to the neck or ring, a pivot 22 hingedly connecting the arm and the ears. It will be apparent from the foregoing that the cap can be swung on the hinge connection to or from a position on the neck or ring to close or give access to the tank, and that the cap is adapted for swivel or rotative movement with respect to the collar, and that the hinge point of the latter is so located that the hooks of the cap when the latter is in closed position, but not locked, are fitting between the stops 10 and the ribs 6, and hence can be turned only toward the latter. When so turned, the lugs engage the ribs and as there is a cam relation between them, the cap is forced downward and hence clamps its gasket 13 firmly

upon the neck or ring to seal the tank against vapor loss. Reversed rotation of the cap is arrested when the hooks abut the stops 10, at which time the cap can be swung to open position.

The cap has a central opening or passageway 23 and a hood 24 fits over said opening at its top, and interposed between the cap and hood and held in position by the hood securing screws 25, is a fire screen 26. A passageway is thus provided to permit air to enter the tank upon the production of a vacuous condition therein as will hereinafter appear.

The cap is provided with a valve mechanism to relieve vacuous conditions within the tank, to relieve pressure conditions within the tank, and to seal the tank against leakage or loss of liquid should the tank be accidentally overturned as in a wreck or the like. This mechanism comprises the following elements: 27 and 28 respectively indicate upper and lower members detachably secured together, the upper member having an opening 29 and the lower member an opening 30. Received within the cage or housing formed by the members 27 and 28 is a ball valve 31 normally closing the opening 30 to prevent vapor loss from the tank, but unseated by vapor pressure should the pressure within the tank exceed atmospheric pressure.

If the tank should be upset or overturned the ball valve will gravitate to its seat 29 to seal the tank against loss of its liquid contents.

To provide means to relieve vacuous conditions within the tank the ball valve casing is formed at its upper end with a flange 32 and at its lower end with a valve seat 33 adapted to be seated on a valve seat 34 formed on the lower end of a sleeve 35 threaded in the passageway in the cap, said seats 33—34 being held in closed relation by a coiled spring 36 engaging the flange 32 at one end and a series of bosses 37 formed on the inner wall of the sleeve 35. Upon vacuous conditions within the tank the valve opens against the resistance of the spring 36 to admit air into the tank.

From the above description, it will be apparent that we have produced a construction embodying all of the features of advantage set forth as desirable, and while we have described the preferred embodiments of the invention, we reserve the right to all changes within the spirit of the invention and without the ambit of the prior art.

In Figure 6 a modified type of dome and neck is illustrated, in which the filling neck is formed by a down turned flange 38 integral with the body of the dome, the locking ribs 6 of the other constructions being formed by inclined notches 39 cut in the periphery of the lower edge of the flange as shown. The operation of the construction shown by said Figure 6 is the same as that previously described.

We claim:—

The combination with a tank having a filling neck, a collar hingedly connected to the tank, a cap for the filling neck larger than and underlying the collar and provided with an upstanding tubular portion swivelled in the collar, the cap and neck having a bayonet wedge-joint connection for the clamping of the former upon the latter, and a hood fitting over and secured to the upper end of the tubular portion of the cap and provided with a depending skirt overlying the said collar to prevent accidental disengagement between the cap and the collar when the latter is operated to withdraw the cap from the neck of the tank.

GEORGE H. CLAY.
HARRY W. BAILEY.