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SELF-CLOSING VENTING DEVICE FOR LIQUID CONTAINERS

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FIG. 1.

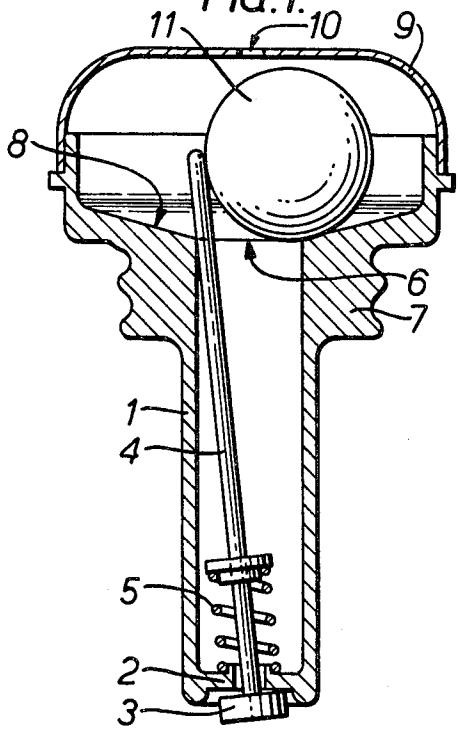
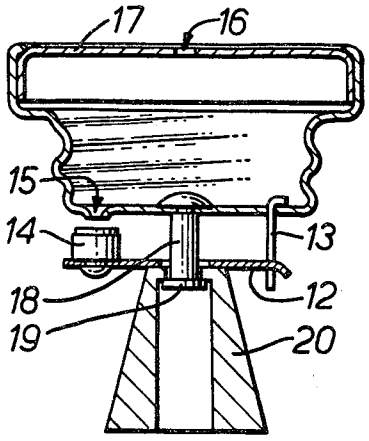


FIG. 2.



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SELF-CLOSING VENTING DEVICE FOR LIQUID CONTAINERS

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3 Claims. (Cl. 137—43)

ABSTRACT OF THE DISCLOSURE

A valve arrangement for preventing leakage from the vented cap of an accidentally tilted or overturned container comprises a normally open movably mounted valve element moved to closed position in response to movement of a weight caused by tilting of the container. In each embodiment the valve is in the filler cap for the container. In one embodiment the valve is centered by a spring and its generally vertical stem extends through a concave surface where it is frictionally engaged by a weight in the form of a free ball movable along that surface. When the container is vertical the weight of the ball which maintains contact with the stem is sufficient to rockably displace the stem from vertical and hold open the valve, but when the container is tilted the ball rolls laterally with respect to the stem and the stem rocks to close the valve under influence of the spring. In another embodiment a weight hangs on a pin extending through a slotted pivoted lever, and when the container is tilted the weight moves to tilt the lever and close a vent in the cap.

This invention relates to an improved valve for a liquid container designed to prevent the outflow of liquid in the event of accidental tilting or overturning of the container. The invention is particularly, but by no means exclusively applicable to fuel reservoirs of liquid fuel burning heating appliances.

According to the invention in its broadest aspect there is provided in or for a liquid container an automatic valve comprising a movable valve member which is normally open but is adapted to be moved into the closed position as the result of the movement of a weight caused by tilting the container.

Two embodiments of the invention are shown respectively in FIGS. 1 and 2 of the accompanying drawings and will now be described. In each of these embodiments the valve is in the filler cap of the fuel tank of a liquid fuel burning appliance.

Referring to FIG. 1, an elongated lower valve body **1** has at its bottom a seat **2** for a valve member **3**. The latter is fixed to a valve stem **4** and a compression spring **5** tends to centre the stem **4** in the body and close the valve. The stem extends upwards through a central hole **6** in the upper valve body **7**, which hole is surrounded by a dished rim **8**. The latter has an inclined angle of approximately 150 degrees. A cover **9** is provided with an opening or vent **10** and serves to contain a weight in the form of a ball **11** of the type used for example in a ball bearing.

In operation, so long as the tank is level, the weight of the ball is sufficient to displace the valve stem **4** from its central position and the valve member **3** is made wide enough to ensure that such displacement opens the valve, as shown in FIG. 1. As soon as the tank is tilted, say beyond 15 degrees, the ball rolls away from the valve stem and, under the pressure of spring **5** the stem assumes a central position in the body **1** so that the valve closes.

In the second embodiment shown in FIG. 2, use is made of a short horizontal lever **12** pivoted at one end on a member **13** and carrying at the other end a valve member in the form of a small rubber pellet **14** adapted to close a vent or oil hole **15**. The latter is in communication with an external vent or oil hole **16** in the hollow cap **17**. A headed pin **18** is arranged to project downwards through a slot in the lever **12**, the head **19** being adapted to engage a counter-bored weight **20** so as to form a universal joint. The pin is adjusted to a length which just allows the valve to remain open under gravity, so long as the weight hangs vertically, as shown in FIG. 2. In operation, as soon as the tank is tilted through a small angle, say 15 degrees, the top of the weight, using the head of the pin as a fulcrum, raises the lever and, no matter in what direction the container is tilted, the raising of the lever under the influence of the weight is such as to cause the rubber pellet **14** to close the vent or oil hole **15**.

It will be understood that the above described embodiments are given by way of illustration only. The invention also extends to other types of automatic valves adapted to close when the tank or container is tilted through a small angle and which do not rely on mechanical means external to the tank for closure of the valve.

We claim:

1. A vent valve for a liquid container, comprising a valve body having means by which it is adapted to be rigidly secured to the container and provided with an aperture for the admission of air thereto, a valve member movably mounted on said valve body and disposed to remain out of closing engagement with said aperture when the valve body is in its normal position, and a weight freely suspended from said valve body at a point offset from said aperture and so operatively connected to said valve member as to be operative in response to tilting of the valve body to urge siad valve member into closing engagement with said aperture.

2. In the vent valve defined in claim **1**, a lever pivoted adjacent one end on said valve body, said valve member being mounted at the other end of said lever and said weight being operatively connected to said lever intermediate said ends of the lever.

3. In the vent valve defined in claim **2**, there being a fixed downward projection on said valve body extending freely through an opening in said lever, and said weight being carried by said projection in operative association with the underside of said lever.

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