Feb. 11, 1930. H. A. BENEDICT ET AL 1,746,814

VALVE

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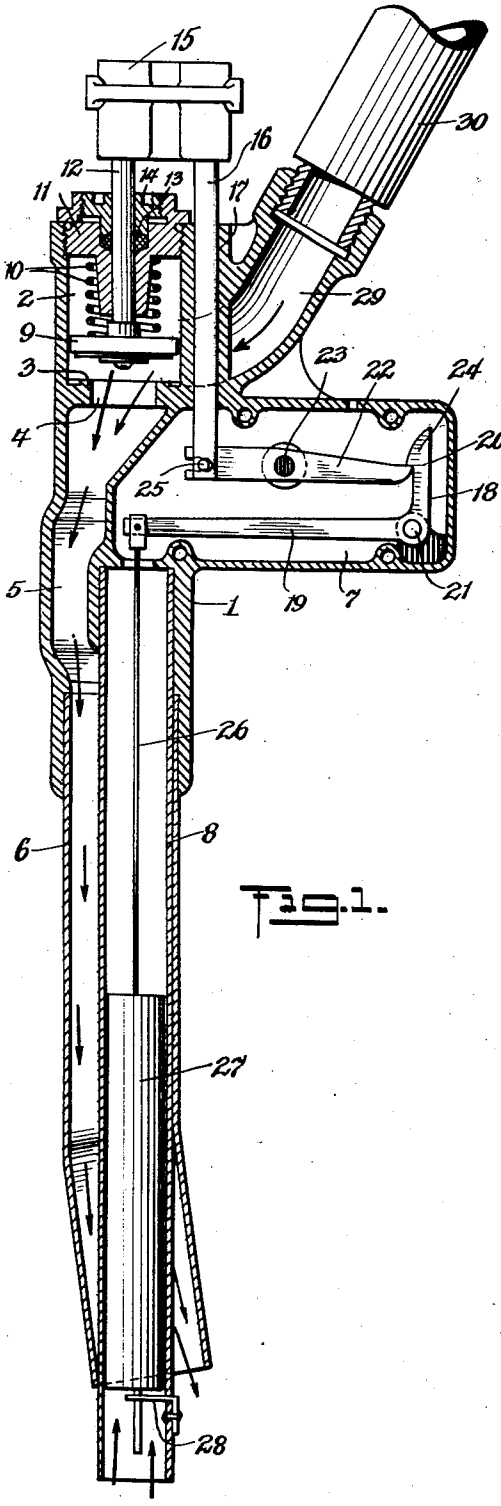


Fig. 1.

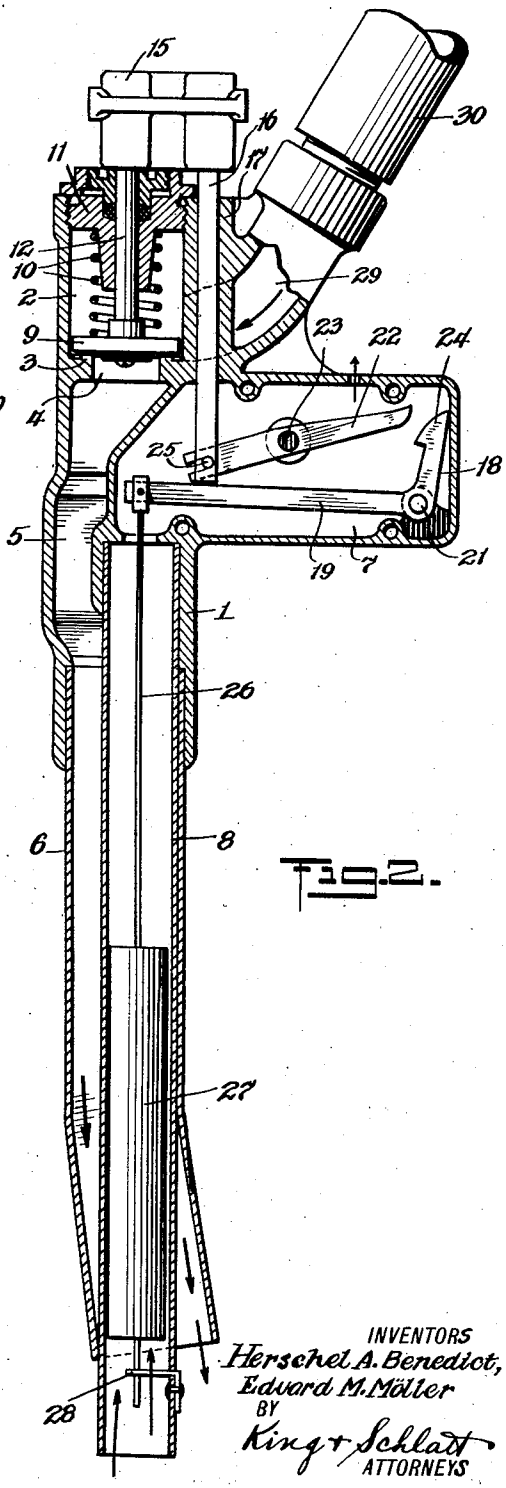


Fig. 2.

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VALVE

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This invention relates to valves and more particularly to automatic trip valves operable by a float.

The objects of the invention are to provide means for automatically shutting off the flow of gasoline from a pumping station when the tank being filled reaches its capacity and thereby prevent overflow of the tank and waste of the gas; to provide a sensitive apparatus which will be positive in its operation; to prevent the inflowing gas having influence on the trip mechanism until the tank level of the gasoline operates the float; to provide a structure having minimum chances for leakage; to enable the valve to be readily opened by hand and the trip mechanism thereby automatically reset; to secure simplicity of construction and operation, and to obtain other advantages and results as may be brought out in the following description.

Referring to the accompanying drawing in which like numerals of reference indicate similar parts throughout the several views,

Fig. 1 is a vertical or longitudinal cross-sectional view of a valve embodying our invention showing the parts in position to permit a flow of gasoline from the filling station through the valve mechanism to the tank; and

Fig. 2 is a similar cross-sectional view showing the valve closed.

In the specific embodiment of the invention illustrated in said drawing, the reference numeral 1 indicates in general the main housing or casting forming the body portion of the valve of the present invention. The interior of this housing 1 provides an upper chamber 2 having a valve seat 3 at its lower end and a passage 4 through the said valve seat to a chamber or passage 5 for the discharge of the gasoline or other fluid to any suitable tank being filled. For convenience in manufacture, we have shown a sheet metal tubing 6 inserted and suitably held in the lower end of said passage 5 forming a continuation thereof so as to make the complete passage the desired length. This specific construction is susceptible to considerable variation and is mentioned merely for the purpose of being definite. The housing also includes at the side of said passage 5 another chamber 7 for the trip mechanism which is entirely partitioned off and has entirely no communication whatever with either of the other chambers 2 and 5. This separated trip mechanism chamber 7 projects into the passage 5 in a manner sufficient to enable a smaller tube 8 than said passage to be contained within said passage and lead downwardly through the same from said chamber 7. Said inner tube 8 preferably projects below the gasoline passage tube 6 so that none of the gasoline while passing out of said tube 6 will enter the inner tube 8, the only chance for the gasoline to enter the inner tube 8 being from the rising level of gasoline in the tank being filled.

In the upper chamber 2 above mentioned is a plunger valve 9 adapted to seat on the valve seat 3 and close valve opening 4 to the passage of gasoline from said chamber 2 into the passage or chamber 5. This valve is normally actuated toward the seat by means of a spring 10 positioned between said valve 9 and the upper end of the chamber 2. The constructional details of the assembling of this plunger valve and its mounting includes a cap 11 which screws into the end of said chamber 2, said cap having a central passageway of appropriate size to receive a stem forming part of said plunger valve. Suitable packing 13 is provided around the said stem and held in place by a suitable packing ring 14 screw threaded into the outer end of cap 11. The stem 12 projects from this packing ring 14 and is secured fast with respect to a head 15 which obviously is outside of the casting and which can be manually pulled upon to open the valve when the operator desires to do so. Said head 15 also has secured thereto trip rod 16, said rod being arranged parallel to the valve stem and passing into the housing through a boss 17 leading directly into the trip mechanism chamber. Since there is no gasoline pressure or gasoline present in the said trip mechanism chamber, no particular need exists for packing the trip rod in its passage through said boss 17.

Trip mechanism as constructed in the present disclosure comprises a bell-crank 18 hav-

ing a horizontally positioned arm 19 and a vertically positioned arm 20 with a pivotal support 21 between said arms. As shown, this pivotal support is at the outer end of trip mechanism chamber 7 so the horizontal arm 19 may extend therefrom with its free end overlying the end of inner tube 8 above described. Above the said horizontal arm 19 is a lever 22 pivoted as at 23 intermediate of its ends and adapted to swing substantially in the same plane as the bell-crank in the present disclosure. One end of said lever is adapted to engage under a shoulder 24 on the vertical arm of the bell-crank whereas the other end of said lever is provided with a slot and pin connection 25 with the lower end of the trip rod 16. The end of arm 19 of the bell-crank which over-lies the end of tube 8 is pivotally connected to a suitable link 26 the lower end of which is attached to a float 27 riding in said tube and suitably guided at its lower end if found desirable, by a bracket 28.

As the level of the gasoline rises in the tank so as to enter the lower end of tube 8, float 27 will be lifted as shown in Fig. 2 thereby operating through link 26 to swing bell-crank 18 and withdraw shoulder 24 on arm 20 from engagement with lever 22. The spring 10 in chamber 2 is pressing the valve 9 downwardly and upon release of lever 22 from said shoulder 24 said spring operates through valve stem 12, head 15 and rod 16 to swing said lever 22 to a position shown in Fig. 2 and said valve is permitted to close. When the operator desires to open the valve he merely pulls head 15 outwardly which opens the valve and also swings lever 22 which again engages shoulder 24 on the bell-crank which will swing to the position shown in Fig. 1 under the influence of gravity.

The housing preferably includes a suitable intake passage 29 leading into the upper chamber 2 above the valve seat 3. For convenience this intake passage has been shown as sloping upwardly to the side, but obviously the position and direction may be altered without affecting the invention. The upper end of said intake passage 29 is appropriately screw-threaded to receive the hose 30 from the filling station or pump.

While the present invention is designed particularly for use in connection with gasoline filling stations for motor vehicles and intended for replacing the present nozzle on the ends of the hose of such filling stations, the use of the invention is not restricted to this purpose alone, and in the foregoing description where we have made mention of gasoline and gasoline filling stations, we have done so merely for the purpose of identifying one use of the present invention and with no intention of confining ourselves to that use only. Furthermore, it is within the scope of the invention to make various changes and modifications in the exact structure, and we do not confine ourselves to the details of the present disclosure except as set forth in the following claim when construed in the light of the prior art.

Having thus described our invention, we claim:—

A device of the character described comprising a body portion having an upper fluid chamber adapted for connection with a source of supply and a lower flow passage with a valve seat between said fluid chamber and flow passage, a valve for said valve seat, said valve having a stem projecting through the wall of said fluid chamber, packing means for said stem, a head on said stem by which said stem may be manually drawn out, a trip rod also secured to said head and projecting parallel to said stem into said body portion, said body portion having a passage through and closed with respect to the fluid chamber for said trip rod and having an enlargement below the said passage thereby providing a mechanism chamber in communication with said passage and out of communication with the flow chamber, means in said mechanism chamber for holding the trip rod and valve slid to its outward position and thereby retain the valve raised from its seat, a spring for actuating the valve toward the seat when released, and means for automatically tripping said trip rod and releasing the valve thereby permitting the said spring to force the valve to its seat.

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