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APPARATUS FOR DISPENSING A PLURALITY OF MATERIALS SIMULTANEOUSLY

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FIG. 1

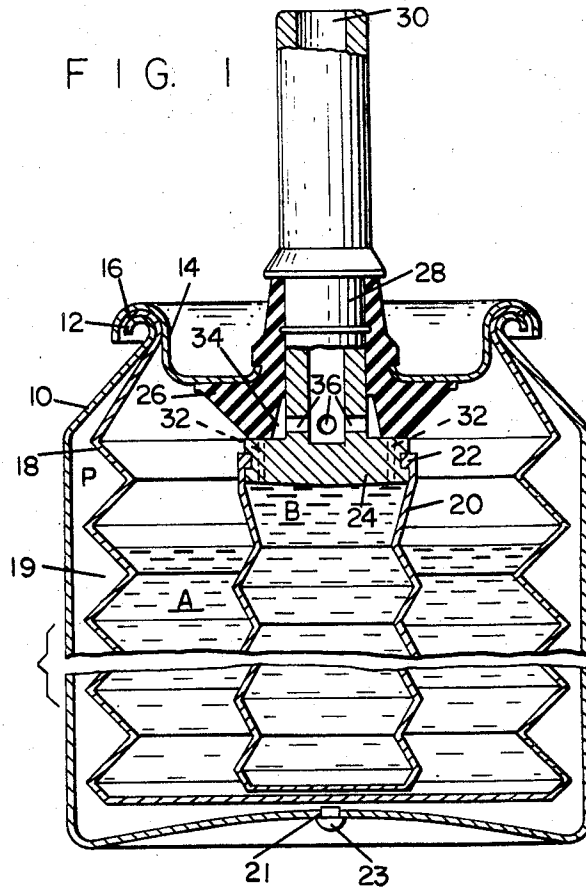
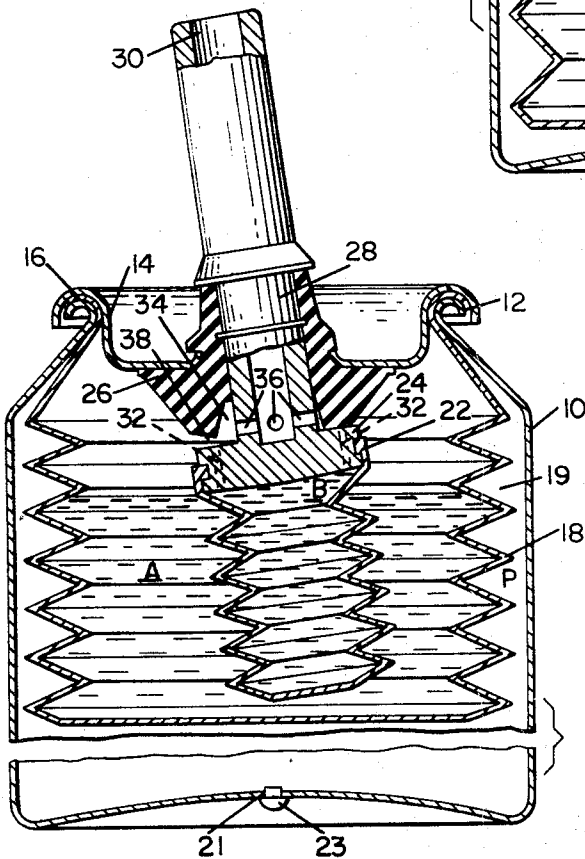


FIG. 2



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3,474,934 APPARATUS FOR DISPENSING A PLURALITY OF MATERIALS SIMULTANEOUSLY

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7 Claims

ABSTRACT OF THE DISCLOSURE

Apparatus for dispensing a plurality of liquids simultaneously by providing a rigid container under pressure with a form of aerosol valve, an inner product containing collapsible container with a surrounding outer collapsible container having a different product therein which may or may not be under pressure, the valve being constructed to intermingle the two products when actuated, for expression (withdrawal) of the two products together, under the pressure in the outer container which applies pressure to the product on the inner container also.

It has been found when utilizing an aerosol can to codispense a plurality of products, where one product is confined within an inner bag and is not normally pressurized and the other product is located outside the bag and is pressurized, that when the amount of the second product, under pressure, is decreased by use of the aerosol, shaking spreads the product under pressure over the inner surface area of the can, so that actuation of the valve without allowing time for the residues of such product to drain into the valve area, results in sputtering and incomplete product mixing and withdrawal.

It is the principal object of the present invention to overcome these difficulties by utilizing a rigid container (can) under pressure, surrounding a primary outer collapsible container (bag) with product therein which may or may not be pressurized and which in turn surrounds the usual inner secondary collapsible container so that as the outer product is continually removed, both the inner and outer bags tend to collapse and become smaller and shorter, and on shaking the can, the area over which the residual product is spread becomes less and less as the bags collapse, and the ability to contact the valve becomes greater, resulting in more bulk delivery, greater uniformity and less sputtering and lack of mixing of the two products when the valve is actuated.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which:

FIG. 1 is a view in section illustrating the invention with the dispensing valve in closed position with respect to both products, and

FIG. 2 is a similar view showing the valve open.

In illustrating the invention the same is shown as utilizing a more or less conventional can or other container 10. This can may have a crimped rim structure at 12 which holds a valve plate 14 in position due to the crimping action as is well known and in addition may also hold the lip or edge at 16 of an outer collapsible bag indicated at 18 the outside of which forms with the inside of container 10 a propellant chamber 19 having a loading or filling opening 21 closed by a plug 23 for sealing propellant P in chamber 19.

This bag 18 is provided with a product A which may or may not be under pressure and there is another smaller bag generally indicated at 20 which is connected in any way desired as at 22 to a valve member 24 and this col-

lapsible bag contains a product B which may or may not be under pressure but usually is not.

The valve structure itself is old and well known and comprises a fixed but distortable rubber-like ferrule 26 holding a stem 28 which conducts the mixed products A and B to the atmosphere at 30 when the valve is open. The ferrule firmly contacts the upper surface of the valve member 24 closing ports 32 therein and at the same time also closes an annular chamber 34 having ports at 36 leading into the tubular stem so that product A may also move from chamber 34, etc.

FIG. 2 shows how this is accomplished by tilting the valve stem 28 in any direction. Since the ferrule 26 is annular in its contact with valve member 24, and the chamber 34 is also annular, it makes no difference in which direction the valve stem 28 is tilted to open a port 32, at the same time it creates a port at 38, port 32 of course allowing product B to enter chamber 34 and the port at 38 allowing the product A to enter chamber 34 so that the products will then escape through port 36 into stem 28 to the atmosphere.

The products A and B whether or not internally pressurized are provided sufficient external pressure from propellant P in chamber 19 to permit products A and B to escape when the valve is actuated. Thus depending upon the size of the various ports, the two products become mixed in chamber 34 and are withdrawn together and obviously as the pressure is used in the outer bag, it will tend to collapse so that it will be seen that the main object of the invention is clearly carried out, i.e., the outer bag becomes smaller and shorter and the same is true of the interior bag. Therefore on shaking, the area over which the residual product A is spread becomes less and the ability to contact the valve is greater than without an outer collapsible bag. This results in greater bulk delivery, more uniformity and less sputtering and better mixing when the valve is actuated, so that it is seen that the objects of the invention are carried out.

In order to cause the bags to collapse evenly, the bags can be fluted, i.e. made somewhat in the nature of an accordion, and this allows the bags to collapse in a more uniform manner and makes the action smoother.

What I claim is:

1. A dispenser comprising an outer main container, a valve having a valve stem communicating with the interior thereof, said valve being adapted to be actuated to open the interior of the container to the atmosphere through said stem, means normally maintaining said valve closed, an inner collapsible container attached to said valve and containing a product, a port leading from the inner container to the valve stem of the valve, said port being normally closed, but opening upon actuation of the valve to open condition, an outer collapsible container containing a different product and substantially completely surrounding the inner collapsible container, means normally closing said outer collapsible container with respect to said valve stem, said valve upon actuation thereof to open said port also forming a port for communication of the contents of the outer collapsible container to said valve stem, so that the two products become commingled and exit through the stem together, and means applying pressure to the product in the outer collapsible container, and thus to the inner container.
2. The dispenser of claim 1 wherein the means applying pressure to the product in the outer collapsible container resides in a source of pressure between the outer main container and the outer collapsible container.
3. The dispenser of claim 1 wherein the means applying pressure to the product in the outer collapsible container resides in a source of pressure within the outer collapsible container.

4. The dispenser of claim 1 including means causing the inner container to grow smaller and shorter when the product therein is at least partially withdrawn.

5. The dispenser of claim 1 wherein the outer collapsible container includes means causing it to grow smaller and shorter as the product therein is withdrawn, reducing the area over which the product is spread upon shaking the main container.

6. The dispenser of claim 1 including means causing both of said collapsible containers to gradually grow smaller and shorter as the products therein are continually exhausted decreasing the areas over which the respective products are spread when the main container is shaken.

7. The dispenser of claim 1 including means causing both of said collapsible containers to gradually grow

smaller and shorter as the products therein are continually exhausted decreasing the areas over which the respective products are spread when the main container is shaken, said means including fluting in the walls of the collapsible containers.

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