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3,372,845

VALVE FOR UPRIGHT OR INVERTED USE

Filed June 15, 1966

Fig. 1.

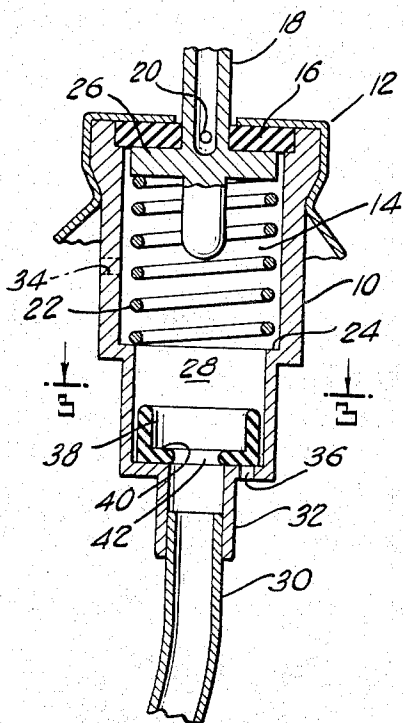


Fig. 2.

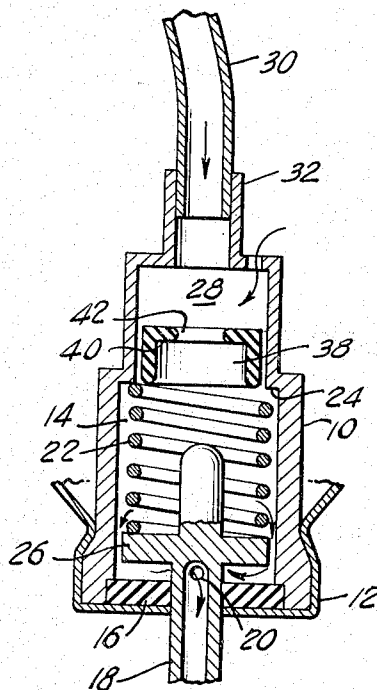


Fig. 3.

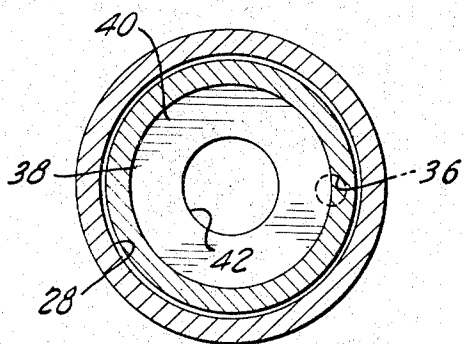
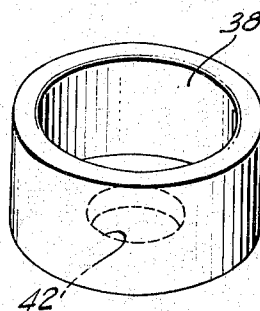


Fig. 4.



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1

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VALVE FOR UPRIGHT OR INVERTED USE

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2 Claims. (Cl. 222-402.18)

ABSTRACT OF THE DISCLOSURE

A valve for an aerosol container, said valve including a chambered portion having a perforated disc therein to seal a vapor tap located in peripheral portions of the chamber and communicating between the chamber and container. The disc, responding to gravity, seals the vapor tap only when the container is upright.

This invention relates to an aerosol valve.

An object of the invention resides in the provision of a valve that will discharge a product under pressure from a pressurized container for the product when the container is either in an upright position or in an inverted position.

A further object of the invention resides in so constructing such a valve that the propellant vapor will not escape through the valve independently, that is to say without simultaneously ejecting a portion of the product.

A further object of the invention lies in so constructing the valve that the ratio between the propellant and the product remains constant.

A still further object of the invention resides in providing a simple and inexpensive valve which will accomplish the above objects.

There are in the industry today valves which will permit the discharge of the product under pressure when the product container is either in upright or inverted positions, but, in at least some of these, the propellant vapor is permitted to escape through the valve when the valve is being used in an upright position. My invention aims to overcome this disadvantage which results in the change of the ratio between the propellant and the product.

I have illustrated one form of my invention in the drawing, in which—

FIG. 1 is a vertical sectional view of a preferred embodiment of my invention when the valve and container are in upright positions and the orifice in the valve stem is closed;

FIG. 2 is a similar view but showing the valve and container in an inverted position with the orifice in the valve stem open to the container;

FIG. 3 is a horizontal sectional view on line 3—3 of FIG. 1 looking in the direction of the arrows; and

FIG. 4 is a perspective view of the sealing device for the vapor tap which establishes communication between the container and the valve body.

In the embodiment of the invention illustrated the valve body 10 is secured within the container in the usual manner, as by a ferrule 12, as illustrated. The valve body is provided with a chamber 14 which is sealed by gasket 16 through which the valve stem 18 extends, said valve stem having a discharge orifice 20. This valve stem is moved into its outer or closed position by spring 22 which is footed upon a shoulder 24 and which engages a flange 26 on the valve stem. When the spring moves the valve stem to its outer position the valve stem orifice 20 is closed by the gasket 16 so that the orifice is out of communication with the chamber 14 and consequently with the body of the container.

The valve body is provided with a compartment chamber 28 which is in free communication with the cham-

2

ber 14 and with the container through the dip tube 30 which is attached to the usual nipple 32.

If the wall of the chamber 14 were provided with a constantly open vapor tap, as for instance at a point such as indicated by the reference numeral 34, as it is in some of the valves now used in the industry, propellant vapor would be permitted to escape from the container into the chamber 14 of the valve body 10 while the product is being ejected through the valve stem when the container is being used in an upright position and while the propellant is forcing the product through the valve stem by way of the dip tube 30. This, as I have pointed out, results in the change of ratio of which I have spoken, which, of course, results in an unsatisfactory operation.

In my invention the vapor tap 36, which establishes communication between the container and the compartment chamber 28 and consequently with the chamber 14, is located at the lower end of the compartment chamber 28 when the valve is in its upright position and is at the upper end of the compartment chamber 28 when the valve is inverted. Vapor tap 36 is automatically closed when the valve stem is in an upright position, as shown in FIG. 1, and it is automatically opened to permit the propellant vapor to enter the valve body 10 when the valve is in its inverted position.

This control of vapor tap 36 is effectuated by a sealing device 38 which is made of relatively heavy material and which includes an annular flange 40. This sealing device has a central opening 42 which constantly permits communication with the chamber 14 through the dip tube 30.

This sealing device 38 moves by gravity from the position shown in FIG. 1 in which position it closes the vapor tap 36, to the position shown in FIG. 2 when the valve is inverted, in which latter position it uncovers the vapor tap 36, and it moves from the position in FIG. 2 to the position shown in FIG. 1 by gravity when the valve is again moved to an upright position.

It is to be noted that the sealing device 38 is quite independent of the valve actuating spring 22 except to the extent that the spring acts as a limiting abutment to arrest the movement of the sealing device, when it moves from vapor tap closing position shown in FIG. 1 into its vapor tap opening position shown in FIG. 2.

In operation, when the valve is in the upright position shown in FIG. 1, the vapor tap 36 will be closed by the sealing device 38 whether the valve stem orifice 20 is closed by the gasket 16 or is in open communication with the chamber 14.

Thus the vapor from the propellant will be excluded from the chamber except by entry through the dip tube 30 with the accompanying product.

As the valve is inverted, as shown in FIG. 2, the sealing device 38 drops by gravity into the position illustrated in this figure, thus uncovering the vapor tap 36 and permitting fluid to enter the chamber 14. By this arrangement the original ratio between the propellant and the product in the container remains constant.

What I claim is:

1. In a pressurized container of the aerosol type, a valve comprising a cylindrical chambered body portion having, at a first end thereof, an opening communicating with the container, said body portion having a shoulder surrounding said opening and further having, at a second end thereof, a valve stem having a discharge orifice, a vapor tap at the first end of the valve body adjacent said opening, and a disc shaped sealing device located completely within said valve body and having an opening registrable with said first-mentioned opening, said sealing device being arranged to rest on said shoulder and to seal said vapor tap when said container and valve are in upright position, and to fall freely away from and to

3

open said vapor tap when said container and valve are inverted, said sealing device being received telescopically within said cylindrical chambered body portion for free movement along the axis thereof.

2. The combination as in claim 1 wherein said disc-shaped sealing device has a raised vertical flange on peripheral portions thereof to guide said sealing device in movements toward and away from said vapor tap to insure the opening and closing thereof and the registry of the opening in said cylindrical chambered body portion and the opening in said sealing device.

4

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