Sept. 29, 1925. 1,555,657

G. C. GLENN

TANK AND OUTLET CONSTRUCTION

Filed March 6, 1925

Fig. 1.

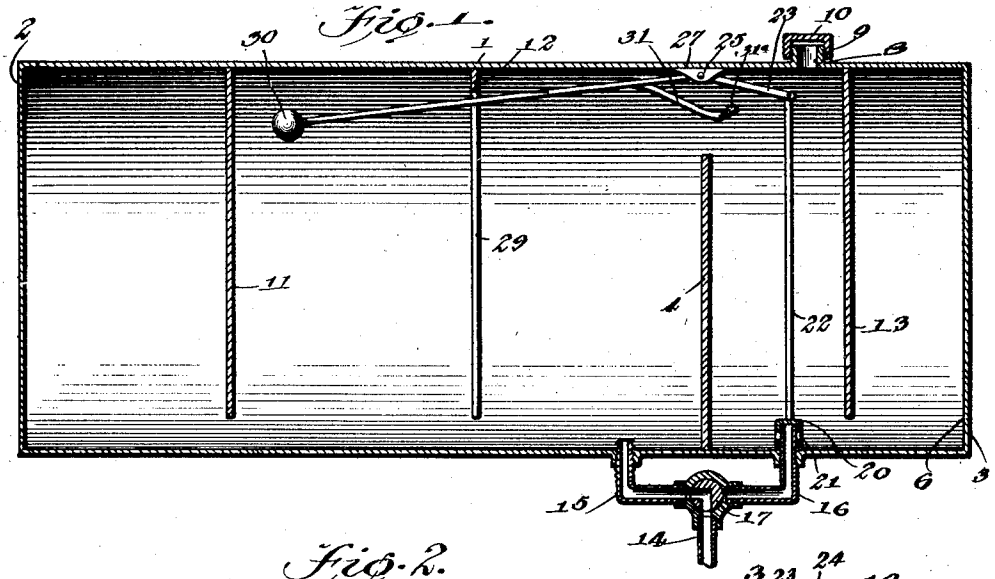


Fig. 2.

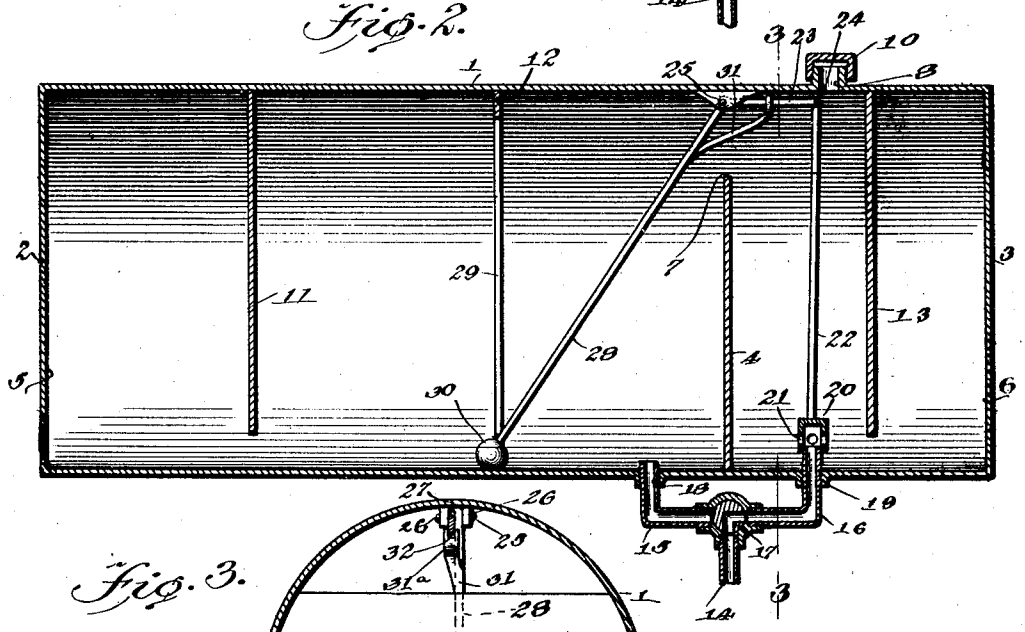
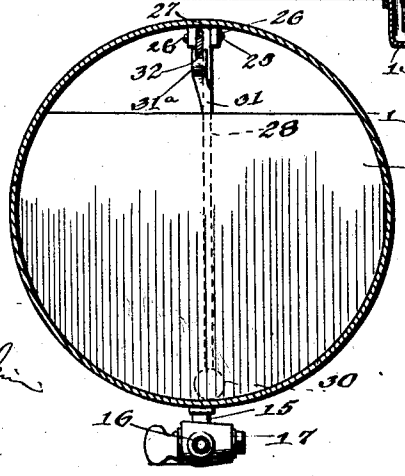


Fig. 3.



WITNESS

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UNITED STATES PATENT OFFICE.

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TANK AND OUTLET CONSTRUCTION.

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To all whom it may concern:

Be it known that I, GROVER C. GLENN, a citizen of the United States, and a resident of Raleigh, in the county of Wake and State of North Carolina, have invented certain new and useful Improvements in Tank and Outlet Constructions, of which the following is a specification.

My invention is an improvement in tank and outlet constructions, of the type particularly adapted for holding and feeding liquid fuel to an internal combustion engine, as in an automobile, and it consists in the combinations, constructions and arrangements herein described and claimed.

An object of the invention is the provision of a tank having a main chamber and an auxiliary chamber and means for controlling the flow of liquid from the tank so that flow from the main chamber only is possible until the main chamber is empty, at which time flow from the auxiliary chamber is permitted.

A further object of the invention is the provision of a tank and outlet construction of the character described which is simple in construction, not likely to get out of order easily and thoroughly practical commercially.

Other objects and advantages of the invention will be apparent from the following description, considered in conjunction with the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section through a tank and outlet construction embodying the invention, showing liquid in both the main chamber and the auxiliary or reserve chamber and showing the flow controlling mechanism of the outlet structure in position to permit flow from the main chamber.

Figure 2 is a view similar to Figure 1, showing the main chamber empty and the flow controlling mechanism of the outlet structure in position to permit flow from the auxiliary chamber, and

Figure 3 is a section along the line 3—3 of Figure 1.

In carrying out the invention, I provide a tank which preferably has a horizontally disposed cylindrical body 1 closed at its ends, as at 2 and 3, respectively. The body 1 may have any other desirable and suitable configuration in cross sectional contour. A transverse partition 4 divides the space within the tank into a relatively large main chamber 5 and a smaller chamber 6 which is located at one end of the tank and is in open communication at 7 at its upper end with the main chamber 5, the partition 4 terminating at its upper end short of the upper wall of the space within the tank.

The upper portion of the tank body is provided with a filler opening 8 which may be in the form of an upstanding nipple 9 which normally is closed by a screw cap 10. The filler opening 8 is located above the relatively small chamber 6, which will be referred to hereinafter as the reserve chamber, and in order to fill the tank to its full capacity, the reserve chamber 6 is filled first and then liquid overflows above the partition 4 through the opening 6 into the main tank and fills the latter to the level of the upper end of the partition 4, after which the chambers 6 and 5 are filled as a unit to the upper wall of the tank body. Spaced transverse baffle partitions or plates may be provided within the tank body as indicated at 11, 12 and 13, respectively, each of these baffle partitions terminating at its lower end short of the bottom portion of the tank body. The purpose of these baffle partitions is to prevent splashing of the liquid within the tank body in the direction of length of the tank body and these baffle partitions may be omitted if desired.

A discharge conduit 14 has branches 15 and 16, respectively, and is provided with a two-way valve 17 at the juncture of the branches 15 and 16 with each other and with the main portion of the discharge conduit. The branch 15 of the discharge conduit is secured in a vertical opening 18 in the lowest portion of the bottom wall of the main chamber 5. The branch 16 is in threaded engagement with a vertical opening 19 in the lowest portion of the bottom wall of the reserve chamber 6 and extends within the reserve chamber a short distance above such bottom wall. A valve cap 20 has a close sliding fit with the upper end portion of the branch 16 so that flow from the chamber 6 into the branch 16 is prevented when the valve cap 20 is in lowered position on the upper end portion of the branch 16, as shown in Figure 1. Flow from the chamber 6 into the branch 16 is permitted through lateral ports 21 in the body of the valve cap when the valve cap has been slid upward on the

upper end portion of the branch 16 until the lateral ports 21 no longer are covered by the upper end portion of the branch 16.

A valve stem 22 is joined at its lower end to the head of the valve cap 20 and extends upward in the chamber 6 nearly to the upper wall of the latter. A rigid link at 23 is loosely and pivotally attached at one end, as at 24 to the upper end of the valve stem 22 and is pivotally supported at its other end upon a horizontal pivot pin 25 which extends transversely through the spaced depending arms 26 of a bracket 27 which is substantially of inverted U-shape and is secured to the upper portion of the tank body above the partition 4. A rigid arm 28 is pivotally supported at one end on the horizontal pivot pin 25 and extends within the main chamber 5 through a vertical slot 29 in the baffle plate at 12. The arm 28 carries a float 30 at its free end which will rise and fall with liquid in the main chamber 5.

A lifter arm 31 is secured at one end to the underside of the arm 28 and extends at an acute angle to the arm 28 beneath the bracket 27 and underneath the rigid link 23. The free end portion of the lifter arm 31 is upturned as indicated at 31a and is provided with a notch 32 in its upper end adapted to engage with the lower edge portion of the rigid link 23 when the float 30 has moved downward from the position shown in Figure 1 nearly to the position shown in Figure 2 and to then swing the link 23 upward as the downward movement of the float 30 continues so that the valve cap 20 will be lifted from its seat to the position shown in Figure 2 at the time the float reaches the limit of its downward movement, also as shown at Figure 2.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. The two-way valve 17 may be of any suitable known construction operable to connect the branches 15 and 16 selectively with the stem or main portion of the delivery conduit 14. In use, the two-way valve 17 is turned to the position shown in Figure 1 so that discharge from the reserve chamber 6 is prevented, even though the valve cap 20 be open. Liquid then is introduced through the filler opening 8 until the reserve chamber 6 has been filled and the main chamber 5 also has been completely filled or filled to a desired level. The float 30 will rise with the liquid in the main chamber and will permit the valve cap 20 to close by gravity and as a result of the head of liquid within the chamber 6. After the valve cap 20 has moved to closed position, flow of liquid from the reserve chamber 6 is prevented until the main chamber 5 has been emptied or at least until the float 30 has descended to the level required to cause the arm 28 and the lifter arm 31 to be actuated to lift the link and valve stem 22 from the position shown in Figure 1 to the position shown in Figure 2. When the valve cap 20 is in the position shown in Figure 2, flow will take place from the reserve chamber through the discharge conduit as soon as the two-way valve 17 has been turned to the position shown in Figure 2.

From the foregoing it will be manifest that the invention provides means for maintaining a reserve quantity of liquid within the tank after the operator of an automobile to which the tank is applied or the user of the tank in any other suitable manner has been apprised by reason of the emptying of the main chamber as to the quantity of liquid within the tank.

Obviously, the invention is susceptible of embodiment in forms other than that which is illustrated in the accompanying drawings and I therefore consider as my own all such modifications and adaptations thereof as fairly fall within the scope of the appended claims.

I claim:

1. In combination, a tank having separate main and reserve chambers, a discharge conduit including a main portion, a branch in communication with the lower part of the main chamber, another branch in communication with the lower part of the reserve chamber, and valve means for connecting said branches selectively with the main portion of the discharge conduit, said main and reserve chambers of the tank being in open communication with each other at their upper ends, said tank having an inlet located above the reserve chamber, a valve within said tank controlling flow from the reserve chamber into the branch of the conduit which is associated with said reserve chamber, said last named valve being normally closed, a vertical stem for operating said last named valve, a horizontal pivot element in the upper part of said tank, a rigid link pivotally supported at one end on said horizontal pivot element and having a loose pivotal connection at its other end with the upper end of said valve stem, a float within said main chamber, an arm pivotally supported at one end on said horizontal pivot element and secured at its other end to said float, and means carried by said float supporting arm for engaging said link when the float approaches the limit of its downward movement in the main chamber and for then swinging said link upward to cause opening of said last named valve.

2. In combination, a tank having a main chamber and a reserve chamber, each provided with an outlet in communication with its lower part, a normally closed valve controlling flow through the outlet of said reserve chamber, a stem connected at its lower end to said valve and extending verti-

cally in said tank, a float within said main chamber, an arm pivotally supported at one end in the upper part of said tank and secured at its other end to said float, a vertically swingable link pivotally attached at one end to said valve stem and pivotally supported at its other end in the upper part of said tank, and a lifter arm carried by said float supporting arm in position to engage said link only when said float has moved downward in the tank nearly to the bottom of said main chamber and then to move said link upward to open said valve when the float has moved downward to the bottom of said main chamber.

GROVER C. GLENN.