July 8, 1969 J. B. MOSSOP 3,454,228

ASPIRATOR INSERT

Filed May 15, 1967

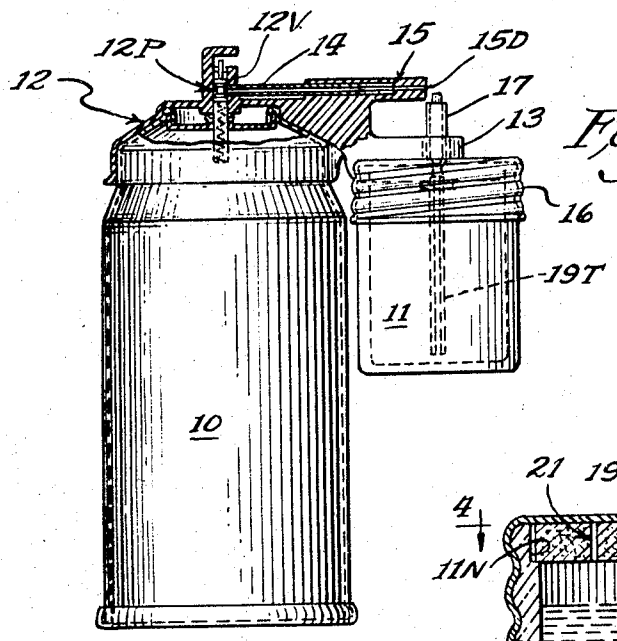


Fig. 1.

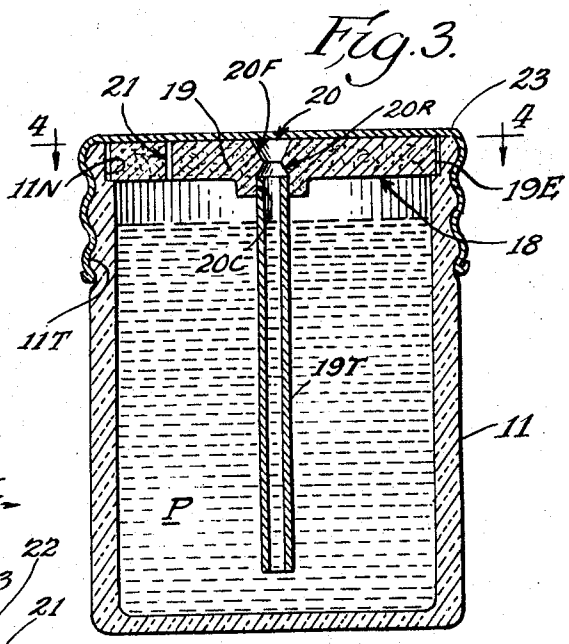


Fig. 3.

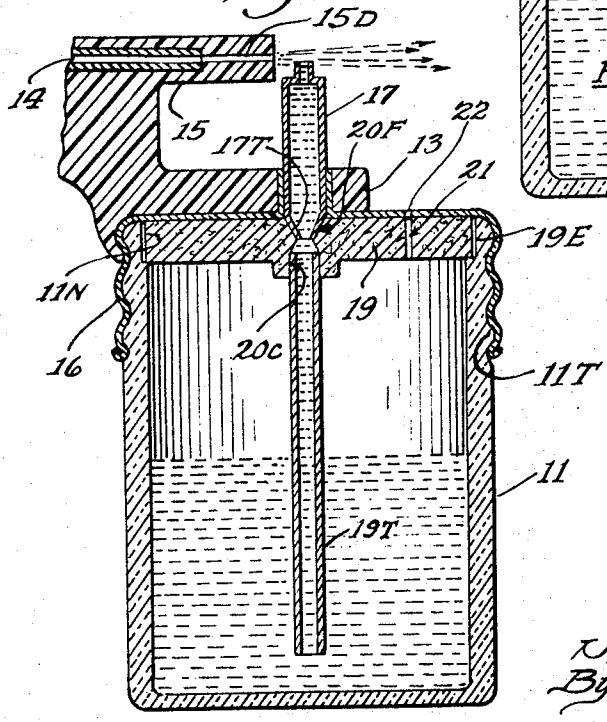


Fig. 2.

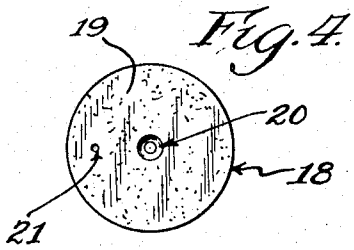


Fig. 4.

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ASPIRATOR INSERT

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ABSTRACT OF THE DISCLOSURE

An aspirator insert is incorporated in an individual product container which is to be selectively associated with a composite spray head and propellant pack to effect spray discharge from the product container while the insert shields the spray head from unnecessary contact with the product. The aspirator insert includes a vented shield disc disposed in seating relation to the top end of the product container and having a passage opening centrally therethrough and a delivery tube carried in depending relation from the disc, with the tube having an upper end communicating with the passage and a lower end extending into the product. The passage flares upwardly to assure automatic seating of an aspirator nozzle carried from the spray head to register centrally with the passage.

Background of the invention

The invention relates to spray dispensing of liquid or other flowable products and, more particularly, to an improved arrangement for handling, storing and dispensing of spray-type products, such as paints, lacquers, enamels, cosmetics such as perfume, cologne or hair sprays, insecticides and detergents.

Many spray-type products have been marketed in aerosol cans but in many instances, this method of packaging is unduly expensive and is impractical for those situations where the user requires only a small quantity or has only an infrequent need for the particular product.

Combination spray pack systems wherein a single propellant container is to be used with each of a number of different product containers have been suggested over a period of many years as represented by the following United States patents; Katzman No. 2,013,917, Ellis No. 3,044,713, Hagadorn No. 3,084,870 and Moonan No. 3,162,370, but these prior art systems have required special closure caps on each product container for use with a composite spray head provided on the propellant container or have been unable to prevent contamination of the spray head so as to require extensive cleanup before use with different products or have been otherwise clumsy to handle and interchange.

Until the present time, therefore, the combination spray pack systems have involved unnecessary costs, have not been convenient to handle and have not been freely interchangeable so that the market potential for combination spray pack systems remains largely untapped.

Summary of the invention

In accordance with this invention, an aspirator insert is provided for incorporation in each product package, the inserts affording maximum convenience and ease when the various product containers are to be associated individually with a single master spray head on the propellant container.

The aspirator insert is incorporated in the product container during original filling and packaging to be available for use with the master spray head upon removal of the conventional closure cap that is provided for the product container. The insert includes a vented shield disc supportedly engaged a seating relation to the top end of the product container, the disc having a central passage opening therethrough and a tube carried in depending relation from the disc, the tube having an upper end communicating with the passage and a lower end extending into the product.

The master spray head includes a portion serving as a top cover for the product container and equipped with an aspirator nozzle that automatically registers with and seats in the disc passage when the product container is fitted into the spray head. An upward flare on the disc passage and a mating taper on the lower end of the aspirator nozzle together with exact central location thereof assures rapid and easy interconnection of these components.

Most consumer convenience items for which the present invention finds wide application contemplate disposable, one-way type product packages where packaging cost must be minimized. The insert is extremely simple and low cost and yet serves the essential purposes of ease and convenience in handling and connection of the product containers and in addition serves to shield the master spray head from unnecessary contamination by the product.

Other features and advantages of the invention will be apparent from the following description and claims, and are illustrated in the accompanying drawings which show an illustrative embodiment of the present invention.

Brief description of drawings

In the accompanying drawings forming a part of the specification, and in which like numerals are employed to designate like parts throughout the same,

FIG. 1 is an elevational view of a combination spray pack incorporating an aspirator insert in accordance with this invention, with parts broken away and sectioned;

FIG. 2 is an enlarged fragmentary detailed sectional view of the aspirator fittings;

FIG. 3 is an enlarged transverse section of a basic product package; and

FIG. 4 is a plan view of the aspirator insert.

Description of disclosed embodiment

Referring now to the drawings, a typical combination spray pack, such as is contemplated in the practice of the present invention, is illustrated in FIG. 1 as including a propellant container **10**, a separate product container **11** and a composite spray head **12** normally permanently mounted upon the propellant container **10** and including an outboard cover portion **13** for removable mounting upon the top end of the product container **11**.

The propellant container **10** may be in the form of a conventional aerosol can and typically may be several times larger than the product container **11** to store a quantity of liquified gaseous propellant, such as dichlorodifluoromethane, the quantity being large enough to service several of the product containers. Thus, the invention finds important application in connection with a coordinated set of product packages, each to be individually associated with a primary propellant package to enable interchangeable use of the product containers for selective spray discharge of the different products. The composite spray head **12** for the propellant container is passaged as indicated at **12P** and provided with an external tubular stem **14** leading from the passage and anchored in an outboard nozzle body portion **15** to define a discharge nozzle which communicates with the propellant container, the spray head **12** being equipped with a control valve **12V** for regulating propellant flow through the discharge nozzle.

In the particular embodiment illustrated herein for purposes of disclosure, the spray head has its outboard cover portion **13** fitted with a permanent metal top cover **16**. The permanent cover **16** has a depending skirt of conventional form provided with internal threads to engage

corresponding external threads 11T provided around the top end of the product container. The nozzle body portion 15 provided upon the closure cap mounts the nozzle extension tube 14 which leads from the main section of the spray head. An aspirator nozzle 17 is also carried by the outboard portion 13 at a location immediately forward of the discharge orifice 15D provided in the nozzle body portion 15. The jet discharge of propellant passes directly across the open top of the aspirator nozzle 17 to effect an aspirating effect and cause a spray discharge of the product P from the product container 11.

In accordance with the present invention, an aspirator insert generally designated at 18 is incorporated in the product container 11 and includes a vented shield disc 19 having a peripheral edge 19E engaged in seating relation to the top end of the product container and having a central passage 20 opening therethrough, with a tube 19T being mounted to the disc and carried in depending relation thereby. The tube 19T has its upper end communicating with the passage and has its lower end extending into the product P. The aspirating effect of the jet discharge of propellant draws product upwardly through the tube 19T and through the disc passage 20 to exit through the aspirator nozzle 17 without occasioning contamination of the underface of the permanent cover 16 of the spray head.

The top end of the product container 11 that is shown herein for purposes of illustrative disclosure has an annular internal, peripheral top corner notch 11N defining a circular mounting seat. The aspirator disc 19 may be of a molded plastic such as polyethylene or any other suitable material and has a circular form to enable its peripheral edge to seat snugly in the notch 11N at the top end of the product container.

The aspirator disc has the passage 20 located exactly centrally and having a generally hourglass transverse sectional configuration that includes a cylindrical lower end region 20C serving as a socket that receives the upper end of the aspirator tube 19T in force fit relation and that presents an upwardly flaring socket region 20F at its upper end communicating with the lower region through a restricted intermediate region 20R and serving to receive the tapered lower end 17T of the aspirator nozzle. The tube may be of any suitable molded plastic or other material and preferably is of a flexible or semi-flexible character though this is not a requisite to the practice of the invention.

To promote efficient discharge of the product, the insert disc has a vent hole 21 located intermediately of its peripheral edge and its central passage and the permanent cover 16 has a vent hole 22 to allow inflow of air as product is withdrawn from the container. The vent hole 21 is sized small enough to preclude escape of the product therethrough so that the disc is effectively able to serve as a shield for preventing contamination of the underface of the permanent cover 16.

A typical product package is shown in FIG. 3 wherein the product container 11 is represented as a small glass jar having a circumambient internal corner notch 11N serving as a mounting seat for receiving the edge 19E of the vented shield disc 19 in edge sealing relation within the top of the product container. In the illustrated package arrangement, the disc lies substantially flush with the top end of the product container and a screw type closure cap 23 is removably applied on the container to hold the disc sealed in place during shipping and handling. With this approach, the product packages may be marketed through mass distribution channels, such as the supermarkets.

It is contemplated that a coordinated set of product packages will be provided with a common propellant container that is to be selectively associated with each of the product packages. Thus, if the product container represented in FIG. 1 has red paint, the propellant container is temporarily associated with it to dispense the requisite amount of paint which may be a very small quantity or a substantial quantity depending on the particular use. Thereafter, the red paint container is disengaged from the cover portion 16 of the spray head, the associated aspirator insert remaining in place and the conventional closure cap is applied to protect the contents for future use. The propellant control valve 12V is actuated to clear the aspirator nozzle 17 of red paint before using the spray pack with another product. A different type of product package such as that shown in FIG. 3, which may be assumed to contain blue paint, is then opened by removing the closure cap and fitting the top end of the product container into the permanent cover 16. Quick and convenient interchange of the various product containers is of prime importance and this is made possible by the provision in each product container of an individual aspirator insert 18. The insert serves as a shield and because of the central location of the disc passage 20 and the corresponding location of the depending lower end of the aspirator nozzle 17, product containers can quickly be connected to or removed from the cover portion 16 of the spray head without any nozzle alignment or seating problems. In addition, the system involves no extraneous parts other than the usual closure caps for the product containers.

What is claimed is:

1. In a disposable one-way package for a spray-dispensed product, said package including a container having an open top end and being at least partly filled with said product, and a top closure removably mounted on said open top end in sealed relation to said container, the improvement comprising an aspirator insert incorporated in said package and including a generally flat vented shield disc supportedly engaged in seating relation to and spanning said top end of said container and having a central passage opening therethrough and a tube carried in depending relation from said disc, said tube having an upper end communicating with said passage and a lower end extending into said product.

2. In a disposable one-way package in accordance with claim 1 and wherein said central passage has a cylindrical lower end region providing a mounting socket for retaining the upper end of said tube and said central passage has an upwardly flared upper end region communicating with said lower end region through an intermediate restricted region.

3. In a disposable one-way package in accordance with claim 1 and wherein said container has an internal annular top corner notch defining an annular seat and said vented shield disc has a circular peripheral edge disposed in said seat and a vent hole located between said central passage and said peripheral edge, and said top closure engages said container externally and impresses said disc upon said annular seat.

4. A disposable, one-way package comprising a container having an open top end bordered by a circumambient seat, said container having a flowable product therein, an aspirator insert including a generally flat vented shield disc having a circular peripheral edge engageable on said seat and having a central passage opening therethrough and a vent hole located intermediate of said passage and said edge, a tube carried in depending relation from said disc, with said tube having an upper end communicating with said passage and having a lower end projecting into said flowable product and a top closure removably mounted on said open top end and retaining said aspirator insert in place.

5. A disposable one-way package in accordance with claim 4 and wherein said central passage has a cylindrical lower end region providing a mounting socket retaining the upper end of said tube, said central passage having an upwardly flared upper end region communicating with said lower end region through an intermediate restricted region.

6. In a combination propellant-powered, spray discharge pack that includes a propellant container, a product container, a composite spray head spanning both of said containers and equipped with a product aspirator nozzle, a propellant discharge nozzle communicating with the propellant container and terminating in an outlet located in aspirating relation to said aspirator nozzle, and a control valve for said discharge nozzle, the improvement characterized by said spray head having means mounting said aspirator nozzle to depend at least partly therebelow at a location having predetermined central registry with said product container and an aspirator insert incorporated in the top of said product container to shield the spray head from contact with product, said insert having a vented shield disc in edge seating relation to said product container and provided with a central passage receiving the lower extremity of said aspirator nozzle, said disc carrying a tube having an upper end communicating with said passage and a lower end extending into said product.

7. In a combination spray pack in accordance with claim 6 wherein said central passage has an upwardly flaring upper end region and said aspirator nozzle has a downwardly tapering lower end matching and snugly fitting in the upper end region of said passage to facilitate automatic seating thereof incident to connection of the product container to the spray head.

8. In a combination spray pack in accordance with claim 6 wherein said product container has an internal annular top corner notch defining an annular seat and said vented shield disc has a circular peripheral edge disposed in said seat and a vent hole located between said central passage and said peripheral edge, said central passage having a cylindricl lower end region providing a mounting socket for retaining the upper end of said tube, said central passage having an upwardly flared upper end region communicating with said lower end region through an intermediate restricted region, and said aspirator nozzle having a downwardly tapering lower end matching and snugly fitting in the upper end region of said passage to facilitate automatic seating thereof incident to connection of the product container to the spray head.

9. In a coordinated set that comprises a plurality of one-way disposable product packages, each containing a flowable, spray dispensable product and a propellant package, said product packages each including a product container having an open top end, a top closure removably mounted on said open top end in sealed relation to said product container and an aspirator insert incorporated in each product package and including a vented shield disc supportedly engaged in seating relation to said top end of said container and having a central passage opening therethrough and a tube carried in depending relation from said disc, said tube having an upper end communicating with said passage and a lower end extending into the product, said propellant package including a propellant container for a pressurized propellant and a composite spray head on said propellant container and equipped with a discharge nozzle and a control valve for said nozzle, said spray head carrying an outboard cover adapted for removable mounting selectively on the top end of any of said product containers upon removal of the corresponding top closure, said cover carrying an aspirator nozzle having predetermined registry with and seatable in said disc passage to serve as an extension thereof, said aspirator nozzle terminating at a location in suction relation to said discharge nozzle.

10. In a coordinated set in accordance with claim 9 wherein each product container has an internal annular top corner notch defining an annular seat and each corresponding vented shield disc has a circular peripheral edge disposed in said seat and a vent hole located between said central passage and said peripheral edge, said central passage having a cylindrical lower end region providing a mounting socket for retaining the upper end of said tube, said central passage having an upwardly flared upper end region communicating with said lower end region through an intermediate restricted region, and said aspirator nozzle having a downwardly tapering lower end matching and snugly fittable in the upper end region of each passage to facilitate automatic seating thereof incident to connection of the product container to the spray head.

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U.S. Cl. X.R.

222—193; 239—344, 426, 434