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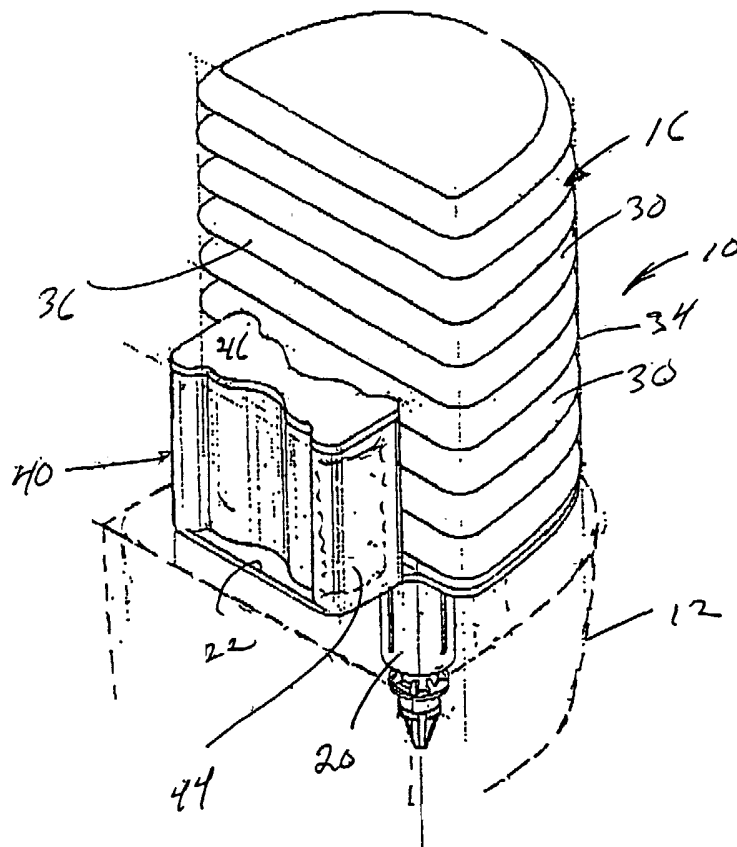
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(54) Title: BATTERY BOTTLE



(57) Abstract: A bottle assembly for a battery powered dispenser includes a container for storing a dispensable fluid, a pump fixed to the container for releasing metered amounts of fluid from the container in response to a battery operated actuator disposed in the dispenser. A battery carrier, fixed to the container, provides power to the actuator. A base is provided for supporting the container and the battery carrier and enabling collapse of the container without interference with the battery carrier. A size and number of batteries are calibrated to provide an adequate power supply for the dispenser to dispense all of the fluids stored in the container.

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BATTERY BOTTLE

5 The present invention is generally directed to a collapsible container for storing a fluid, such as, for example, liquid soap, to be metered to a user through a dispensing device.

10 Bottles and containers made from flexible or semi-rigid plastic materials are well known in the art. Such containers have been fabricated from such materials as polyvinyl chloride, polyethylene, polypropylene and polycarbonate.

15 Many types of liquid soaps, detergents and deodorants for personal hygiene are supplied in such containers which are designed to be inserted into a dispenser provided with hand actuated pumps.

20 Often the dispensers are designed such that as a liquid is pumped from the container, air backflows into the container to replace the displaced fluid. This exposure to air can lead to degradation and shortened lifetime of the fluid due to, for example, oxidation and contamination.

25 This in turn, may cause thickening of the fluid, by oxidation or evaporation which may result in blockages of the pumping mechanism in the dispenser.

30 Collapsible containers have been utilized wherein a fluid is dispensed from the container by a pump and an airtight seal of the container prevents air from being drawn

into the container. The container slowly collapses as the fluid volume therein decreases. This design reduces exposure of the fluid to air which in turn decreases oxidation and contamination of the fluids contained therein,
5 thus increasing the useful shelf life of the liquid or fluid.

Another problem associated with battery-powered dispensers is the separate requirement of battery
10 replacement.

The present invention provides for a bottle assembly for a battery-powered dispenser in which a battery and a collapsible bottle are coupled as a unit. Thus, no separate
15 handling of batteries is necessary and the battery may be sized so that its life is depleted when the fluid is completely dispensed.

SUMMARY OF THE INVENTION

20

A bottle assembly in accordance with the present invention for a battery-powered dispenser generally includes a container for storing a dispensable fluid and a pump, fixed to the container, for releasing metered amounts of the
25 fluid from the container in response to a battery operated actuator disposed in the dispenser.

A battery carrier is fixed to the container for providing power to the actuator. The battery carrier
30 includes means for enabling electrical connection between the batteries disposed in the battery carrier and the actuator.

Thus, the batteries and collapsible container are coupled as a unit and, as hereinabove noted, no separate handling of batteries is necessary. The battery life
5 capacity is coupled to the collapsible container volume and the depleted bottle assembly is disposed with no additional handling for the battery assembly.

More particularly, the container is collapsible,
10 preferably with accordion-like convolutions in walls of the container for enabling collapse thereof. The batteries are preferably sealed within the battery carrier and a size and number of the batteries are calibrated to provide an adequate power supply for the dispenser to dispense all of
15 the fluid stored in the container.

A base is provided for supporting the container and the battery carrier while enabling collapse of the container without interference with the battery carrier. More
20 specifically, the container may include a curvilinear wall interconnected with a linear wall and a battery carrier may be supported adjacent the container linear wall. This provides for a small footprint.

25 BRIEF DESCRIPTION OF THE DRAWINGS

The advantages and features of the present invention will be better understood by the following description when considered in conjunction with the accompanying drawings, in
30 which:

Figure 1 is a perspective view of a bottle assembly in accordance with the present invention as it may be installed on a battery powered dispenser along with a pump fixed to the container and a battery carrier fixed to the container
5 by a base; and

Figure 2 is another perspective view of the bottle assembly with a collapsed container, showing a bottom portion thereof including the base and the pump fixed to the
10 container and extending downwardly from the base for releasing metered amounts of the fluid from the container.

DETAILED DESCRIPTION

15 With reference to Figures 1 and 2, there is shown a bottle assembly 10 for a battery powered dispenser 12 which may include a collapsible container 16, shown full of a dispensable fluid in Figure 1 and empty of the dispensable fluid in Figure 2.

20

The battery-powered dispenser 12 shown in dashed line in Figure 1 is fully described in U.S. Patent Application Serial No. _____ entitled "TOUCH FREE DISPENSER" filed on even date herewith. This application is to be
25 incorporated into the present application, including all drawings and specifications for the purpose of describing a battery powered dispenser for use with the bottle assembly 10 described herein.

30 A pump 20 is fixed to the container 16 through a base 22 and a fitment 24. Preferably an exterior 26 of the pump 20 is formed from a material common to the container 16 and

base 22 and may be ultrasonically attached thereto to provide a sealed communication between the pump 20 and the container 16. The pump 20 may be of any conventional design.

5

The container 16 is preferably formed from a pleated polyethylene blow-molded material that collapses under the differential pressure created by dispensing a fluid, or liquid product, therefrom.

10

As shown in the figures the container 16 includes accordion-like convolutions 30 enabling the collapse of the container as shown in Figure 2.

15

The container 16 includes a curvilinear wall 34 interconnected with a linear wall 36 and a battery carrier 40 is disposed on the base 22 adjacent to the linear wall 36. The independent fixing of the carrier 40 and collapsible container 16 on the base 22 enables uninterfered collapse of the container on the base as illustrated in Figure 2. Batteries 44, shown in dashed line, are sealed within the carrier 40 between the base 22 and a cap 46 and provide a battery pack for providing power to an actuator (not shown) which is part of the dispenser 12 for actuating the pump 20. Contacts 48, 50 extending through the base 22 provide a means for enabling electrical connection between the battery 44 and the actuator in a conventional manner.

20

Thus, the batteries 44 within the carrier 40 are permanently fixed within the bottle assembly 10 in a manner not impeding the collapsing function of the bottle as illustrated. The size and number of the batteries 44 may be

25

calibrated to provide an adequate power supply to the actuator for the dispensing of the total fluid volume contained in the collapsible container 16.

5 The carrier 40 may be an injection molded polyethylene material into which the batteries 44 are inserted. Soft walls of the container 40 provide a clamping and locking force against the sides of the batteries 44, thus eliminating movement during handling and shipping. The cap,
10 or lid, 46 is ultrasonically welded or otherwise appropriately and permanently fixed to the carrier 40.

It should be appreciated that the container 16 may be provided in a different fluid capacities and a corresponding
15 change in battery capacity via size or quantity coupled to the body in order that the battery and container 16 are depleted in a simultaneous manner through operation of the dispenser 12. The capacity of the batteries 44 is, of course, depending on the power requirements to dispense all
20 of the fluid in the container 16 and may be especially calculated or otherwise _____ by conventional methods. Preferably, the provided battery 44 capacity is equal to an amount of power necessary to only dispense the fluid stored in the container and no more. This provides for efficient
25 and economic advantages.

Although there has been hereinabove described a specific battery bottle in accordance with the present invention for the purpose of illustrating the manner in
30 which the invention may be used to advantage, it should be appreciated that the invention is not limited thereto. That is, the present invention may suitably comprise, consist of,

or consist essentially of the recited elements. Further, the invention illustratively disclosed herein suitably may be practiced in the absence of any element which is not specifically disclose herein. Accordingly, any and all
5 modifications, variations or equivalent arrangements which may occur to those skilled in the art, should be considered to be within the scope of the present invention as defined in the appended claims.

WHAT IS CLAIMED IS:

1. A bottle assembly for a battery powered dispenser, the assembly comprising:
- 5 a container for storing a dispensable fluid;
- a pump, fixed to said container, for releasing metered amounts of the fluid from said container in response to a battery operated actuator disposed in the dispenser; and
- 10 a battery carrier, fixed to said container, for providing power to the actuator, said battery carrier having means for enabling electrical connection between batteries disposed in said battery carrier and the actuator.
- 15 2. The assembly according to claim 1 wherein said container is collapsible.
3. The assembly according to claim 2 further comprising batteries sealed within said battery carrier.
- 20 4. The assembly according to claim 3 wherein the container includes accordion like convolutions in walls of the container for enabling collapse thereof.
- 25 5. The assembly according to claims 1 wherein a size and number of the batteries are calibrated to provide an adequate power supply for the dispenser to dispense all of the fluid stored in said container.
- 30 6. The assembly according to claim 1 further comprising a base for supporting said container and said

battery carrier and enabling collapse of said container without interference with said battery carrier.

7. The assembly according to claim 6 wherein said
5 container includes a curvilinear wall interconnected with a linear wall.

8. The assembly according to claim 7 wherein said
battery carrier is supported adjacent the container linear
10 wall.

9. The assembly according to claim 8 wherein said
pump depends from a side of the base opposite a side
supporting said container.
15

10. A bottle assembly for a battery powered fluid
dispenser, the assembly comprising:

a dispensable fluid;
a disposable container for storing the dispensable
20 fluid;

a pump, fixed to said container and disposable
therewith, for releasing metered amounts of the fluid from
the container in response to a battery operated actuator
disposed in the dispenser; and

25 a battery pack for providing power to the
actuator; and

a battery carrier fixed to said container and
disposable therewith, and including means for enabling
electrical connection between the battery pack and the
30 actuator.

11. The assembly according to claim 10 wherein the container is sealed with the fluid stored therein.

12. The assembly according to claim 11 wherein said
5 battery pack is sealed within said battery carrier and disposable therewith.

13. The assembly according to claim 10 wherein a
capacity of the battery pack is calibrated to provide an
10 adequate power supply for the dispenser to dispense all of the fluid.

14. The assembly according to claim 13 wherein said
container is collapsible.
15

15. The assembly according to claim 14 wherein the container includes accordion like convolutions in walls of the container for enabling collapse thereof.

16. The assembly according to claim 15 further
20 comprising a base for supporting said container and said battery carrier and enabling collapse of said container without interference with said battery carrier.

17. The assembly according to claim 16 wherein said
25 container includes a curvilinear wall interconnected with a linear wall.

18. The assembly according to claim 17 wherein said
30 battery carrier is supported adjacent the container linear wall.

19. The assembly according to claim 18 wherein said pump depends from a side of the base opposite a side supporting said container.

