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2,587,040

SPRAY NOZZLE

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Fig. 1

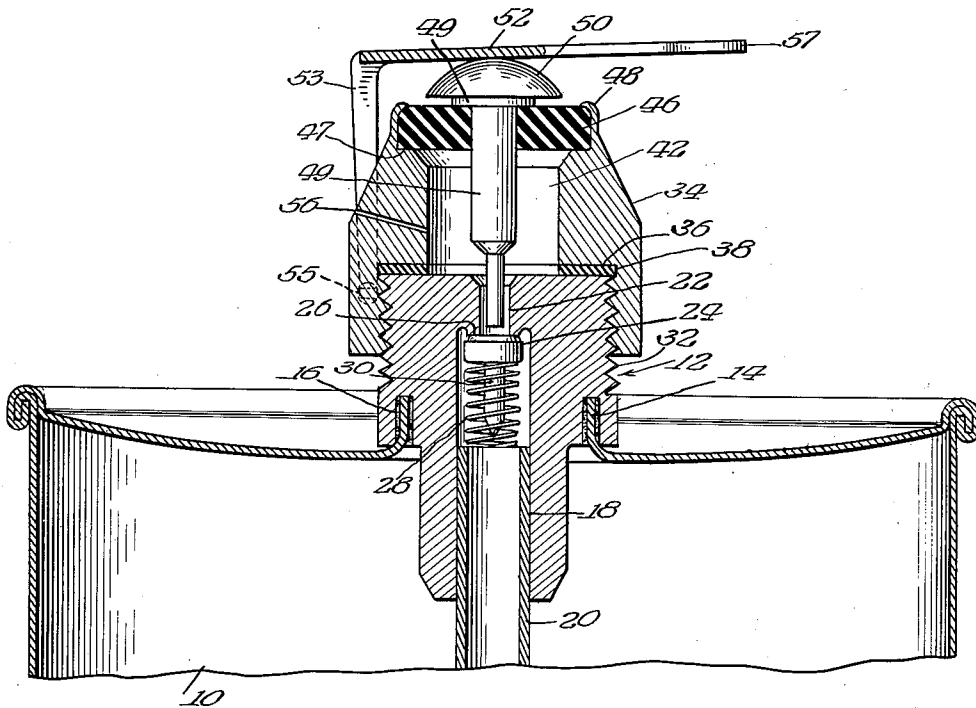


Fig. 2

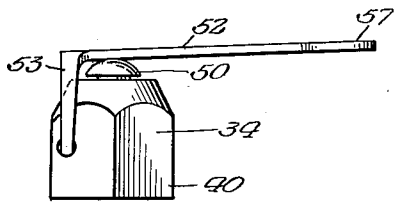
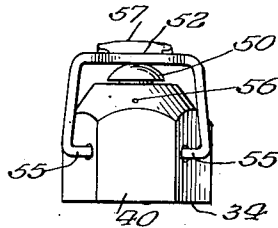


Fig. 3



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UNITED STATES PATENT OFFICE

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SPRAY NOZZLE

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2 Claims. (Cl. 299—150)

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The invention relates to spray nozzles and more particularly to the type adapted to be coupled to cans or receptacles charged with material containing a gas propellant and provided with a closure valve.

The objects of the invention are to provide a spray nozzle of this type which is simple in construction, efficient in operation and which can be readily manipulated for directional control of the spray from the nozzle.

Other objects of the invention will appear from the detailed description.

The invention consists in the several novel features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawings:

Fig. 1 is a vertical section of a spray nozzle embodying the invention and applied to a can provided with a closure valve and containing material which contains a gas propellant;

Fig. 2 is a side elevation of the nozzle; and

Fig. 3 is an end elevation of the nozzle.

The improved spray nozzle is exemplified on a can 10 the top of which is usually concave and provided with a valve-casing 12. The top wall of the can is usually provided with an upturned flange 14 which is soldered in an annular recess 16 in and thereby sealed to the valve-casing 12. The casing 12 is provided with a bore 18 in which the upper end of a pipe 20 is secured, for conducting material to be sprayed from the bottom of the can into the valve casing. The upper end of the casing 12 is provided with a central discharge duct 22. A valve 24 for closing the can, is disposed in the bore 18, engages a seat 26 at the lower end of duct 22 and is held closed by a coil spring 28 which extends around a stem 30 on said valve and between said valve and the upper end of pipe 20. This valve closes the can to retain the pressure in the material therein. The casing 12 is provided with a screw-thread 32 for connection to the spray nozzle.

The spray nozzle comprises a casing 34 which is provided with a screw-thread for engaging the screw-thread 32 on the valve casing and is provided with a shoulder 36 for clamping a packing ring or gasket 38 between the nozzle-casing 34 and the outer end of the valve-casing 12 and sealing the material in the can. The lower portion of nozzle 34 has a hexagonal periphery, as at 40, for turning said casing into connected relation with the valve-casing. An expansion chamber 42 in the nozzle-casing extends to the upper end of casing 12 and communicates with the duct 22.

The nozzle includes a device for opening the valve 24 which comprises a depending stem 44

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the lower end of which is adapted to extend into duct 22 and lower the valve 24 away from its seat 26 when the said stem is depressed for discharging material to be sprayed from the can into the expansion chamber 42. An elastic disk 46 is secured in the upper end of the nozzle-casing 34 and supports the stem 44. Elastic disk 46 is seated on a shoulder 47 in the casing 34 and is secured on said shoulder by the inturned integral upper edge 48 of the casing 34, for forming a seal between the margin of the disk and casing 34. Stem 44 is provided with an enlarged portion 49 which extends through the elastic disk, and a head 50 which engages the upper face of the central portion of disk 46. The elastic material in the disk 46 forms a seal around the stem 44.

A lever for conveniently shifting head 50 and stem 44 to open valve 24, comprises an arm 52 which extends over head 50 and depending legs 53 the lower ends of which are provided with integral inturned pintles 55 which are confined in coaxial sockets 54 in and adjacent one side of casing 34. Arm 52 is provided at its distal end with a finger-piece 57. The discharge orifice 56 from expansion chamber 42 extends through the wall of the casing 24 between the depending legs 53 of the lever, so that by positioning the legs toward the work to be sprayed the operator can direct the spray in the desired direction.

The operation of the spray nozzle will be as follows: Assuming the casing 34 to be screwed onto the valve-casing 12, as illustrated in Fig. 1, the operator by downward pressure on the finger-piece 57 on arm 52, will force head 50 and stem 44 downwardly a sufficient extent to open valve 24 so that the material will enter expansion chamber 42 and be discharged through orifice 56. The depression of arm 52 will flex the central portion of disk 46 downwardly. The elastic disk 46 will lift stem 44 and head 50 when pressure on the arm 52 is released to close valve 24.

An important characteristic in this construction is that the elastic disk forms a seal around the valve shifter stem and for the nozzle-casing so that leakage from chamber 42 will be effectively prevented, and also functions to retract said stem. Another characteristic of the device is that the discharge orifice 56 is positioned transversely between the legs 52 of the shifter lever, so that the operator by positioning said legs toward the work the spray will always be centrally between said legs while the operator's finger manipulates the opposite end of the lever. This facilitates the directional manipulation of the nozzle for controlling the spray.

Another characteristic of the nozzle is that

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when it is detached from the can, it can be readily cleaned.

The invention exemplifies a spray nozzle adapted for attachment to cans containing material to be sprayed with a gas propellant, in which the valve-shifting member in the nozzle casing is sealed in said casing by an elastic disk which also functions to retract the valve-opening device. The invention also exemplifies a simple lever construction by which the opening of the valve may be facilitated and which aids in directionally controlling the spray by the operator.

The invention is not to be understood as restricted to the details set forth since these may be modified within the scope of the appended claims without departing from the spirit and scope of the invention.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A spray nozzle adapted to be coupled to a container provided with a casing secured therein and having a closure-valve supported in said casing, comprising: a nozzle-casing provided with an expansion chamber communicatively connected with its inner end, a discharge orifice leading from said chamber, and means for detachably coupling it to the valve-casing on the can; an elastic disk, the nozzle-casing having a seat for the disk and a wall surrounding and upset to retain and seal the margin of the disk in the nozzle-casing; a stem for shifting the valve extending through, sealed to and retractable by the central portion of the elastic disk; and a head on the outer side of the disk for shifting the stem, the stem being separable from the valve and the nozzle-casing with the stem being detachable from the casing secured in container, while the valve remains operative to close the container.

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2. A spray nozzle adapted to be coupled to a container provided with a casing secured therein and having a closure-valve supported in said casing, comprising: a nozzle-casing provided with an expansion chamber communicatively connected with its inner end, a discharge orifice from said chamber, and means for detachably coupling it to the valve casing on the can; an elastic disk having its margin sealed to and secured in the nozzle-casing; a stem for shifting the valve extending through, sealed to and retractable by the central portion of the elastic disk; a head on the outer side of the disk for shifting the stem; and a lever outside of the nozzle casing for shifting the head including an arm overlying the head and integral dependent legs having their lower ends provided with inturned pintles, the nozzle-casing having sockets in which said pintles are confined, the discharge orifice being disposed between the legs, the stem being separable from the valve and the nozzle-casing with the stem being detachable from the casing secured in container, while the valve remains operative to close the container.

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