

Aug. 30, 1966

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3,269,608

AEROSOL DISPENSER WITH MAGNETIC SUPPORT

Filed Sept. 24, 1964

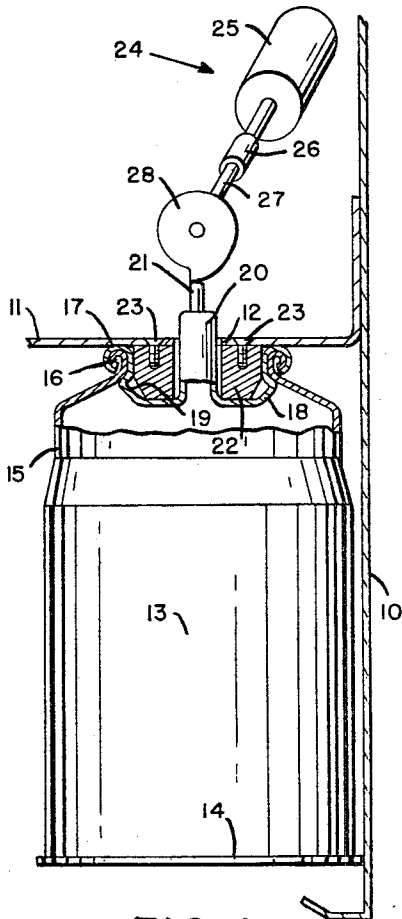


FIG. 1

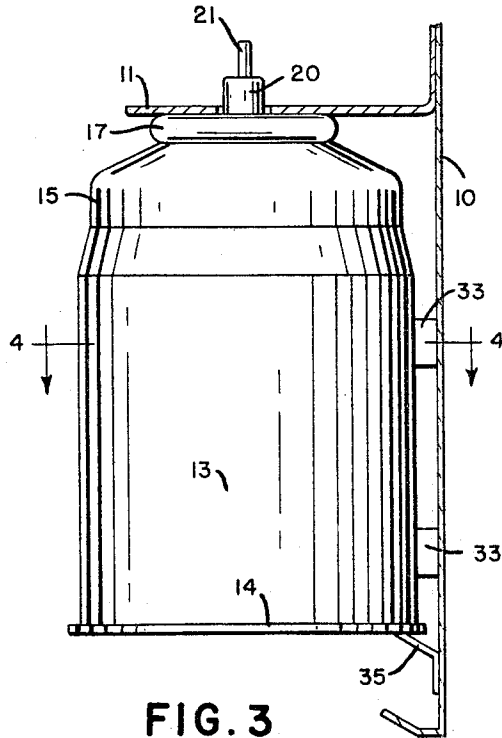


FIG. 3

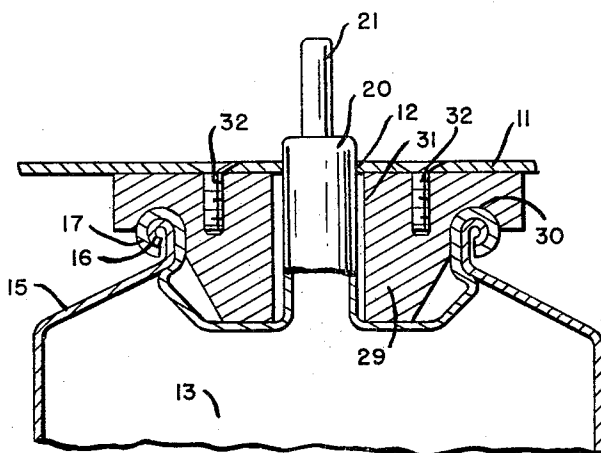


FIG. 2

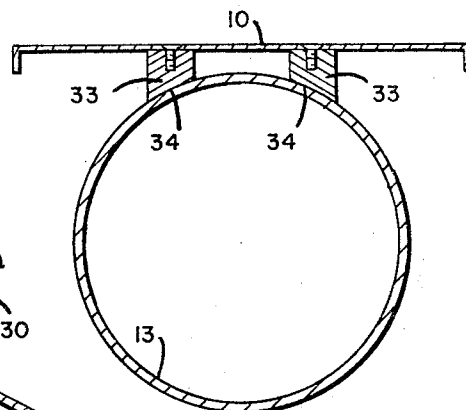


FIG. 4

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3,269,608

AEROSOL DISPENSER WITH MAGNETIC SUPPORT

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Filed Sept. 24, 1964, Ser. No. 398,931

3 Claims. (Cl. 222-180)

This invention relates generally to fluid spraying apparatus and more particularly to motor driven devices for the periodic and automatic dispensing of pressurized material from containers such as aerosol cans.

For many years aerosol containers with manually actuated valves have been used for discharging fine sprays of atomized liquids into the atmosphere. Such containers or cans contain aerosols in which the fluid to be dispensed is in association with a liquified gas. In the can is a spring closed valve with an upwardly projecting discharge stem carrying a spray nozzle in the form of a finger-piece or button, the depression of which opens the valve to effect the dispensing of the active ingredient and the carrier in the form of a fine mist. The valve mechanism may be such that the spray is continuously discharged as long as the nozzle is held depressed, or it may be of the metering type in which the depression of the nozzle causes a single burst of spray. In recent years there have been marketed devices for automatically operating the nozzles of such aerosol cans at timed intervals such as one, five, fifteen or more minutes. Such automatic actuators have used slow speed electric motor units to periodically operated some form of mechanism that engages the valve nozzle or button fixed to the top of the tubular discharge stem of the valve mechanism.

The active ingredients in the sprays from such aerosol containers may be of various kinds such as an insecticide to control flying insects in homes, eating places, food stores and greenhouses, an air purified to sanitize and deodorize the air in hospitals, food stores, restaurants and kennels, and a chemical to produce a fragrant odor such as evergreen, spice, chocolate, or hickory smoke useable in retail stores, specialty shops and food stores to aid in selling various products.

An object of the present invention is to provide an automatic spraying mechanism in which a can of pressurized active ingredient is held in a frame so that a motor driven means can periodically actuate the valve of the pressurized can.

Another object of the invention is to provide such a mechanism in which magnetic means is employed to hold the can to the frame.

Still another object of the invention is to provide such a mechanism in which the magnetic means acts on the top of the can.

Another object of the invention is to provide such a mechanism in which the magnetic means acts on the side of the can.

In one aspect of the invention, a horizontal plate may be connected to a vertical plate forming a frame adapted to be attached to a wall. The horizontal plate may include an opening therethrough for the reception of a protuberance on the top of an aerosol can or the like.

Aerosol cans are usually constructed with a top portion that is closed by a recessed cap, the outer edge of which is spun over, together with the top edge of the can opening. Usually the recessed cap includes a central, upstanding, cylindrical portion or protuberance, providing an annular space between it and the outer wall of the recessed cap. The upstanding, central protuberance houses a valve mechanism that communicates with the interior of the can, and a valve stem extends upwardly beyond the central upstanding protuberance.

In another aspect of the invention, an annular-

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shaped magnet, which may be a permanent magnet or a sintered type electromagnet, may be rigidly attached to the underside of the horizontal plate and concentric with the hole therethrough. Its outer diameter may be such that it will pass into the cup-shaped top of the aerosol can, and its internal diameter may be such that the upstanding central valve housing passes through said magnet, thence through the hole in the horizontal plate.

In still another aspect of the invention, the annular magnet may include a semicircular groove concentric with the internal diameter thereof, which groove receives the spun edge of the cap and top of the aerosol can.

In a further aspect of the invention, magnets may be attached to the vertical plate, said magnets having a contoured outer surface that corresponds to the cylindrical surface of the aerosol can, there being a finger attached to the vertical plate for holding the can in proper position vertically.

In a still further aspect of the invention, motorized means may be provided for periodically actuating the valve stem of the pressurized can for dispensing predetermined amounts of active ingredient.

The above, other objects and novel features of the improved pressurized can supporting and actuating means will become apparent from the following specification and accompanying drawing which are merely exemplary.

In the drawing:

FIG. 1 is an elevational view, partly in section, showing a support for an aerosol can to which the principles of the invention have been applied;

FIG. 2 is a modified form of the invention shown in FIG. 1;

FIG. 3 is another modified form of the invention; and FIG. 4 is a sectional view taken substantially along line 4-4 of FIG. 3.

Referring to the drawing, and particularly to FIG. 1, the principles of the invention are shown as applied to apparatus including a vertical plate 10 adapted to be mounted on a wall. A horizontal plate 11 is fixed to plate 10 and it includes a passage 12 therethrough. A can 13 of pressurized active ingredient adapted periodically to be dispensed is shown as being cylindrical in form, having a closed bottom 14 and a truncated conical top portion 15. The top portion terminates in an edge 16 that is rolled or spun together with the outer periphery 17 of a closure cap 18. The cap 18 may include a reentrant angular portion 19 and a central upstanding housing portion 20. The housing portion 20 is adapted to contain the usual valve mechanism for such cans including a stem 21 that slidably extends outwardly from the top of housing 20. The diameter of passage 12 is such as to freely receive housing 20.

An annular magnet 22 that may be a permanent magnet or a sintered type electromagnet may be fixed to the underside of plate 11 by screws 23. The inside diameter of magnet 22 is the same as that of passage 12, and its outside diameter slidably fits the outer wall of the cup-shaped cap 18. By moving the can 13 upwardly so that housing 20 extends through passage 12, magnet 22 is caused to contact the bottom surface of the cup-shaped cap 18 and the side wall of said cap, thus magnetically holding the can 13 to the plate 11.

In order periodically to actuate valve stem 21, a motorized means 24 may be provided. It is shown schematically and may be mounted on plates 10 and 11 or in any other suitable manner. It may comprise a motor 25 that is connected by a conventional one-revolution clutch 26 to a cam shaft 27. A cam 28 may be fixed to shaft 27 so that it acts on stem 21 to dispense a metered quantity of the ingredient within can 13 each time it makes a revolution. By means well known in

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the art, motor 25 can be periodically energized to cause a single revolution of cam 28.

Referring to FIG. 2, the magnet 29 is provided with a groove 30 concentric with a central opening 31, the magnet being fastened to plate 11 by screws 32. The groove 30 receives the rolled or spun edges 16, 17 and provides a more positive magnetic means for supporting the can 13.

Referring to FIGS. 3 and 4, two pairs of magnet means 33 are shown as fixed to the vertical plate 10. The magnets 33 may be provided with contoured surfaces 34 that correspond to the curvature of the can 13. A bracket 35 may be attached to plate 10 for engaging the bottom 14 of can 13 to position it vertically so that housing 20 and stem 21 extend above plate 11.

Although the various features of the improved mechanism have been shown and described in detail to fully disclose several embodiments of the invention, it will be evident that changes may be made in such details and certain features may be used without others without departing from the principles of the invention.

What is claimed is:

1. In combination, an aerosol container having a cup-shaped top including a rolled outer edge and an upstanding housing member at substantially the center thereof which latter communicates with the interior of said container; valve actuating means in said housing member; bracket means including a horizontal plate having a hole therethrough adapted to receive said valve actuating means; and annular-shaped magnetic means attached to the underside of said horizontal plate and concentric with said hole for holding said container to said horizontal plate with said valve actuating means extending above said horizontal plate said magnetic means extend-

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ing into the space between said upstanding housing member and the walls of the cup-shaped cap.

2. In combination, an aerosol container having a cup-shaped top including a rolled outer edge and an upstanding housing member at substantially the center thereof which latter communicates with the interior of said container; valve actuating means in said housing member; bracket means including a horizontal plate having a hole therethrough adapted to receive said valve actuating means; and annular-shaped magnetic means attached to the underside of said horizontal plate and concentric with said hole, there being a groove in said magnetic means adapted to receive said rolled outer edge of said top.

3. In combination, an aerosol container having a cup-shaped top including a rolled outer edge and an upstanding housing member at substantially the center thereof which latter communicates with the interior of said container; valve actuating means in said housing member; bracket means including vertical and horizontal plates, the latter having a hole therethrough adapted to receive said valve actuating means; magnetic means attached to said vertical plate and including a contoured surface corresponding to the contour of said container; and means on said vertical plate adapted to contact the bottom of said container for locating said container vertically.

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