Nov. 14, 1933. J. A. JENSEN 1,935,226

COVER SECURING MEANS

Filed April 6, 1933

FIG. I.

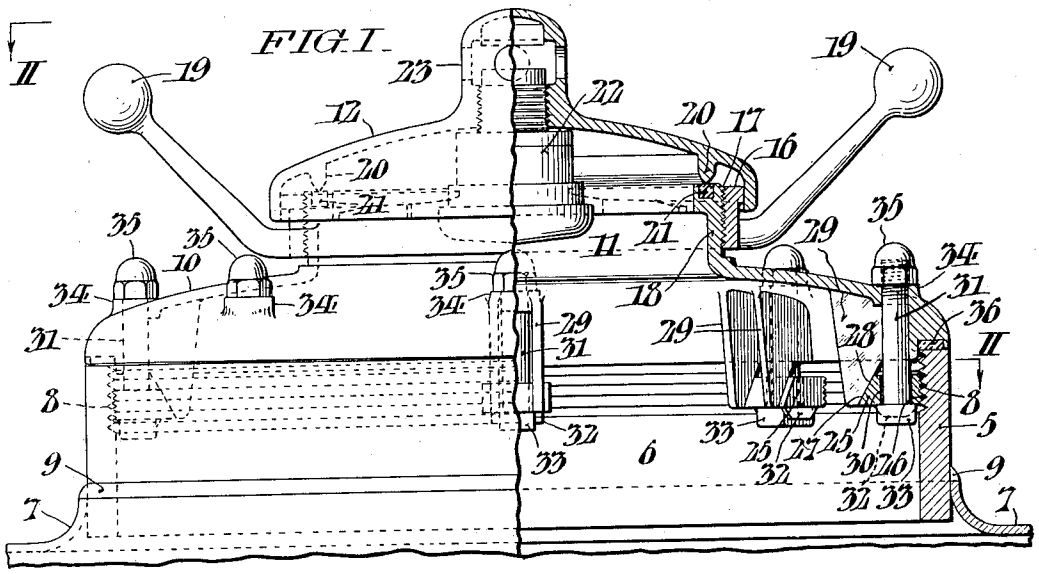


FIG. II.

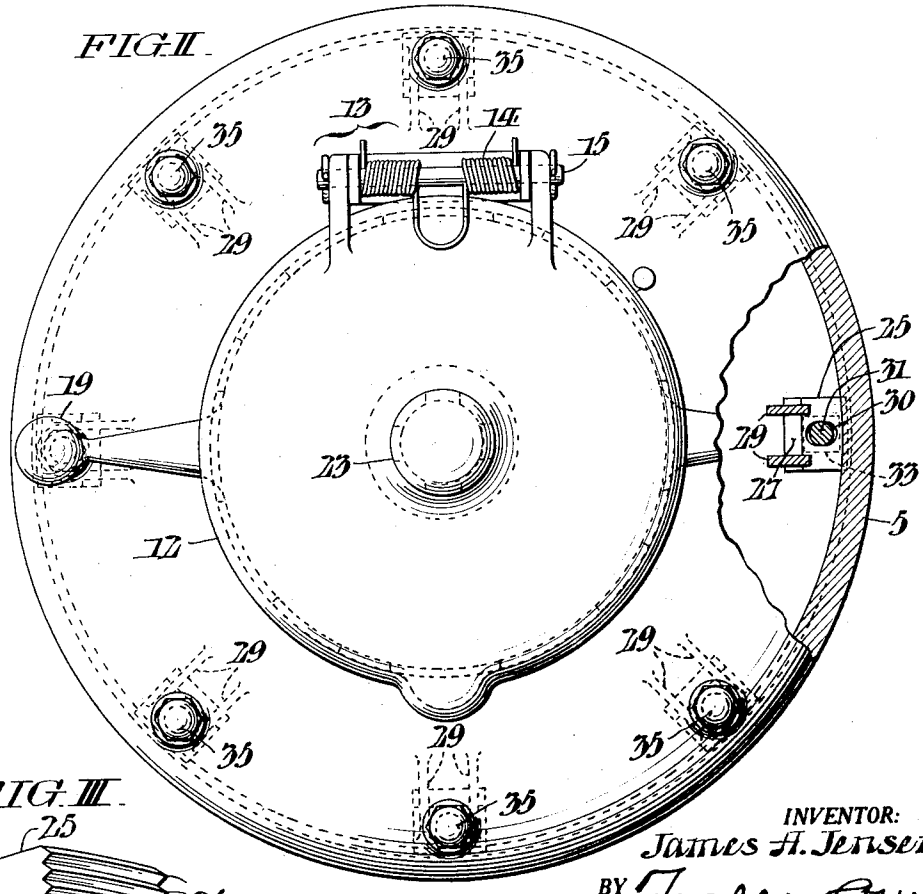
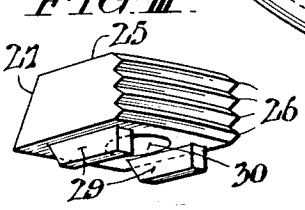


FIG. III.



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COVER SECURING MEANS

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6 Claims. (Cl. 220—55)

This invention relates to means for securing the covers of receptacles; and it has reference more particularly to securing means for the manhole covers of multi-compartment tanks of vehicles such as are ordinarily employed in transporting gasoline, oils and other liquid commodities.

The prevalent practice in vehicle tank construction is to screw the manhole covers into the manhole openings, and to provide said covers with smaller axial openings to enable filling of the corresponding tank compartments, said smaller openings being in turn protected by supplemental hinged connected covers. To facilitate manipulation of these supplemental covers from one side of the tank, it is desirable that their hinges be parallel to the longitudinal axis of the tank. Due to lack of uniformity in machining the screw threads, it is impossible to screw down the manhole covers tightly and at the same time predetermine disposal of the hinges of the supplemental covers in the mentioned desired relation, particularly when compressible sealing gaskets are used in association with the manhole covers. The aim of my invention is to overcome the drawback to which attention has been directed, or in other words, to make it possible to tightly secure the manhole covers in a definite circumferential relation to the manhole openings which will predetermine alignment of the supplemental filling hole cover hinges accurately in parallelism with the tank axis. This object I attain as hereinafter more fully disclosed, through provision of wedge blocks, which, by means of exteriorly manipulatable bolts, are caused to coact with pendant bevel projections internally of the manhole cover and thereby urged laterally outward into engagement with the screw threads of the manhole, while the manhole cover is concurrently drawn into sealing relation with the edge of said opening.

In the attached drawing, Fig. I is a fragmentary view, partly in side elevation and partly in longitudinal section; of a vehicle tank showing one of the manhole structures of the latter and embodying the cover securing means of my invention.

Fig. II shows the organization in plan with a portion of the manhole structure broken away and in section to expose details of the securing means, the view being taken as indicated by the arrows II—II in Fig. I.

Fig. III is a perspective view of one of the wedge blocks of my improved cover securing means.

With more detailed reference to these illustrations, the numeral 5 designates an annulus which constitutes the side wall of a manhole 6 leading into one of the compartments of the vehicle tank whereof the shell is indicated at 7, said annulus having internal screw threads 8, and being permanently united to the tank by welding as conventionally indicated at 9. The manhole cover 10 has a central filling orifice 11 protected by a supplemental "quick-opening" cover 12, said cover 12 being attached to the manhole cover by a hinge connection 13 and yieldingly urged to closed position by a torsion spring 14 surrounding the hinge pin 15. A ring 16 having threaded engagement at 17 with the neck 18 of the manhole cover 10 and formed with grasp handles 19, serves as a means for locking the supplemental cover 12 closed with an internal annular ridge 20 thereof engaging a sealing gasket 21 recessed into the top edge of the filling opening 11. A suitable form of vent valve 22 serves to relieve vapor pressure of the gasoline in the tank 7, said valve being screwed upward into a laterally-ported axial dome-like projection 23 of the supplemental cover 12.

For the purpose of securing the manhole cover 10 to the wall annulus 5 of the manhole 6 in accordance with my invention, I provide a number of wedge blocks 25 whereof one is illustrated in perspective in Fig. III. As shown, these wedge blocks 25 have frontal teeth 26 adapted to engage the internal screw threads 8 of the manhole 5, and rear bevels 27 adapted to oppose the bevels 28 of spaced parallel pairs of circumferentially arranged pendant projections 29 of the manhole cover 10. The wedge blocks 25 moreover have central apertures 30 for passage of connecting bolts 31, and parallel ridges 32 on their bottom faces to opposite sides of the apertures for engaging polygonal heads 33 on said bolts to hold the latter against turning. From Fig. I it will be noted that the bolts 31 extend up in the interval between the paired projections 29 and out through apertured bosses 34 of the manhole cover 10 for attachment of nuts 35 to their projecting threaded ends.

With the described construction, it will be seen that tightening of the nuts 35 on the bolts 31 will cause the wedge blocks 25 to be drawn upward, while, through coaction between the opposing bevels 27 and 28, said wedge blocks will be at the same time urged laterally outward into engagement with the internal threads 8 of the manhole wall 5. Also at the same time, the cover 10 will be drawn downward to compress a

gasket 36 circumferentially interposed between it and the top edge of said manhole wall with resultant formation of a fluid-tight seal at the joint. It will be further apparent that the described arrangement enables sealing of the manhole cover 10 in a definite circumferential relation to the manhole 6 such that the hinge axis 15 of the supplemental filling hole cover 12 is predisposed accurately in parallel relation to the longitudinal axis of the tank 7. This is highly advantageous in connection with multi-compartment tanks in that it renders convenient and easy, the opening and closing of the filler hole covers of the several compartments all from one side of the vehicle, with attendant saving of time in the performance of these operations by the driver. Preferably I make the pitch or spacing of the teeth 26 on the wedge blocks 25 as a multiple division of the pitch of the threads 8 of the manhole opening 6 as shown in Fig. I. Accordingly the wedge blocks 25 can be used with manifolds wherein the screw threads vary correspondingly in pitch.

While I have particularly shown and described my invention in connection with manhole covers of vehicle tanks, it is obvious that the same may be employed in connection with receptacle covers generally, wherein, for any reason, it is important or desirable that the cover, when in closed and sealed position, occupy a definite circumferential relation to the receptacle opening.

Having thus described my invention, I claim:

1. Receptacle cover securing means comprising circumferentially-arranged wedge blocks with teeth adapted to engage screw threads internally of the receptacle opening, and with rear bevels adapted to be opposed by pendant bevel projections on the cover; and means accessible at the exterior and operable after placement of the cover in any desired circumferential position, to draw upon the wedge blocks, whereby, through coaction between the bevels on the latter and the bevel projections on the cover, said blocks are urged laterally outward to engage the screw threads of the receptacle opening, and the cover is concurrently clamped into sealing contact with the receptacle mouth.

2. Receptacle cover securing means comprising circumferentially arranged wedge blocks with frontal teeth adapted to engage screw threads internally of the receptacle opening, and with rear bevels adapted to be opposed by pendant bevel projections on the cover; and connecting bolts extending up through the cover for accessibility at the exterior and operable after placement of the cover in any desired circumferential position, to draw upon the wedge blocks, whereby, through coaction between the bevels of the latter and the bevel projections of the cover, said blocks are urged laterally outward into engagement with the screw threads of the receptacle opening, and the cover is concurrently clamped into sealing contact with the receptacle mouth.

3. Receptacle cover securing means comprising circumferentially arranged wedge blocks with frontal teeth adapted to engage screw threads internally of the receptacle opening, and with rear bevels adapted to be opposed by pendant bevel projections on the cover; connecting bolts held against rotation through engagement of polygonal heads thereof between parallel lugs on the wedge blocks and having their shanks extending up through said blocks and out through the cover; and nuts on the protruding ends of the bolts, operable, after placement of the cover in any desired circumferential position, to cause upward pull upon the wedge blocks, whereby, through coaction between the bevels on the latter with the opposing bevel lugs on the cover, said blocks are urged laterally outward into engagement with the internal screw threads of the receptacle opening, and the cover is concurrently clamped into sealing contact with the receptacle mouth.

4. Means for securing the manhole covers of vehicle tanks, comprising circumferentially arranged wedge blocks with frontal teeth adapted to engage screw threads internally of the manhole opening, and with rear bevels adapted to be opposed by internal pendant bevel projections on the cover; and means accessible at the exterior and operable after circumferential placement of the manhole cover to align the hinge axis of a supplemental filling hole cover thereon with the longitudinal axis of the tank, to draw upon the wedge blocks, whereby, through coaction between the bevels of the latter and the opposing bevel projections of the manhole cover, said blocks are urged laterally outward into engagement with the internal screw threads of the manhole opening, and the manhole cover is concurrently clamped into sealing contact with the edge of the manhole opening.

5. Securing means for manhole covers of vehicle tanks, comprising circumferentially arranged wedge blocks with frontal teeth adapted to engage screw threads internally of the manhole opening, and with rear bevels adapted to be opposed by internal pendant bevel projections on the cover; and connecting bolts extending up through the cover for accessibility at the exterior and operable, after circumferential placement of the manhole cover to align the hinge axis of a supplemental filling hole cover thereon with the longitudinal axis of the tank, to draw upon the wedge blocks, whereby, through coaction between the bevels of the latter and the bevel projections on the manhole cover, said blocks are urged laterally outward into engagement with the screw threads of the manhole opening, and the manhole cover is concurrently clamped into sealing contact with the edge of the manhole opening.

6. Securing means for the manhole covers of vehicle tanks, comprising circumferentially arranged wedge blocks with frontal teeth adapted to engage screw threads internally of the manhole opening, and with rear bevels adapted to be opposed by internal pendant bevel projections on the cover; and connecting bolts held against actuation through engagebent of polygonal heads thereof between parallel lugs on the wedge blocks, and having their shanks extending up through said blocks and out through the cover; and nuts on the protruding ends of the bolts operable after circumferential placement of the manhole cover to align the hinge axis of a supplemental filling opening cover thereon with the longitudinal axis of the tank, to cause upward pull on the wedge blocks, whereby, through coaction between the bevels of said blocks and the opposing bevels of the projections on the manhole cover, said blocks are urged laterally outward into engagement with the internal screw threads of the manhole opening, and the manhole cover is concurrently clamped into sealing contact with the edge of the manhole opening.

JAMES A. JENSEN.