

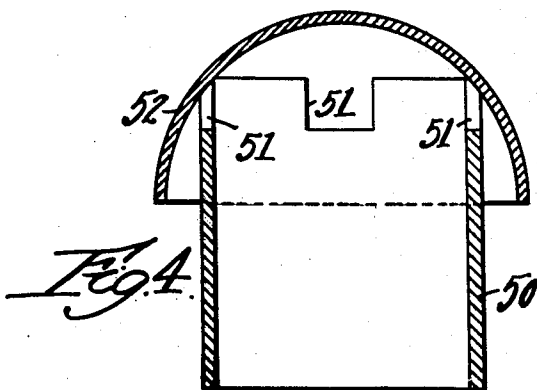
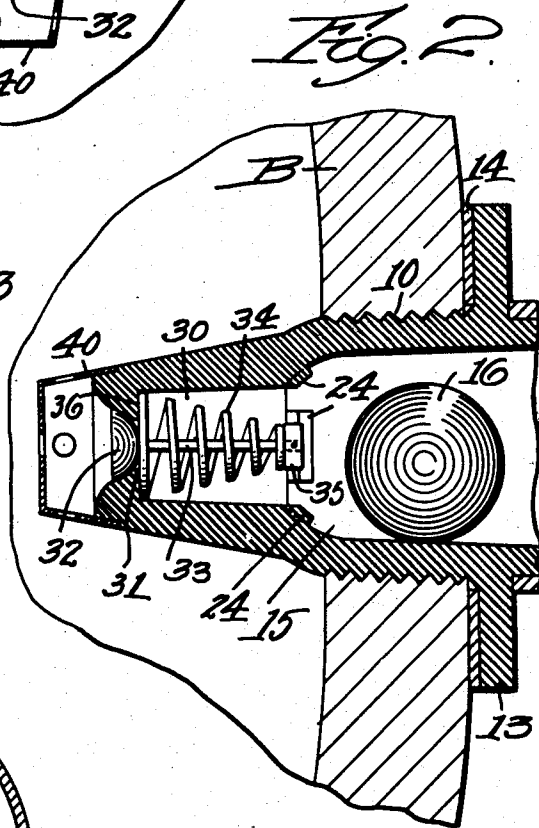
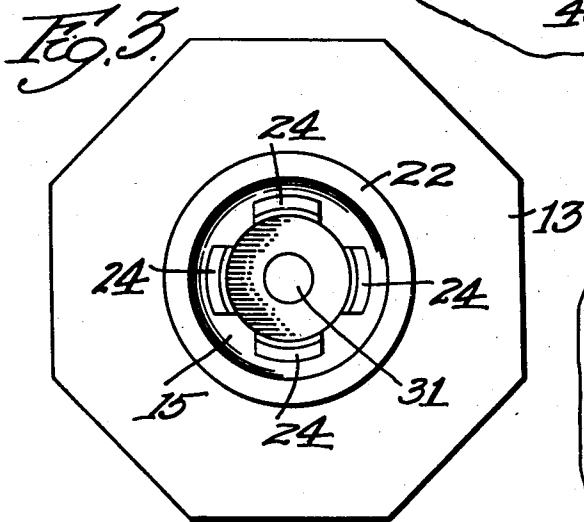
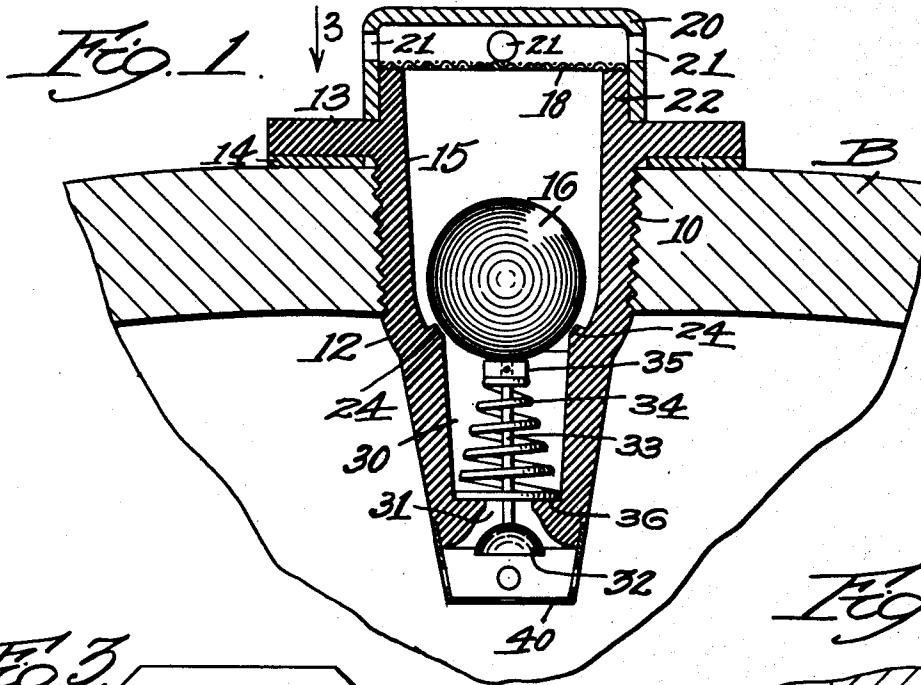
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VENT VALVE

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VENT VALVE

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1 Claim. (Cl. 251-147)

This invention relates to a vent valve adapted for general application but particularly designed for oil barrels or cylindrical drums in domestic use. Such barrels are commonly mounted on stands or supports, from which they are at times removed or accidentally dislodged. It is very important that escape of oil through the vent valve under these circumstances be effectually prevented.

It is the general object of my invention to provide an improved vent valve which will close automatically when the barrel or drum is moved substantially away from its normal vertical position, in which position the vent valve is uppermost.

A further object of my invention is to provide a simple and self-contained vent valve of the safety type which may be inserted and secured in the ordinary threaded cap or plug opening in an oil barrel or drum.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claim.

A preferred form of the invention is shown in the drawing, in which

Fig. 1 is a sectional side elevation of my improved valve in normal vertical or open position;

Fig. 2 is a similar view but showing the valve in horizontal closed position;

Fig. 3 is a plan view of the valve body, looking in the direction of the arrow 3 in Fig. 1; and

Fig. 4 is a sectional side elevation of a modified cap construction.

Referring to the drawing, I have shown a portion of a tank or barrel B having a threaded opening 10 for the usual removable cap or plug.

My improved vent valve comprises a body 12 having a flange 13, the body being threaded to fit the opening 10 in the wall of the barrel B. A washer 14 may be inserted between the flange 13 and the outside of the barrel to make a tight joint.

The body 12 has a chamber 15 in which a ball 16 is loosely mounted. A fine mesh wire screen 18 covers the upper end of the chamber 15 and is held in position by a cap 20 provided with vent openings 21 and fitting snugly over an upward extension 22 of the body 12.

The lower end of the chamber 15 is contracted as shown in the drawing and is provided with lugs 24 which engage the ball 16 and prevent it from seating closely against the contracted lower end of the chamber 15. A smaller chamber 30 is formed in the body 12 below the chamber 15 and

is provided with a bell-shaped outlet or opening 31 at its lower end.

A valve 32 is provided for closing the opening 31 and has an upwardly extending valve stem 33 surrounded by a conical spring 34. The spring is held from upward displacement by a collar 35 secured to the upper end of the rod 33. The enlarged lower end of the spring 34 rests against a shoulder 36 which surrounds the opening 31 and forms the lower end of the chamber 30.

A cap or cover 40 may be provided for the lower end of the body 12, which cover 40 is vented and serves to protect the valve 32 from accidental injury.

When the barrel is in its normal position with the vent valve uppermost, the parts assume the position shown in Fig. 1, with the ball 16 resting on the collar 35 or the upper end of the valve rod 33, and forcing the valve 32 downward to open position, the ball 16 being of substantial mass so that it definitely overpowers the spring 34.

In this position the barrel is effectively vented through the opening 31 and the chambers 30 and 15, but the screen 18 acts on the principle of a miner's safety lamp and prevents any possibility of gas or vapor in the barrel being ignited from an outside flame. The screen 18 also prevents dirt which might enter the openings 21 from reaching the valve 32 and preventing effective seating thereof.

If the barrel B is rolled to the position shown in Fig. 2, either intentionally or accidentally, the ball 16 will roll away from the collar 35 and valve rod 33, and the spring 34 will then act immediately to draw the valve 32 upward into the bell-shaped opening 31 thus effectively closing the vent opening.

When the barrel is returned to normal position, the ball 16 automatically resumes the position shown in Fig. 1, and the vent valve is again opened thereby.

I have thus provided an exceedingly simple vent valve in which there are no bearings or close-fitting parts, and in which the ball 16 and loosely mounted valve 32 are the only moving parts. My improved vent valve is thus unusually reliable in operation and furnishes very effective protection, as there is no possibility whatever of the valve 32 sticking in the open position shown in Fig. 1.

If the valve should become too firmly seated in the closed position shown in Fig. 2, as by long disuse, so that the weight of the ball 16 is not sufficient to open the valve, no particular harm would be done, as the failure of the barrel to

vent properly would immediately result in investigation and in the application of sufficient force to the ball 16 to free the valve for normal operation.

- 5 When my improved vent valve is used in external situations where it may be exposed to rain or other unfavorable weather conditions, the form of cap shown in Fig. 4 may be substituted for the cap 20. This cap for external use comprises a sleeve 50 having slots or notches 51 in its upper end and having a semi-spherical cover 52 permanently secured to the upper end of the sleeve 50 in any convenient manner as by brazing or welding. With this form of cap, entrance of rain or other moisture through the valve is effectually prevented.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claim, but what I claim is:—

- 20 A vent valve comprising a body having a chamber with a contracted lower end portion, a second and smaller chamber positioned adjacent and directly below said first chamber and freely

communicating therewith, said second chamber having a valve opening in its lower end and an inverted valve seat surrounding said opening, a valve member mounted below said valve opening and engageable with said inverted valve seat, said valve member having a valve stem extending upward through said opening and into said second chamber, a spring housed entirely in said second chamber when said vent valve is open, said spring surrounding said valve stem and being disposed between a collar on said valve stem and a flange at the lower end of said second chamber, a ball loosely mounted in said first chamber and freely abutting the upper end of said valve stem and effective to depress said valve stem and to thereby open the vent valve when said valve is in normal vertical position, and said ball rolling free from said valve stem to permit said valve member to be moved by said spring to engage said valve seat and close said vent valve when the vent valve is turned to a position in which its longitudinal axis is horizontal.

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