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VALVE OPERATING MECHANISM FOR TANKS.

APPLICATION FILED OCT. 26, 1910. RENEWED JULY 25, 1912.

1,056,421.

Patented Mar. 18, 1913.

2 SHEETS—SHEET 1.

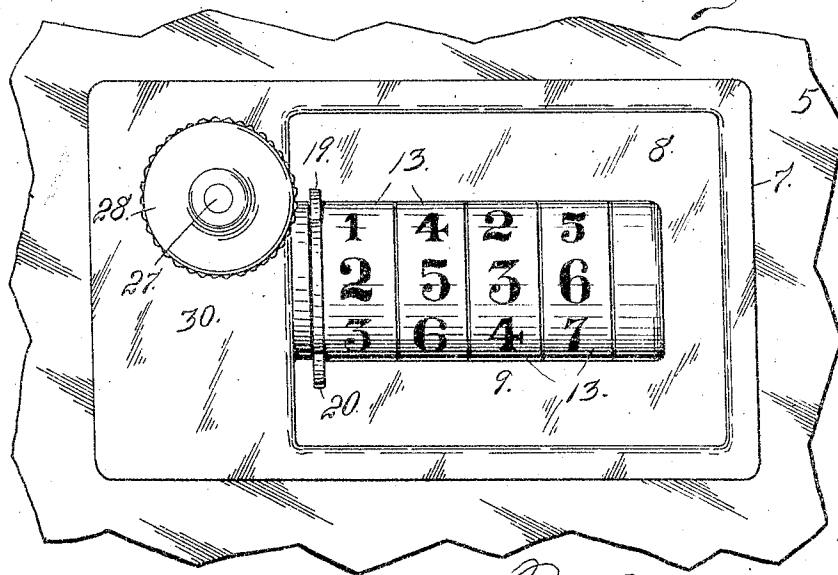
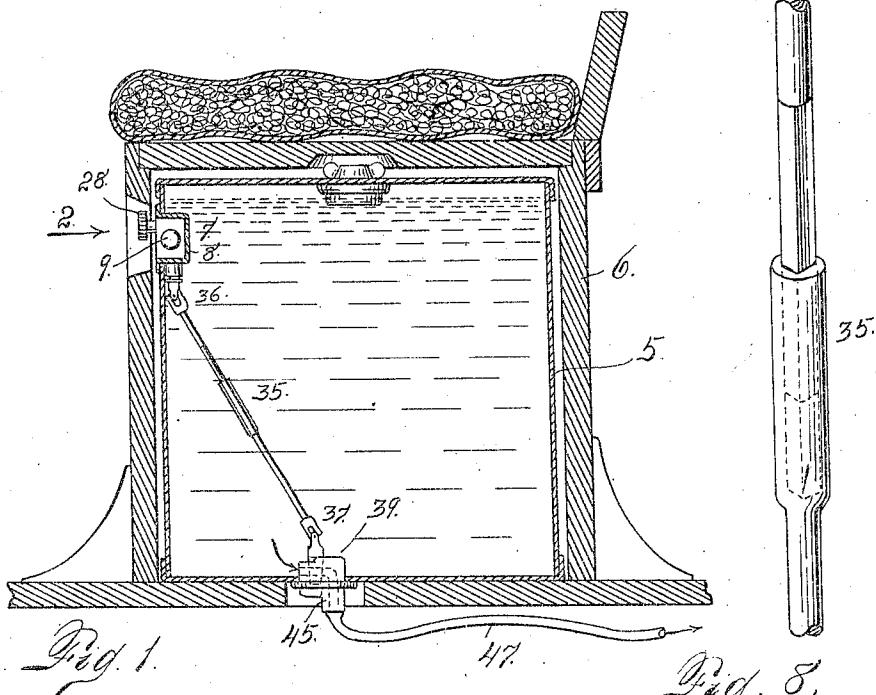


Fig. 2.

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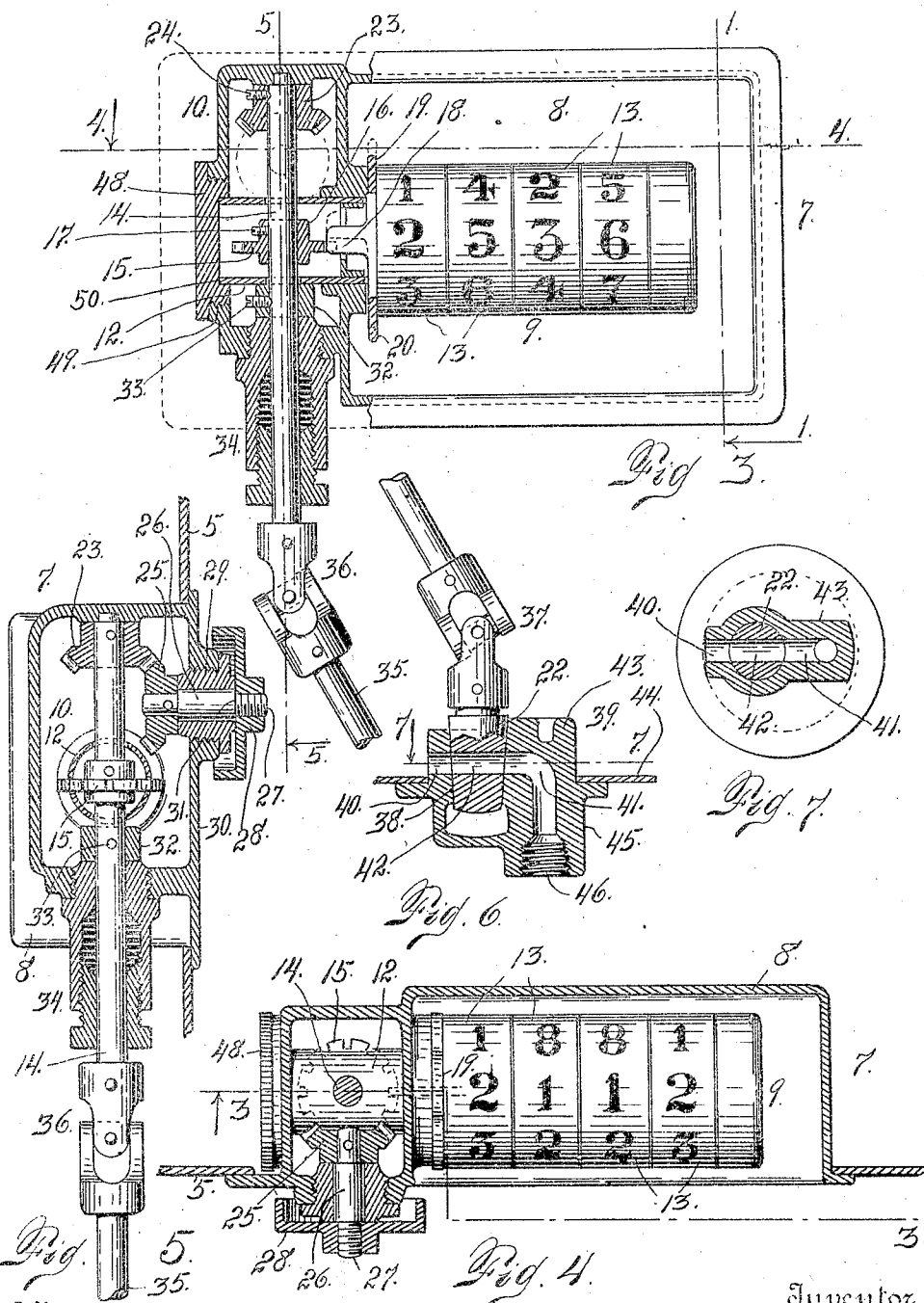
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VALVE-OPERATING MECHANISM FOR TANKS.

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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 Valve-Operating Mechanism 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 valve operating mechanism for tanks, being more especially intended for use in connection with gasoline tanks of automobiles.

My object is to make it impracticable for an unauthorized person to open the valve which controls the flow of gasoline from the tank to the carbureter, thus making it impossible for such a person to operate the machine.

In my improved construction the valve operating spindle enters a closed casing into which extends a part of a permutation lock, the said part, which I will call the pallet, being normally interlocked with a toothed disk fast on the said spindle. The tumbler portion of this lock, or the part containing the movable members, which must be manipulated to solve the combination, is exposed for the purpose, and after they are properly manipulated the pallet may be actuated to disconnect it from the toothed disk of the spindle, thus allowing the latter to be operated by turning an exposed knob or hand piece having an operative connection with the concealed portion of the spindle. The entire casing carrying the aforesaid valve operating mechanism is set into, an opening formed in the tank, only the operating knob protruding beyond the wall of the tank. The portion of the casing where the tumbler member of the lock is located is depressed to form a chamber for such portion of the lock, but the latter does not protrude beyond this chamber, though the latter is open to allow the hand to enter in order to manipulate the tumblers.

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 section taken through a liquid-containing tank equipped with my improved valve operating mechanism. In this view the section cuts the lock casing on the line 1—1 Fig. 3, the parts, however, being shown on a smaller scale. Fig. 2 is a fragmentary front view of a tank equipped with my improvement, being a view looking in the direction of arrow 2, Fig. 1, shown on a larger scale. Fig. 3 is a front view of the mechanism partly in vertical section, taken on the line 3—3 Fig. 4. Fig. 4 is a horizontal section taken on the line 4—4 Fig. 3, looking downwardly. Fig. 5 is a section taken on the line 5—5 Fig. 3. Fig. 6 is a sectional view in detail illustrating the valve mechanism, the same being shown on a larger scale than in Fig. 1. Fig. 7 is a section taken on the line 7—7 Fig. 6. Fig. 8 is a fragmentary enlarged view of the valve-operating rod, one member of which is centrally enlarged and made hollow to form a telescopic connection with the other member of the rod.

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

Let the numeral 5 designate a liquid-containing tank which as shown in the drawing is surrounded by an outer casing 6. In Fig. 1 the member 5 is supposed to be a gasoline tank located underneath the seat of an automobile, the tank proper being surrounded by a wood casing 6.

The more important part of the valve operating mechanism is carried by a casing 7, which is depressed or bent inwardly to form an open chamber 8 into which the tumbler member 9 of the permutation lock protrudes, the said lock member being exposed within the open chamber 8 for manipulating purposes. At one end of the chamber 8 is a closed casing member 10 which in an integral part of the casing. The permutation lock of which the tumbler member 9 forms a part, is provided with a cylinder 12 upon which the tumblers 13 are mounted, the said cylinder, however, extending beyond the tumblers and entering the casing part 10. A valve operating spindle member 14 enters the part 10 of the casing and is journaled therein, occupying as illustrated in the drawing, a vertical position. This spindle mem-

ber 14 passes through openings formed in the cylinder 12. Made fast to the spindle 14 within the cylinder 12 is a toothed disk 15 having a hub 16 to which a set screw 17 is applied for the purpose of securing the disk upon the spindle. The pallet or movable member of the permutation lock, has one extremity 18 which extends into the casing part 10 and is adapted to engage the teeth of the disk 15, when the device is in the locked position. This pallet is provided with top and bottom projections 19 and 20 which are formed integral with the pallet and protrude respectively above and below the tumbler member 9 of the lock within the chamber 8. When the tumblers 13 are manipulated to release the pallet, the latter may be moved upwardly to the dotted line position (see Fig. 3) out of engagement with the toothed disk 15, by pressing upwardly upon the projection 20. While the pallet is held in this position, the spindle member 14 may be rotated for the purpose of operating a valve 22, as hereinafter more fully explained.

To the upper extremity of the spindle 14 a beveled pinion 23 is made fast by a set screw 24. This pinion meshes with a similar pinion 25 secured to the inner extremity of a short spindle 26 extending at right angles to the spindle 14. This spindle 26 protrudes beyond the casing part 10 and terminates exteriorly in a reduced threaded part 27 upon which is screwed an operating knob or disk 28. The spindle 26 passes through a bearing 29 threaded into an opening formed in the front wall 30 of the casing member 10. The knob or disk 28, when the parts are assembled, engages a shoulder 31 formed on its spindle, and also bears against the outer extremity of the bearing 29.

Below the cylinder 12, the spindle 14 is provided with a collar 32 which is made fast thereto by a set screw 33. Connected with the lower extremity of the casing member 10 is a stuffing box 34 through which the spindle 14 passes in order to form a fluid-tight joint around the spindle and prevent the possibility of leakage from the tank when the latter is filled with liquid.

The lower protruding extremity of the spindle 14 is connected with a valve-operating rod 35 by a universal joint 36, the opposite extremity of the rod 35 being connected by means of a similar joint 37 with the valve piece 22, the latter being seated in an opening 38 formed in a valve block 39, the latter having passages 40 and 41 adapted to register with an opening 42 formed in the valve piece, when the latter is adjusted to allow the liquid to flow from the tank. This valve block 39 has a part 43 which extends above the bottom 44 of the tank; and has a part 45 protruding beyond the tank. (See Figs. 1 and 6.) The passage 40 of the valve block 39 is within the tank, while the outer extremity

of the passage 41 extends through the portion of the valve block beyond the tank and terminates in a threaded opening 46 adapted to be connected with a flexible conduit 47 leading from the tank and adapted to carry the liquid to the carbureter (not shown) of an automobile.

From the foregoing description it will be understood that the valve piece 22 may be manipulated by turning the exposed knob 28, when the tumblers 13 have been properly manipulated, to permit the lifting of the pallet extremity 18 out of engagement with the toothed disk 15 mounted on the spindle 14, since the short knob or spindle 26 is connected in operative relation with the spindle member 14, by the gears 25 and 23.

As nothing is claimed in this application upon the specific permutation lock mechanism, the same is not described in detail. It may be stated, however, that in assembling the lock in connection with the valve operating mechanism, a threaded disk or plate 48 is inserted in an opening 49 formed in the casing part 10 and in alinement with the cylinder 12, the said plate 48 having a recess 50 into which the adjacent extremity of the cylinder 12 extends. Hence this plate 48 forms the support for one extremity of the said cylinder member.

As illustrated in the drawing the tumblers 13 of the lock mechanism are provided with numerals, which may be employed to facilitate the setting of the combination. In other words, the combination may be so set, or the mechanism so adjusted, that when any four figures of the respective tumblers 13 are in alinement in the direction of the axis of the tumblers, the pallet may be moved for the purpose of disconnecting it from the toothed disk of the valve operating spindle member 14.

If desired the rod 35 may be composed of two telescoping members, one of which is enlarged at its extremity and made hollow to receive the opposite member, which telescopes therein and is formed polygonal in cross section to cause the two parts to rotate in unison, the hollow portion of the other member having its opening of counterpart shape. By making this rod lengthwise extensible, it becomes practicable to locate the valve mechanism or valve block 39 in any desired portion of the bottom of the tank. By virtue of this construction the same rod may be employed regardless of the location of the said valve mechanism.

Having thus described my invention, what I claim is:

1. The combination with a tank having a valve for controlling the escape of liquid therefrom, of a valve operating mechanism comprising a casing mounted on the tank and having a closed compartment at one extremity of the casing and an open compart-

ment adjacent the closed compartment, a valve operating spindle extending into the closed compartment, a permutation lock having its tumbler-manipulating portion extending into the open compartment of the casing, the lock having a movable tumbler-controlled part, and an operative connection between the said movable tumbler-controlled part and the said spindle, whereby when the said movable tumbler-controlled part is in one position the spindle may be actuated, while when in another position the spindle is locked against movement.

2. The combination with a tank having a valve for controlling the escape of fluid therefrom, of valve-operating mechanism comprising a casing mounted on the tank and having a closed compartment and an open compartment the closed compartment being located at one extremity of the casing, a valve-operating spindle extending into the closed compartment, a permutation lock having a movable-tumbler portion located in the open compartment, and a movable tumbler-controlled pallet, and an operative connection between the spindle member and the said pallet, substantially as described.

3. The combination with a fluid-containing tank having a valve for controlling the escape of fluid therefrom, of means for operating said valve comprising a casing mounted on the tank and having closed and open compartments the closed compartment being located at one extremity of the casing, a valve-operating spindle member extending into the closed compartment, a permutation lock having a movable-tumbler member located in the open compartment, and a tumbler-controlled pallet connected in operative relation with the said spindle.

4. The combination with a fluid-containing tank having a valve for controlling the escape of fluid therefrom, of means for operating said valve comprising a casing mounted on the tank and having closed and open compartments, a valve-operating spindle extending into the closed compartment of the casing and having a toothed disk fast thereon, and a permutation lock having a tumbler portion located in the open compartment of the casing, and a tumbler-controlled pallet extending into the closed compartment and adapted to engage the toothed disk of the spindle, substantially as described.

5. The combination with a tank having a valve for controlling the escape of liquid therefrom, of a casing having an open and a closed compartment, a valve-operating spindle extending into the closed compartment and having a toothed disk, a permutation lock having its tumbler portion located in the open compartment and having a tumbler-controlled pallet extending into the closed compartment and connected in

operative relation with the toothed disk of the spindle, an exposed knob or disk, and an operative connection between the same and the valve-operating spindle member, substantially as described.

6. The combination with a tank having a valve for controlling the escape of fluid therefrom, of a casing having open and closed compartments, a valve-operating spindle extending into the closed compartment of the casing and carrying a toothed disk, a permutation lock having its tumbler portion located in the open compartment of the casing, and having a tumbler-controlled pallet extending into the closed compartment, in operative relation with the toothed disk of the spindle, whereby when the pallet is in one position the spindle may be operated for valve-manipulating purposes, while when in another position the spindle is locked against movement, an exposed spindle-operating knob or disk mounted on the casing, and a gearing connection between the said knob and the spindle for operating the latter, substantially as described.

7. The combination with a tank having a valve for controlling the escape of fluid therefrom, of a casing mounted on the tank and extending into an opening formed therein, the said casing having a closed and an open compartment, a valve operating spindle extending into the closed compartment of the casing, one extremity of the spindle being concealed within the casing, a stuffing box with which the said closed compartment is equipped, the opposite extremity of the spindle projecting beyond the stuffing box into the tank, a permutation lock having its tumbler-manipulating portion located within the open compartment of the casing, and having a tumbler-controlled pallet extending into the closed compartment and in operative connection with the valve spindle, and a knob mounted on the casing and connected in operative relation with the valve spindle.

8. The combination with a fluid-containing tank having a valve for controlling the escape of fluid therefrom, of means for operating the said valve comprising a closed casing compartment and an open casing compartment, a valve-operating spindle extending into the closed compartment and carrying a toothed disk, a permutation lock having a movable tumbler member located in the open compartment, and a tumbler-controlled pallet connected in operative relation with the toothed disk of the spindle.

9. The combination with a fluid-containing tank having a valve for controlling the escape of fluid therefrom, of means for operating the said valve comprising a closed casing member mounted on the tank, a valve-operating spindle member extending into the said casing member and having a

toothed disk mounted thereon within the closed chamber, a permutation lock having a movable tumbler member mounted adjacent the closed casing compartment and connected therewith, and a tumbler-controlled 5 pallet carried by the tumbler member and connected in operative relation with the toothed disk of the spindle.

10. The combination with a tank having a valve for controlling the escape of fluid therefrom, of a concealed valve-operating member including a toothed disk, and a permutation lock exposed for purposes of manipulation and connected in operative relation with the toothed disk of the valve-oper- 15 ating member.

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

ALLAN G. HURDMAN:

Witnesses:

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