# United States Patent

[11] **3,580,429**


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[54] **PASTE DISPENSER WITH INTERCHANGEABLE BAGGED CARTRIDGES**
**10 Claims, 4 Drawing Figs.**


[52] **U.S. Cl.** ..... **222/327,** 222/105, 222/107, 222/183, 222/325, 222/341
[51] **Int. Cl.** ..... **G01f 11/06**
[50] **Field of Search** ..... 222/105, 106, 107, 181, 182, 183, 325, 327, 92, 93, 336, 340, 341, 496, 518; 229/14 (BL), 14 (BA)



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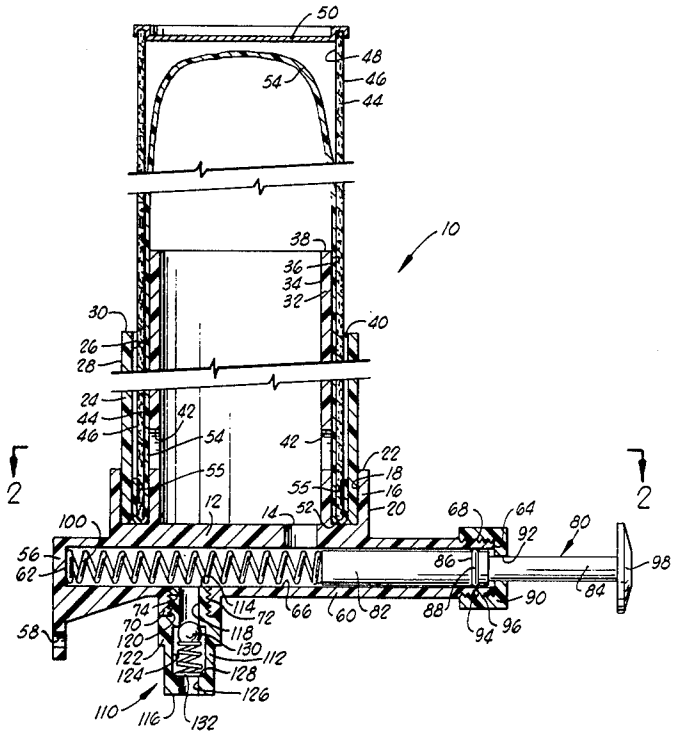
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**ABSTRACT:** A dispenser for dispensing a measured amount of nonsolid material such as, for example, paste hand cleaner, the dispenser receiving interchangeable cartridges containing the fluid material in operative affixture, and including a manually depressible extracting valve in communication with the paste material and serving to dispense a proportionate amount upon depression of the valve; the cartridge including a liner protecting the paste material from exposure to the surrounding air, the liner also being secured within the cartridge to regulate the evacuation of the paste material.

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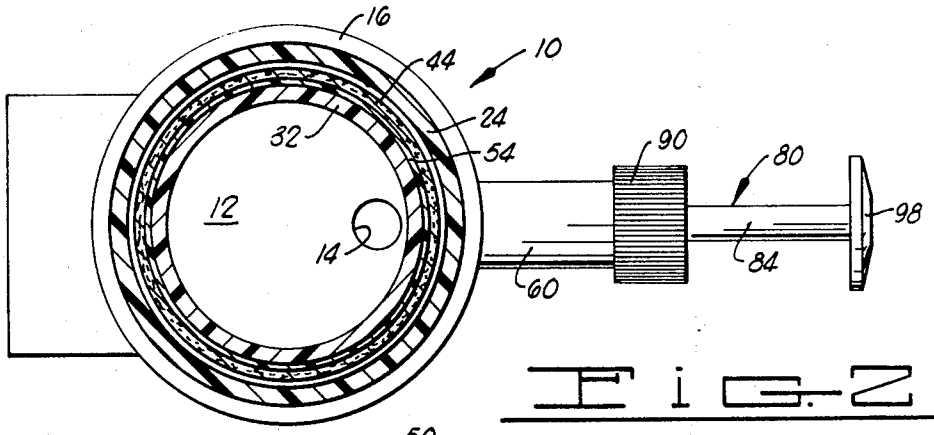



Fig. 2

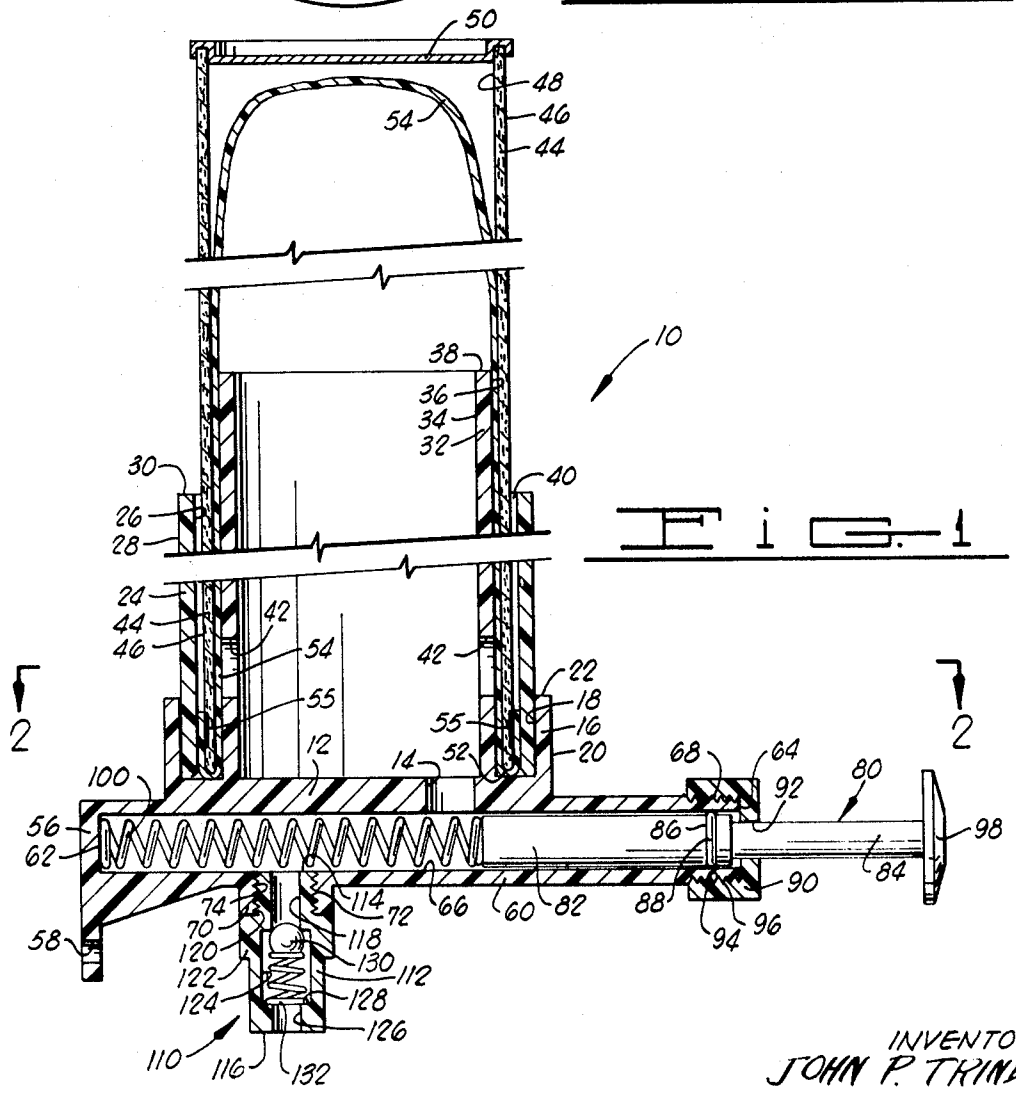



Fig. 1

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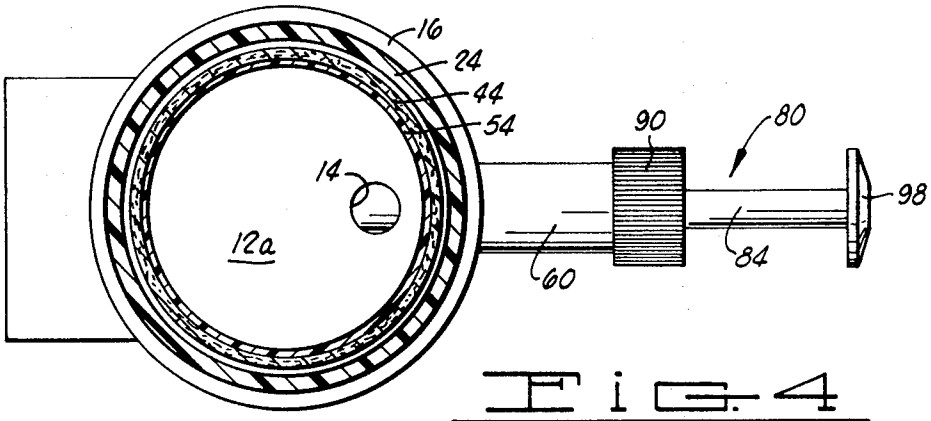



Fig. 4

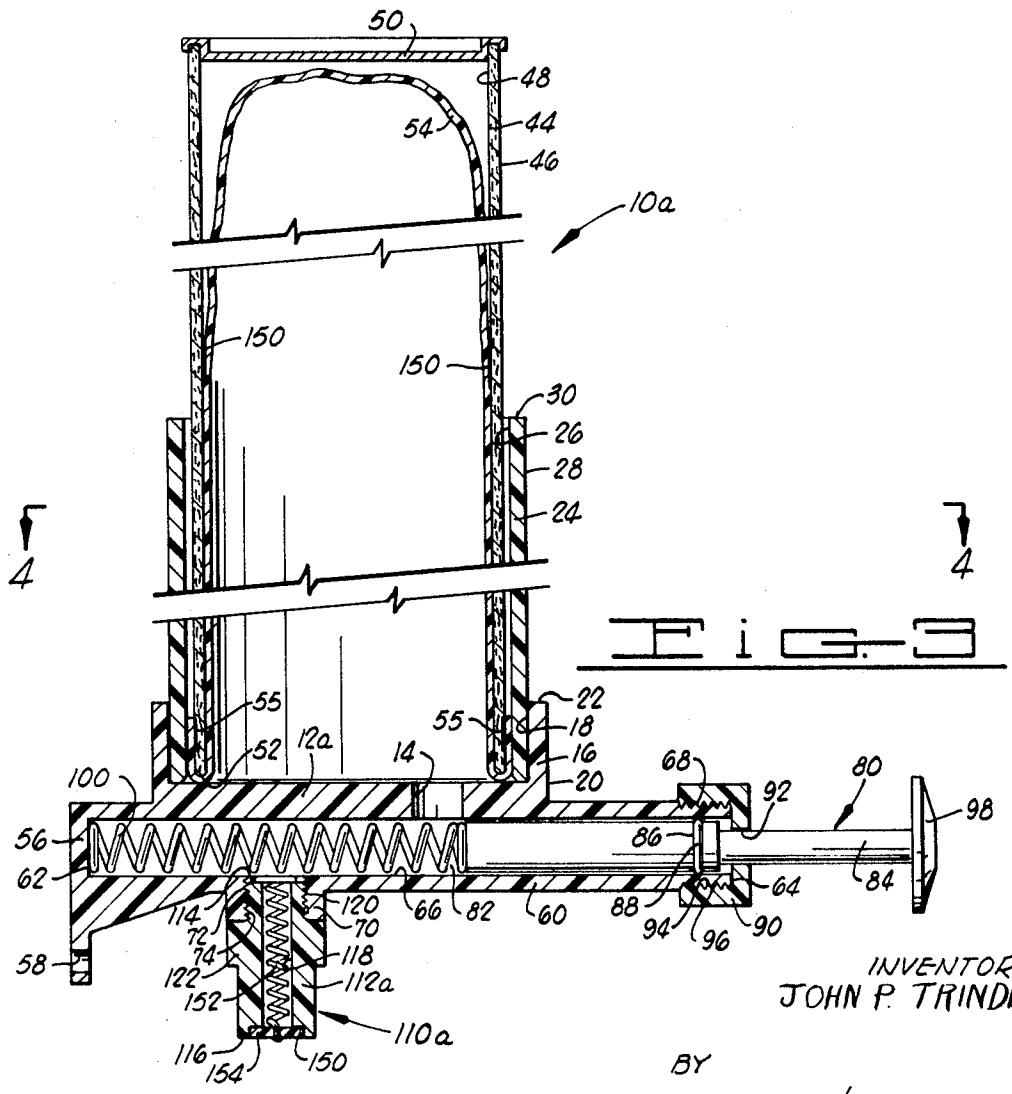



Fig. 3

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# PASTE DISPENSER WITH INTERCHANGEABLE BAGGED CARTRIDGES

## BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates generally to improvements in dispensers and, more particularly, but not by way of limitation, it relates to dispensers of the type which dispense a proportionate amount of the fluid or paste contained therein during each cycle of operation.

2. Description of the Prior Art

In the past, dispensers capable of dispensing a proportionate amount of fluid have generally been constructed such that the fluid would flow by gravity into a movable chamber which was disposed in a bore. When it was desired to dispense the fluid from the chamber, the chamber was moved along the bore to a position over an outlet aperture where, by force of gravity it flowed downward therethrough.

In a dispenser of this type it was found that a certain portion of the fluid remained along the walls of the bore and around the outlet aperture. This fluid, after being exposed to the air for a period of time, would harden and form a layer, which would not only prevent the chamber from being freely moved along the shaft, but also would eventually clog the outlet aperture.

It was also common in dispensers of the type hereinbefore described, to provide a metal container attached thereto to retain the fluid, which was eventually to be dispensed. When the fluid was completely dispensed, the metal container was then refilled from a larger, bulk-type container. This type of dispenser with an integral metal container was not only difficult and time consuming to refill, but also required the storage of the larger bulk-type container. Since the fluid contained in the bulk-type container was used only in small portions over a long period of time, it is apparent that a large quantity of the fluid remained in the bulk-type container and was exposed to the surrounding air.

## SUMMARY OF THE INVENTION

The present invention contemplates a dispenser comprising a base having an aperture formed therethrough. A cartridge means having an open end therein and being disposed on the base such that the open end of the cartridge means is adjacent said base. A collapsible bag means which contains the fluid or paste to be dispensed, the bag means having one end thereof open and being disposed in the cartridge means with the open end of the bag means secured to the walls of the cartridge about the open end thereof. Means are provided to support the collapsible bag means above the base, as the fluid material contained in the collapsible bag means is dispensed. The dispenser is also provided with valve means for dispensing proportioned quantities of the fluid material contained in the collapsible bag means.

An object of the invention is to provide a dispenser having an interchangeable cartridge which includes bag means secured in such manner as to prevent the bag means from interfering with the fluid material evacuation via the dispenser.

Another object of the invention is to provide a dispenser constructed in such a way that it protects the material contained in the dispenser from over exposure to the surrounding air.

A further object of the invention is to provide a dispenser having an outlet valve assembly constructed such that it will automatically seal the material within the dispenser.

A still further object of the invention is to provide a dispenser having an outlet valve assembly constructed to provide a relatively dripless outlet, and thus prevent the buildup of fluid material around the outlet of the dispenser, thereby closing the outlet.

A still further object of the invention is to provide a dispenser capable of dispensing proportionate amounts of the fluid materials contained therein, which dispenser is economical in construction and operation.



Other objects and advantages of the invention will be evident from the following detailed description when read in conjunction with the accompanying drawings which illustrate the various embodiments of the invention.

## BRIEF DESCRIPTION OF THE DRAWING

FIG. **1** is a sectional view of a dispenser.

FIG. **2** is a sectional view of the dispenser of FIG. **1**, taken substantially along the lines **2–2** of FIG. **1**.

FIG. **3** is a view similar to FIG. **1**, but illustrating a modified dispenser.

FIG. **4** is a sectional view of the dispenser of FIG. **3** taken substantially along the lines **4–4** of FIG. **3**.

## DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings in detail, and to FIGS. **1** and **2** in particular, a dispenser **10** includes, a base **12** having an aperture **14** formed therethrough. As shown more clearly in FIG. **2**, the base **12**, in the preferred form, is generally circular in shape, and is provided in this particular shape for the purpose of economy of manufacture, due consideration being given to the components to be mounted thereon, as will be more fully described hereinafter. A retainer **16**, having an inner wall **18**, an outer wall **20**, and an upper edge **22**, is formed on the base **12**. As shown in FIGS. **1** and **2**, the retainer **16** is generally circular in shape and is affixed to extend generally perpendicular to base **12** and adjacent to the outer periphery thereof.

An outer sleeve **24**, having an inner wall **26**, an outer wall **28**, and an upper edge **30** is disposed on the base **12**, and is also affixed to extend generally perpendicular thereto. The outer wall **28** of the outer sleeve **24** is provided to have a diameter slightly less than the diameter of the inner wall **18** of the retainer **16** and, as shown in FIGS. **1** and **2**, the retainer **16** encompasses a portion of the outer wall **28** of the outer sleeve **24**, thereby limiting the lateral movement of the outer sleeve **24** with respect to the base **12**. In a preferred form, the outer sleeve **24** is not secured to the base **12**, for reasons which will be made more apparent hereinafter, and sleeve **12** may be constructed of a plastic material, the particular composition of which would depend on the molding process to be employed with due consideration given to the economy of manufacture.

An inner sleeve **32**, having an inner wall **34**, an outer wall **36**, and an upper edge **38** is disposed on the base **12** and, in a preferred form, is secured thereto. As shown in FIGS. **1** and **2**, the inner sleeve is also provided to extend generally perpendicular to the base **12**. The outer wall **36** of the inner sleeve **32** is formed to have a diameter less than the diameter of the inner wall **26** of the outer sleeve **24**, thereby forming an annular gap **40** therebetween. As clearly shown in FIGS. **1** and **2**, the inner wall **34** of the inner sleeve **32** is provided to encompass the aperture **14** formed in the base **12**. A pair of apertures **42** are formed in the inner sleeve **32** and apertures **42** extend therethrough to intersect the inner wall **34** and the outer wall **36**.

A cartridge **44**, having an outer wall **46**, an inner wall **48**, a closed and **50**, and an open end **52**, is disposed on the base **12** and within the annular gap **40** between the inner sleeve **32** and outer sleeve **28**. The cartridge **44** contains a bag **54**, which extends generally around the inner wall **48** of the cartridge **44**. Shown more clearly in FIG. **1**, the open end of the bag **54** is extended over the open end **52** of cartridge **44** and is bonded to the outer wall **46** thereof at portion **55**. The cartridge **44**, and more particularly the bag **54**, contains a fluid or paste material, such as the type generally classified as a paste hand cleaner compound, which is to be dispensed by the dispenser **10**, as will be described more fully hereinafter. In a preferred form, the bag **54** is formed to have a slightly larger volume capacity than the cartridge **44** so that, when the fluid is initially poured into the cartridge **44**, the bag **54** will be generally supported by the inner wall **48** of the cartridge **44**, thereby eliminating any necessity that the bag **54** have a structural strength sufficient to support the volume of fluid contained therein.

As shown more clearly in FIG. 1, the cartridge 44 and bag 54 contained therein are generally disposed around the outer wall 36 of the inner sleeve 32. Thus, the inner sleeve 32 extends a distance into the inner portion of the cartridge 44 such that the upper end 38 extends a distance above the base 12, such distance being slightly in excess of one-half the distance which the closed end 50 of the cartridge 44 extends above the base 12.

The cartridge 44, containing the fluid material to be dispensed, is generally shipped and stored separate from the remaining components of the dispenser 10 to protect the fluid material from excessive exposure and to provide convenience in shipping. Therefore, after the fluid material is poured into the cartridge 44, a cap (not shown) is generally provided to enclose the open end 52 of the cartridge 44, thereby sealingly containing the fluid material within the cartridge.

By containing the fluid material in the bag 54, which may be constructed of an inexpensive, flexible, plastic material e.g. polyethylene, it prevents the material from soaking into the walls of the cartridge 44. Therefore, the choice of material used in the construction of the cartridge 44 is not affected by the type of fluid material contained therein and, if desired, it can be constructed of an inexpensive cardboardlike material. It has been found, that for convenience in shipping and for economy of manufacture, that a tubular cartridge having a generally circular cross section, as shown for the cartridge 44 in FIGS. 1 and 2, is most satisfactory. Therefore, in a preferred form, the base 12, the retainer 16, the outer sleeve 24, and the inner sleeve 32 have also been shown in FIGS. 1 and 2 as having a generally circular cross section compatible with the aforementioned cartridge 44.

A flanged portion 56 is provided on one end of the base 12 to extend generally perpendicular to the base 12. A plurality of apertures 58 are formed to extend through the flange portion 56. The flange portion 56 is provided so that dispenser 10 may be easily mounted on a wall or other relatively stationary structure (not shown) by extending bolts or screws (not shown) through the apertures 58 and securing same to the wall.

A plunger body 60, having opposite ends 62 and 64, and having a chamber 66 extending therethrough and intersecting said opposite ends 62 and 64, is formed on the base 12 and is disposed on the opposite side of the base 12 from the inner sleeve 32. The plunger boy 60 is also disposed relative to base 12 so that the aperture 14 of base 12 is in communication with the chamber 66 of the plunger body 60, as will be further described.

The end 62 of the plunger body 60 abuts the flange 56, and is sealingly secured thereto, thereby closing the respective end of the chamber 66 adjacent the end 62 of the plunger body 60. The outer periphery of the plunger body 60, adjacent the end 64 thereof, is provided with a threaded portion 68, to be further described below.

A nipple 70 is formed on the outer periphery of the plunger body 60 and is axially displaced from the aperture 14 in the direction toward the end 62 of the chamber 66. The nipple 70 is provided with a bore 72 extending therethrough and communicating with the chamber 66. The bore 72 is provided with a threaded portion 74 therein for reasons which will become apparent hereinafter. In one form of the invention, the base 12, the retainer 16, the inner sleeve 32, the flange portion 56, and the plunger body 60 including the nipple 70, are formed as an integral unit, and may be constructed of a plastic material, the particular composition of which would, of course, depend on the molding process to be employed and considerations of economy of manufacture.

A plunger assembly 80 is generally disposed in the chamber 66 of the plunger body 60. The plunger assembly 80 basically comprises a plunger 82 which is secured on one end of a plunger shaft 84. The plunger 82 is provided to slidingly mate with the chamber 66 of the plunger body 60. A groove 86 is formed around the outer periphery of the plunger 82, and an O-ring type seal member 88 is disposed in the groove 86. The O-ring 88 is provided to sealingly engage the walls of the chamber 66.

A cap 90, having an aperture 92 formed therethrough, is disposed generally around the shaft 84 of the plunger assembly 80, the shaft 84 extending through the aperture 92 of the cap 90. The aperture 92 of the cap 90 is shaped to have a slightly larger diameter than the diameter of the shaft 84 to allow axial movement of the shaft 84 in the aperture 92. A counterbore 94 is formed in one end of the cap 90 and the walls thereof are provided with a threaded portion 96 therein. The threaded portion 96 is sized to threadingly engage the threaded portion 66 of the plunger body 60, thereby securing the plunger assembly 80 to the plunger body 60.

A button 98 is formed on one end of the shaft 84 opposite the plunger 82. The plunger 82 and the button 98 are both formed to have diameters larger than the diameter of the aperture 92, thereby to retain the cap 90 on the shaft 84 for reasons to be more fully described.

In one form of the invention, the plunger 82, the shaft 84, the button 98, and the cap 90 may be formed of a plastic material, similar to that previously described for other components of the dispenser 10, such as the base 12 for example. For economy of manufacture and ease of assembly, the plunger 82 and the shaft 84 are formed as an integral unit, and after the cap 90 has been installed on the shaft 84, the button 98 is formed on the end of the shaft 84. In an alternate form, the plunger 82 may be formed of a metal, and the shaft 84 then bonded thereto.

A spring 100 is disposed in the chamber 66 and it is disposed to have one end thereof engaging the flange 56 and the opposite end engaging the plunger 82. The outer diameter of the spring 100 is sized such that the spring 100 may be compressed and extended in the chamber 66 without undue interference with the walls of said chamber 66. The spring 100 is provided to have sufficient length and spring tension such that, in an assembled position, as shown more clearly in FIG. 1, and with no pressure being exerted from the button 98 end of the plunger assembly 80, the spring 100 will bias the plunger 82 in a direction generally away from the end 62 of the chamber 66, and to a position in chamber 66 beyond the aperture 14. The reason that the spring 100 is so provided will be explained in more detail hereinafter.

An outlet valve assembly 110 is generally disposed in the nipple 70 provided on the plunger body 60. The outlet valve assembly 110 basically comprises a valve body 112 having opposite ends 114 and 116, and a bore 118 extending therethrough, intersecting said opposite ends 114 and 116 respectively.

A portion of the outer periphery of the valve body 112 adjacent the end 114 thereof is provided with threads 120 which are sized to threadedly engage the threaded portion 74 of the nipple 70. In the assembled position, the bore 118 in the valve body 112 is in communication with the chamber 66 of the plunger body 60, for a reason to be made apparent hereinafter.

A flange portion 122 is provided on the valve body 112 extending generally radially therefrom. The flange portion 120 is sized such that, in an assembled position as shown in FIG. 1, the flange portion 120 will engage the nipple 70, thereby limiting the movement of the outlet valve assembly 110 within the nipple 70.

The valve body 112 is provided with a first counterbore 124 adjacent and parallel with a bore 118, said first counterbore 124 having a diameter sized to be larger than the diameter of the bore 118. A second counterbore 126 having a diameter larger than the bore 118 and smaller than the diameter of the first counterbore 124 is formed in the valve body 112, adjacent and parallel to the first counter bore 124, thereby forming a recess 128 between the first and second counterbores 124 and 126, respectively. The recess 128, as shown in FIG. 1, is exaggerated for the purpose of clarity and, in actual practice, it may be relatively small to perform a function as will be described hereinafter. The valve body 112 may be formed of a plastic material similar to that previously described for other components of the dispenser, such as the base 12, for example.

A valve ball **130** is disposed in the first counterbore **124** of the valve body **112**, adjacent the bore **118**. The diameter of the valve ball **130** is sized to be larger than the diameter of the bore **118**, for reasons to be described below.

A spring **132** is also disposed in the first counterbore **124**. As shown more clearly in FIG. **1**, one end of the spring **132** is in engagement with the recess **128** formed between the first and second counterbores **124** and **126** respectively, and the opposite end of the spring **132** is in engagement with the valve ball **130**. The spring **132** is provided to have a sufficient length and spring tension to bias the valve ball **130** generally toward the bore **118** of the valve body **112**. Since the diameter of the valve ball **130** is larger than the bore **118**, the valve ball **132** will seat generally in the opening between the bore **118** and the first counter bore **124**, thereby closing the passageway through the valve outlet assembly **110**. It is apparent from the above description that the ball **130** and the spring **132** combine to form what may be generally described as a spring-loaded ball check valve, the function of which will be described more fully hereinafter.

## OPERATION OF THE INVENTION

The dispenser **10** and cartridge **44** are provided such that various cartridges of a similar construction may be installed alternately on the dispenser **10**. Therefore, as the fluid material from one of the cartridges is completely dispensed, the cartridge is merely replaced with another cartridge containing a fresh supply of the fluid.

To initially install cartridge **44** on the dispenser **10**, the outer sleeve **32** is removed. The cartridge **44** is then placed on the base **12** such that the open end **52** of the cartridge **44** is adjacent to the base **12** and, such that the inner sleeve **32** of the base **12** is generally disposed within the inner wall **48** of the cartridge **54**. In this position, as shown more clearly in FIG. **1**, a portion of the bag **54** is contained generally between the outer wall **36** of the inner sleeve **32** and the inner wall **48** of the cartridge **44**. When initially inserting the cartridge **44** on the base **12**, most of the fluid material contained in the bag **54** will flow into the inner sleeve **32**, thus a slight pistonlike effect may be encountered during this initial insertion. The apertures **42** are provided in the inner sleeve **32** to equalize pressure and thus reduce the pistonlike effect, thereby facilitating the installation of the cartridge **44**.

The outer sleeve **24** is then inserted over the cartridge **44** and disposed on the base **12**. In this position, as shown in FIG. **1**, a portion of the outer wall **28** of the outer sleeve **24** is encompassed by the inner wall **18** of the retainer **16**, and the inner wall **26** of the outer sleeve **24** encompasses a portion of the outer wall **46** of the cartridge **44** with respect to the base **12**. The diameters of the retainer **16**, the outer sleeve **24**, and the inner sleeve **32** are such that when the outer sleeve **24** is disposed on the base **12** a relatively tight fit is obtained between the outer sleeve **24** and the cartridge **44**. This will, to some extent, secure the cartridge **44** in an assembled position as shown in FIG. **1**.

In the assembled position (FIG. **1**), the fluid material contained in the cartridge **44**, or more particularly, in the bag **54**, will tend to flow by force of gravity through the aperture **14** in the base **12**. Since the spring **100** biases the plunge **82** toward the end **64** of the chamber **66**, such that the plunger **82** is beyond the aperture **14**, the fluid material will flow through the aperture **14** into the chamber **66**. The material will continue to flow through the aperture **14** into the chamber **66** between the end **62** thereof and the plunger **82** until it is completely filled with the fluid. At this point, the fluid material is contained in the chamber **66** by the valve ball **130** in the valve outlet assembly **110**, which is seatingly and sealingly engaging the valve body **112**, thereby closing the bore **118** of the valve outlet assembly **110**, and thereby preventing the surrounding air from entering the chamber **66**.

When it is desired to obtain the portion of the fluid from the dispenser **10**, button **98** is forced inward toward the end **62** of the chamber **66**, thereby moving the plunger **82** in the chamber **66** against the force of the spring **100**. As the plunger **82** moves toward the end **62** of the chamber **66**, the fluid contained therein is compressed, thereby forcing the fluid through the bore **118** of the valve outlet assembly **110**. The compression force of the fluid is sufficient to overcome the spring tension force of the spring **132** of the valve outlet assembly **110**, thereby moving the ball **130** from its seating and sealing position. As the ball **130** of the valve outlet assembly **110** is moved, a passageway is opened through the valve outlet assembly **110**, and the fluid will flow therethrough, being finally dispensed through the open end **116** of the valve outlet assembly **110**.

The travel of the plunger **82** in the chamber **66**, or in other words, the reciprocal stroke of the plunger **82**, is limited by the button **98**, which will engage the cap **90**. The stroke of the plunger **82** and the size of the chamber **66** will determine or proportion the amount of fluid material which is dispensed per stroke or portion of stroke. At the end of the inward stroke of the plunger **82**, the force is removed from the button **98** and the spring **100** will again bias the plunger **82** back to its original position beyond the aperture **14** in tee base **12**. At this point, the dispenser **10** is once again in a position to recycle and dispense another portion of the fluid.

The O-ring seal **82** on the plunger, which sealingly engages the walls of the chamber **66**, will not only prevent the surrounding air from entering the portion of the chamber **66** containing the fluid material but it will also wipe the fluid material from the walls of the chamber **66** and thus keep that portion of the chamber **66**, which may be exposed to the surrounding air, relatively free of the fluid.

As the fluid is dispensed from dispenser **10**, in the manner as described hereinbefore, it is apparent that bag **54** will gradually be emptied, thus causing the bag **54** to collapse within the cartridge **44**. As the bag **54** collapses it will be retained by the inner sleeve **32**. The inner sleeve **32** is thus provided to support the bag **54** above the aperture **14** of the base **12** as the fluid material contained therein is dispensed. Without the sleeve **32** performing the above-mentioned function, it would be possible for a portion of the bag **54** to empty and collapse over the aperture **14**, thereby preventing any further flow of the fluid material prematurely or at a time when a substantial amount of fluid was still contained in the bag **54**.

It is apparent from the foregoing that the present invention provides a dispenser capable of dispensing a proportionate amount of the fluid contained therein, it is capable of dispensing the entire amount of fluid material from the cartridge without encountering any problems of premature clogging of the passageway therethrough. The dispenser **10** described herein is also provided with a cartridge **44** which may be quickly and easily interchanged, and yet it is held securely in position during the operation thereof.

The plunger assembly **80** and the valve outlet assembly **110** cooperate to efficiently dispense a portion of the fluid material from the dispenser and yet provide an effective seal while in the nonoperating position, thereby preventing the fluid material from becoming contaminated through overexposure to the surrounding air.

## DESCRIPTION OF FIGS. 3 AND 4

A modified dispenser is shown in FIGS. **3** and **4**, and generally designated by the reference character **10***a*. The modified dispenser **10***a* is constructed exactly like the dispenser **10** shown in FIGS. **1** and **2**, except as hereinafter described. The base **12***a* may be constructed exactly like the base **12** in FIGS. **1** and **2**, except that the base **12***a* does not include an inner sleeve similar to the inner sleeve **32** of the base **12**, for reasons which will be made apparent hereinafter.

Cartridge **44** and the bag **54** shown in FIGS. **3** and **4**, are identical to the cartridge and bag shown in FIGS. **1** and **2**, and therefore the parts are referred to by the same reference nu-

merals. Note however, that the bag **54** is bonded to the inner wall **48** of the cartridge **44** by a bonding portion **150**. In an assembled position, and as shown more clearly in FIG. **3**, the bonded portion **150** is located generally above the open end **52** of the cartridge **44** a distance slightly in excess of one-half the distance from the open end **52** to the upper end **50** of the cartridge **44**, thereby supporting the bag **54** above the aperture **14** in the base **12**, as the fluid contained in the bag **54** is dispensed, as will be more fully described.

As shown more clearly in FIG. **3**, a modified valve outlet assembly generally designated by the reference character **110***a* is threadly secured to the nipple **10** of the plunger body **60**. The valve outlet assembly **110***a* includes a modified valve body **112***a*, which is constructed exactly like the valve body **112** shown in FIG. **1**, except that the valve body **112***a* is not provided with a first and second counterbore, as previously described with respect to the valve body **112** (FIG. **1**), for reasons which will be made apparent. A counterbore **150** is formed in the end **116** of the valve body **112***a* thereby providing a seating surface therein.

A spring **152** is disposed in the bore **118** of the valve body **112***a* and it is secured on one end thereof to the end **114** of the valve body **112** *a*, and the opposite end of the spring **152** is secured to a cover plate **154**. The cover plate **154** is provided to have an outer diameter sized to seatingly and sealingly engage the valve body **112***a* in the counterbore **152**, thereby closing the bore **118**.

The spring **152** is provided to have a sufficient length and spring tension such that, when no fluid is flowing through the bore **118** of the valve body **112***a* under pressure from plunger assembly **80** (to be more fully described hereinafter), the spring **152** will bias the cover plate **154** generally toward the end **116** of the valve body **112***a*, and thereby cause the cover plate **154** to seatingly and sealingly engage the valve body **112***a*. It is apparent, that the valve outlet assembly **110***a* is interchangeable with the dispenser **10**, shown in FIGS. **1** and **2**, and, of course, the valve outlet assembly **110** is provided to be interchangeable with the dispenser **10***a* shown in FIGS. **3** and **4**.

## OPERATION OF FIGS. 3 AND 4

The operation of the dispenser **10***a* is similar to that previously described with respect to the dispenser **10**, shown in FIGS. **1** and **2**. The cartridge **44**, having the bag **54** therein, which contains the fluid material to be dispensed, is disposed on the base **12***a*, the open end **52** of the cartridge **44** is disposed adjacent the base **12***a*.

The outer sleeve **28** is then disposed over the cartridge **44**, and disposed adjacent the base **12***a*, generally between the retainer **16** and the cartridge **44**. It is apparent that the outer sleeve **28** will prevent a lateral movement of the cartridge **44** with respect to the base **12***a*, and it will also retain the cartridge **44** generally in a position adjacent the base **12***a*, due to the relatively tight fit between the outer sleeve **28** and the cartridge **44**.

The bag **54** is bonded to the cartridge **44** at the bonded portion **148**, the inner sleeve **32**, as shown in FIGS. **1** and **2**, is not required in this embodiment of the invention, and it is the function of the bonding at portion **148** to hold the bag **54** above the aperture **14** in the base **12***a* as the fluid is being dispensed from the bag **54**.

After the installation of the cartridge **44** on the base **12***a*, the fluid material contained in the bag **54** will flow by force of gravity through the aperture **14** in the base **12***a*, and generally fill the chamber **66** of the plunger body **60**, in a manner exactly like that described with respect to the dispenser **10** shown in FIGS. **1** and **2**.

The spring **152** in the outlet valve assembly **110***a* is sized to have a sufficient spring tension to hold the cover plate **154** seated securely against the valve body **112***a*, thereby sealing off any fluid material from the chamber **66**. When it is desired to dispense a portion of fluid material from the dispenser **10***a*, a force is applied to depress the button **98**. This movement of button **98** will move the plunger **82** into the chamber **66** toward the end **62** of chamber **66**. Movement of the plunger will place the fluid material contained in the chamber **66** under compression, exactly like that described with respect to the dispenser **10** shown in FIGS. **1** and **2**. The compressive force of the fluid is sufficient to overcome the spring tension of the spring **152**, thereby moving the cover plate **152** off its seating position with respect to the valve body **112***a*, and thus allowing the fluid from the chamber **66** to flow through the outlet valve assembly **110***a*, generally between the cover plate **154** and the valve body **112***a*.

It is apparent from the various embodiments of the invention as described herein, that the present invention provides a dispenser capable of dispensing a proportionate amount of fluid material, which can be economically manufactured and operated in a relatively trouble-free manner. The dispenser assembly as shown herein also provides an interchangeable cartridge and bag wherein the fluid material is completely dispensed from the bag, and the possibility of a portion of the bag being prematurely collapsed, thereby to close the fluid material passageway in the base, is virtually eliminated.

The outlet valve assemblies as shown herein provide complete protection of the fluid material contained in the dispenser to prevent its being exposed to the air and, in one form of the invention to provide a relatively dripless outlet which virtually eliminates the possibility of excess fluid being built up in a portion of the evacuation passageway.

Changes may be made in the construction and arrangement of parts or elements of the various embodiments as disclosed herein without departing from the spirit and scope of the invention as defined in the following claims.

What I claim is:

**1**. A dispenser for dispensing fluid material comprising:

a base having an aperture formed therethrough;

a cartridge means having opposite ends and a bore extending a distance therethrough intersecting one of said ends thereby to provide an open end thereof, said cartridge means being disposed on the base such that the open end thereof is adjacent said base and communicating with said aperture;

a collapsible bag means containing the fluid material to be dispensed and having one end thereof open, said bag means being disposed in said cartridge means such that the open end portion thereof is adjacent to the open end portion of the cartridge means;

support means formed as a concentric sleeve inserted within said bag means open end for supporting said bag means above the base as said fluid material is dispensed therefrom, said support means being generally cylindrical in shape and being disposed on said base to extend approximately one-half the length of the bag means thereabove, and said support means including a plurality of apertures extending through the sleeve walls to substantially equalize pressure as the cartridge means and collapsible bag means are disposed generally over said support means sleeve;

means for rigidly supporting approximately one-half of said bag means which is adjacent the bag means open end such that it remains in predetermined concentric disposition relative to said cartridge means; and

actuating means for creating pressure differential to dispense a quantity of said fluid material contained in the collapsible bag means through said aperture in the base.

**2**. The dispenser of claim **1** which is further characterized to include:

bonding means securing an outer circumferential portion of said bag means to said cartridge means.

**3**. The dispenser of claim **1** characterized further to include an outer sleeve means disposed on the base and provided to encompass a portion of the outer periphery of said cartridge means, thereby limiting lateral movement of said cartridge means with respect to said base.

4. The dispenser of claim 1 wherein the actuating means comprises:

a plunger body having opposite ends and a chamber extending a distance therethrough and being open at one of said ends, said plunger body being disposed on the base such that the aperture in the base is in communication with said chamber;

an outlet means secured to the plunger body in communication with said chamber;

a plunger means disposed in said chamber and sized to slide reciprocally in a generally axial direction within said chamber, thereby to dispense the fluid within said chamber through said outlet means.

5. The dispenser of claim 4 wherein said plunger body chamber extends generally transversely to said aperture in said base.

6. The dispenser of claim 4 wherein the plunger means includes an O-ring disposed around the outer periphery thereof and sized to sealingly engage the walls of said plunger body chamber.

7. The dispenser of claim 4 which is further characterized to include a spring, having one end thereof in engagement with the closed end of the plunger body and the opposite end thereof in engagement with the plunger means to bias the plunger means generally axially toward the open end of the plunger body.

8. The dispenser of claim 4 wherein the plunger means is further characterized to include:

cap means having an aperture extending axially therethrough;

shaft means being reciprocally disposed in said cap means aperture and secured to the open end portion of the plunger body.

9. The dispenser of claim 4 wherein the outlet means includes:

a valve body having opposite ends and a bore extending therethrough and being secured at one end thereof to the plunger body, said valve body bore being in communication with said plunger body chamber, said valve body being provided with a seating surface in a portion of the valve body bore;

a valve member disposed in said bore; and

a spring disposed in said bore and having one end thereof in engagement with said valve member, said spring acting to bias the valve member into seating and sealing engagement with the seating surface in the valve body bore.

10. The dispenser of claim 4 wherein the outlet means includes:

a valve body having a bore extending therethrough and being secured at one end to the plunger body with the opposite end being formed as a seating surface, said valve body bore being in communication with said plunger body chamber,

cover plate means being movably disposed on one end of the valve body and seatingly and sealingly engaging the seating surface provided on said valve body seating surface; and

a spring having one end attached to the cover plate and the opposite end attached adjacent to the opposite end of said valve body bore with said spring being biased to urge said cover plate against said seating surface in the valve body.