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Smrt

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[54] **ACTUATING ASSEMBLY FOR AEROSOL SPRAY CAN**

[76] Inventor: **Thomas J. Smrt,** 4N671 Rt. 59, Bartlett, Ill. 60103

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[51] **Int. Cl.** **B65d 83/14**

[58] **Field of Search** 222/182, 402.11, 402.15, 222/402.21, 402.22, 402.23

[56] **References Cited**

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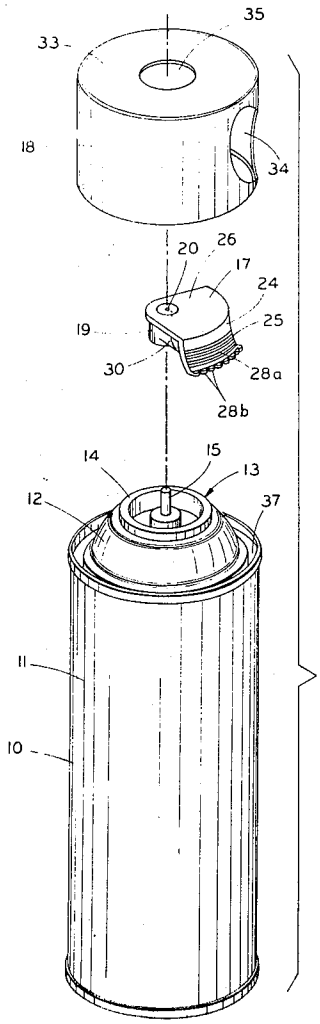
Primary Examiner—Stanley H. Tollberg
Assistant Examiner—John P. Shannon

[57] **ABSTRACT**

An actuating assembly for an aerosol spray can which permits the can to be conveniently sprayed upside down and which is movable between actuating and non-actuating positions. The actuating assembly includes a spray nozzle which is mounted on the valve of the can and a trigger which extends outwardly from the nozzle and which includes an outer downwardly extending finger portion. The valve is of the type which is opened when moved laterally, and pressing the finger portion of the trigger opens the valve. A cap is rotatably and removably mounted on the top of the can and covers the trigger. The top of the cap is provided with an opening above the nozzle through which the contents of the can may be sprayed, and the side of the can is provided with an opening which exposes the finger portion of the trigger when the cap is in the actuating position. The cap may be rotated on the can to move the side opening away from the trigger to prevent actuation of the valve when spraying is not desired.

2 Claims, 5 Drawing Figures



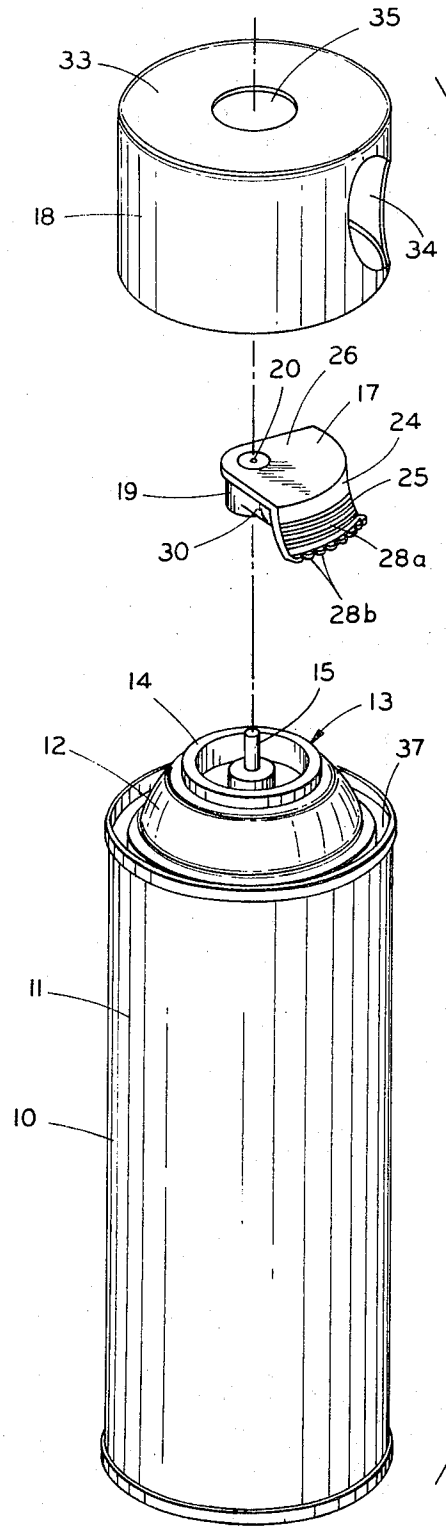


FIG.1

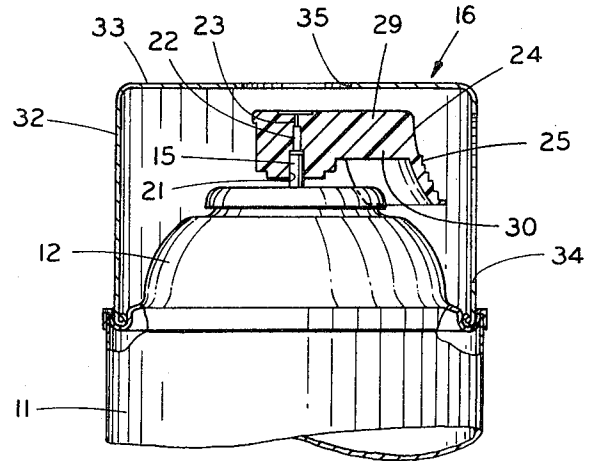


FIG.2

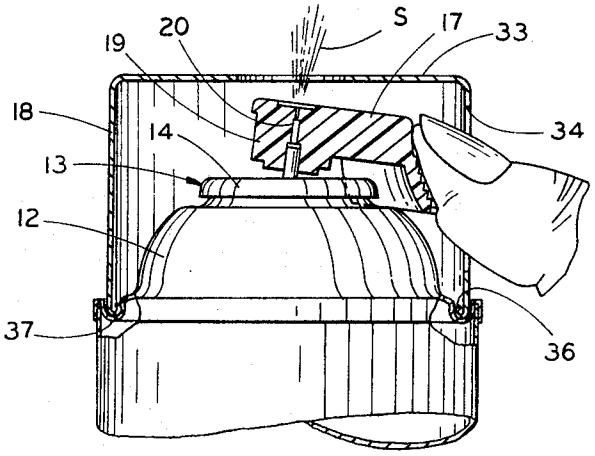


FIG.3

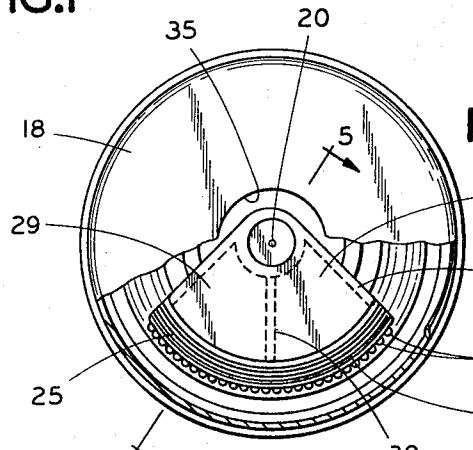


FIG.4

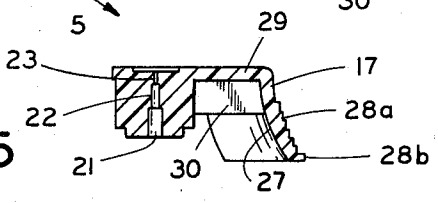


FIG.5

ACTUATING ASSEMBLY FOR AEROSOL SPRAY CAN

BACKGROUND

This invention relates to aerosol spray cans, and, more particularly, to an actuating assembly for an aerosol spray can which sprays its contents when inverted.

The use of aerosol spray cans to spray marking material on pavement, walkways, grass, and other surfaces is becoming increasingly common. Aerosol spray cans conventionally include a cylindrical body and a valve mounted in the top of the can. The valve includes a valve stem which opens the valve when moved, and a spray nozzle is mounted on the valve stem. Most aerosol cans also include a dip tube which extends from the valve to the bottom of the can so that the marking material within the can is expelled through the dip tube by the aerosol propellant when the can is upright.

A can having a dip tube is not convenient for spraying horizontal surfaces. The can must be held upwardly inclined relative to the horizontal so that the marking material covers the bottom of the dip tube and is pushed through the dip tube by the propellant. This means that the marking material will be sprayed onto the surface at an angle, which will decrease the accuracy or the control of the spraying, and the spray nozzle will be spaced from the surface, which might permit the spray to be blown by the wind before it reaches the surface. The necessity of holding the can upwardly inclined when spraying also makes the spraying procedure awkward and tiring, particularly when a large number of marks are to be made at different locations. The operator must squat or kneel in order to hold the can inclined upwardly yet relatively close to the surface, and the continual bending and straightening up at each spot to be marked can be very tiring. Simply bending from the waist will not position the can close enough to the surface.

SUMMARY

The invention utilizes a valve-equipped spray can that is not provided with a dip tube so that the contents of the can are sprayed when the can is inverted. The valve is opened when moved laterally, and the trigger of the actuating assembly can be easily pressed with one finger to move the valve when the can is pointed downwardly. Since the can can be actuated when pointed straight down, the operator need not assume an awkward, stooped position in order to spray but need only bend slightly from the waist. The side opening in the cap exposes the trigger for actuation when desired, and when the can is not to be used, the cap can be rotated to move the side wall of the cap into protecting relationship with the trigger.

DESCRIPTION OF THE DRAWING

FIG. **1** is an exploded perspective view of an aerosol spray can equipped with the invention;

FIG. **2** is a fragmentary sectional view through the top of the can and the actuating apparatus;

FIG. **3** is a view similar to FIG. **2** showing the actuation of the valve;

FIG. **4** is a fragmentary sectional top plan view of FIG. **2**; and

FIG. **5** is a sectional view of the actuator without the spray nozzle taken along the line **5—5** of FIG. **4.**

DESCRIPTION OF SPECIFIC EMBODIMENT

The numeral **10** designates a conventional aerosol spray can having a cylindrical body **11** and a dome-shaped top **12.** The top is provided with a central opening which is closed by a valve assembly **13.** The valve assembly includes a cap **14** which is crimped over the edges of the top opening to form a gas-tight seal and an upwardly extending valve stem **15.** The valve stem is connected to a conventional aerosol valve within the valve assembly, and the valve is of the type that is opened when the valve stem is moved laterally, i.e., transversely to the longitudinal axis of the can. The can contains marking material, such as paint, and a conventional aerosol propellant, such as a blend of isobutane and propane. The marking material is heavier than the propellant, and the marking material occupies the bottom of the can when the can is upright with the propellant thereabove. The valve assembly does not include a dip tube which conventionally extends downwardly from the valve to the bottom of the can. Thus, marking material is propelled from the can by the propellant when the can is inverted rather than when it is upright as shown.

The valve is opened or actuated when desired by an actuating assembly **16,** which includes an integrally molded plastic actuator **17** and a cap **18.** The actuator includes a generally cylindrical spray nozzle portion **19** provided with a central bore **20** which comprises three portions of decreasing diameter. A first or attaching portion **21** is sized to snugly receive the valve stem **15** so that the actuator is frictionally retained thereon, a reduced diameter intermediate portion **22** prevents the stem from being inserted too far into the bore, and a small diameter end portion **23** provides the spray orifice for the marking material.

The actuator also includes a trigger portion **24** which extends outwardly from the nozzle portion and includes an outer finger portion **25** and a connecting or intermediate portion **26.** The finger portion **25** extends through an arc of about 90° and includes a downwardly and outwardly curved or arcuate wall **27** which is adapted to be pressed by a finger and which is provided with arcuately extending ribs **28*a*** and radially extending serrations **28*b*** to prevent slipping. The connecting portion includes a flat generally sector-shaped top wall **29** which extends radially outwardly from the top of the nozzle portion to the top of the arcuate wall **27** and three radially extending ribs **30.**

The cap **18** includes a cylindrical side wall **32** and a flat top wall **33.** The side wall is provided with an opening **34,** and the top wall is provided with an opening **35** directly above the spray nozzle. The lower edge of the side wall terminates in a curved rim **36** which can be snapped into a groove **37** formed in the can top **12.**

The groove **37** is curved in cross section and extends for slightly more than a semicircle so that when the curved rim **36** is snapped into the groove it is retained therein. The cap can be removed from the can when desired by exerting an upward force sufficient to compress the curved rim slightly to permit it to be withdrawn from the groove. When the rim is positioned within the groove, the cap is rotatable with respect to the can, but the groove frictionally retains the rim in any desired position.

When the contents of the can are to be sprayed, the cap is rotated to bring the side opening **34** adjacent the

finger portion **25** of the trigger. The trigger terminates just inwardly of the side wall of the cap, and the finger portion is readily accessible when exposed by the side opening. The can is pointed downwardly toward the surface to be sprayed, and the operator merely inserts his finger through the opening **34** to engage the trigger. When the finger portion **25** of the trigger is pressed toward the top of the can as shown in FIG. **3**, the actuator is caused to pivot about the connection of the stem with the valve, and the lateral movement or pivoting of the stem opens the valve to spray the contents of the can through the nozzle as indicated at S. Although the can is shown upright in FIG. **3** for convenience of illustration, it will be understood that since the can is not provided with a dip tube, the marking material within the can is sprayed when the can is pointed downwardly.

The can can be conveniently held in one hand with the index finger extending through the side opening and engaging the trigger. Since the can is operated when it is pointed downwardly, the operator need only bend slightly at the waist to bring the nozzle into the desired spraying position relative to the surface. The operator can therefore quickly spray a large number of markings at different locations without discomfort or fatigue.

The bottom edge of the curved wall **27** has substantially the same curvature as the adjacent portion of the dome-shaped top **12**, and this bottom edge is engageable with the dome-shaped top to prevent excessive movement of the actuator and nozzle. Excessive movement of the nozzle might decrease the accuracy of the sprayed material, cause some of the spray to hit the top of the can rather than passing through the opening therein, and excessively stress the connection between the valve stem and the valve.

When the can is not to be used for a period of time, the operator can prevent inadvertant actuation of the valve merely by rotating the can top **18** to move the side opening **34** away from the finger portion of the trigger. For example, rotation of the top for only about 90° will bring an imperforate portion of the side wall adjacent the finger portion, the maximum dimension of the opening also extending through an arc of about 90°. The cap will be frictionally retained in a non-actuating position until the can is to be used again, at which time the cap is merely rotated to permit the side opening to expose the trigger. When the cap is in the non-actuating position, it can be carried in a packet, tool box, or the like without danger of the contents of the can being sprayed.

Referring to FIG. **2**, the trigger is seen to be located inwardly of the side wall of the cap, and even when the cap is in the actuating position shown, inadvertant actuation of the valve is unlikely.

While in the foregoing specification a detailed description of a specific embodiment of the invention was set forth for the purpose of illustration, it is to be understood that many of the details herein given may be varied considerably by those skilled in the art without departing from the spirit and scope of the invention.

I claim:

1. An actuator for an aerosol spray can having a generally cylindrical body and a valve-equipped top, the valve being adapted to open when moved laterally relative to the longitudinal axis of the can, the actuator comprising a spray nozzle portion mounted on the valve, an intermediate portion extending outwardly from the nozzle portion generally transversely to the longitudinal axis of the can, and a finger portion extending concavely arcuately outwardly and downwardly from the intermediate portion whereby the valve can be opened by pressing the finger portion to move the valve laterally, a cap rotatably mounted on the top of the can, the cap having a generally cylindrical side wall and a top wall, the finger portion of the actuator being positioned inwardly of the side wall, the top wall being provided with an opening therethrough above the nozzle portion of the actuator through which the contents of the can are sprayed when the valve is opened, the side wall of the cap being provided with an opening therethrough, the cap being rotatable on the can between an actuating position in which the opening in the side wall of the cap exposes the finger portion of the actuator and permits the actuator to be pressed to open the valve and non-actuating positions in which an imperforate portion of the side wall of the cap is adjacent the finger portion of the actuator to prevent the actuator from being pressed, the top of the can being generally dome-shaped and the lower periphery of the finger portion of the actuator extending arcuately in a plane extending transversely to the axis of the can with substantially the same curvature as the dome-shaped top, the spacing between the lower periphery of the finger portion and the dome-shaped top when the valve is closed being such that the lower periphery of the finger portion engages the dome-shaped top before the actuator is pressed sufficiently to spray the contents of the can against the top wall of the cap.

2. The structure of claim **1** in which the finger portion of the actuator is provided with a plurality of ribs, each rib extending in a plane transverse to the axis of the can.

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