

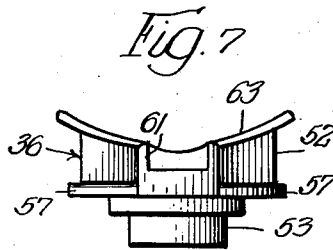
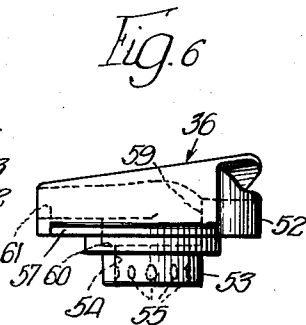
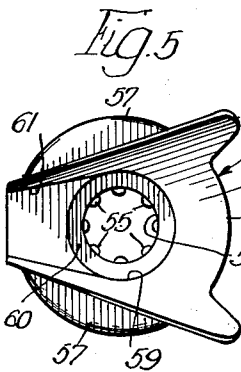
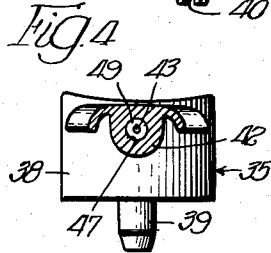
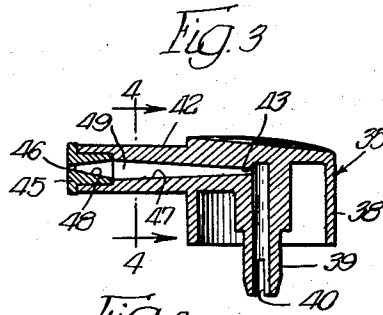
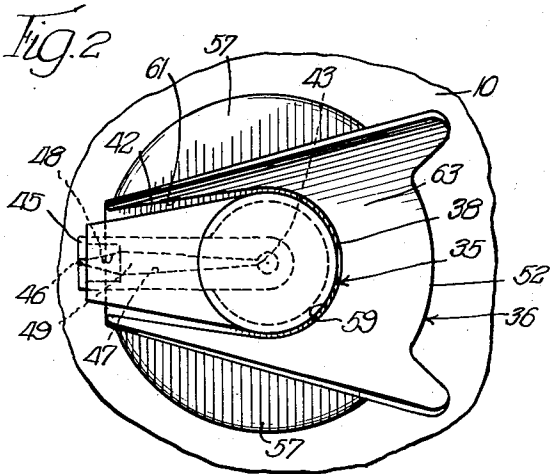
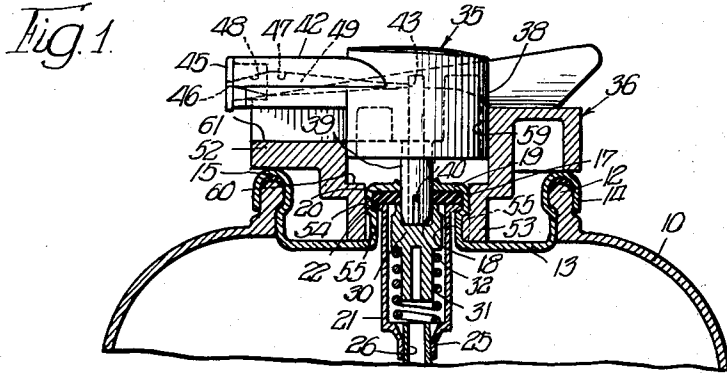
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E. H. GREEN

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SPRAY HEAD AND GUIDE ASSEMBLY FOR AEROSOLS

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INVENTOR.

Edward H. Green,

BY

Cromwell, Smith & Warden

attys

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**SPRAY HEAD AND GUIDE ASSEMBLY  
FOR AEROSOLS**

Edward H. Green, % Newman-Green Inc.,  
57 Interstate Road, Addison, Ill.  
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The present invention relates to aerosol containers and, more particularly, to a spray head and guide assembly for the dispensing valve of an aerosol container.

An important object of the present invention is to provide a new and novel spray head and guide assembly for the dispensing valve of an aerosol container wherein a depressible spray head is guidingly accommodated in a vertical bore formed in a guide member with the upper surface of the guide member being provided with a configuration adapted to facilitate properly positioning a person's thumb or finger for depressing the spray head whereby the product will be dispensed in a direction away from the person.

Another important object of the present invention is to provide a new and novel depressible spray head having a laterally projecting nozzle portion provided with an expansion chamber therein whereby to provide double expansion of the product dispensed therethrough and thus a fine product spray.

A more detailed object of the present invention is to provide a new and novel spray head and guide assembly for the dispensing valve of an aerosol container including a guide member mounted on the top of the aerosol container and having a centrally located vertical bore formed therein, a depressible spray head for the dispensing valve of the aerosol container guidingly accommodated in the bore in the guide member and having a laterally projecting spray nozzle portion provided with an expansion chamber therein, and with the upper surface of the guide member being concavely curved upwardly and outwardly in a direction diametrically opposite to the projecting spray nozzle whereby to facilitate properly positioning a person's thumb or finger for depressing the spray head so that the product will be dispensed in a direction away from the person.

Certain other objects of the invention will, in part, be obvious, and will in part appear hereinafter.

For a more complete understanding of the nature and scope of the invention reference may now be had to the accompanying drawings wherein:

FIG. 1 is a fragmentary vertical section taken through the top portion of an aerosol container and the dispensing valve thereof, which aerosol container is provided with a spray head and guide assembly embodying the invention with the guide member being shown in vertical section and the spray head being shown in side elevation;

FIG. 2 is a top plan view of the assembly of FIG. 1;

FIG. 3 is a vertical section taken through the spray head of the assembly;

FIG. 4 is a vertical section taken generally on the line 4—4 of FIG. 3;

FIG. 5 is a reduced scale top plan view of the guide member of the assembly;

FIG. 6 is a side elevational view of the guide member of FIG. 5; and

FIG. 7 is a front end elevational view thereof.

An aerosol container of the type fragmentarily illustrated in FIG. 1 includes an upper portion 10 having an open mouth provided with an upturned rim 12. The dispensing valve for the container includes a sheet metal cover 13 having a rolled edge 14 which extends over a composition sealing gasket 15 fitted over the rim 12 of the open mouth of the container. The cover 13 is off-set

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or dished inwardly of the mouth of the container and is provided with a centrally located upstanding tubular neck portion 18 having an apertured top wall 19. The neck portion 18 is provided at its upper end with an enlarged diameter portion 17 for purposes which will be explained hereinafter.

An apertured sealing gasket 20 formed of rubber or other suitable elastic material is disposed in the neck portion 18 against the underside of the top wall 19 thereof and a cylindrical valve shell 21 provided at its upper end with an outwardly turned flange portion is disposed against the underside of the sealing gasket 20. The sealing gasket 20 and the valve shell 21 are retained in their foregoing positions by an inwardly turned shoulder 22 defined between the enlarged diameter portion 17 and the main body portion of the upstanding neck 18. The valve shell 21 is provided with a bottom wall having a depending tubular portion 25 which is swaged about the upper end of a dip tube 26 which extends into proximity with the bottom of the container. A valve plunger member 30 is slidably fitted in the valve shell 21 and is normally resiliently urged upwardly into sealing engagement with the underside of the sealing gasket 20 by a spring member 31. The upper end of the valve plunger member 30 is provided with a socket 32 which is disposed in alignment with the apertures formed in the top wall 19 of the neck portion 18 and the sealing gasket 20.

The spray head and guide assembly with which the present invention is primarily concerned includes a depressible spray head 35 and a guide member 36. As best illustrated in FIGS. 1—4, the spray head 35, which is preferably formed of a plastic material, includes a generally cylindrical body portion 38 which is closed at its upper end. An integral hollow stem 39 which is disposed in alignment with the axis of the cylindrical body portion 38 extends downwardly therefrom and is provided at its lower end with one or more longitudinally extending slots 40 formed in the wall thereof. The stem 39 is adapted to be inserted downwardly through the apertured top wall 19 of the neck portion 18 and the apertured sealing gasket 20 and into the socket 32 formed in the upper end of the valve plunger member 30. Thus, when the spray head 35 is depressed, the valve plunger member 30 is moved downwardly out of sealing engagement with the gasket 20 whereby to permit the pressurized product in the aerosol container to flow upwardly through the dip tube 26, the valve shell 21, and then into the hollow stem 39 through the slots 40 formed therein.

The spray head 35 is further provided with an integral elongated spray nozzle portion 42 which projects laterally from the cylindrical body portion 38 and has a passage 47 extending therethrough. The inner end of the passage 47 in the nozzle portion 42 is in communication with the bore of the stem 39 through a first orifice 43 with the inner diameter of the passage 47 increasing progressively in a direction away from the orifice 43 toward the outer end of the nozzle portion 42. The outer open end of the nozzle portion 42 is substantially closed by an insert member 45 having a passage 48 extending there-through. The outer end of the passage 48 in the insert member 45 is in the form of a small orifice 46 with the remaining portion of the passage 47 increasing progressively in diameter in a direction away from the orifice 46 until at the opposite end of the insert member 45 it is substantially equal in diameter to the diameter of the outermost end portion of the passage 47 in the nozzle portion 42. The orifices 43 and 46 are preferably equal in size and may have a diameter in the order of .025 inch. An expansion chamber 49 is thus defined in the nozzle portion 42 whereby the pressurized product dispensed through the spray head 35, when the spray head 35 is depressed, will be provided with a double expansion

with the first expansion of the product occurring as it passes from the hollow stem 30 into the expansion chamber 49 through the orifice 43 and with the second expansion occurring when it passes through the orifice 46 into the atmosphere. This double expansion feature results in a fine product spray and reduces the tendency of certain products to be dispensed in undesirable drops, particularly the more viscous products such as paint and the like.

The guide member 36 of the assembly, which is preferably formed of a yieldable plastic material, is best illustrated in FIGS. 1, 2, and 5-7. The guide member 36 includes a body portion 52 having a centrally located downwardly extending tubular portion 53 with the inner diameter of the bore 54 thereof being approximately equal to the outer diameter of the enlarged diameter portion 17 of the upstanding neck 18, whereby the tubular portion 53 is adapted to be telescopically fitted over the neck 18. The bore 54 of the tubular portion 53 is provided adjacent the lowermost end thereof with a series of circumferentially spaced inwardly projecting lug members 55. Because of the yieldability of the material from which the guide member 36 is formed, the lug members 55 may be snapped over the enlarged diameter portion 17 of the neck 18 as the tubular portion 53 is telescopically fitted over the neck portion 18 whereby to releasably mount the guide member 36 on the container cover member 13. The body portion 52 of the guide member 38 is characterized by a generally circular horizontally and radially extending flange-like portion 57 which is adapted to overlie the uppermost surface of the rolled edge 14 of the cover member 13 when the tubular portion 53 of the guide member 36 is telescopically assembled on the neck portion 18 whereby to provide a cover for the inwardly dished cover member 13 and the upstanding neck portion 18 thereof.

A vertically extending guide bore 59 is formed in the top of the guide member 36, which bore 59 is axially aligned with the bore 54 of the depending tubular portion 53 and in communication therewith. The diameter of the bore 59, which is larger than the diameter of the bore 54 whereby an upwardly facing shoulder 60 is defined therebetween, is slightly larger than the outer diameter of the cylindrical body portion 38 of the spray head 35 whereby the depressible spray head 35 may be guidingly disposed therein. An open-topped slot 61 is formed in the top of the guide member 36 and extends radially outward from the bore 59 whereby to accommodate the elongated spray nozzle portion 42 of the spray head 35. As illustrated in FIG. 1, when the spray head and guide assembly of the invention is mounted on the upper portion 10 of the aerosol container and the spray head 35 is in its normal non-depressed condition, the lower surface of the nozzle portion 42 is positioned above the lower surface of the slot 61 and the lower edge of the cylindrical body portion 38 is positioned above the shoulder 60 defined between the bores 54 and 59 whereby to accommodate the downward movement of the spray head 35 when the same is depressed.

The guide member 36 is provided with a specially designed upper surface 63 which is concavely curved upwardly and outwardly in a direction diametrically opposite to the radial slot 61. This configuration of the upper surface 63 serves as a guide for properly positioning a person's thumb or finger for depressing the spray head 35 so that the product will be dispensed in a direction away from the person. With many aerosol containers, it is necessary to carefully look at the spray head thereof to ascertain the position of its spray orifice before depressing the spray head. It is not an uncommon occurrence for a careless or distracted person to receive the product spray directly in the face. With the spray head and guide assembly disclosed herein and particularly the configuration of the upper surface 63 of the guide member 36, the product spray may always be directed away

from the person using the aerosol container without him even having to glance at the spray head thereof. This is of particular importance when spraying a medicant-type product in a child's darkened room, when dispensing an anti-mosquito product out-of-doors after dark, or in aerosols to be used by blind persons, for example.

It will be understood that certain changes may be made in the construction or arrangement of the spray head and guide assembly disclosed herein without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. In an aerosol dispenser valve for a container having an inwardly dished cover member closing the open upper end of the container and said cover member has a centrally positioned, upstanding neck having an upper end wall provided with an aperture and a sealing gasket having a central aperture aligned with said end wall aperture and a spring biased valve plunger member having an upwardly opening socket of cylindrical configuration coaxially aligned with said apertures and normally biased upwardly into sealing engagement with said gasket; the herein improvement which comprises, a guide member and spray head assembly adapted to be removably mounted on said neck for dispensing an aerosol product from the container, said guide member comprising, a body portion having an upper end and a central bore therethrough, a hollow, tubular portion depending from the opposite end of said body portion coaxially with said bore and having an internal diameter enabling said tubular portion to be telescopically engaged over said neck in a friction fit, said bore being larger in diameter than the internal diameter of the tubular portion to provide an internal shoulder between said body and tubular portions, the upper end face of said body portion having an upwardly opening slot therein extending radially from said bore to the marginal edge of said body portion, said upper end face likewise having an upwardly and outwardly concave surface portion extending radially from said bore to the marginal edge of said body portion, albeit, in a direction diametrically opposite to said slot, said spray head comprising, a generally cylindrical hollow body member having an imperforate, transverse, upper end wall, said body member being slidably engaged axially in said bore through the upper end of said body portion, said body member having a hollow depending stem extending into the tubular portion past said shoulder, an elongated spray nozzle projecting laterally from said body member and having a passageway therethrough, one end of said passageway communicating with the interior of said hollow stem adjacent the upper end of said stem, the opposite end of said passageway opening to ambient atmosphere, said passageway having an internal diameter of non-uniform cross-section to provide an expansion chamber in the nozzle intermediate the open ends of said passageway, said assembly adapted to be removably mounted on said neck with the stem extending through said apertures into said socket and said nozzle aligned with said slot albeit normally spaced from the bottom of the slot and said transverse upper end wall protruding upwardly beyond the upper end of said body portion between the slot and said concave surface, said concave portion providing a finger guide for depressing said spray head to dispense the aerosol product through said opposite end of the passageway in a direction away from the concave surface with accompanying movement of the nozzle into said slot.

2. An assembly as described in claim 1 in which there is an enlarged annular flange on said body portion adapted to be seated upon said cover member spaced from said neck when the assembly is installed and said ends of the passageway are substantially similar in cross-sectional dimensions.

3. An assembly as described in claim 1 in which the internal dimensions of said passageway increase progres-

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sively in directions away from the opposite open ends thereof.

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