Nov. 2, 1926. 1,605,416

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TANK CAR DOME CLOSURE

Filed June 7, 1923

Fig. 1.

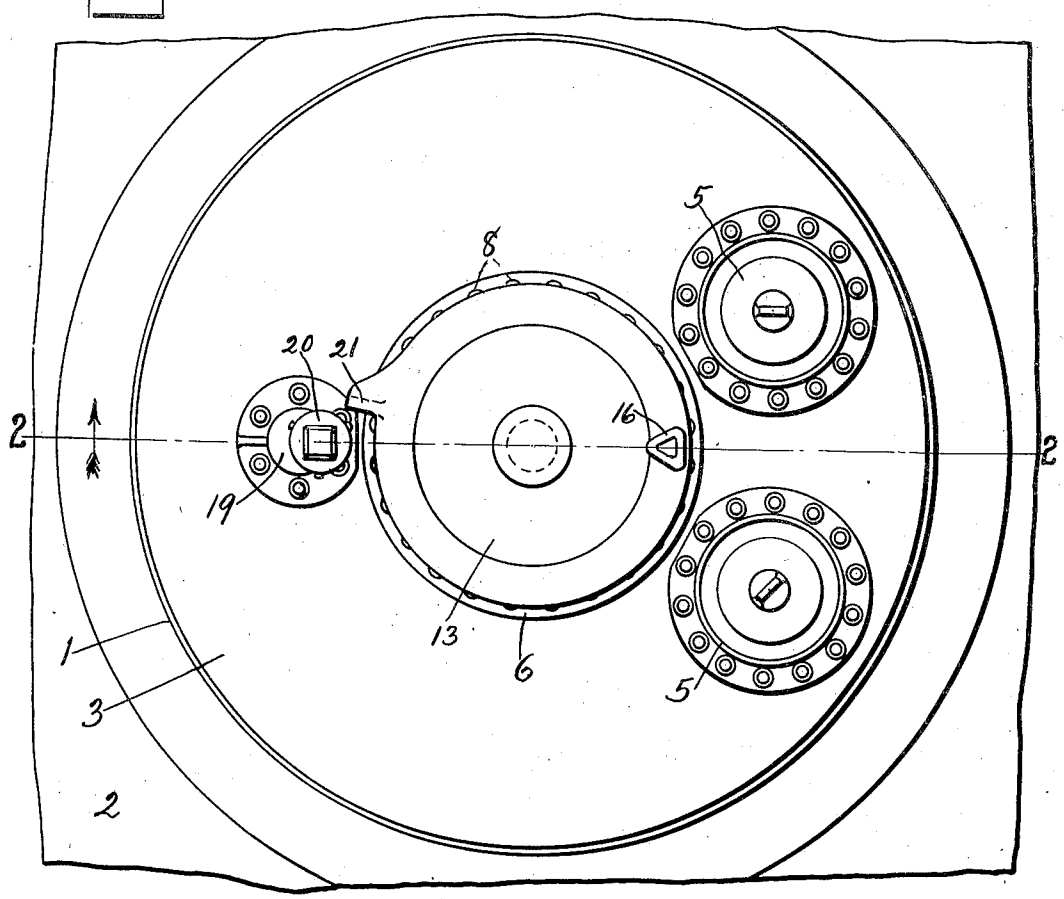
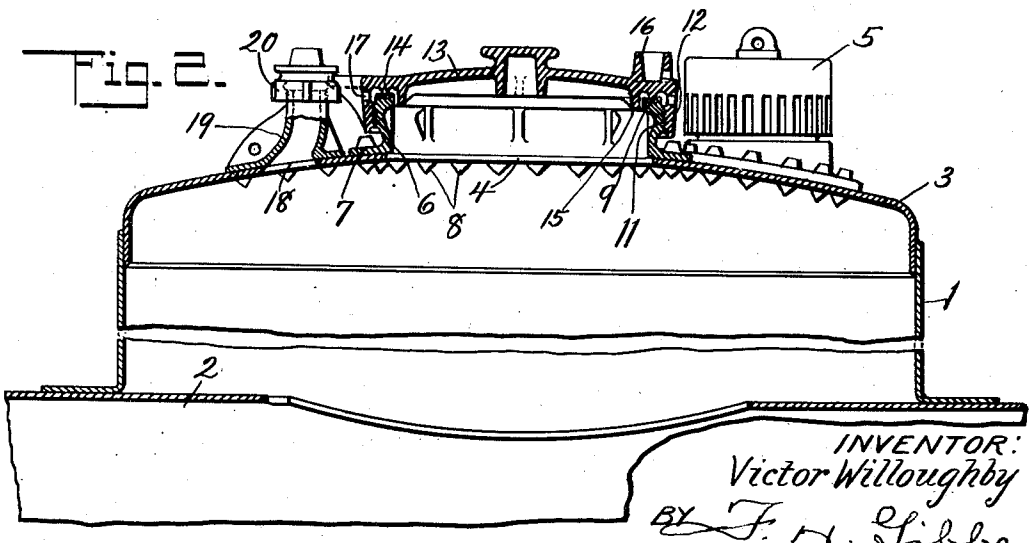


Fig. 2.



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TANK-CAR-DOME CLOSURE.

Application filed June 7, 1923. Serial No. 643,844.

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 plan view of a car tank dome with a dome closure and vent constructed in accordance with this invention; and

Fig. 2 is a broken transverse section taken on the line 2—2 of Fig. 1.

This invention relates to closures for dome heads of car tanks used for transporting volatile liquids and has for its object the providing of closures for the manhole opening and a vent opening in the dome head which will insure the opening of the vent so that excess pressure will be discharged before the manhole cover may be loosened or opened thereby preventing danger to the operator opening the tank and loss of part of the contents of the tank which may result when the manhole cover is removed while excessive pressure exists in the tank.

In the drawings, there is shown a tank dome formed of the flanged dome sheet 1 secured to the tank sheet 2 and having a dome head 3. The dome head 3 is provided with the usual manhole opening 4 and openings for the safety valves 5. Surrounding the manhole opening is a ring or collar 6 having a flange 7 by which it is secured to the dome head 3 by rivets 8. The ring 6 has a groove 9 to receive a suitable packing and is externally threaded, as at 11, to receive the internally threaded flange 12 of the manhole cover 13.

The manhole cover 13 is provided with an annular ring 14 adapted to engage with the packing in the groove 9 and has depending guide members 15 which project into the opening of the ring 6. The cover 13 is also provided with the usual lug 16 for use in opening and closing the cover and with vent ports 17 in the flange 12, as is usual in this type of cover. It has been found, however, that the ports 17 are insufficient to relieve the pressure which occasionally forms in the tank in the time taken to unscrew the cover and unless the operator takes warning from the discharge through the ports 17 and allows sufficient time to elapse for the release of the pressure in the tank, the cover 13 will be thrown from the car by the pressure in the tank when unscrewed and the sudden release of the pressure in the tank upon the removal of the cover will cause a large portion of the contents of the tank to be discharged through the manhole opening.

The dome head 3 is provided with a vent opening 18 closed by a casing 19 and a cap 20 threaded on the end of the casing 19. The opening 18 is placed close to the manhole opening 4 and is of sufficient capacity to discharge the pressure from the tank in the time which will be required to remove the cover 13 from the manhole opening. To insure the opening of the vent 18 before the opening of the manhole opening 4, the manhole cover 13 is provided with a radially extending projection 21 which will engage with the cap 20 when the cap is in position on the casing 19 but which will not engage with the casing 19. While the projection 21 has been shown as formed integral with the cover 13 it is to be understood that the projection 21 may be, as in the case of covers now in service, a projecting metal piece secured to the cover 13 in any desired manner.

It will be seen that the cap 20 has to be removed from the casing 19 in order that the cover 13 may be screwed in place and that, with the cap 20 in place, the cover 13 may not be rotated a complete revolution, thus insuring that the cover 13 may not be loosened or removed from the manhole opening while the cap 20 closes the vent 18. Since the cover 13 has to be completely unscrewed after removal of the cap 20, sufficient time to permit of the discharge of the pressure in the tank through the vent 18 and casing 19 will elapse between the removal of the cap 20 and the rotating of the cover 13 to a position in which it may be removed from threaded engagement with the ring 6. The cap 20 being of comparatively small size may be safely removed by the operator when there is pressure in the tank and the size of the vent opening 18 will prevent the discharge of the tank contents upon the removal of the cap 20 as well as reduce the cause of such discharge by reducing the rate at which the pressure in the tank is reduced.

What is claimed is:

1. A car tank dome-head having manhole and vent openings, a perforated and flanged cover for said manhole opening, a casing extending above said vent opening, a removable cover for said casing projecting verti-

cally above said casing and a lug extending from the cover of the manhole opening in such relation to said casing and cover as to clear the casing and contact with the cover when the cover is in position on the casing, said lug insuring the removal of the casing cover prior to the removal of the manhole cover.

2. A car tank dome head having manhole and vent openings therein, a removable cap for closing the vent hole opening, a cover for closing the manhole opening, and a lug on said manhole cover for preventing rotative movement of the cover for removal thereof when said cap is mounted in position.

3. A car tank dome head having manhole and vent openings therein, a casing extending above said vent opening, a cap threadably connected to said casing and covering the top thereof, a collar mounted above said manhole opening, a cover threadably connected to said collar and a lug projecting from said cover to clear said casing when the cap is removed and to contact with said cap when the latter is in position on the casing.

4. A car tank dome head having manhole and vent openings therein, a casing having an unobstructed opening therethrough and mounted on the dome head above said vent opening to provide an unobstructed port through the vent opening into the dome head, a removable cap adapted to be secured to the top of said casing, a cover for said manhole opening, and a lug on said cover clearing said casing and engaging said cap when the latter is in position on the casing, said lug serving to insure the removal of said cap prior to the removal of the cover.

In witness whereof I have hereunto set my hand.

VICTOR WILLOUGHBY.