Feb. 8, 1966 G. B. DIAMOND 3,233,788

SNAP-ON COVER FOR PRESSURE DISPENSERS

Filed April 23, 1963

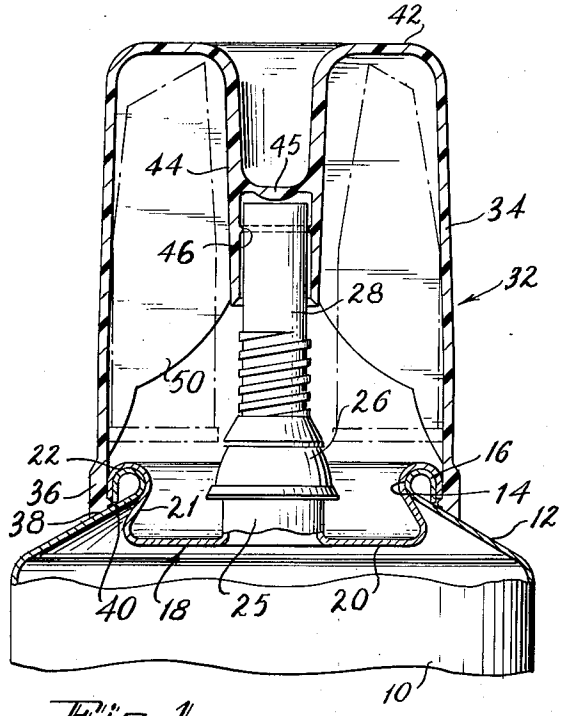
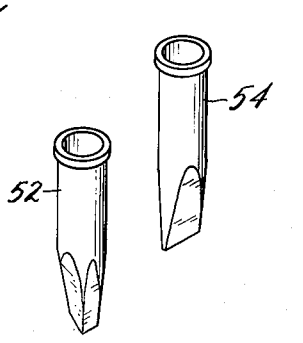


Fig. 1



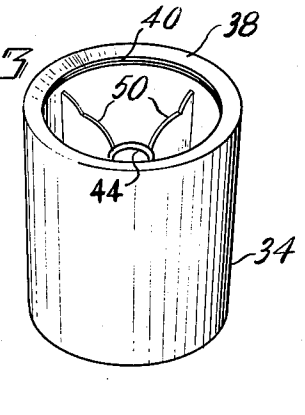


Fig. 3

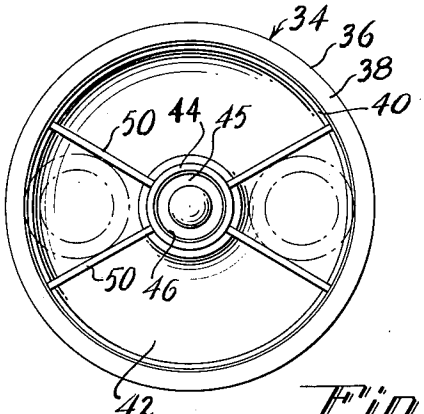


Fig. 2

INVENTOR.
George B. Diamond
BY
ATTORNEY

United States Patent Office

3,233,788

Patented Feb. 8, 1966

3,233,788

SNAP-ON COVER FOR PRESSURE DISPENSERS

George B. Diamond, Glen Gardner, N.J., assignor to Glen Gardner Corporation, Glen Gardner, N.J., a corporation of New Jersey

Filed Apr. 23, 1963, Ser. No. 275,120
10 Claims. (Cl. 222—182)

The present invention relates to a cap for a pressure dispenser such as an "aersol" can; particularly to a pressure dispenser of the type provided with an axially extending, elongated, tubular nozzle that is depressible either axially or tiltably to open the outlet valve of the dispenser. More specifically, the present invention is directed to a snap-on cap for such pressure dispenser.

It is an object of the present invention to provide a snap-on cap for a pressure dispenser, of the character described, which will be held in place when upon the dispenser with maximum security and safety to prevent inadvertent or accidental depression or tilting of the nozzle.

It is another object of the present invention to provide a snap-on cap of the character described, which provides multiple air-seals between the outlet of the nozzle of the dispenser and the exterior of the cap, to thereby provide maximum prevention of contact between the outside air and the end of the dispenser nozzle.

It is still another object of the present invention to provide a snap-on cap for a pressure dispenser, of the character described, which, as it is placed over the nozzle will clean the nozzle from any residues that may have accumulated thereon during a previous dispensing, to thereby keep the nozzle in a clean and sanitary state.

It is still another object of the present invention to provide a snap-on cap for a pressure dispenser, of the character described, which will remain in sealing contact directly with the nozzle even when the nozzle settles lower in place and becomes foreshortened after pressure within the dispenser is reduced due to discharge of part of its contents.

It is a further object of the present invention to provide a snap-on cap, of the character described, which may contain within its storage place for various types of auxiliary discharge nozzles having different sizes and shapes of discharge orifices that may be used with and secured on the dispenser nozzle for various special purposes to thereby make it compact and convenient to store and to find such auxiliary nozzles as and when required.

It is a still further object of the present invention to provide a snap-on cap of the character described, which is of attractive appearance, easy and convenient to put in place and to remove, and is economical to produce.

The foregoing and other objects and advantages of the snap-on cap of the present invention for pressure dispensers of the character described, will become more readily apparent to those skilled in the art from the embodiment thereof shown in the accompanying drawings and from the description following. It is to be understood, however, that such embodiment is shown by way of illustration only, to make the principles and practice of the invention more readily comprehensible and without any intent of limiting the invention to the specific details therein shown.

In the drawings:

FIG. 1 is a vertical sectional and partly elevational view of one embodiment of a closure of the present invention shown as mounted upon a pressure dispenser; the latter being shown in fragment; with the auxiliary nozzle shown stored thereunder and indicated by broken lines;

FIG. 2 is a bottom plan view of the snap-on cap of FIG. 1; and

FIG. 3 is a blown view of the snap-on cap, shown in inverted position, with a pair of auxiliary nozzles ready for placement in the receiving compartments therefor.

Referring now in greater detail to the embodiment of the invention illustrated in the drawings, the numeral **10** designates the outlet and portion of a cylindrical aerosol can of a conventional type having an upwardly inwardly sloping flange, **12**, forming a top wall with a circular center opening, **14**, that is defined by an outwardly and downwardly curving edge portion forming a beaded edge, **16**. The can **10** is provided with a conventional, inwardly extending, cup-shaped, circular closure for its opening **14**, generally designated as **18**. The closure **18** may have the bottom wall, **20**, and a slightly inwardly tapering side wall, **21**, formed with an outwardly and downwardly curving flange, **22**, that fits snugly over the beaded edge **16** of the can **10**, with its edge terminating a distance from the surface of the sloping top wall **12**.

The bottom wall of the cover **18** has an upwardly extending cylindrical tubular stud, **25**, at its center which supports an outlet valve (not shown), and a nozzle including a resilient section, **26**, housing the outlet valve and a rigid nozzle section **28**.

The cover of the present invention, generally designated as **32**, may preferably be formed, by molding, of a synthetic plastic material having a degree of inherent resilience and elasticity, such as polyethylene. It may comprise a cylindrical tubular body, **34**, having a preferable thickened edge portion, **36**, at one end, whose inner circumference will frictionally engage on the outer surface of the closure flange **22**, and whose end face is feathered as at **38**, to fit snugly against the sloping flange **12** of the container **10**. The body **34** is provided with an inwardly projecting, annular bead, **40**, at its inner edge, arranged to engage under the edge of the flange **22** of the closure **18**. The body **34** is formed with a closure or end wall, **42**, at its other end from which extends inwardly, integrally and concentrically therewith, a cylindrical sleeve, **44**. The sleeve **44** is of such length that its end portion will overlap and enclose a substantial portion of the end of the nozzle **28** when the cap is in position on the dispenser, and is of a diameter to fit relatively snugly thereover. The inner nozzle enclosing portion of the sleeve, **44**, is provided with a transverse wall, **45**, that forms a closure for the sleeve. Preferably the body **34** may be of substantial height to extend a distance above the end of the nozzle, **28**, when in place on the can **10**, and the closure wall for the sleeve is preferably formed a distance inwardly from its end wall **42**.

The nozzle enclosing portion of the sleeve **44** is provided on its inner surface with an annular projection or bead, **46**, of a thickness that will frictionally engage over the surface of the nozzle **28** as the cap is put into place on the can **10** to form a vapor transmission barrier with the nozzle.

Since the material from which the cap **32** is formed is relatively inherently resilient and flexible, reinforcing means, preferably integrally molded with the body **32**, are provided for the sleeve **44**. Such reinforcing means may be in the form of vanes, **50**, connecting the sleeve **44** with the body, that are arranged in diametrically opposed relation. Such vanes may be four or more, in number, with each pair being so spaced as to form an enclosure or compartment adapted to receive and frictionally hold between them an auxiliary nozzle such as nozzles **52** and **54**, having differently shaped outlet openings useful for different purposes.

This completes the description of the cap of the present invention. It will be readily apparent that such cap provides sealing closures along at least four points. Thus as the cap is put in place and moved inwardly over the noz-

zle, the inner end portion of the sleeve **44** will engage over the nozzle and the annular bead will frictionally engage against its exterior and will not only form an air-tight seal therewith, but, in moving inwardly thereover will also wipe out any discharged material that may have accumulated on the nozzle surface. Also, as the cap **32** is moved into place, its inner end portion will contact the exterior of the flange, **22**, to form a point of sealing and the bead **40** at its inner end, will not only form a snap-closure or snap-engagement by fitting under the edge of the flange **22**, but will also form a seal at that point. Additionally, when in position, as described above, the feathered end face **38** of the body section **36** will be in contact with the sloping flange **12** of the can **10** to provide a fourth sealing contact.

It will be apparent that the vanes beside reinforcing and rigidifying the sleeve **44** to maintain it in proper position for engaging over the nozzle, will also serve to provide compartments to receive and frictionally hold, for compact and convenient storage, and also for ready availability, the auxiliary nozzles **52** and **54**; it being understood that instead of two pairs of vanes, providing two compartments, three or four pairs may be provided, to thereby provide storage compartments for holding more than two auxiliary nozzles or other accessories.

It will be further apparent that numerous variations and modifications may be made in the snap-on cap of the present invention, in accordance with the principles of the invention hereinabove set forth, and without the exercise of any inventive ingenuity. I desire, therefore, to be protected for any and all such modifications and variations that may be made within the spirit of the present invention and the scope of the claims hereto appended.

What I claim is:

1. A one-piece cover for a pressure dispenser, said pressure dispenser comprising a tubular body having an opening at one end and a closure on said opening, said closure having an edge portion projecting away from said body and a nozzle projecting outwardly from said closure, said cover comprising a tubular member, said tubular member having one end portion of a size adapted to fit snugly against said projecting edge of said closure and having an inner circumferential bead adapted to engage under said projection, a sleeve supported within said cover in position to fit over the end portion of said nozzle when said bead is engaged over said projecting edge of said cover, said bead engaged on said projecting edge with a snap action on axial movement of said sleeve along said nozzle, said sleeve closed at its outer end.

2. A cover for a pressure dispenser, said pressure dispenser comprising a tubular body having an opening at one end and a closure on said opening, said closure having an edge portion projecting away from said body and a nozzle projecting outwardly from said closure, said closure comprising a tubular member, said tubular member having one end portion of a size adapted to fit snugly against said projecting edge of said closure and having an inner circumferential bead adapted to engage under said projection, a sleeve within said cover, means supporting said sleeve in position to fit over the end portion of said nozzle when said bead is engaged over said projecting edge of said cover, said sleeve-supporting means comprising a plurality of vanes connecting the exterior of said sleeve with the interior of said tubular member, said sleeve closed at its outer end.

3. The cover of claim **1**, wherein an annular bead is formed on the interior of said sleeve, said bead adapted to form annular frictional engagement with the exterior of said nozzle.

4. The cover of claim **2**, wherein pairs of said vanes are spaced a distance from one another adapted to engage and frictionally hold between them an auxiliary nozzle adapted to fit over said nozzle.

5. A cover for a pressure dispenser, said pressure dispenser comprising a cylindrical container closed at one end having an upwardly and inwardly extending flange at its other end defining a central circular opening, said flange having an outwardly and downwardly curved marginal edge portion forming a bead, an inwardly extending cup-shaped closure for said opening, said cup-shaped closure having an outwardly and downwardly curving marginal edge portion engaged over said bead of said container, the edge of said outwardly and downwardly curved portion of said closure overhanging and terminating short of said tapering flange, said cup-shaped closure supporting an outwardly extending cylindrical nozzle co-axially with said container, said cover comprising a cylindrical tubular body having its diameter at one end portion thereof of a size to fit snugly over the outside of said closure edge, said body having a circumferential bead on the inner surface of the said end, adapted to engage under the overhanging edge of said curved portion of said closure edge, and having a feathered end face at said end adapted to engage against the surface of said flange when said bead is caught under the said overhanging edge of said closure, said cylindrical body having a co-axial sleeve therewithin and means supporting said sleeve on said body, said sleeve of a diameter adapted to fit over the end portion of said nozzle and having an annular bead formed on its inner surface adapted to form frictional contact with the outer surface of said nozzle, said sleeve having a transverse closure at its outer end in position to overlie the opening of said nozzle when said cover is engaged on said pressure dispenser.

6. The cover of claim **5** wherein said body is closed at its other end and said sleeve depends from said closed end.

7. The cover of claim **6** wherein a plurality of vanes connect the exterior of said sleeve with the inner surface of said cylindrical body, pairs of said vanes spaced from one another a distance adapted to receive and frictionally hold an auxiliary nozzle between them.

8. A one-piece air-seal cover for a pressure dispenser comprising a cylindrical container, an outwardly extending nozzle concentric with said container, and a bead-like circular projection on said container concentric with said nozzle, said cover comprising a tubular sleeve adapted to be fitted over said nozzle by one end portion thereof and having a closure at its other end portion, said first end portion of said sleeve having an annular rib formed on the interior thereof adapted to form a wiping engagement with said nozzle when fitted thereon by an axial sliding movement of said sleeve on said nozzle, and means connected to said sleeve for removably inter-engaging said bead-like projection when said sleeve is fitted over said nozzle.

9. The air-seal cover of claim **8** wherein said sleeve is formed of an inherently resilient synthetic plastic material.

10. The air-sealed cover of claim **8** wherein said sleeve is formed of polyethylene.

References Cited by the Examiner

UNITED STATES PATENTS

2,767,888	10/1956	Soffer	222—182
2,831,613	4/1958	Soffer	222—182
3,048,307	8/1962	Michel	222—394

LOUIS J. DEMBO, *Primary Examiner.*