A. G. HURDMAN.

FLUID CONTROL FOR TANKS.

APPLICATION FILED AUG. 15, 1910. RENEWED FEB. 9, 1912.

1,068,773.

Patented July 29, 1913.

2 SHEETS—SHEET 1.

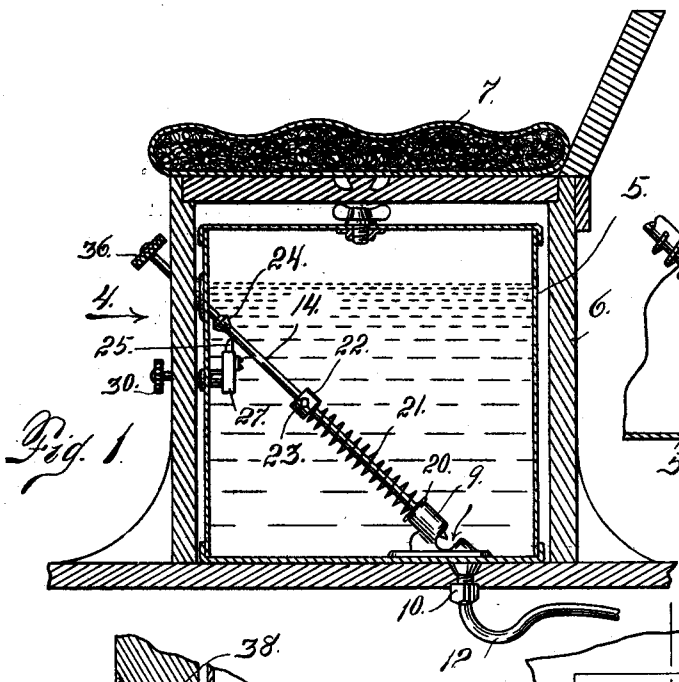


Fig. 1.

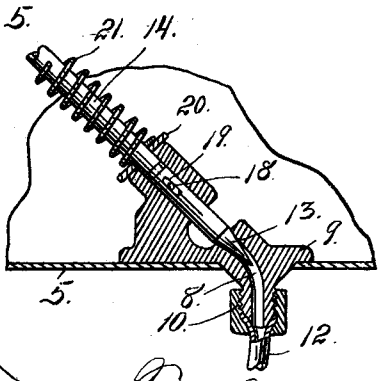


Fig. 2.

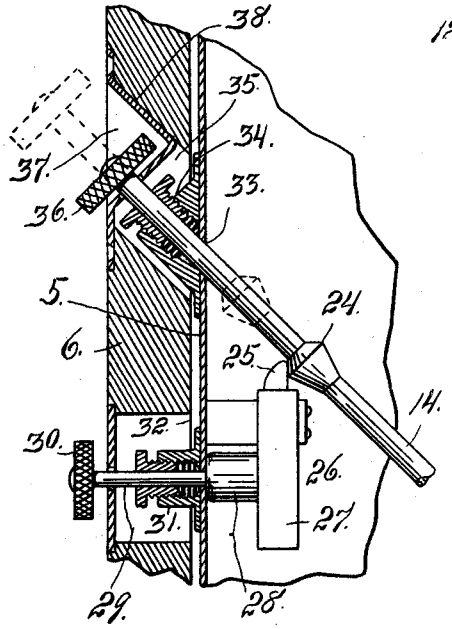


Fig. 3.

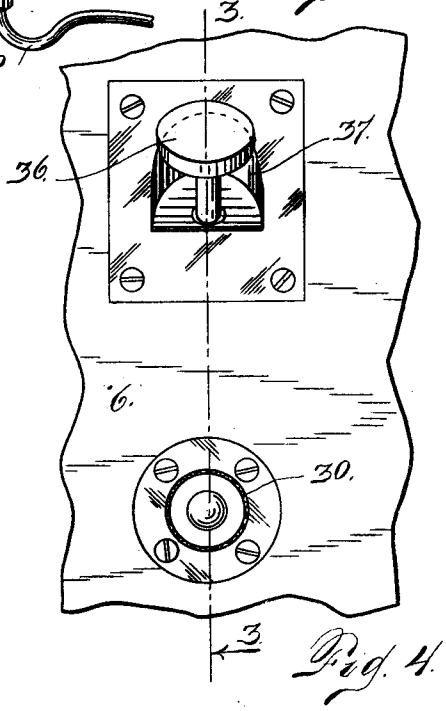


Fig. 4.

Witnesses

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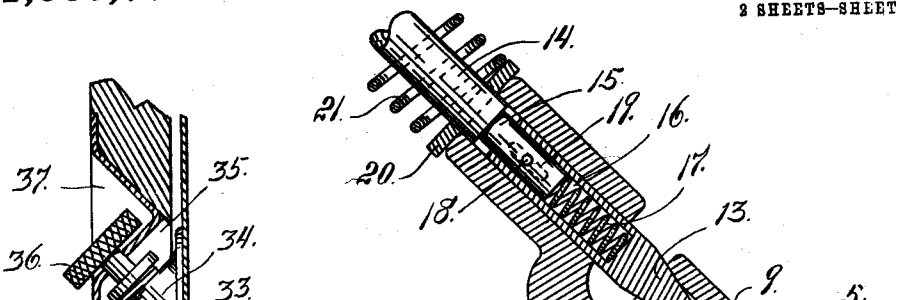


Fig. 5.

Fig. 6.

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FLUID CONTROL FOR TANKS.

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To all whom it may concern:

Be it known that I, ALLAN G. HURDMAN, a subject of Great Britain, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Fluid Controls for Tanks; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in fluid controls for tanks.

The invention while it may be employed in other relations, is more especially adapted for use in connection with the gasolene tanks of automobiles. By virtue of my improved construction, it becomes practicable for the owner of the machine to lock the valve controlling the escape of gasolene from the tank to the carbureter, so that it becomes practically impossible for a thief to successfully steal the machine, since he will be unable to supply the same with the necessary explosive mixture for operating the engine, as he cannot supply the carbureter with gasolene from the tank. In order to render it practically impossible for an evilly disposed person to open the valve of the gasolene tank, I prefer to employ a combination lock for locking the valve stem in the closed position, the said lock being located inside the tank, but having an exteriorly located knob for manipulating purposes.

Having briefly outlined my improved construction, I will proceed to describe the same in detail, reference being made to the accompanying drawing in which is illustrated an embodiment thereof.

In this drawing: Figure 1 is a vertical section taken through a gasolene tank equipped with my improvement, the tank being shown underneath a seat of the automobile. Fig. 2 is a fragmentary detail view showing the tank in section where the valve and tank escape opening are located, the parts being shown on a larger scale. Fig. 3 is a fragmentary vertical section taken through the tank on the line 3—3 Fig. 4. Fig. 4 is a fragmentary elevation of the tank looking in the direction of arrow 4, Fig. 1. Fig. 5 is a sectional detail view of the valve mechanism, the parts being shown on a still larger scale. Fig. 6 is a section taken through the tank illustrating a modified form of construction.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate a gasolene tank surrounded by a casing 6, forming a support for the seat 7 of an automobile or horseless vehicle. This tank is provided with an escape opening 8 formed in a reinforced valve seat 9 and extending downwardly through a coupling 10 to a pipe 12 leading to the carbureter of the machine (not shown.) The valve seat 9 is adapted to be engaged by a cone-shaped valve 13, which is telescopically connected with a valve rod 14 having a reduced lower extremity 15 which enters a hollow portion 16 extending above the valve proper. Between the reduced part 15 of the valve stem and the bottom of the hollow portion of the valve, is interposed a coil spring 17, which is normally under tension, to insure the seating of the valve, for reasons hereinafter explained. The valve rod is connected with the hollow member of the valve by a pin 18 passing through a slot 19 formed in the sleeve on opposite sides thereof, to allow the sleeve or hollow portion of the valve a limited degree of longitudinal movement on the valve rod, or with respect thereto. Above the valve seat 9, which as illustrated in the drawing is inclined at an angle of about forty-five degrees, is located a washer 20 which is engaged by the lower extremity of a coil spring 21, whose opposite extremity engages a stop 22 adjustably mounted on the valve rod by a set bolt 23. This valve rod, above the stop 22, is provided with a knob or button 24, which when the valve is closed, occupies a position in engagement with the protruding extremity of a latch 25, forming a part of a lock 26 having a casing 27, the bolt being controlled by combination mechanism 28 operated by the rotation of a spindle 29, whose outer extremity is equipped with an exposed manipulating knob 30. The spindle after leaving the combination mechanism 28, passes through a stuffing box 31 located within a recess or cavity 32 formed in the casing, thus surrounding the gasolene tank as heretofore explained.

When the valve is closed and the button

24 on the valve rod is moved downwardly to the position shown in Fig. 3 and the combination is thrown off, it is evident that a person who knows the combination can manipulate the lock and withdraw the bolt for the purpose of allowing the valve rod to move longitudinally sufficiently for valve-opening purposes. Above the stop button 24, the valve rod passes through an opening 33 formed in the wall of the gasolene tank and also passes through a stuffing box 34 applied to an opening formed in the wall of the casing, the latter being recessed as shown at 35 for the purpose. The outer extremity of the valve rod is exposed and provided with a head 36 for convenience of manipulation. When the valve is closed the head of the valve rod is partly located within a socket 37 formed in one wall of the casing 6, the said socket being lined with an angle plate 38. In this form of construction, when it is considered advisable to close the valve, it is only necessary for the person in charge of the machine to push the head 36 inwardly from the dotted line position in Fig. 3 to the full line position in the same figure. This will cause the button 24 of the valve rod to engage the protruding extremity of the latch 25, which action will force the latch inwardly until the button passes the same, after which the latch will spring out into locking engagement with the button 24. Now as this latch can only be withdrawn by manipulating the lock combination, it being assumed that the combination is thrown off at the time the valve is closed, it will be impossible for an evilly disposed person to open the valve, since he does not know the combination, hence he cannot steal the machine for obvious reasons.

It will be understood that in closing the valve by shoving the outer extremity of the valve rod into the socket 37, it may sometimes happen that the button 24 will be moved past the latch 25 of the lock, in which event it is evident that as soon as the pressure ceases to act upon the valve rod, the spring 21 will move the rod upwardly until the button is brought into engagement with the protruding extremity of the latch. If this upward movement resulted in imparting a corresponding movement to the valve 13, the valve would of course be open, allowing gasolene to pass immediately to the carbureter. In order to avoid the possibility of this result, I employ the spring 17 interposed between the valve and the valve rod, the two parts being capable of a limited degree of independent movement. Now if it be assumed that when the valve is thrust against its seat, the button 24 will move inwardly past the protruding extremity of the latch 25 so that there is a space between these two elements, the spring 21 may act on the stop 22 to actuate the rod sufficiently to bring the button into engagement with the latch, without unseating the valve, since the tension of the spring 17 will be sufficient to hold the valve in the seated position, the tension of the spring being such that it will not be exhausted after the valve rod has ceased to move upwardly for the aforesaid purpose.

In the form of construction shown in Fig. 6, a portion 39 of the valve rod is threaded to engage a threaded portion 40 of a guide sleeve 41 located above the valve seat 42. In this case in order to seat the valve, the valve rod must be turned in order to thread it into the guide sleeve, and by the time the valve is seated, the button 24 of the rod will be in retaining engagement with the bolt 25 of the lock, the parts being arranged to produce this result. Then if it be assumed that the combination of the lock is thrown off, it is evident that the valve cannot be opened except by manipulating the combination of the lock and withdrawing the bolt 25 into the casing of the lock and out of the path of the button 24. Hence in order to open the valve, the lock bolt must be retracted or drawn into the casing, after which the valve rod may be moved upwardly by unscrewing the rod from the guide sleeve 21.

Having thus described my invention, what I claim is:

1. The combination with a tank having an escape opening, of a valve rod movable in the tank to open and close the valve, the valve being detachably connected with the valve rod and the two parts having a limited degree of longitudinal movement independently of each other, a spring interposed between the valve and valve rod, a second spring acting on the valve rod and adapted to move it in a direction to open the valve, and a lock located within the casing, but operable from the outside thereof, the lock having a bolt adapted to act on the valve rod to hold the valve in the closed position, substantially as described.

2. The combination with a liquid-containing tank having an escape opening, a valve and valve rod connected to have a limited degree of independent movement, a spring interposed between the two elements, and a second spring connected with the rod and adapted to move it in a direction to open the valve, the first named spring, however, being under sufficient tension that it will maintain the valve in its seated position, while the second spring is acting to impart the aforesaid movement to the valve rod, substantially as described.

3. The combination with a liquid-containing tank having an escape orifice, a valve for controlling the escape of liquid from the tank, a valve rod connected with the valve having a limited degree of independent movement, a spring interposed between the

valve and valve rod, a second spring acting on the valve rod to move it in the valve-opening direction, the first spring having sufficient tension that it is not exhausted when the independent movement of the valve rod is exhausted, and means for locking the valve rod in position corresponding with the seated position of the valve, substantially as described.

4. The combination with a liquid-containing tank having an escape orifice, a valve for controlling the escape of liquid from the said orifice, a valve rod connected with the valve to have a limited degree of independent movement, a spring interposed between the valve and valve rod and adapted to hold the valve against its seat while the valve rod is moving a limited distance in the valve-opening direction, the valve rod having an exposed extremity for manipulating purposes, and a lock located within the tank but operable from the outside thereof, whereby the bolt of the lock is actuated to lock the valve rod in a position corresponding with the seated position of the valve, substantially as described.

5. The combination with a fluid-containing tank having an escape orifice, a valve adapted to close the said orifice, a valve rod connected with the valve, the valve rod being longitudinally movable in the tank and having its outer extremity exposed for manipulating purposes, and a lock having a bolt, the lock being operable from the outside of the tank to actuate the bolt, the valve rod having a stop button adapted to be engaged by the bolt to lock the valve in the seated position, substantially as described.

6. The combination with a liquid-containing tank having an escape orifice, of a valve for controlling the escape of liquid through said orifice, a longitudinally movable valve stem connected with the valve, a spring acting on the valve stem and tending to move it to open the valve, and means arranged to be brought into operation after the said spring has been compressed for positively forcing the valve to its seat.

7. The combination with a liquid containing tank having an escape orifice, of a valve for controlling the escape of liquid through said orifice, a longitudinally movable valve stem connected with the valve, a spring acting on the valve stem and tending to move it to open the valve, means arranged to be brought into operation after the said spring has been compressed for positively forcing the valve to its seat, and a lock for holding the valve stem in its valve-seated position.

8. The combination with a fluid-containing tank having an escape orifice, a valve adapted to close the said orifice, a valve rod connected with the valve, the valve rod being longitudinally movable in the tank and having its outer extremity exposed for manipulating purposes, and a lock comprising a retaining member, the lock being operable from the outside of the tank to actuate the retaining member, the valve rod having a stop button adapted to be engaged by the retaining member to lock the valve in the seated position.

In testimony whereof I affix my signature in presence of two witnesses.

ALLAN G. HURDMAN.

Witnesses:

A. J. O'BRIEN,

F. E. BOWEN.