

[54] **COMBINED CLOSURE AND DISPENSING CAP FOR TUBES AND BOTTLES**

[76] Inventor: John A. Hays, Post Office Box 795, Raymondville, Tex. 78580

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[51] Int. Cl. B67d 3/00

[58] Field of Search.....222/493, 96, 490, 222/491, 492, 511, 512, 544, 494, 539, 495, 496, 545, 513, 562; 137/269.5, 525.3, 533, 525.1

[56] **References Cited**

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Primary Examiner—Robert B. Reeves

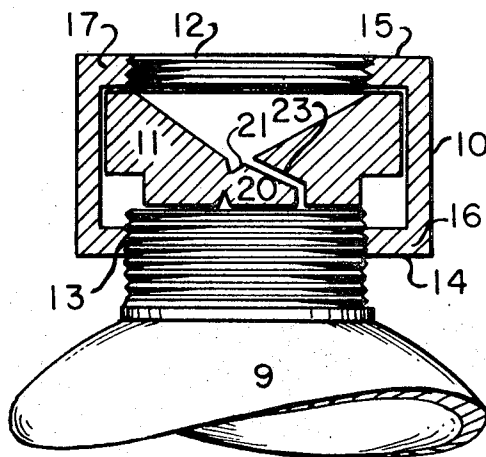
Assistant Examiner—Joseph J. Rolla

Attorney—Williard J. Hodges, Jr.

[57] **ABSTRACT**

Dual function of the closing device comprises an outer threaded retainer encasing a valve including a flexible flap which functions in one direction as dispenser and in the other direction as a seal when forced against the valve seat. The threaded retainer is constructed with threads at each end retaining a floating valve. The device is constructed and arranged to function as a dispenser when secured to a tube at one end and as a closure or seal when secured at the opposite end.

4 Claims, 7 Drawing Figures



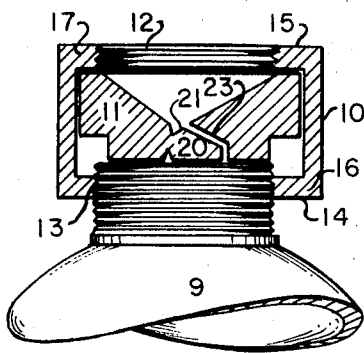


FIG. 1

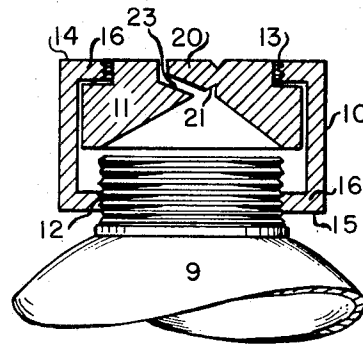


FIG. 2

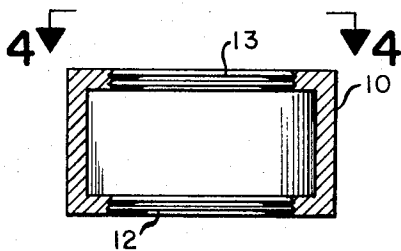


FIG. 3

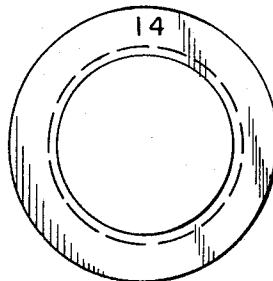


FIG. 4

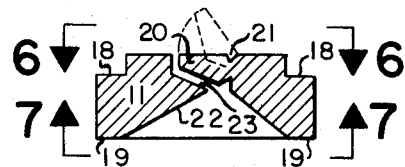


FIG. 5

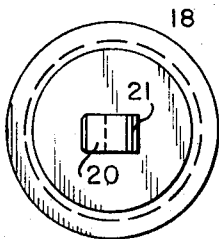


FIG. 6

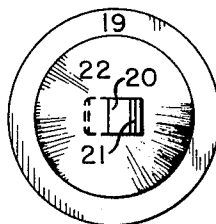


FIG. 7

INVENTOR

JOHN A. HAYS

BY

William J. Hays
ATTORNEY

COMBINED CLOSURE AND DISPENSING CAP FOR TUBES AND BOTTLES

BACKGROUND OF THE INVENTION

1. Field of the Invention This invention relates to a closure and dispensing mechanism for containers of paste like material such as toothpaste or creams. The invention is particularly suited as a closure dispenser for collapsible tube-type container or a collapsible plastic bottle.

2. Description of Prior Art

In the conventional tube cap or closure device, the cap is removed to dispense and threadably screwed to the tube to close. When the cap is removed, the content dries or the carrier evaporates and the content hardens.

Numerous attempts have been made to solve this problem. All of the specialized devices known to your inventor which permits a loosening of the cap and dispensing while affording some measure of sealing when not in use requires specialized construction of the tube. The dispensing neck of a particularly designed tube is utilized in conjunction with the modified cap. Numerous devices have been conceived and patented; however, their scarcity in the market place leads one to surmise the cost of construction of a specialized tube has discouraged commercial use.

SUMMARY OF THE INVENTION

The invention of this device is designed for use in combination with the conventional widely known open neck threaded toothpaste tube or similar containers. The closure device comprises an outer retainer encasing a floating valve. The retainer is threaded at each end above and below the floating valve which includes a flexible hinge flap which is constructed in a particular manner that when urged in one direction functions as a ribbon-like dispenser and when urged in the opposite direction, contacts the valve seat and securely closes the container. Either end of the retainer may be screwably secured to the tube. In the open mode of attachment the device functions as a dispenser under pressure and as a flexed closure seal when under no pressure. In the closed mode of attachment of the device, the valve flap is forced against the valve seat and the container sealed.

BRIEF DESCRIPTION OF THE DRAWINGS

Reference is made to the attached drawings wherein:

FIG. 1 depicts a sectionalized view of the assembled device attached to a tube like container in the sealed mode of attachment.

FIG. 2 depicts a sectionalized view of the assembled device attached to a tube like container in the dispensing mode of attachment.

FIG. 3 is a sectionalized view of the outer retainer.

FIG. 4 is a top view of the outer retainer taken substantially on line 4—4 of FIG. 3 looking in the direction of the arrows.

FIG. 5 is a sectionalized view of the floating valve.

FIG. 6 is a top view of the floating valve taken substantially on line 6—6 of FIG. 5 looking in the direction of the arrows.

FIG. 7 is a bottom view of the floating valve taken substantially on line 7—7 of FIG. 5 looking in the direction of the arrows.

DESCRIPTION OF THE PREFERRED EMBODIMENT

For a detailed description of the construction and utilization of the preferred embodiment reference is made to the attached several views wherein like reference characters are utilized throughout the several views and the following detailed description to depict similar or equivalent components.

The device of this invention is designed to be used in conjunction with a collapsible tube 9 of the conventional widely used construction or similar type threadably enclosed container. The device of this invention is constructed with a looped like outer retainer 10 which may be constructed of plastic in two sections and thermally welded with the outer retainer 10 encasing the floating valve 11 which is molded of a flexible plastic in a unitary structure. The outer retainer 10 encircling the floating valve 11 has constructed in one end valve open threads 12 and in the opposite end the valve closed threads 13. The outer retainer would accordingly comprise a discharge end 14 and a cap end 15. The outer retainer 10 has constructed in each end approximately three threaded sections which project outward from each end of the retainer 10 and comprise a valve open retaining collar 16 and a valve close retaining collar 17. The floating valve 11 has constructed adjacent the discharge end 14 of the outer retainer 10 a valve shoulder 18 which projects through and around the valve open retaining collar 16 to present a smooth surface for dispensing the contents of the tube 9 in the dispensing mode of operation. The bottom edge of the floating valve has constructed in its circumferential extremity a valve closure ring 19 which will contact and be retained by the valve closure retaining collar 17 when the device is utilized in closure mode of operation as illustrated in FIG. 1. Floating valve 11 has constructed in its center section a flexible hingedly secured valve flap 20 which may be constructed with grooved detents forming a valve hinge 21 illustrated in FIG. 5. Proceeding from the tube 9 when the device is utilized in a dispensing mode of operation as illustrated in FIGS. 2, 5 and 7, there is constructed in the body of the floating valve 11 valve cone 22 which facilitates the transfer of pressure to the flexible valve flap 20 to function dispensing the content of the tube 9. When the outer retainer 10 is secured to the tube 9 in the closure mode of operation as illustrated in FIG. 1 valve flap 20 is so constructed and arranged as to be forced against valve seat 23 to seal the content of tube 9. The construction and arrangement of this valve seat 23 and valve flap 20 is perhaps best illustrated in FIGS. 1, 2 and 5.

The device of this invention and the assembly in the closure mode of operation is illustrated in FIG. 1 depicting the product as normally sold. The removal of the outer retainer 10 because the compatible method of construction carries with it floating valve 11. The reversal of the device and the securing of the combination to the tube 9 by means of the valve open threads 12 places the device in a dispensing mode of operation. Pressure applied to the tube 9 in the configuration assembly as illustrated in FIG. 2 results in the content of the tube transfer of pressure through valve cone 22 applying pressure to the inner side of valve flap 20 which results in a ribbon like dispensing of the content of tube

9. When pressure is no longer applied to tube 9 and is content, the flexible valve flap 20 closes, sealing and retaining the moisture content of the tube 9. For purpose of travel or other reasons the outer retainer may be reversed and valve closure threads 13 attached to tube 9 and container securely sealed as illustrated in FIG. 1.

Having described my invention, its construction and use in detail, what is desired to be claimed is all equivalent structures not departing from the scope of the appended claims.

I claim:

1. A closure device for a flexible paste tube or container comprising:

- a. an outer retainer comprising a cylindrical structure having an inner wall, and an exterior wall, a cap end, and a discharge end,
- b. valve open threads constructed in the said inner wall adjacent the cap end,
- c. valve closure threads constructed in the said inner wall adjacent the discharge end,
- d. a floating valve of a substantially cylindrical configuration mounted in said outer retainer juxtaposed said valve open threads and said valve closed threads, said floating valve further comprising,
 1. a valve shoulder adjacent said discharge end of said outer retainer, and
 2. a valve closure ring adjacent said cap end of said outer retainer, and

e. a flexible valve flap constructed integral with said floating valve, said flexible valve positioned substantially at the center of said floating valve, said floating valve further comprising:

f. a valve seat adjacent said flexible valve flap, said flap contacting said seat and securely closing said container when said floating valve is urged in the direction of the cap end of said cylindrical outer retainer.

2. The invention of claim 1 wherein said floating valve comprises a valve cone having a base and an apex projecting into said floating valve, the base of said cone originating adjacent said valve closure ring and the apex of said cone terminating adjacent said flexible valve flap.

3. The invention of claim 1

further comprising a valve open retaining collar constructed in the said discharge end of said outer retainer, said valve open retaining collar receiving and retaining said floating valve in an open configuration adjacent the discharge end of said cylindrical structure.

4. The invention of claim 1 further comprising a valve closure retaining collar constructed in the said cap end of said outer retainer, said closure retaining collar contacting and securely retaining said valve closure ring thereby securely retaining said flexible flap in contact with said flap valve seat.

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