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OVERFLOW SAFETY DEVICE

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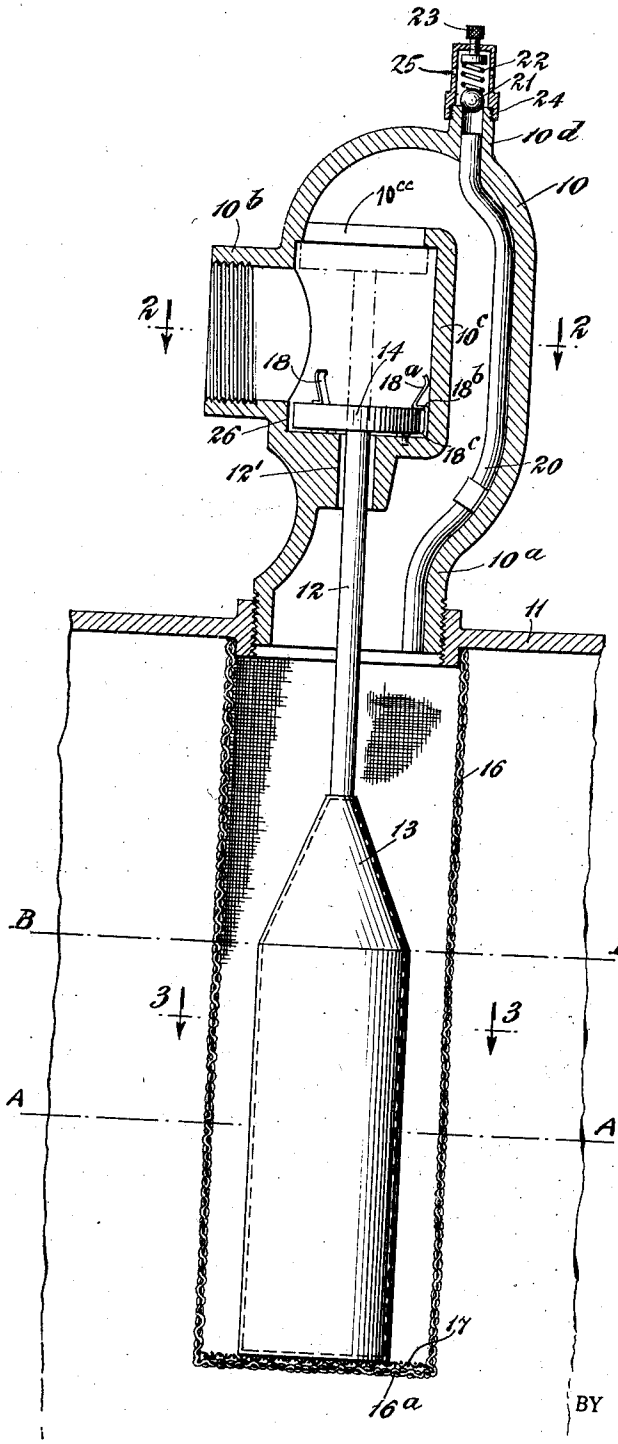


Fig. 1

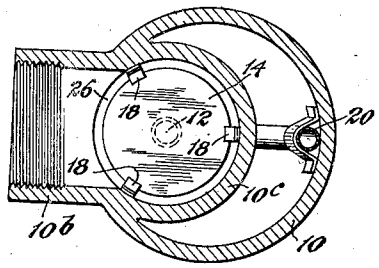
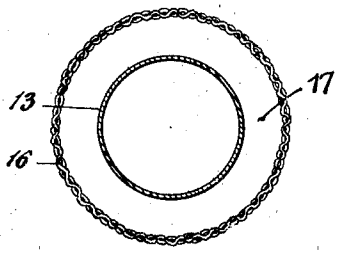


Fig. 2

Fig. 3



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OVERFLOW SAFETY DEVICE

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3 Claims. (Cl. 137—68)

This invention relates to new and useful improvements in an overflow safety device.

The invention has for an object the construction of a device as mentioned which is capable of preventing the overflow of liquids in tanks during the filling of the tanks. The invention is applicable to all types of liquids such as fuel oil, gasoline, milk, etc. Primarily, it is intended for fuel oil and gasoline tanks.

A feature of the invention resides in the fact that when the device is applied to a gasoline tank the customary dump cover is eliminated. It has generally been recognized that the dump covers are an extreme hazard in gasoline tanks and numerous unsuccessful attempts have been made to overcome this hazard.

More specifically, the invention contemplates the provision in an overflow safety device of an inverted L-shaped body for the passage of fluid which is adapted to be connected at the bottom outlet end with a fuel tank and at the side inlet end with a supply of fluid, and said body to have an internal vertical cylindrical portion open at the top and closed at the bottom, and at the side connecting with said side inlet whereby a valve may be arranged within the cylindrical portion and connected with a float in the tank and arranged so as to close against the open top of the cylindrical portion when the liquid within the tank rises to a pre-determined amount.

Still further the invention proposes an arrangement whereby the float is held comparatively stationary when the liquid within the tank is low so that the float does not rattle and unduly wear out parts of the device.

Another object of the invention is the construction of a device as described which is simple and durable and which may be manufactured and sold at a reasonable cost.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawing, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawing forming a material part of this disclosure:—

Fig. 1 is a vertical sectional view of a device constructed according to this invention and applied to a fuel tank.

Fig. 2 is a horizontal sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a horizontal sectional view taken on the line 3—3 of Fig. 1.

The overflow safety device, according to this invention, comprises an inverted substantially L-shaped body 10 for the passage of fluid and having a bottom outlet 10*a* and a side inlet 10*b*. The bottom outlet 10*a* is adapted to be connected upon the top of a fuel tank 11, preferably by a threaded connection. The side inlet 10*b* is adapted to be connected with a supply pipe for the liquid, also preferably by a threaded connection since the parts may then be quickly associated with each other.

Within and integral with the body 10 there is a vertical cylindrical portion 10*c* which is formed with an open top 10*cc* and a closed bottom. This cylindrical portion 10*c* at the side connects with the side inlet 10*b*.

A vertical stem 12 slidably engages through the closed bottom of the cylindrical portion 10*c* and at the bottom end is attached on a float 13. At the top end the stem 12 connects with a disc-shaped valve 14 which is adapted to engage upon a shoulder surrounding the opening 10*cc* for the purpose of closing the opening.

The float 13 preferably should be a hollow light metal air tight container. The passage 12' in the closed bottom end of the cylindrical portion 10*c* for the stem 12 is considerably of a larger size than the stem so as to provide a drain for the fuel, as hereinafter further described. An arrangement which has been found to be satisfactory is one in which the stem 12 is 5/16'' and the opening 12', one quarter inch. Since the stem 12 is relatively loose in the opening 12' an arrangement is provided for supporting the float 13 in its lowered position to prevent rattling. More specifically, a wire cage 16 is attached upon the tank 11 and encases the float 13. This wire cage has a bottom portion 16*a* upon which a soft pad 17 is mounted. In the lowered position of the valve 14 the float 13 rests upon the pad 17. Several springs 18 are attached on the inside of the cylindrical portion 10*c* and are adapted to assist in holding the float in the lowered position.

Each of the springs 18 has a top converging portion 18*a* which connects with a horizontal shoulder 18*b*, which in turn connects with a bottom portion 18*c* attached upon the bottom wall of the cylindrical portion 10*c*. The construction is such that the shoulders 18*b* of the springs normally hold the valve in its lowered position, but when the liquid level in the tank rises a pre-determined amount, the float exerts sufficient force to flex the springs so that the valve 14 is free and may rise. When the liquid in the tank falls the valve 14 comes down upon

the converging portions 18a and spreads these portions so as to pass there-beneath to assume the complete down position of the valve. The valve and float, because of a mechanical advantage, may readily spread the springs 18 when moving downwards.

A vent pipe 20 is attached along the side wall of the body 10 and extends from the bottom outlet end 10a to the top of the body and through a boss 10d. A ball check for the release of air pressure is arranged on the boss 10d. This ball check comprises a ball 21 resting upon the top of the opening in the boss 10b and releasably held in this position by a spring 22 which is tensioned by an adjustment screw 23. This adjustment screw is supported upon a housing 24 mounted upon the boss 10d and encases the ball 21. Vent openings 25 are formed in the sides of the housing 24.

The bottom of the cylindrical portion 10c is formed with a recess 26 within which the valve 14 normally is disposed. This recess is arranged below the entrance level of the liquid through the inlet 10b. Consequently, the pressure of the passing liquid tends to maintain the valve 14 in its open position. It is impossible for the entering liquid to exert any upward pressure on the bottom face of the valve.

The operation of the device is as follows: A supply of liquid is connected with the side inlet 10b. The liquid passes to the cylindrical portion 10c and up through the opening 10cc, and then around down through the body 10 and is finally discharged into the tank 11 through the outlet 10a. When the level of the liquid in the tank 11 reaches the position A—A the float starts to lift. When the liquid level in the tank reaches the elevation B—B the float has lifted a sufficient amount so that the valve 14 is substantially midway between its original position and the opening 10cc. The incoming liquid then exerts pressure beneath the valve 14 and forces the valve closed upon the seat of the opening 10cc. The closed position of the valve is indicated by the dot and dash lines in Fig. 1.

The fact that the valve 14 has closed will be immediately noted by the operator in that the pressure in the supply line immediately rises. The operator then stops the supply of liquid. The liquid within the line and in the cylindrical portion 10 then drains through the opening 12' into the tank 11. After all the liquid has drained from the lines the line is disconnected from the inlet 10b. As the liquid flows into the tank 11 the air from the tank may pass out through the vent pipe 20.

While I have illustrated and described my invention with some degree of particularity, I realize that in practice various alterations therein may be made. I therefore reserve the right and privilege of changing the form of the details of construction or otherwise altering the arrangement of the correlated parts without departing from the spirit or the scope of the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:—

1. An overflow safety device, comprising an inverted L-shaped body for the passage of fluid and adapted to be connected at the bottom outlet end with a fuel tank and at the side inlet end with a supply of fuel, and having an internal vertical cylindrical portion open at the top and closed at the bottom and at the side connected with said side inlet end, a vertical stem slidably engaging through said closed bottom of said cylindrical portion, a float for extending into said tank and connected with the bottom of said stem, a valve on the top of said stem and within said cylindrical portion and in a raised position adapted to close the said open top of said cylindrical portion, and means for releasably holding said valve in the open position, comprising several springs mounted upon the interior wall of said vertical cylindrical portion and engaging said valve.

2. An overflow safety device, comprising an inverted L-shaped body for the passage of fluid and adapted to be connected at the bottom outlet end with a fuel tank and at the side inlet end with a supply of fuel, and having an internal vertical cylindrical portion open at the top and closed at the bottom and at the side connected with said side inlet end, a vertical stem slidably engaging through said closed bottom of said cylindrical portion, a float for extending into said tank and connected with the bottom of said stem, a valve on the top of said stem and within said cylindrical portion and in a raised position adapted to close the said open top of said cylindrical portion, and means for releasably holding said valve in the open position, comprising several springs mounted upon the interior wall of said vertical cylindrical portion and engaging said valve, and having converging top portions connecting with horizontal shoulder portions beneath which the valve may engage.

3. An overflow safety device, comprising an inverted L-shaped body for the passage of fluid and adapted to be connected at the bottom outlet end with a fuel tank and at the side inlet end with a supply of fuel, and having an internal vertical cylindrical portion open at the top and closed at the bottom and at the side connected with said side inlet end, a vertical stem slidably engaging through said closed bottom of said cylindrical portion, a float for extending into said tank and connected with the bottom of said stem, a valve on the top of said stem and within said cylindrical portion and in a raised position adapted to close the said open top of said cylindrical portion, and a guard surrounding said float.

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