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⑯ **Aerosol dispensers.**

⑯ An aerosol dispensing container (2), including a down-tilt-actuated valve (12), has an outlet which is covered by a sealed plastics dispensing nozzle (14) which is mounted on the valve externally of the container. The presence of the sealed nozzle prevents inadvertent dispensing of product in the container. When it is desired to dispense product, an aperture can be formed in the nozzle, e.g. by cutting off the tip (18) thereof, and tilting the nozzle.

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AEROSOL DISPENSERS

The present invention relates to aerosol dispensers.

The use of aerosol or pressurised containers, containing products dispensable through a valve on 5 actuation of the valve, is widespread. Such containers are used to dispense, for example, caulking materials, adhesives and creams. It is often desirable to obtain a smooth bead of such a product when dispensed.

It is also usually desirable to prevent premature 10 dispensing of the product, in order to avoid product loss, product spoiling, or clogging of the valve. While a conventional valve can be activated quite easily, e.g. to sample product prior to sale, mishandling can cause inadvertant product release, and this can cause significant 15 product waste and economic waste.

Various proposals have been made, with the intention of alleviating the problem of inadvertant dispensing. The trend of such proposals has been to discard conventional valves, in favour of radically different 20 valve and adapter designs. While such solutions may meet the desired objectives, they have not met with success, since the cost of tooling is high. Complicated shapes are often involved, making moulding difficult. Many stages are often necessary in order to mount such valves on 25 aerosol containers.

Another proposal has been to provide a sealed cover for the valve. Such a cover can prevent the product contacting metal portions of valves. However, the production of such covers has required elastomeric materials which 30 are sufficiently soft for it to be necessary to require

additional reinforcement, thereby raising costs.

U.S. Patent Specification No. 3,648,905 discloses an aerosol dispensing container including a down-tilt actuated valve. An outlet nozzle is provided, rigidly connected to a lever arm which can be releasably mounted in a locking member to prevent inadvertant operation of the valve.

U.S. Patent Specification No. 3,901,410 discloses an aerosol dispensing container including a down-tilt actuated valve with an aperture nozzle which can be open or closed by rotation of a screw-threaded member.

U.S. Patent Specification No. 4,165,825 discloses an aerosol dispensing container including a down-tilt actuated valve whose outlet is covered by a sealed plastics dispensing nozzle.

The material of the nozzle is resilient (specifically, a flexible non-rigid thermoplastic material) which has a rigid reinforcing plug therewithin. The nozzle is mounted within the valve, and the valve, of course, is mounted in the container top.

The embodiments illustrated in U.S. Patent Specifications Nos. 3,901,410 and 4,165,825 are complicated. The moulding of such valve members is difficult, and the cost of production of the valves is high.

According to the present invention, an aerosol dispensing container including a down-tilt actuated valve whose outlet is covered by a sealed plastics dispensing nozzle, has the nozzle mounted, externally of the container, on the valve.

It is a feature of the present invention that an entirely conventional aerosol container, with a conventional valve can be used. For the purposes of the invention, an independent sealed nozzle member can be mounted on the valve, before or after the container is filled with the product to be dispensed.

The nozzle member can serve as a cap for an aerosol container or can valve, and also as a dispensing nozzle. When it is desired to dispense product, an aperture is formed in the nozzle. The nozzle is preferably 5 tapered, and more preferably has, at least in part, a cone-shaped head which can be cut off.

The valve can be actuated by tilting the nozzle. The product will then flow through the valve, and out of the nozzle in the form of a smooth bead, depending on 10 the shape of the aperture. No product can escape, by inadvertant activation of the valve, until an aperture is formed in the nozzle. The valve is prevented from clogging, since residual product in the nozzle provides a seal. If the nozzle aperture becomes clogged with product, the 15 clogged part of the nozzle can be cut off or punctured.

A nozzle can be moulded inexpensively, owing to its simple design. Since a conventional valve can be used, the adapter can be incorporated into conventional aerosol delivery systems.

20 The material of the nozzle walls is substantially rigid. Accordingly, the valve can be actuated by pressure on a part of the nozzle. The material may be non-elastomeric and thermoplastic. Suitable materials include polyacetals, acrylics, polyamides, polyesters, ABS, 25 polystyrene, SAN, polyimides, polyurethanes, polycarbonates and vinyls such as polyvinyl chloride. The most preferred materials are olefine plastics such as low and high density polyethylene and polypropylene.

A suitable, conventional valve for use in a 30 container of the invention is a springless down-tilt actuated valve. If desired, a valve with a spring can be used. Known valves of a suitable type comprise a flexible base section, an intermediate flared section and a straight stem. The stem usually has threads, at least at its lower 35 end. The flexible section is preferably made from rubber

and functions to maintain the valve closed, and the container thus sealed, when not being actuated. The valve may be provided in a cup which can be mounted on an aerosol container.

5 At least that part of the nozzle which surrounds the valve is preferably cylindrical. The lower internal wall of this section of the nozzle suitably has a locking lug which can be snap-fitted or otherwise brought into engagement with a corresponding rib or flange on the 10 valve (suitably the flared portion thereof). The lug on the interior of the nozzle may be a continuous rim or comprise at least three evenly-spaced projections.

The interior of the nozzle may comprise axial ribs. There will usually be at least three evenly-spaced, 15 and suitably four, ribs. Such ribs can have, in addition to a reinforcing effect, the purpose of maintaining the nozzle and the stem of the valve in the same relative configuration. In the absence of such ribs, there can be a time-lag between tilting the nozzle and actuation of the 20 valve, if there is a degree of play between the nozzle and the valve.

The invention will now be described by way of example with reference to the accompanying drawings in which:

25 Figure 1 is a fragmentary perspective view of an embodiment of the invention;

Figure 2 is a partial sectional view of the apparatus of Figure 1; and

Figure 3 is a bottom view of a sealed nozzle 30 member for use in the invention.

Figure 1 shows an aerosol container 2 including a down-tilt-actuated valve 4. The valve has a straight stem 6 having a threaded portion 8, a flexible section 12 and a flared section 22. The flexible section supports 35 the stem and is mounted in a mounting cup 10.

A sealed nozzle 14 is mounted externally of the container, on the valve 4. The nozzle has a generally cylindrical body 16 with a tapered closed top 18. The interior of the cylindrical body has, mounted thereon, a plurality of axial ribs 24.

Figure 2 shows the manner in which the generally cylindrical body is mounted on the valve, in greater detail. Figure 2 shows a lug 20 on the interior of the generally cylindrical body 16 which cooperates with a flange on the flared section 22 of the valve 4.

Figure 3 shows the disposition of the lug 20 and the axial ribs 24.

CLAIMS

1. An aerosol dispensing container including a down-tilt-actuated valve whose outlet is covered by a sealed plastics dispensing nozzle, characterised in that the nozzle is mounted on the valve, externally of the container.
2. A container according to claim 1, in which the nozzle is tapered.
3. A container according to claim 1 or claim 2, in which the nozzle is cone-shaped.
4. A container according to any preceding claim, in which the nozzle has internal ribs.
5. A container according to any preceding claim, in which the nozzle has an internal lug cooperating with a flange on the valve.
6. A container according to claim 5, in which the lug comprises a continuous rim.
7. A container according to any preceding claim, in which the nozzle is a snap-fit over the valve.
8. A container according to any preceding claim, in which the valve is springless.

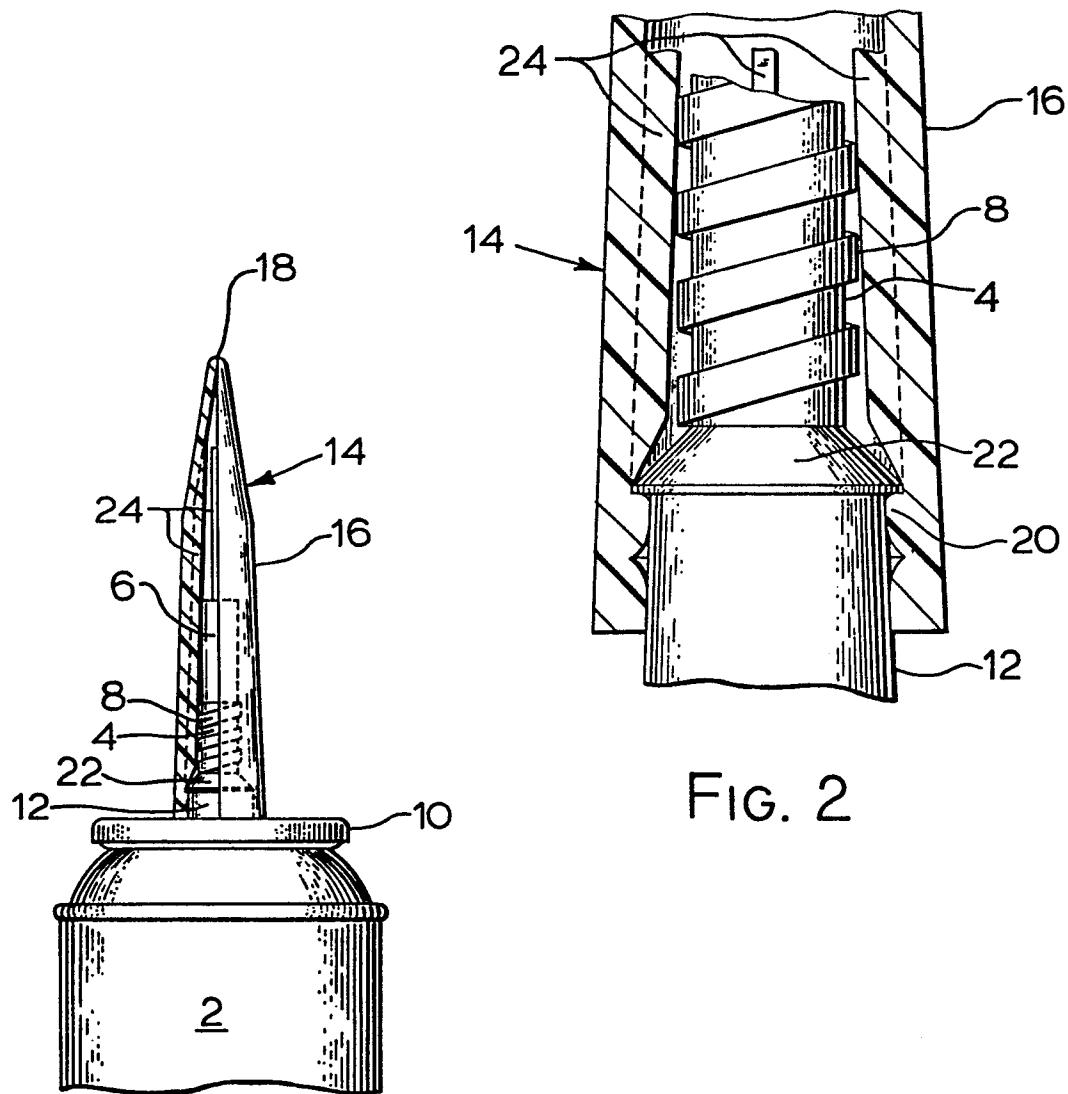


FIG. 1

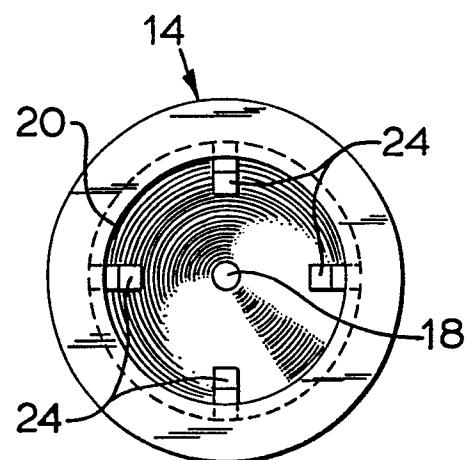


FIG. 3



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
Y	FR-A-2 292 526 (SENEGAGLIA) * Page 2, lines 5-32; page 3, lines 4-6; figures 1,2,4 *	1-8	B 65 D 83/14
Y	--- FR-A-2 343 662 (L'OREAL) * Page 4, line 7 - page 6, line 10; figures *	1-8	
Y	--- US-A-3 447 779 (HULING) * Column 5, lines 19-40; figures 5,6 *	4,8	
A	--- FR-A-1 323 822 (RAMIS) * Whole document *	1-3	
A	--- US-A-3 161 331 (MURTHA) * Whole document *	1	TECHNICAL FIELDS SEARCHED (Int. Cl. 3)
A	--- GB-A-1 142 398 (ON APPLICANT'S NAME) * Page 1, line 80 - page 3, line 7; figures 1-4 *	1,5-8	B 65 D

The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	MARTENS E.G.R.	
THE HAGUE	11-08-1982		
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			