May 23, 1933. A. M. ELLIS 1,910,282

CLOSURE FOR TANKS

Filed Feb. 8, 1932

Fig. 1.

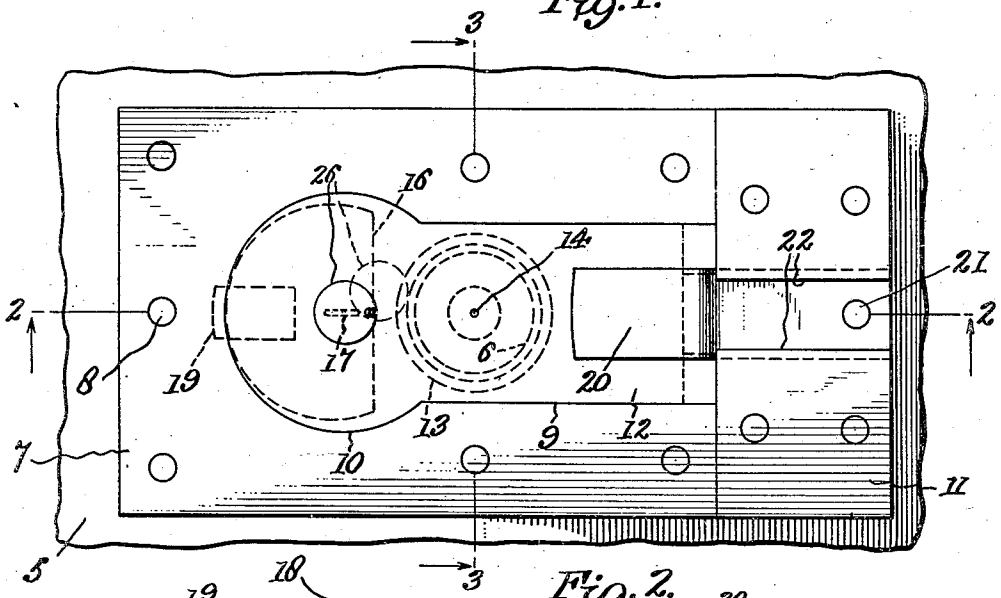


Fig. 2.

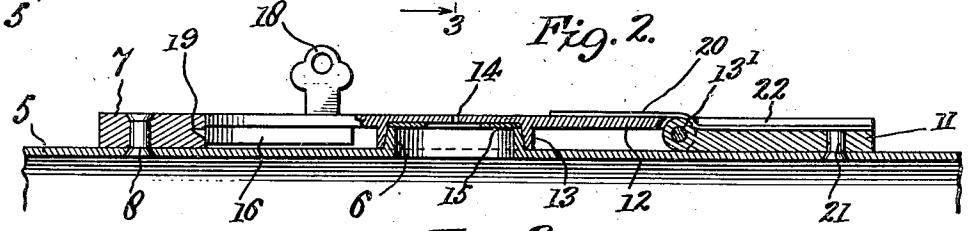


Fig. 3.

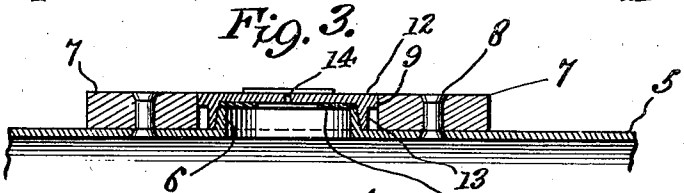
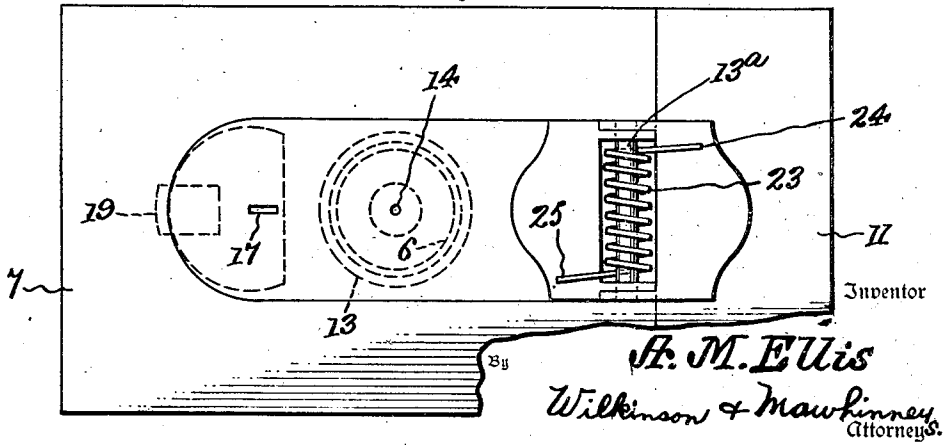


Fig. 4.



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UNITED STATES PATENT OFFICE

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CLOSURE FOR TANKS

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The present invention relates to improvements in closures for tanks, and more particularly refers to a closure for gasoline or other inflammable fluid tanks in which the closure will automatically seek a closed and preferably locked position to reduce as much as possible and eventually avoiding the hazard of fire and the likelihood of theft of the fluid.

Another object of the invention is to provide an improved cover for gasoline tanks as used on automobiles wherein a hinged spring closed locking cap is provided which is normally maintained by the spring in a locked condition, openable only by means of a key invested in an authorized person.

A further object of the invention is to provide an automatically closing cap for gasoline tanks, such as will spring to a closed position as soon as the supply hose nozzle is withdrawn.

A still further object of the invention is to provide such an automatically closing cap for gasoline or other tanks where the automatic closing of the cap will act to reduce fire hazard by cutting off the supply of oxygen and, therefore, stifling any fire that may have been started in the inflammable fluid.

With the invention the danger of fire in case of a wrecked car is also very much reduced inasmuch as the cap would not come off the tank and gasoline would not be lost or spilled unless, of course, the tank itself was broken in the accident.

It is a still further object of the invention to produce an automatic cap assembly which will be a part of the tank itself, installed at the time of manufacture of the tank, so as to be an integral part of the tank or other container at the time of manufacture; and will consist of few parts not causing damage to the tank at the time of installation, but acting to reinforce the tank particularly about the filling neck.

A still further object of the invention is to provide a device which has no connection with the intake neck, but which is a part of the tank and cooperates with the intake neck without forming any considerable enlargement or obstruction projecting beyond the end of the filling neck.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawing, wherein like symbols refer to like or corresponding parts throughout the several views,

Figure 1 is a fragmentary top plan view of a tank showing the improved device installed thereon.

Figure 2 is a longitudinal section taken on the line 2—2 in Figure 1.

Figure 3 is a transverse section taken on the line 3—3 also in Figure 1, and

Figure 4 shows a top plan view, partly broken away indicating a modification.

Referring more particularly to the drawing, 5 represents a gasoline or other tank or container, and 6 indicates the usual filling neck extending about the filling opening of the tank except that the filling neck is preferably very short and extends only a small distance from the plane of the tank wall from which it emerges. The filling neck is also beveled as to its exterior wall, tapering outwardly.

In accordance with the invention a base plate 7 is secured permanently to the tank 5 about the filling neck 6. Rivets 8 are shown as securing the base plate 7 to the tank, but it will be understood that such base plate may be welded or otherwise affixed to the tank. The base plate 7 is a wide long plate and while solid, except for the slot hereinafter mentioned, it is of very little height above the short filling neck 6 in order to make a compact and strong assembly with the tank and

to avoid objectionable projections extending beyond the tank.

In the base plate 7 is formed an elongated slot 9 having laterally enlarged spaces 10 at its inner end.

The slot 9 preferably opens through one end of the base plate 7 but at this point the slot is closed by a companion hinge plate 11, which may be of the same thickness as the base plate 7 and of an equal width but of materially less length. To the hinge plate is hingedly or movably secured a cap or closure plate 12. A hinged pintle in this instance is shown at 13'. The cap plate 12 is so proportioned and constructed that it will accurately conform to the slot 9 and to its circular enlargement 10, so that the cap plate may fit flush within the base plate 7 when in its closed locking position as indicated in the drawing.

The cap plate 12 carries a flange 13 which is of annular form to conform to the usual character of the filling neck 6, and which is beveled to conform to the bevel of the filling neck in order to form an accurate fit. This flange 13 extends from an intermediate portion of the cap plate 12 in which intermediate portion are one or more perforations or holes 14 to permit of the proper breathing of the tank; for instance, for the purpose of admitting air to relieve the vacuum as fuel is withdrawn from the tank under suction demands of the motor.

Within the flange 13 there may be provided a gasket 15 of felt, rubber or other suitable material for taking against the mouth of the filling neck 6 in order to form a tight joint.

The cap plate 12 has an enlargement at its free end conforming to the enlargement 10 of the slot 9, so as to accurately fit the same and also to provide ample space in which to house the lock mechanism, indicated at 16, a key hole thereto being indicated at 17 in which is inserted the key 18. A latch 19 of the usual reciprocating form is indicated at 19 and is carried by the cap plate 12 and as cooperating with a striker socket in the base plate. The nose of the latch 19 is so beveled that it will be automatically retired by the act of closing the cap plate; after which the latch will, of course, be automatically projected into the striker socket. The key 18, carried only by the owner of the automobile or some other authorized person will enable the latch 19 to be withdrawn and the cap plate 12 lifted, so as to give access to the filling neck for the purpose of inserting a hose nozzle at a gasoline filling station. A flat spring 20 is secured to the hinged plate 11 by any suitable means, for instance, by a rivet 21 and it lies in a counter-sunk portion 22 of the plate 11 and along and against a portion of the cap plate 12, acting to automatically close the cap plate and return the cap plate to closed position after the hose nozzle is removed from the filling neck.

In Figure 4, I have shown an alternative form of spring in which the coil spring 23 is wound about the pintle 13a having one end 24 disposed against the hinged plate 11 and the other end 25 against the cap plate 12, thus exerting at all times the potential energy stored in its wound convolutions 23 which are under tension when the cap plate is lifted and which will, therefore, tend to unwind and close the cap plate when the lifting force is removed.

The cap plate will, therefore, be locked at all times in order to prevent theft of the gasoline by siphoning from the tank; and fire will be eliminated by the automatic closure of the tank and by the same token any fire already started in the tank will be extinguished by the automatic closure of the cap when the filling nozzle is removed as such tank will shut off further access of oxygen.

It is conceivable that the lock might be dispensed with and merely a spring latch 19 maintained in which case a knob for retracting the latch 19 would project out through the key hole slot 17.

The recess 10, while being shown as substantially circular in the drawing may of course be elliptical, square or of other form.

If automatic closing of the device is not desired, the same arrangement may be used without the spring or the latch 19. A pivoted cover 26 is also preferably provided for the keyhole 17 to prevent the entry of water in inclement weather and the resultant ice freezing in the hole in cold weather.

If the gas tank is covered by an apron or other metal covering, the base and hinge plates will be fastened to the apron or covering; and the filling neck will extend through the apron, or covering a sufficient distance to form the joint, just as if the plates were fastened directly to the tank itself.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claims:—

What is claimed is:—

1. In combination with a tank having a short filling opening and a filling neck projecting up from the opening with a bevel exterior wall, a thin flat base plate secured permanently to the tank about the filling neck and being only slightly greater in height than the filling neck, said base plate having an elongated slot extending on both sides of the filling neck, a hinge plate secured permanently to the tank, a closure cap hinged to said hinge plate and fitting flush within the slot in the base plate and having a flange to close against said filling neck, spring means for automatically moving said closure cap to a

closed position, and a latch between said closure cap and base plate.

2. In combination with a tank having a filling opening and a short tapering filling neck projecting up from the tank about the opening, a flat base plate permanently secured to the tank and having an elongated slot extending to both sides of said filling opening with a laterally enlarged space at the inner end of said slot, a hinge plate permanently secured to said tank at one end of the base plate and closing the slot at this end, a cap plate hinged to said hinge plate and adapted to fit flush into said slot, said cap plate having at its intermediate portion an annular flange projecting inwardly with an inner bevel wall fitting snugly about the filling neck, the intermediate portion of the cap plate circumscribed by said annular flange being perforated, a gasket carried by the cap plate within said flange in position to engage against said filling neck, spring means to urge the cap plate to a closed position, said cap plate having an enlarged head portion for fitting into the enlarged spaces of the slot in the base plate, and a latch between the head portion of the cap plate and said base plate.

3. In combination with a tank having a filling opening and a short tapering filling neck projecting up from the tank about the opening, a flat base plate permanently secured to the tank and having an elongated slot extending to both sides of said filling opening with a laterally enlarged space at the inner end of said slot, a hinge plate permanently secured to said tank at one end of the base plate and closing the slot at this end, a cap plate hinged to said hinge plate and adapted to fit flush into said slot, said cap plate having at its intermediate portion an annular flange projecting inwardly with an inner bevel wall fitting snugly about the filling neck, the intermediate portion of the cap plate circumscribed by said annular flange being perforated, a gasket carried by the cap plate within said flange in position to engage against said filling neck, spring means to urge the cap plate to a closed position, said cap plate having an enlarged head portion for fitting into the enlarged spaces of the slot in the base plate, a latch carried by the head portion and adapted to interlock with said base plate, and a lock carried by said head portion for securing the latch in closed position.

4. In combination with a gasoline tank for automobiles having an opening in its upper portion and a short filling neck extending upwardly about said opening, a base plate separate and distinct from said neck and extending to a substantial area over the upper wall of the tank about said neck, said base plate being flat and wide, means for permanently securing said base plate to the upper wall of the tank, said base plate having an elongated opening extending at its sides and ends away from said filling neck and receiving the filling neck in said slot, a flat wide hinge plate extending over a substantial area of the upper wall of the tank and permanently secured to the tank abutting said base plate, a cover plate hinged to said hinge plate and adapted to move down flush into said slot and having means for fitting about and closing the filling neck, spring means for tending to close said closure plate, and locking means between the closure plate and said base plate.

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