

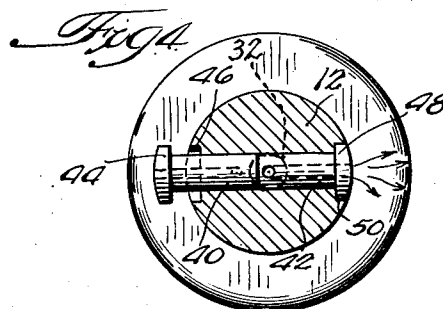
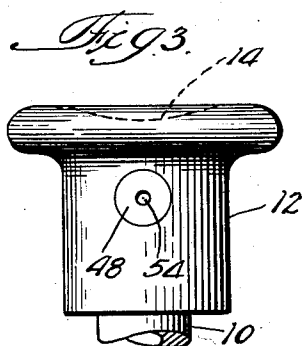
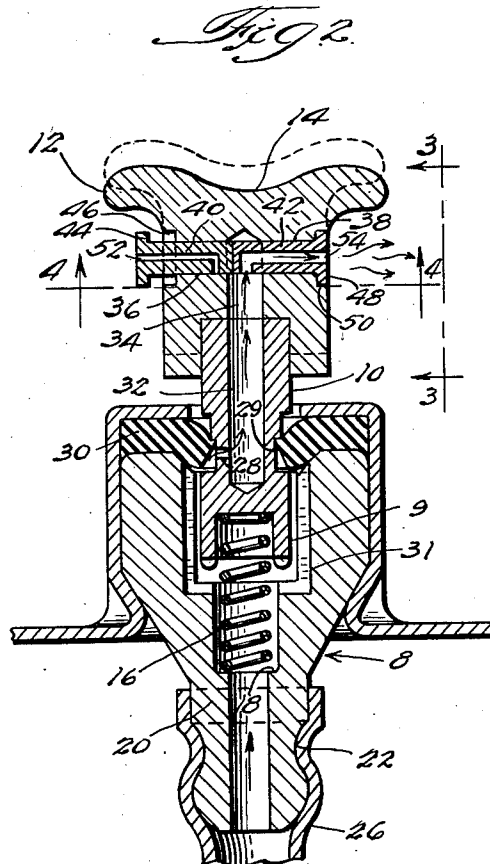
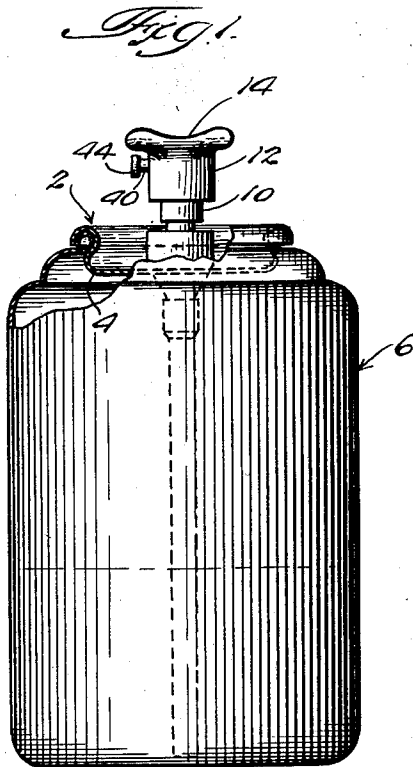
July 2, 1957

E. J. McKERNAN

2,797,965

AEROSOL BOMB

Filed Jan. 27, 1955



INVENTOR.

Edward J. McKernan.

BY.

Walter L. Schlegel, Jr.

Att'y.

1

2,797,965

AEROSOL BOMB

Edward J. McKernan, Crystal Lake, Ill., assignor to Seaquist Manufacturing Corp., Carey, Ill., a corporation of Delaware

Application January 27, 1955, Serial No. 484,365

8 Claims. (Cl. 299—95)

This invention relates to aerosol bombs which are commonly used in spraying a dispensed fluid such as an insecticide, a weed destroyer, or a paint.

Such bombs conventionally contain a quantity of liquid to be dispensed together with a dissolved or mixed propellant liquid, such as Freon, having a boiling point below room temperature at atmospheric pressure. The dispensed fluid is released by pressure of the user's finger against a valve stem to actuate the stem to open position, whereat the contents of the bomb are open to communication with a dispensing spray nozzle of the stem.

A well known prior art disadvantage of such bombs has been their lack of adaptability to jobs requiring sprays of various types. For example, a certain product which is dispensed in such a bomb is used not only as a sealer for wallpaper and wood, but is also used to finish wood surfaces such as floors and furniture. This product should be applied by a relatively coarse spray to wallpaper in order to avoid the necessity of repeated applications due to absorption by the wallpaper, and the product should be applied by a very fine spray when finishing a wood surface in order to afford a smooth flawless finish. However, the cost of providing a bomb with an adjustable spray nozzle and the inexpediency of packaging the product in bombs having various spray nozzles of various sizes to accommodate the various jobs for which the product may be used has resulted in a compromise spray nozzle which is best suited for none of the jobs to which the product is adapted.

Accordingly, a primary object of the present invention is to devise an aerosol bomb having a novel and economical means for preselecting the spray characteristics of the dispensed product.

A more specific object of the invention is to provide a plurality of dispensing ports connected to the outlet port of the bomb cap, said ports having spindles therein with spray passages of various sizes to preselect the spray characteristic of the dispensed product before the cap is actuated to release the dispensed product from the bomb.

Another object of the invention is to arrange the dispensing ports and their spindles so that pressure on one spindle urges it to operative position and urges the other of said spindles to inoperative position.

A further object of the invention is to permit spraying of the dispensed fluid from more than one port at a time.

Yet another object of the invention is to devise an arrangement such as above described in which a pair of the dispensing ports are coaxial and are arranged with their axis approximately perpendicular to that of the cap's outlet port, so that the dispensing ports can be drilled in a single operation.

A different object of the invention is to provide a plurality of spindles of identical external contour to mate with identical dispensing ports of the cap, so that such spindles are interchangeable to facilitate assembly or replacement thereof.

The foregoing and other objects and advantages of the

2

invention will become apparent from a consideration of the following specification and the accompanying drawings, wherein:

Figure 1 is a partly broken side elevational view of an aerosol bomb embodying a preferred form of the invention;

Figure 2 is an enlarged fragmentary vertical sectional view of the bomb shown in Figure 1;

Figure 3 is an elevational view on line 3—3 of Figure 2; and

Figure 4 is a cross-sectional view on line 4—4 of Figure 2.

Describing the invention in detail, a mounting cup 2 is adapted for attachment in the usual way by crimping at 4 (Figure 1) to the open end of a container or bomb 6 containing a fluid to be dispensed under superatmospheric pressure in the container.

The valve assembly comprises a valve body 8 having a novel sealed connection to the cup 2 as hereinafter described and containing a head 9 of a valve stem 10 on which is fitted a cap 12 having a concave surface 14 for convenient and comfortable actuation by a finger of a user.

The valve stem 10 is biased to the closed position of Figure 2 by a spring 16 which seats at one end thereof on a complementary flat surface of the stem head 9, the opposite end of said spring bearing against a shoulder 18 of a tubular extension 20 on the inner end of the valve body 8. The extension 20 is provided externally thereof with a retainer groove 22 having engagement with an elastic delivery tube 26 which extends to a point slightly spaced from the bottom of the bomb to ensure delivery of the entire contents thereof.

The stem 10 is adapted for actuation to open position by pressure of the user's finger on the cap surface 14 to open a port 28 in the neck 29 of the stem, which port is normally closed by a rubber gasket 30. When the port is open, the dispensed fluid flows outwardly in the direction of the arrows in Figure 2 through the tube 26 and valve body extension 20 and thence through a U-shaped slot 31 in the body to the port 28 which conducts the dispensed fluid to an outlet passage 32 of the stem and thence to an outlet port or passage 34 in the cap 12.

The port 34 communicates with a pair of coaxial delivery ports 36 and 38 which are approximately perpendicular to the axis of the port 34 and are preferably formed by a single drilling operation through the cap 12 before or after the port 34 is drilled.

A valve spindle or spool 40 is snugly fitted in the port 36 in slideable fluid-tight engagement therein, and a similar valve spindle or spool 42 is snugly fitted in the port 38 in slideable fluid-tight engagement therein. The spool 40 is provided with a larger-diameter head 44 adapted to be recessed within the cap as at 46, and the spool 42 is provided with a larger-diameter head 48 adapted to be recessed within the cap as at 50 when the spool 40 is in inoperative position, as shown in Figure 2.

It may be noted that the outer diameter of the spindles 40 and 42 are identical and their heads 44 and 48 are identical, so that the spindles are reversible for ease of assembly or replacement. The spools are snugly fitted within the ports 36 and 38 so that friction between the spools and the cap is sufficient to keep the spools from being blown from the ports by the dispensed fluid. This eliminates the necessity of providing retainer means for the spools, although such means can be provided, if desired.

The spool 40 comprises a spray nozzle or port 52, and the spool 42 comprises a larger diameter spray nozzle or port 54, and the spools are arranged in end-to-end abutting relationship so that either spool may be urged to a position whereat its port is cut off from communica-

3

tion with the outlet port 34 by pressure of the operator's finger against the head of the other spool, pushing the latter inwardly until its head is recessed at 46 or 50 within the cap 12.

As shown in Figure 2, the port 54 of spool 42 communicates with outlet port 34 of the cap, and port 52 of spool 40 is cut off from communication with outlet port 34, whereby, upon pressure of the operator's finger against cap surface 14, a relatively coarse spray of the dispensed liquid is expelled from the port 54 as indicated by the arrows in Figure 2.

If a relatively fine spray is desired, the operator presses head 44 until it is recessed at 46 in the cap, whereupon a fine spray is delivered through port 52 of spool 40 upon pressure of operator's finger against cap surface 14.

It may be noted that the novel arrangement of spools shown in the drawings permits spray simultaneously from both ports 52 and 54; however, if desired, these ports may be arranged so that only one or the other communicates with the outlet port in any position of the spools, to prevent the operator from accidentally spraying the dispensed fluid against the operator's hand or clothing.

It will also be understood that, if desired, the heads 44 and 48 may be eliminated and the spools may be integrally connected or joined in any desired manner at their inner ends.

Thus it will be understood that the novel aerosol bomb comprises compact, economical and easily operated means for preselecting the characteristic of the spray which is delivered upon pressure of the user's finger against the valve stem to release the dispensed product.

What is claimed is:

1. In an aerosol bomb having a container of fluid under superatmospheric pressure and having a valve stem operable by a user's finger to open and close said container with respect to the atmosphere; the combination of a cap on said stem having an outlet port connected to the container when the stem is in open position, said cap having a plurality of discharge ports of various sizes connected to said outlet port and spindles in respective discharge ports in slideable substantially fluid-tight engagement therein, each of said spindles having an outlet spray passage and being moveable to connect and disconnect said passage with respect to said outlet port.

2. In an aerosol bomb having a container charged with a fluid to be dispensed and with a propellant fluid under superatmospheric pressure; the combination of a valve stem having a moveable sealed connection to the container and having an outlet passage, a port in said stem connected to the passage and moveable into communication with the interior of the container when said stem is pushed inwardly with respect thereto, a cap on said stem having an outlet port connected to said passage and having a plurality of discharge ports connected to the outlet port, a plurality of spools slideably fitted in respective discharge ports in slideable fluid-tight engagement with the cap, said spools having discharge spray passages of various sizes and being moveable in their respective discharge ports to connect and disconnect said spray passages with respect to said outlet port.

3. In an aerosol bomb having a container charged with a fluid to be dispensed and with a propellant fluid under superatmospheric pressure, the combination of a valve stem having an outlet passage and having means for connecting and disconnecting said passage with respect to the interior of said container, a cap on said stem having an outlet port connected to said passage, a pair of coaxial discharge ports in said cap connected to said outlet port, a pair of spools in respective discharge ports, said spools being separable and arranged in end-to-end abutting rela-

4

tionship and each having a discharge spray passage moveable into and out of said outlet port, said spray passages being of different sizes and being so formed and arranged that when one thereof is within said outlet port, the other of said spray passages is within its related discharge port.

4. An aerosol bomb having a container of fluid under superatmospheric pressure, valve means for releasing said fluid comprising a member with an outlet port and a plurality of discharge ports connected thereto, valve spools in respective ports and selectively moveable into said outlet port, and spray passages of various sizes through respective spools.

5. An aerosol bomb having a container of fluid under superatmospheric pressure, manually moveable valve means for opening and closing said container and comprising an outlet port to convey said fluid when the container is open, a plurality of discharge ports connected to said outlet port, spools slideably fitted in respective discharge ports, said spools having spray passages of different sizes moveable into and out of communication with said outlet port.

6. An aerosol bomb having a container of fluid under superatmospheric pressure and having a valve member with an outlet port moveable into and out of communication with said container, a pair of discharge ports of different sizes in said member connected to said outlet port, and means slideably mounted in respective discharge ports for selectively disconnecting one of said discharge ports from said outlet port, each of said means extending through its discharge port.

7. In an aerosol bomb having a container of fluid under superatmospheric pressure; the combination of a valve stem having an outlet passage and having a port connected thereto, said port being moveable into and out of communication with the interior of said container, a cap fitted on said stem and having a pair of discharge ports connected to said passage, said discharge ports being coaxial, a pair of spools in respective discharge ports, said spools being moveable in unison axially of said discharge ports, and spray passages of different sizes through respective spools, said spray passages being so formed and arranged that when the spools are in position to connect one of said spray passages to the outlet passage, the other spray passage is disconnected therefrom, the combined length of said spools being greater than the combined length of said ports, whereby one of said spools may be manually pushed into its port to connect one of said spray passages to the outlet passage and to disconnect the other spray passage from the outlet passage.

8. An aerosol bomb having a container of fluid under superatmospheric pressure, normally closed valve means including an outlet port for conducting said fluid from said container, said valve means being manually moveable to open position and having a plurality of spray passages of different sizes, and means for selectively connecting said passages to said outlet port, said spray passages being formed in spools slideably fitted in discharge ports connected to said outlet port.

References Cited in the file of this patent

UNITED STATES PATENTS

225,721	Prouty	Mar. 23, 1880
869,702	Friend	Oct. 29, 1907
1,961,371	Mapes	June 5, 1934
2,137,786	Schlosser	Nov. 22, 1938
2,709,111	Green	May 24, 1955

FOREIGN PATENTS

699	Australia	of 1931
-----	-----------	---------