March 26, 1935. H. W. MORRIS 1,995,997

STORAGE TANK FILLING NECK CAP AND LOCK THEREFOR

Filed Feb. 23, 1933

FIG 1

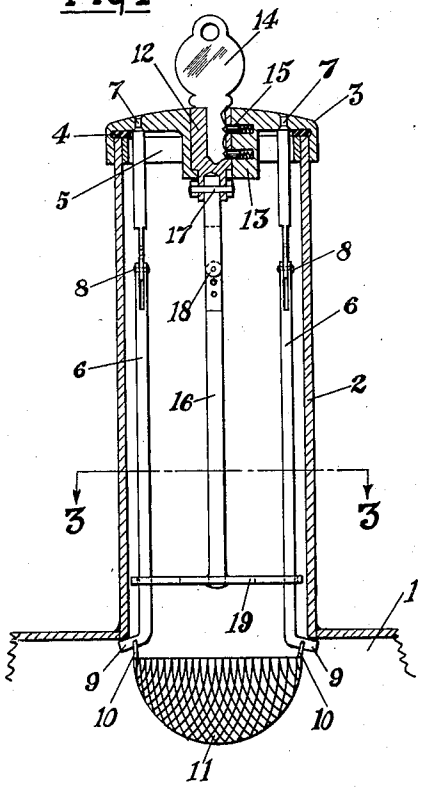


FIG 2

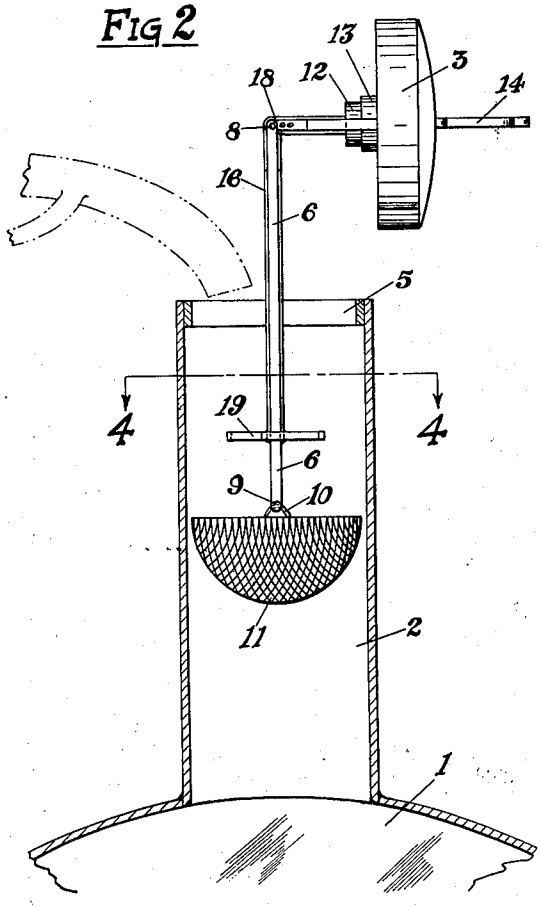


FIG 3

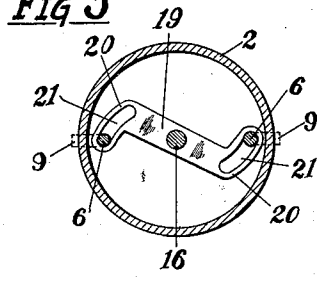
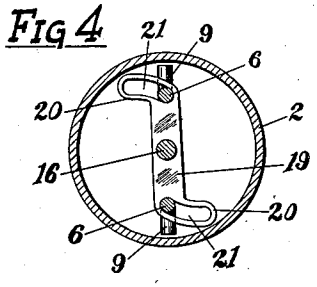


FIG 4



INVENTOR.
HERBERT W. MORRIS
BY
Jacobi & Jacobi ATTORNEYS.

Patented Mar. 26, 1935 1,995,997

UNITED STATES PATENT OFFICE

1,995,997

STORAGE TANK FILLING NECK CAP AND LOCK THEREFOR

Herbert W. Morris, Union, N. J.

Application February 23, 1933, Serial No. 658,215

9 Claims. (Cl. 220—86)

This invention relates to storage tanks and more particularly to a cap for the filling necks of the tanks and improved means for locking the cap in a closed position.

One object of the invention is to provide a device of this character which may serve as a cap for the filling neck of a storage tank, said cap being adapted to be securely locked in a closed position to prevent unauthorized removal thereof.

Another object of the invention is to provide the cap with improved means which will allow the cap to be swung from a position directly over the filling neck to one side thereof when released in order that gasoline or other fluid may be readily poured through the neck into the tank but at the same time retain the cap in a set position at one side of the neck and prevent it from falling upon the ground and becoming lost or covered with dirt.

A still further object of the invention is to associate with securing means for the cap a strainer which will not only prevent dirt and other foreign substances from passing through the filling neck into the tank but also prevent a pipe or hose from being passed inwardly through the neck and the gasoline or other liquid in the tank withdrawn.

Another object of the invention is to so construct the securing means for the cap that it may be adjusted to accommodate itself to the dimensions of the neck and thereby allow the cap to be applied to either a short or tall filling neck.

Another object of the invention is to so construct the securing means for the cap that it will be positive in its action and very effectively prevent removal of the cap until a lock carried by the cap is released.

A still further object of the invention is to provide an improved cap and securing means therefor which is very simple in construction, cheap to manufacture and efficient in its operation.

With these and numerous other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts as will be hereinafter referred to and more particularly pointed out in the specification and claims.

In the accompanying drawing forming a part of this application:

Figure 1 is a sectional view taken through a filling neck of a storage tank having a cap applied thereto provided with the improved securing means, the cap being in position to close the upper end of the filling neck and secured in this position;

Figure 2 is a view similar to Figure 1 showing the cap released and moved to one side in order that it will be out of the way when pouring gasoline or some other liquid into the tank;

Figure 3 is a sectional view taken transversely through the filling neck along the line 3—3 of Figure 1; and

Figure 4 is a sectional view taken along the line 4—4 of Figure 2.

In describing the invention, I shall refer to the drawing in which similar reference characters designate corresponding parts throughout the several views. The storage tank, a fragment of which is shown and indicated by the numeral 1 may be of any size desired and may be a tank such as used for carrying gasoline upon an automobile or a large tank used for transporting gasoline or other liquids or storing them at a filling station or other depot. The neck 2 extends upwardly from the tank and this neck may be of any diameter desired and also of any height. Its upper end receives a cap 3 in which is fitted a gasket 4 to form a tight joint when the cap is applied to the upper end of the neck and it will be understood that this cap may have threaded engagement with the neck or slide into and out of closing relation thereto. The ring 5 mounted in the upper end of the filling neck serves to increase the width of the bearing surface which bears against the gasket 4 in order to reduce wear upon this gasket and also serves to prevent entire separation of the cap from the filling neck in a manner to be hereinafter set forth.

In order to firmly secure the cap in the closed position shown in Figure 1, there have been provided arms 6 formed of strong, resilient metal. These arms extend longitudinally through the neck with their upper or outer ends riveted or otherwise firmly secured to the cap as shown at 7 and in spaced relation to their upper ends, the rods are formed with hinges 8 in order that after the arms have been drawn outwardly a sufficient distance to dispose the cap well above the filling neck, upper portions of the arms may be swung downwardly to a horizontal position and dispose the cap at one side of the neck as shown in Figure 2. Therefore, the cap will be out of the way and gasoline or other liquid may be easily poured into the neck to fill the tanks. The rods are of such length that when the cap is in closing relation to the upper end of the filling neck, hooks 9 formed by bending the lower ends of the arms will engage beneath the inner or lower end of the filling neck and constitute stops serving very effectively to prevent

upward movement of the arms and cap. Therefore, the cap will be very firmly held in a closed position and cannot be removed until the arms have been drawn toward each other to the position shown in Figure 4. When the arms are in the position shown in Figure 4, the distance between the ends of the hooks is such that they may pass upwardly through the filling neck and the cap may then be moved upwardly out of engagement with the neck and swung to one side where it will be out of the way. The hooks 9 serve not only as means for engaging beneath the lower end of the filling neck to retain the cap closed but also serve as supports for engagement by loops or hangers 10 at opposite sides of a screen or sieve 11 formed of wire mesh. This screen or sieve is somewhat similar to a strainer used when pouring tea from a pot and is of such diameter that it will pass freely through the filling neck. It is disposed close to the lower end of the filling neck when the cap is in place but intermediate the height of the filling neck when the cap is in the open position. Therefore, this strainer or screen may serve very effectively to prevent dirt and other foreign matter from entering the storage tank if it passes into the neck with the liquid poured therein and the screen will also serve as a baffle to prevent a hose from being passed downwardly through the filling neck and contents of the tank withdrawn by unauthorized persons. The screen or sieve may be drawn upwardly above the position shown in Figure 2, but it cannot be entirely withdrawn as the hooks or tongues 9 will engage the under edge face of the ring 5 and prevent the arms from having further upward movement. Therefore, although the cap may be drawn upwardly well above the filling neck and swung to one side of the neck where it will be out of the way, the arms will at all times have engagement with the neck and the cap will be supported and prevented from falling upon the ground where it is liable to be covered with dirt or lost.

In order to control movement of the arms into and out of a position in which the hooks or prongs may engage beneath the filling neck, there has been provided a lock having a barrel 12 rotatably mounted in a sleeve or lock casing 13 formed integral with the cap and projecting from the inner face thereof. The barrel 12 is located centrally of the cap with a keyhole at its outer end and by inserting a key 14 into the keyhole, tumblers of a conventional construction indicated by the numeral 15 will be moved to a releasing position in which the barrel will be freed and may be readily turned. A rod 16 extends axially of the barrel 12 with its upper end firmly pinned to the inner end of the barrel as shown at 17 and in spaced relation to its upper end, this rod is formed with a hinge 18 disposed between the hinges 8 of the arms 6. Therefore, when the cap is drawn upwardly to the position shown in Figure 2, the upper portion of the rod 16 may be swung to a horizontal position with the upper end portions of the arms. When the cap is in the closed position, the pivot pin of the hinge 18 extends at right angles to pivots of the hinges 8 but when the barrel of the lock is turned to a releasing position, the pivot pins will all be in alignment. Therefore, swinging movement of upper end portions of the rod and arms will not be interfered with.

At its lower end, the rod 16 carries a cam element or head in the form of a cross bar 19. This cross bar is formed of strong metal and is firmly riveted to the lower end of the rod. Referring to Figures 3 and 4, it will be seen that the cross bar projects from opposite sides of the actuating rod and at its ends has side extensions or fingers 20 slotted as shown at 21 to receive the arms 6. The fingers or side extensions extend diagonally and the slots are arcuate longitudinally. Therefore, when the barrel 12 and actuating rod are turned to move the arms 6 from outer ends of the slots 21 to the inner ends thereof, the arms 6 will be drawn towards each other to retract the hooks 9 to such a position that they may pass through the neck and permit the cap to be moved to an opened position. Turning the rod in an opposite direction when the cap is in place will restore the hooks to an extended position and secure the cap against removal.

From the foregoing description of the construction of my improved cap and lock therefor, the operation thereof and the method of applying the same to use will be readily understood. It will be seen that I have provided a simple, inexpensive and efficient means for carrying out the objects of the invention and while I have particularly described the elements best adapted to perform the functions set forth, it is obvious that various changes in form, proportion and in the minor details of construction may be resorted to, without departing from the spirit or sacrificing any of the principles of the invention.

Having thus described the invention, what is claimed is:

1. In combination with a storage tank having a filling neck, a cap for said neck, arms extending from said cap longitudinally in the neck and movable into and out of position to secure the cap closed, a strainer carried by said arms and movable through the neck with the arms, and means for adjusting said arms having a lock associated therewith for securing the same in a set position with the arms positioned to retain the cap closed.

2. In combination with a storage tank having a filling neck, a cap for said neck, arms extending from said cap longitudinally in the neck and having bills movable with the arms into and out of position to engage under walls of the neck at the lower end thereof to secure the cap closed, said arms being hinged intermediate their ends whereby their upper portions may be swung transversely after being drawn upwardly out of the neck to dispose the cap to one side of the neck, a strainer suspended from lower ends of said arms and movable with the arms through the neck into and out of position below the neck, and lock controlled means carried by said cap for moving the arms into and out of position to secure the cap closed.

3. In combination with a storage tank having a filling neck, a cap for said neck, arms extending from said cap longitudinally in the neck, said arms being hinged intermediate their ends whereby their upper portions may be swung transversely after being drawn upwardly out of the neck to dispose the cap to one side of the neck, and a strainer suspended from the lower ends of said arms and movable through the neck with the arms.

4. In combination with a storage tank having a filling neck, a cap for said neck, arms extending from said cap longitudinally in the neck, said arms being hinged intermediate their ends whereby their upper portions may be swung transversely

after being drawn upwardly out of the neck to dispose the cap to one side of the neck, said arms being of sufficient length to extend through the neck when the cap is in position to close the upper end of the neck, lower ends of the arms being provided with hooks to engage under walls of the neck at the lower end thereof and retain the arms against outward movement through the neck and hold the cap closed, means in the neck adjacent the upper end thereof for engagement by said hooks to limit upward movement of the arms through the neck, and lock controlled means engaging said arms for moving the same into and out of position for engagement of the hooks under the lower end of the neck.

5. In combination with a storage tank having a filling neck, a cap for said neck, arms extending from said cap longitudinally in the neck, said arms being hinged intermediate their ends whereby their upper portions may be swung transversely after being drawn upwardly out of the neck to dispose the cap to one side of the neck, lower ends of the arms being bent to form hooks to engage the neck and retain the arms against outward movement through the neck with the cap closed, a strainer suspended from said hooks and movable through the neck with the arms, and means for moving said arms into and out of position for engagement of the hooks with the neck having a key controlled actuating element carried by said cap.

6. In combination with a storage tank having a filling neck, a cap for said neck, arms extending from said cap longitudinally in the neck, said arms being hinged intermediate their ends whereby their upper portions may be swung transversely after being drawn upwardly out of the neck to dispose the cap to one side of the neck, lower ends of the arms being bent to form hooks to engage the neck and retain the arms against outward movement through the neck with the cap closed, a lock barrel extending centrally through said cap and rotatably mounted, an actuating rod extending from the inner end of said barrel axially thereof and having a hinge disposed between hinges of said arms, and means carried by said rod to engage said arms and move the arms into and out of position for engagement of the hooks with the neck to secure the cap closed.

7. In combination with a storage tank having a filling neck, a cap for said neck, arms extending from said cap longitudinally in the neck, said arms being hinged intermediate their ends whereby their upper portions may be swung transversely after being drawn upwardly out of the neck to dispose the cap to one side of the neck, lower ends of the arms being bent to form hooks to engage the neck and retain the arms against outward movement through the neck with the cap closed, a lock barrel extending centrally through said cap and rotatably mounted, an actuating rod extending from the inner end of said barrel axially thereof and having a hinge disposed between hinges of said arms, and a cross bar carried by said rod and projecting from opposite sides thereof with its ends formed with slots extending transversely of the cross bar at an incline and receiving said arms to move the arms when the barrel is rotated and bring the hooks into and out of position for engaging the neck and securing the cap closed.

8. In combination with a storage tank having a filling neck, a cap for said neck, arms extending from said cap longitudinally in the neck, said arms being hinged intermediate their ends whereby their upper portions may be swung transversely after being drawn upwardly out of the neck to dispose the cap to one side of the neck, lower ends of the arms being bent to form hooks to engage the neck and retain the arms against outward movement through the neck with the cap closed, a lock barrel extending centrally through said cap and rotatably mounted, an actuating rod extending from the inner end of said barrel axially thereof and having a hinge disposed between hinges of said arms, and a head carried by the inner end of said rod and formed with slots extending diagonally of the neck, said arms passing through said slots whereby rotation of the barrel and rod will impart movement to the arms and bring the hooks into and out of position for engaging the neck and securing the cap closed.

9. In combination with a storage tank having a filling neck, a cap for said neck, arms extending from said cap longitudinally in the neck, said arms being hinged intermediate their ends whereby their upper portions may be swung transversely after being drawn upwardly out of the neck to dispose the cap to one side of the neck, lower ends of the arms being bent to form hooks to engage the neck and retain the arms against outward movement through the neck with the cap closed, a lock barrel extending centrally through said cap and rotatably mounted, and actuating rod extending from the inner end of said barrel axially thereof and having a hinge disposed between hinges of said arms and a cam element carried by the inner end of said rod and engaging said arms to impart movement to the arms when the barrel and rod are rotated and move the hooks into and out of position for engaging the neck and securing the cap closed.

HERBERT W. MORRIS.