April 6, 1926. 1,579,270

V. WILLOUGHBY

TANK DOME CLOSURE

Filed April 27, 1925 2 Sheets-Sheet 1

Fig. 1.

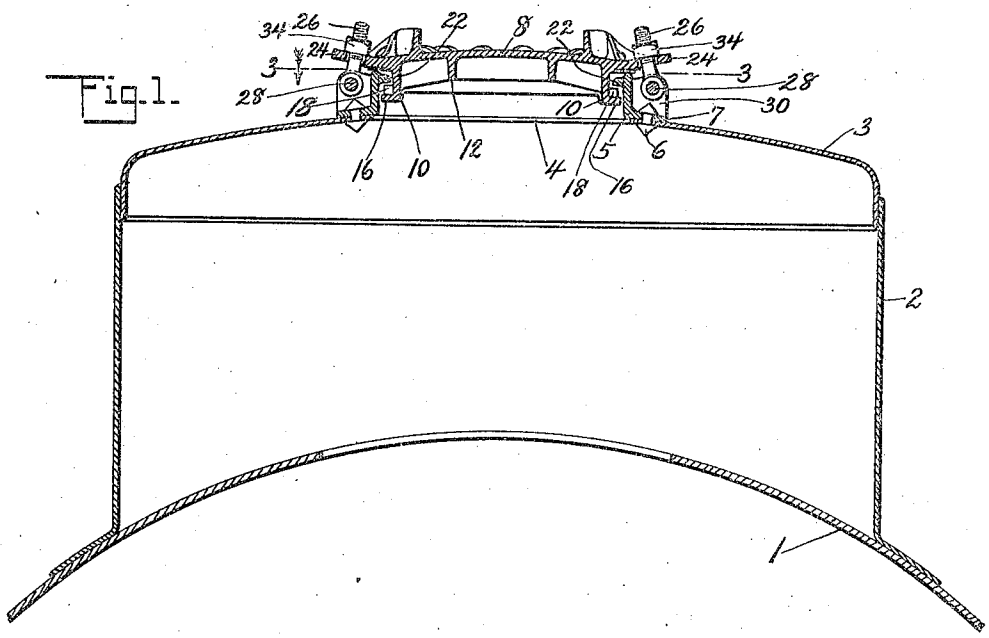

Fig. 2.

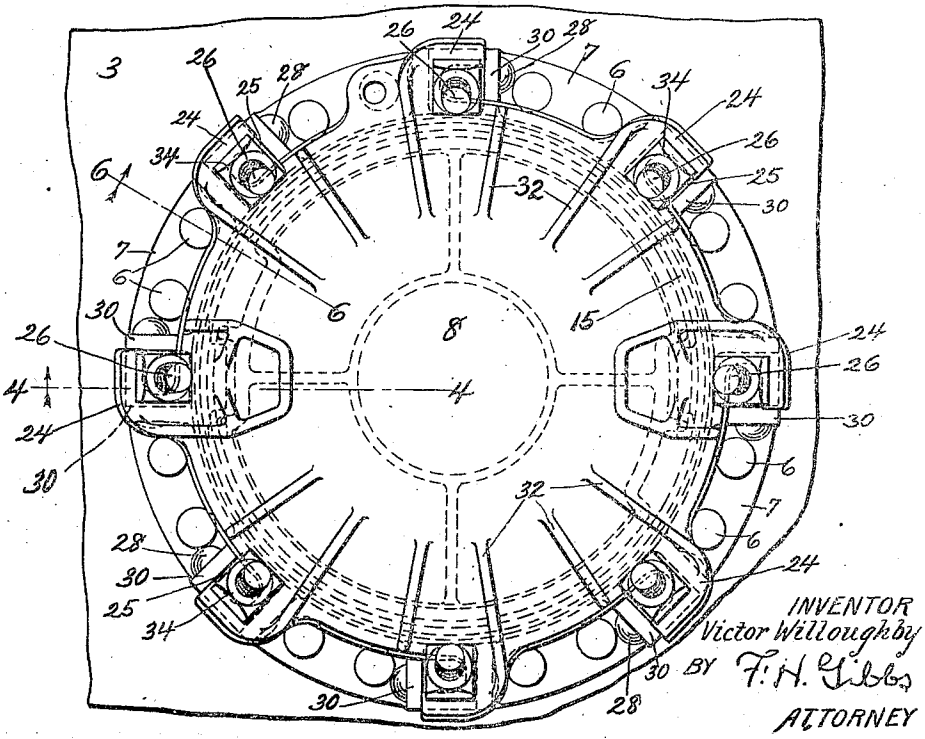

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Fig. 3.

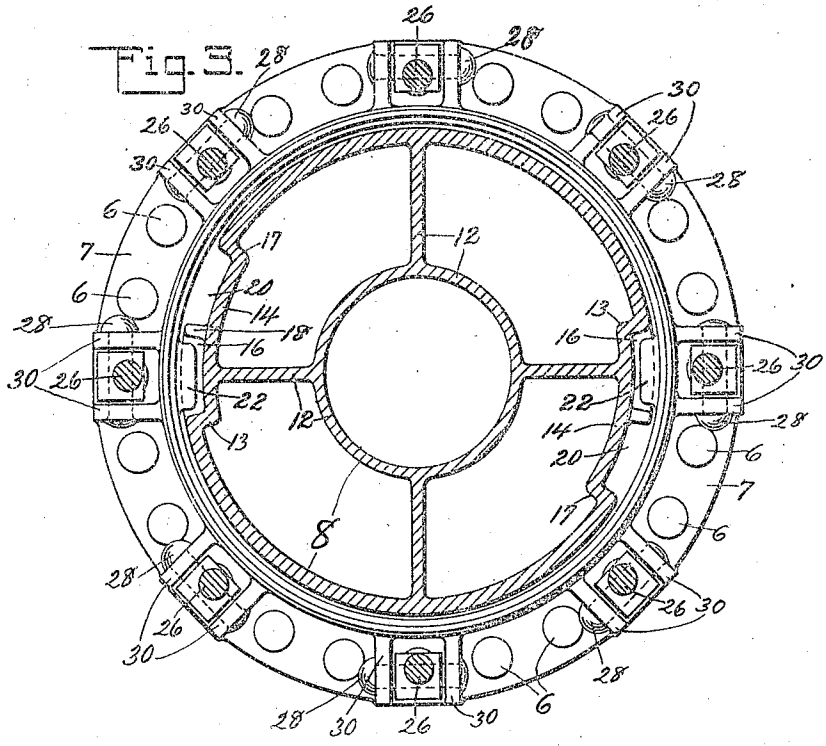


Fig. 4.

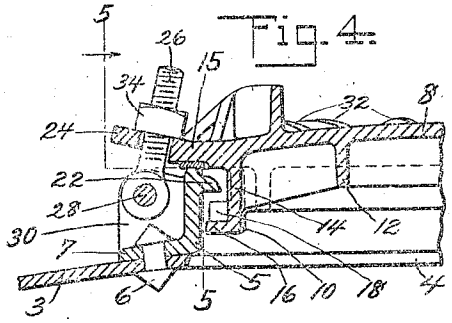


Fig. 5.

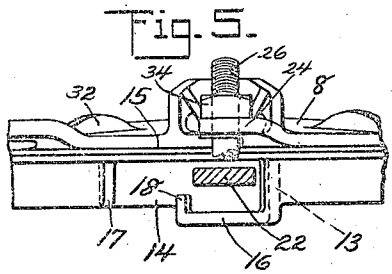


Fig. 7.

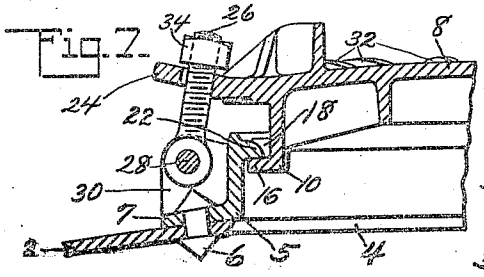
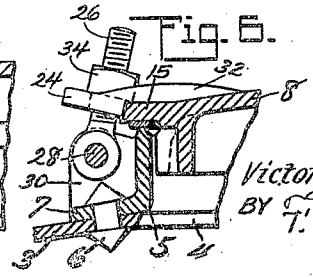


Fig. 6.



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Patented Apr. 6, 1926. 1,579,270

UNITED STATES PATENT OFFICE.

VICTOR WILLOUGHBY, OF RIDGEWOOD, NEW JERSEY, ASSIGNOR TO AMERICAN CAR AND FOUNDRY COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

TANK-DOME CLOSURE.

Application filed April 27, 1925. Serial No. 26,121.

To all whom it may concern:

Be it known that I, VICTOR WILLOUGHBY, residing at Ridgewood, Bergen County, New Jersey, and being a citizen of the United States, have invented certain new and useful Improvements in Tank-Dome Closures, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and to use the same, reference being had to the accompanying drawings, which illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof within the scope of the claims will occur to persons skilled in the art.

In said drawings:

Fig. 1 is a central vertical section of a tank dome having a dome closure constructed in accordance with this invention;

Fig. 2 is a top plan view of the closure shown in Fig. 1;

Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 1;

Fig. 4 is a vertical section taken on the line 4—4 of Fig. 2, the cover being shown held in engagement with the dome ring by the retaining bolts;

Fig. 5 is a section taken on the line 5—5 of Fig. 4;

Fig. 6 is a section taken on the line 6—6 of Fig. 2, and

Fig. 7 is a section taken on the line 4—4 of Fig. 2, the retaining bolts being shown partly released and the cover raised to engage the interlocking retaining lugs.

This invention relates to dome closures for car tanks and has for an object the provision of an improved means for preventing the dome cover being blown from the tank should the cover securing means be released when there is pressure in the tank, the means permitting the cover to be raised sufficiently to vent the pressure from the tank. It is also an object of this invention to provide a means which is applicable to a cover which is rotated slightly to release it from the cover securing means and comprises lugs on the dome ring and cover which interlock when the cover is raised by the pressure in the tank and prevent rotation and removal of the cover while permitting of the cover being raised far enough to vent the pressure from the tank.

In the drawings the invention is shown applied to a car tank 1 having the usual tank dome 2 provided with a dome head 3 having the usual manhole opening 4. The manhole opening is surrounded by a dome ring 5 secured to the dome head 3 by rivets 6 engaging the flange 7 of the dome ring and the dome head 3. The dome ring 5 provides a seat for a dome cover 8 having an inwardly projecting annular flange 10 braced by the reinforcing ribs 12. At diametrically opposite points the flange 10 has portions 14 which are of less radius than the remainder of the flange 10 and are connected to the remainder of the flange 10 by flange portions 13 and 17 forming stops. The portions 14 of the flange 10 are provided at their outer edges with outwardly projecting lugs 16 which extend from the stops 13 to the centers of the flange portions 14 and are provided at their outer ends with lugs 18 forming stops which extend only part way from the lugs 16 to the projecting top 15 of the cover 8. The cover 8 and the flange portions 14 form pockets or recesses 20 which are closed at the ends by the stops 13 and 17 and partly closed at the bottom by the lugs 16 and stops 18, openings being left between the stops 17 and 18 and between the stop 18 and the top 15 of the cover 8 to receive inwardly projecting lugs 22 formed on the dome ring 5.

The cover 8 is also provided with radially extending projections 24 which are inclined upward slightly forming an angle with the top 15 of the cover and have slots 25 to receive bolts 26 pivotally mounted on pins 28 secured in ears 30 formed integral with the dome ring 5. Reinforcing ribs 32 serve to brace the projections 24 and the top 15 adjacent thereto.

In the operation of this device the nuts

34 on the bolts 26 will engage with the projections 24 of the cover 8 and secure the cover to its seat upon the dome ring 5. Upon releasing the nuts 34, when there is pressure in the tank 1, the pressure will raise the cover 8 as the nuts 34 are released, the pressure in the tank holding the cover 8 against the nuts 34 so that the cover may not be rotated to disengage the cover 8 from the bolts 26 until the nuts 34 are unscrewed sufficiently to permit the lugs 16 on the flange portions 14 to engage with the lugs 22 on the ring 5. The engagement of the lugs 22 with the lugs 16 will prevent the cover 8 raising any further due to the pressure in the tank even though the nuts 34 are completely removed from the bolts 26 and the stops 13 and 18 on opposite sides of the lugs 22 will prevent rotation of the cover. It will be noted that when the cover is raised by pressure in the tank and the lugs 16 are in engagement with the lugs 22, that the openings 20 between the stops 17 and 18 provide a means for venting the pressure from the tank.

If the nuts 34 are released when there is no pressure in the tank the cover 8 will remain seated upon the dome ring 5 but cannot be rotated so as to bring the openings 20 between the stops 17 and 18 opposite the lugs 22 until after disengaging the bolts 26 from the slots 25 in the projections 24.

When this is done the cover can be rotated to bring slots 20 into coincidence with lugs 22 and the cover may then be raised from the ring 5.

To secure the cover 8 to the dome ring it will be placed on the ring with the openings between the stops 17 and 18 in line with the lugs 22 and the bolts can then be brought up into line with the slots 25 in the projections 24 only after the cover is given a partial rotation to bring the bolts 26 into alinement with said slots after which the bolts are inserted in the slots 25. At this time the lugs 16 are beneath the lugs 22. Tightening the nuts 34 will then secure the cover 8 to the ring 5.

What is claimed is:

1. A tank dome closure comprising a dome ring carried by the tank, a dome cover to seat on said ring, means to secure said cover to said ring and cooperating means on said ring and cover interlocking to prevent removal of said cover when said cover is raised by the pressure in the tank upon release of said securing means.

2. A tank dome closure comprising a dome ring carried by the tank, a dome cover to seat on said ring, means to secure said cover to said ring, lugs projecting from said ring and means on said cover to interlock with said lugs and prevent removal of said cover when said cover is raised by the pressure in the tank upon release of said securing means.

3. A tank dome closure comprising a dome ring carried by the tank, a dome cover to seat on said ring, pivoted securing bolts for said cover carried by said ring and engaged with said cover by rotation of said cover upon said ring, and means on said cover to interlock with said lugs and prevent rotation of said cover when said cover is raised by pressure in the tank upon release of said securing bolts.

4. A tank dome closure comprising a dome ring carried by the tank, a dome cover to seat on said ring, pivoted securing bolts for said cover carried by said ring and engaged with said cover by rotation of said cover upon said ring, inwardly projecting lugs carried by said ring, said cover having recesses to receive said lugs, and lugs mounted in said recesses in said cover to interlock with said lugs on said ring to prevent rotation and removal of said cover when said cover is raised by pressure in the tank upon release of said securing bolts.

5. A tank dome closure comprising a dome ring carried by the tank and surrounding the manhole opening, a dome cover to seat on said ring, means to secure said cover to said ring engaged with said cover by rotation of said cover on said ring, lugs on said ring projecting into the manhole opening, said cover having recesses to receive said lugs, and lugs mounted in said recesses in said cover to interlock with said lugs on said ring and prevent rotation and removal of said cover when said cover is raised by pressure in said tank upon release of said securing means.

6. A tank dome closure comprising a dome ring carried by the tank and surrounding the manhole opening, a dome cover to seat on said ring, securing means for said cover carried by said ring, lugs on said ring projecting into the manhole opening and lugs on said cover engaging said lugs on said ring to prevent removal of said cover when said cover is raised by pressure in the tank upon releasing said securing means.

7. A tank dome closure comprising a dome ring carried by the tank and surrounding the manhole opening, a dome cover to seat on said ring, means carried by said ring to secure said cover to said ring, lugs on said ring projecting into the manhole opening and lugs on said cover interlocking with said lugs on said ring to prevent removal of said cover when said cover is raised by pressure in the tank upon release of said securing means.

8. A tank dome closure comprising a dome ring carried by the tank and surrounding the manhole opening, a dome cover to seat on said ring, securing bolts for said cover

pivotally mounted on said ring and engaged with said cover by rotation of said cover on said ring, lugs on said ring projecting into the manhole opening, said cover having recesses to receive said lugs, and lugs mounted in said recesses in said cover to interlock with said lugs on said ring to prevent rotation of said cover when said cover is raised by pressure in the tank upon release of said securing bolts.

In witness whereof I have hereunto set my hand.

VICTOR WILLOUGHBY.