July 19, 1932. A. W. BRYAN 1,867,650

GASOLINE TANK CAP LOCK

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Fig. 1.

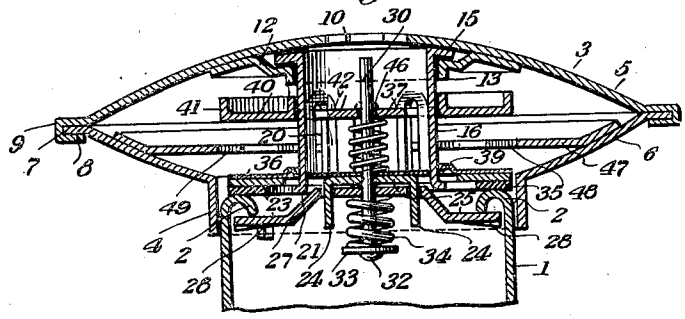


Fig. 2.

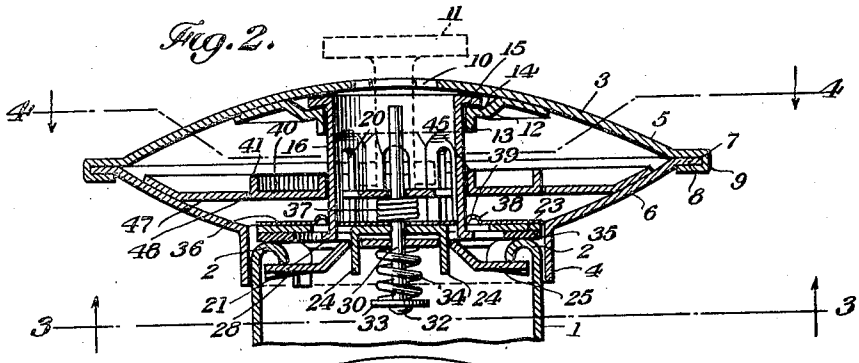
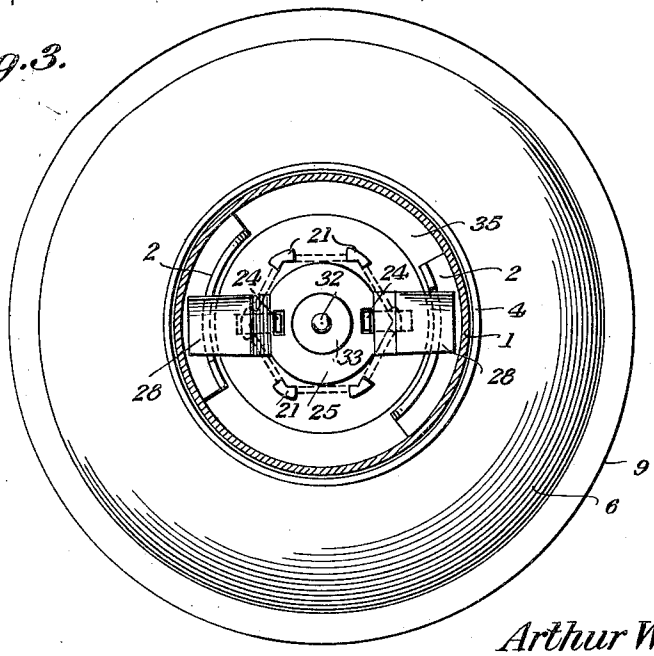


Fig. 3.



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Fig. 4.

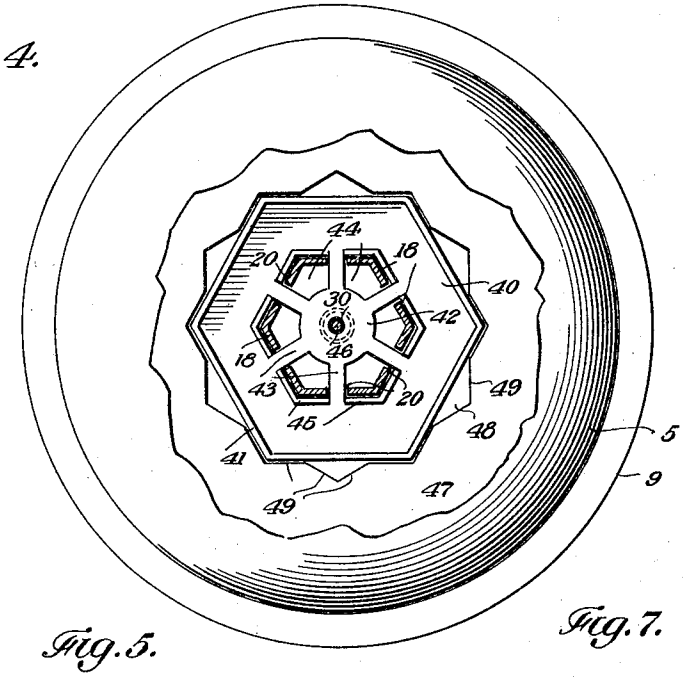


Fig. 5.

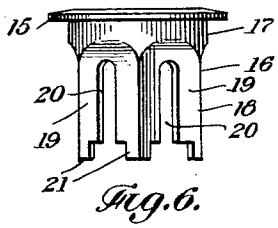


Fig. 6.

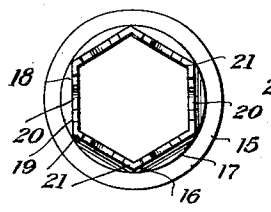


Fig. 7.

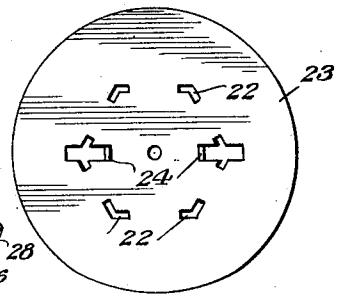


Fig. 10.

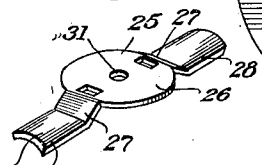


Fig. 8.

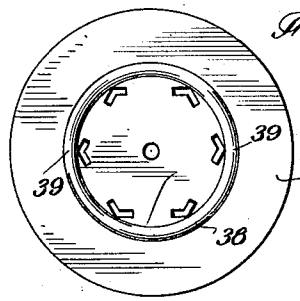
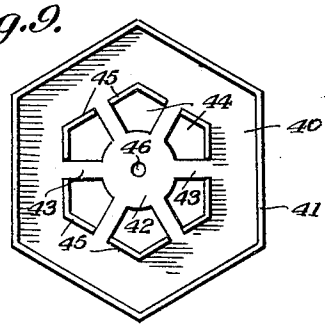


Fig. 9.



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Patented July 19, 1932 1,867,650

UNITED STATES PATENT OFFICE

ARTHUR W. BRYAN, OF TACOMA, WASHINGTON

GASOLINE TANK CAP LOCK

Application filed May 15, 1931. Serial No. 537,689.

This invention relates to improvements in caps or closures for fuel tanks or other containers and has for the primary object, the provision of a device of the above stated character which will effectively prevent theft of the contents of the tank or container and which may be easily and quickly applied to a tank or container now in use without alterations or special construction of the neck of the tank or container.

Another object of this invention is the provision of an effective securing means between the cap and the neck of the tank which will prevent unauthorized removal of the cap but which will permit convenient removal of said cap by employing a key or the like so that the tank may be filled whenever desired.

A further object of this invention is the provision of means to establish a leak-proof connection between the cap and the neck of the tank with suitable vent means which will prevent the escape of the contents of the tank due to splashing thereof.

A still further object of this invention is the provision of a cap or closure for tanks or containers of the above stated character which will be simple, durable and efficient and which may be manufactured and sold at a comparatively low cost.

With these and other objects in view, this invention consists in certain novel features of construction, combination and arrangement of parts to be hereinafter more fully described and claimed.

For a complete understanding of my invention, reference is to be had to the following description and accompanying drawings, in which

Figure 1 is a sectional view illustrating a cap occupying a position locked to the neck of a tank and constructed in accordance with my invention.

Figure 2 is a similar view illustrating the cap positioned ready to be removed from the neck of the tank.

Figure 3 is a sectional view taken on the line 3—3 of Figure 2.

Figure 4 is a similar view taken on the line 4—4 of Figure 2.

Figure 5 is a side elevation illustrating a supporting sleeve employed between the latching means and the cap.

Figure 6 is a bottom plan view illustrating the same.

Figure 7 is a plan view illustrating a closure disk.

Figure 8 is a plan view illustrating a vent disk.

Figure 9 is a plan view illustrating an operating plate.

Figure 10 is a perspective view illustrating a latching member.

Referring in detail to the drawings, the numeral 1 indicates a filling neck of a tank or container which has formed thereon retaining flanges 2 of arcuate shape in plan view as shown in Figure 3 and are transversely curved as shown in Figures 1 and 2 to be engaged by retaining fingers of a closure cap. The foregoing description relates to a well known type of neck for tanks or containers now in use and to which my invention may be easily and quickly applied without undue alterations.

A cap 3 of hollow formation has formed thereon an annular neck or flange 4 to receive the neck 1 as shown in Figures 1 and 2 and the cap is preferably constructed from plates 5 and 6 with their edges secured together as shown at 7. The plate 6 is concave and provided with a marginal flange 8 while the plate 5 is convex and provided with a flange 9 bent about the flange 8 to firmly secure the plates together in cap formation.

The plate 5 is provided with a centrally located key opening 10 for receiving a key 11 employed to operate the securing means between the cap and the neck 1 and which will be hereinafter more fully described.

A journalled plate 12 is suitably secured to

the inner face of the plate 5 of the cap 3 and has a centrally arranged opening positioned about the key opening 10 with a depending guide flange 13. A portion of the journal plate 12 is offset from the plate 5 of the cap 3 to form a bearing seat 14 engaged by an annular flange 15 formed on the upper end of the supporting member 16. The supporting member 16 is of hollow formation having a cylindrical portion 17 and a hexagonal shaped portion 18. The hexagonal shaped portion 18 provides angularly disposed faces 19 provided with slots 20 opening outwardly through the lower edge of the hexagonal shaped portion. The lower ends of the slots 20 are enlarged as shown in Figure 6 to form attaching lugs 21 received in angularly shaped slots 22 of a closure disk 23. The lugs when positioned within the slots 22 are headed or offset for the purpose of attaching the closure disk to the supporting member 16 and it also will be noted that the supporting member provides a rotatable connection between the closure disk and the cap 3.

The closure disk has struck out therefrom spaced guide posts 24 on which is slidably mounted the latch member 25 in the form of a disk 26 having oppositely disposed arms 27 formed integral therewith. The arms 27 are bent downwardly and outwardly from the disk 26 to provide finger portions 28 that are transversely curved to provide upper concave bearing portions 29 adapted to engage under the flanges 2 of the neck 1.

A pin or rod 30 is secured centrally to the closure disk and projects above and below the latter and has its lower end extended through a centrally arranged aperture 31 in the latch member 21 and has its lower end headed as shown at 32. The headed end of the rod 31 supports a washer 33 forming a seat for a coiled spring 34 that bears against the latching member and which urges the latching member toward the closure disk for the purpose of bringing the fingers 28 of the arms 27 in tight engagement with the flanges 2 of the neck 1. Having the convex faces 29 of the fingers 28 provides a construction which will permit the fingers to adjust themselves to the edges of the flanges 2 and adapted to compensate for wear between these parts during the use of the device.

A gasket 35 is secured to the closure disk 23 and seats against the edge of the neck 1 as shown in Figures 1 and 2 for the purpose of establishing a leak-proof connection between the closure disk and the neck. A vent disk 36 is slidably mounted upon the supporting member 16 and is held in tight engagement with the closure disk by the action of a coiled spring 37 mounted on the upper portion of the pin or rod 30. The vent disk 36 is of substantially the same size as the closure disk and is provided with an annular groove 38 provided with a vent opening 39 for the purpose of placing the interior of the tank or container under atmospheric pressure when the cap is applied to the neck. It is to be understood that the vent disk 36 is slidably mounted on the supporting member 16 and moves with the closure disk 23.

A hexagonal shaped operating plate 40 has formed upon its outer edge upstanding marginal flanges 41 and is centrally cut away to form a bearing plate 42 connected to the major portion of the operating plate by radially extending arms 43. The cut-out portion of the plate 40 provides a plurality of openings 44 with the outer walls of said openings of angular shape cooperating with each other in forming the inner edge of the major portion of the operating plate of hexagonal shape. Angularly disposed flanges 45 are formed on the inner edge of the major portion of the operating plate and form bearing surfaces to slidably engage the angularly related faces 19 of the hexagonally shaped portion 18 of the supporting member 16 with the arms 43 extending through the slots 20 and with the rod or pin 30 extending through the bearing plate by way of the opening 46. The bearing plate 42 engages one end of the coiled spring 37 for normally supporting the operating plate in a position as shown in Figure 1.

A keeper plate 47 is secured to the inner face of the plate 6 of the cap 3 and has a comparatively large opening 48 therein through which extends the supporting member 16 and the walls of the opening 48 are cut away to provide angularly related faces 49 to receive the flanges 41 of the operating plate when the latter is moved downwardly as shown in Figure 2 by the key 11 so that by turning the key the operating plate will be rotated imparting rotation to the cap, supporting member 16, and latching member 25, disengaging the arms 27 thereof from the flanges 2 of the neck 1 thereby disconnecting the cap from the neck 1.

The key 11 is adapted to fit between the arms 43 of the operating plate so that on turning the key the operating plate will move or rotate therewith. If desired, a suitable locking mechanism consisting of a key barrel may be mounted within the supporting member 16 and associated with the operating plate that on inserting a key in the key barrel, the locking plate may be depressed and rotated. It is to be understood that the key barrel and its mounting within the supporting member forms no part of this present invention and therefore is not shown.

With the cap applied to the neck 1 as shown in Figure 1 it is impossible to remove said cap from the neck without the employment of the key 11 and will provide a very effective closure for the neck permitting the neck of the tank to always be under atmospheric pressure through the vent openings

in the vent disk. The vent disk being so located that the splashing of the fluid within the tank and neck will be prevented from escaping.

While I have shown and described the preferred embodiment of my invention, it will be understood that minor changes in construction, combination and arrangement of parts may be made without departing from the spirit and scope of my invention, as claimed.

Having thus described my invention, what I claim is:

1. In combination with a filling neck of a tank and retaining flanges on said neck, a hollow cap receiving the neck and having a keyhole to receive an operating key, a supporting member journalled to the cap, a closure disk engaging the neck and secured to the supporting member, fastening means slidably secured to the closure disk and engaging under the flanges, and means under the influence of the key to secure the supporting member to the cap.

2. In combination with a filling cap of a tank and retaining flanges on said neck, a hollow cap receiving the neck and having a keyhole to receive an operating key, a supporting sleeve journalled in the cap, a closure disk mounted on said sleeve and engaging the neck, fastening means yieldably carried by the closure disk to engage under said flanges, and means under the influence of the key to establish a driving connection between the supporting sleeve and the cap.

3. In combination with a filling neck of a tank and retaining flanges on said neck, a cap receiving the neck and having a keyhole to receive an operating key, a supporting sleeve journalled to the cap, a closure disk secured to the sleeve, locking fingers yieldably secured to the closure disk and adapted to engage under the flanges and adapted to rotate with said supporting sleeve, and means under the influence of the key to establish a driving connection between the supporting sleeve and the cap.

4. In combination with a filling neck of a tank and retaining flanges on the neck, a cap receiving the neck and having a keyhole to receive an operating key, a supporting sleeve journalled to the cap, a closure disk secured to the sleeve and engaging the neck, guide posts carried by the closure disk, a latching member slidably mounted on the posts and adapted to engage under the flanges, and means under the operation of the key to establish a driving connection between the supporting sleeve and the cap.

5. In combination with a filling neck of a tank and flanges on said neck, a cap receiving the neck and having a keyhole to receive an operating key, a supporting sleeve journalled to the cap, a closure disk secured to the sleeve and engaging the neck, guide posts carried by the closure disk, a latching member slidably and yieldably mounted on the post and engaging under the flanges, and means under the influence of the key to establish a driving connection between the sleeve and the cap.

6. In combination with a filling neck of a tank and flanges on the neck, a cap receiving the neck, a supporting sleeve journalled to the cap, a closure disk secured to the sleeve and engaging the neck, guide posts carried by the closure disk, a rod carried by the closure disk, a latching member slidably mounted on the post and rod and engaging under the flanges, tension means carried by the rod and bearing against the latching member to urge the latter into engagement with said flanges, and means under the influence of the key to establish a driving connection between the sleeve and the cap.

7. In combination with a filling neck of a tank and flanges on said neck, a cap receiving the neck and having a keyhole to receive an operating key, a closure disk secured to the sleeve and engaging the neck, guide posts carried by the closure disk, a pin carried by the closure disk, a second disk slidably mounted on the pin and guide posts, oppositely disposed arms on said second disk to engage under the flanges, tension means carried by the pin and engaging the second disk to urge the arms into engagement with the flanges, and means under the influence of the key to establish a driving connection between the sleeve and the cap.

8. In combination with the filling neck of a tank and flanges on said neck, a cap receiving the neck and having a keyhole to receive an operating key, a supporting sleeve journalled to the cap, a closure disk secured to the sleeve and engaging the neck, guide elements on the closure disk, a second disk slidably mounted on the guide elements, oppositely disposed arms on the second disk and having portions thereof transversely curved to provide convex faces to engage the flanges, tension means for urging the second disk toward the closure disk, and means influenced by the key to establish a driving connection between the supporting sleeve and the cap.

9. In combination with a filling neck of a tank and flanges on said neck, a cap receiving the neck and having a keyhole to receive an operating key, a supporting sleeve journalled to the cap, a closure disk secured to the sleeve and engaging the neck, a gasket between the closure disk and neck, guide posts carried by the closure disk, a latching member slidable on the post and engaging under the flanges, tension means carried by the closure disk and urging the latching member toward said closure disk to bind the latter against the flanges, and means under the influence of the key to establish a driving connection between the supporting sleeve and the cap.

10. In combination with a filling neck of a

tank and flanges on said neck, a cap receiving the neck and having a keyhole to receive an operating key, a supporting sleeve journalled to the cap, a closure disk secured to said supporting sleeve and engaging the neck, posts struck out from said closure disk and providing passages through the disk, a latching member carried by said post to engage under the flanges, a vent disk mounted on the closure disk and carried by the supporting sleeve and having an annular groove with the walls thereof provided with vent openings, a gasket between the closure disk and the neck, and means influenced by the key to establish a driving connection between the supporting sleeve and the cap.

11. In combination with a filling neck of a tank and flanges on said neck, a cap receiving the neck and having a keyhole to receive a key, a supporting sleeve journalled to the cap, a closure disk secured to the sleeve and engaging the neck, a latching member slidably and yieldably secured to the closure disk to engage under the flanges, a keeper plate slidably secured to the supporting sleeve and normally disengaged from the keeper plate and adapted to be moved by the key to engage the angularly related faces of the keeper plate to establish a driving connection between the sleeve and the cap.

12. In combination with the filling neck of a tank and flanges on the neck, a cap receiving the neck and having a keyhole to receive an operating key, a supporting sleeve journalled to the cap, a closure plate secured to the sleeve and engaging the neck, a latching member yieldably and slidably secured to the closure disk to engage under the flanges, a keeper plate secured to the cap and having angularly related faces, and operating plate slidably secured to the supporting sleeve and having angularly related faces adapted to be brought into engagement with the first named angularly related faces by the key to establish a driving connection between the supporting sleeve and the cap, and a tension means between the closure disk and the operating plate to normally disengage the latter from the keeper plate.

13. In combination with the filling neck of a tank and flanges on said neck, a cap receiving the neck and having a keyhole to receive an operating key, a supporting sleeve journalled to the cap and having a slotted hexagonal shaped portion, a closure disk secured to the sleeve and engaging the neck, a latching member slidably and yieldably connected to the closure disk to engage under the flanges, a keeper plate secured to the cap and having angularly related faces, an operating plate having a cut-out portion to form a central bearing portion and radially extending arms with the arms extending through the slotted portion of the supporting sleeve, said bearing portion adapted to be engaged by the key, angularly related flanges formed on the operating plate, some of said flanges adapted to engage the angularly related faces of the keeper plate when in one position and the other flanges adapted to engage the hexagonal shaped portion of the supporting sleeve, and a tension means between the bearing portion and the closure disk for normally disengaging the operating plate from the keeper plate.

In testimony whereof I affix my signature.

ARTHUR W. BRYAN.