

- [54] **AUTOMATIC DISPENSER FOR TOOTHPASTE AND THE LIKE**
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- [58] **Field of Search**..... 222/95, 96, 105, 222/394, 401, 325, 183, 173, 94, 92, 373, 399, 389, 4, 130, 386.5; 401/110

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[56] **References Cited**
UNITED STATES PATENTS

3,294,289	12/1966	Bayne et al.	222/95
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2,755,967	7/1956	Anderson et al.	222/105 X
3,051,132	8/1962	Johmann	401/110

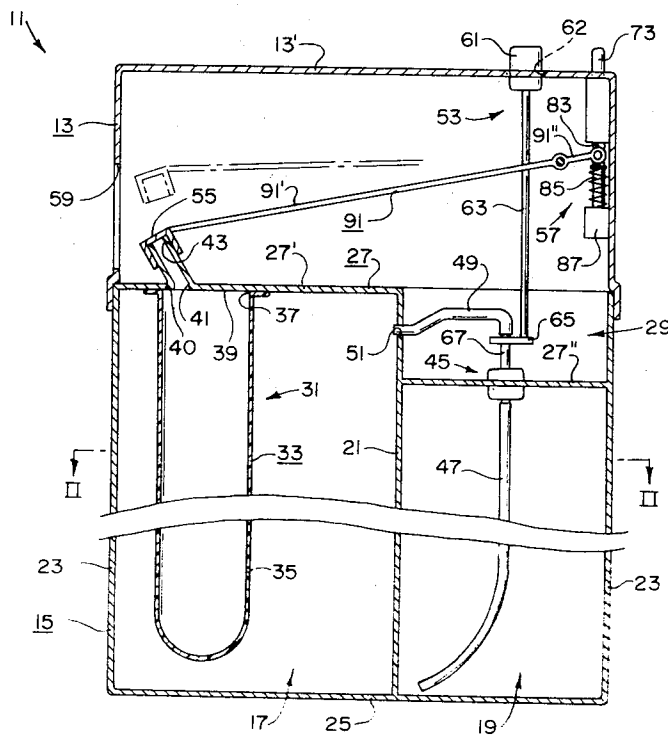
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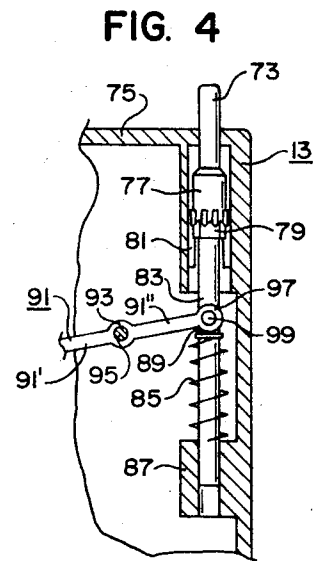
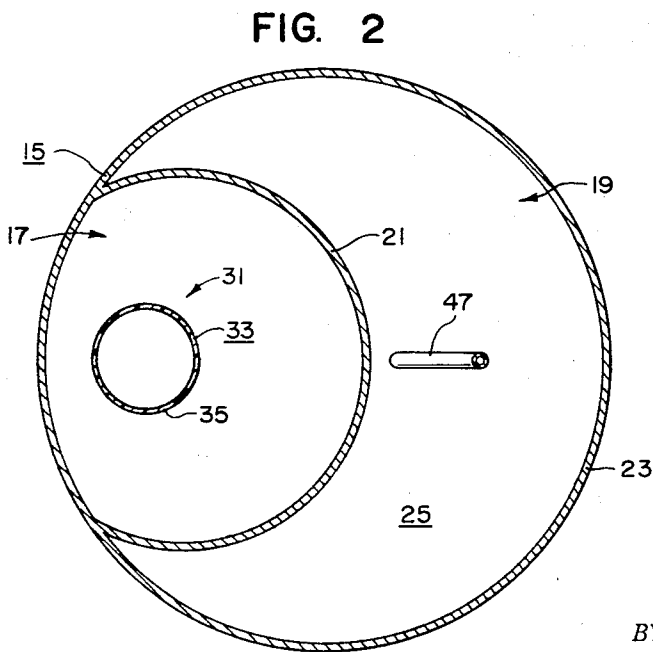
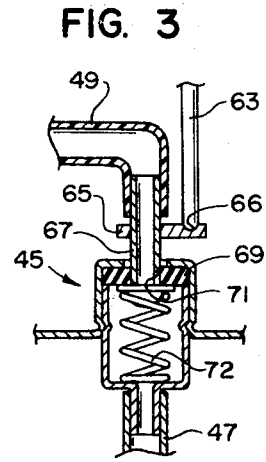
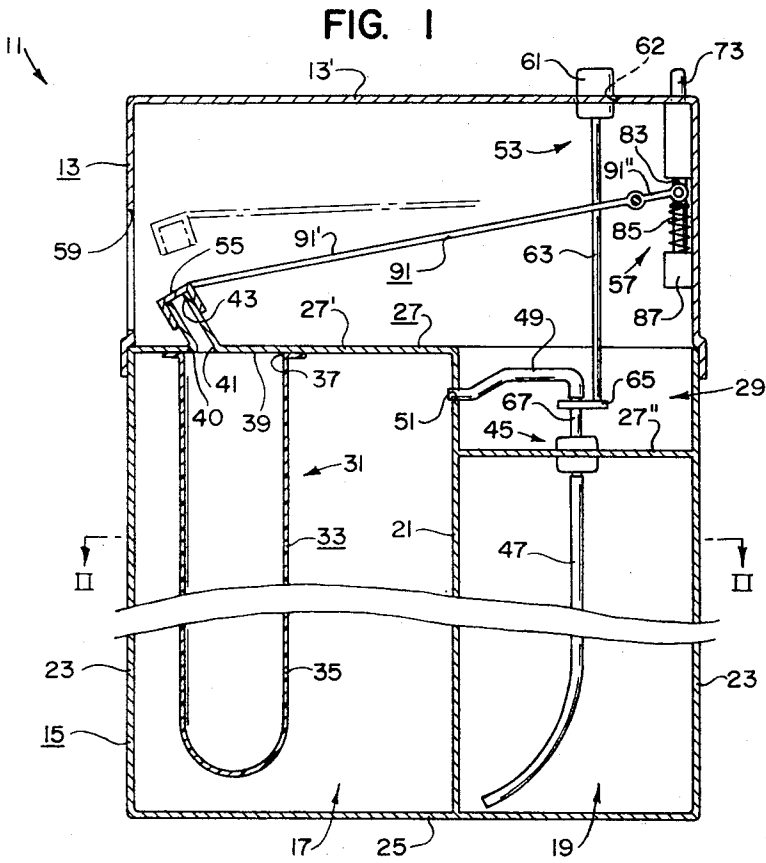
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[57] **ABSTRACT**

A dispenser for toothpaste and the like in which compressed gas controls the flow of the material to be dispensed from a flexible holder through an exit nozzle equipped with a removably mounted cap. A rigid compartment surrounds the flexible holder and allows gas to enter from a second rigid compartment, thus allowing the gas to compress the flexible tube, forcing the material to be dispensed out the exit nozzle. Actuating devices for releasing the compressed gas into the first rigid compartment and for removing the cap from the exit nozzle are included.

2 Claims, 4 Drawing Figures





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AUTOMATIC DISPENSER FOR TOOTHPASTE AND THE LIKE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to automatic dispensing devices.

2. Description of the Prior Art

U.S. Pat. No. 2,755,967, issued to Anderson et al. discloses a dispensing apparatus for dispensing flowable material from flexible containers. The device of Anderson utilizes a water pump and a complicated system of valves to actuate the device by water pressure. The cap and the water pump are interconnected through an operating lever so that with each up and down stroke of the pump the cap will move between a closed and open position on the nozzle.

SUMMARY OF THE INVENTION

The present invention is directed towards providing an improved automatic means for dispensing material such as toothpaste and the like in which the cap for the paste exit nozzle is manipulated by pushing on a push-rod and in which the paste is dispensed, through the medium of compressed gas, by pushing on a push button.

The present invention includes a lower housing which is divided into two sealed compartments by a partition. A flexible tube holding toothpaste is located in the first compartment. The flexible tube is provided with an exit nozzle leading out of the first compartment into an upper housing. The second compartment is provided with compressed gas which may be introduced into the first compartment by actuating a valve which allows the gas to flow through a conduit into the first compartment. The upper housing is provided with means for actuating the removably mounted nozzle cap and the compressed gas valve. The exit nozzle is opened and closed by the removably mounted nozzle cap which is attached to a lever pivotally attached to the upper casing and to an actuating means of the type found in ballpoint pens. The valve is actuated by pressure being exerted downwardly on it from a movable rod extending from the top of the upper housing to the valve.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a sectional view of the dispenser of the present invention showing the removable nozzle cap in its removed position in phantom lines and in its closed position in solid lines.

FIG. 2 is a sectional view taken as on the line II—II of FIG. 1, showing the lower housing.

FIG. 3 is a sectional view taken as on a vertical plane of the valve and valve actuating means.

FIG. 4 is a sectional view of the actuating means for the closable nozzle.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The toothpaste dispenser 11 of the present invention includes an upper housing 13 and a lower housing 15, as shown in FIG. 1 of the drawings.

The lower housing 15 is composed of a first gastight compartment 17 and a second gastight compartment 19 separated from each other by a partition 21. The first and second compartments 17 and 19 respectively

are defined by wall 23 of the lower housing 15, partition 21, bottom 25 of the lower housing 15, and top 27 of the lower housing 15. The top 27 is divided into top 27' of the first compartment 17 and top 27'' of the second compartment 19. The top 27'' of the second compartment 19 is lower than the top 27' of the first compartment creating a third compartment 29.

A holder 31 includes a first container 33 for containing toothpaste. First container 33 includes a flexible portion 35 disposed in first compartment 17. Flexible portion 35 is tube-shaped with an outwardly flanged upper end 37 attached to the underside of top 27' by any suitable means, such as adhesive, known to those skilled in the art. Flexible portion 35 and the portion 39 of top 27' which closes off the upper end of flexible portion 35 establishes the container 33. Holder 31 also includes a hollow neck portion 41 attached to portion 39 and in communication with the interior of flexible portion 35 through an opening 40 in portion 39. The neck portion 41 terminates in an exit nozzle 43 which directs the toothpaste to the desired location.

The second compartment 19 of the lower housing 15 contains compressed gas which is adapted to be introduced into the first compartment 17 by way of an aerosol type valve 45. The compressed gas in the second compartment 19 enters tube 47, passes through valve 45 into conduit 49, and enters the first compartment 17 by way of opening 51 in partition 21. It will be understood that conduit 49 is sealed to partition 21 in opening 51 to prevent escape of gas around the outside of conduit 49.

The upper housing 13 contains valve actuating means 53 for applying manual pressure downward on valve 45. Also contained in the upper housing 13 is removably mounted nozzle cap 55 and a nozzle cap actuating means 57. An opening 59 is provided in the upper housing 13 in a position to allow entrance to exit nozzle 43.

The valve 45 is the typical valve well known to those skilled in the art found on aerosol cans. Valve actuating means 53 includes a pushbutton 61 extending upwardly through an opening 62 in the top 13' of upper housing 13, a rod 63 attached to pushbutton 61 and depending therefrom, and a collar 65 attached to valve stem 67, which collar receives the rounded lower end of rod 63 in a rounded depression 66 in collar 65. The operation of valve 45 can be understood with reference to FIGS. 1 and 3. When pushbutton 61 on valve actuating means 53 is depressed, rod 63 forces collar 65 attached to valve stem 67 down. Collar 65 in turn forces valve stem 67 down past rubber gasket 69. The compressed gas is then free to enter the valve stem from tube 47 through opening 71 now exposed.

The compressed gas then travels up the valve stem 67, through the conduit 49, and into the first compartment 17. The flexible portion 35 of the holder means 31 is compressed by the gas entering the first compartment 17 and in turn forces the toothpaste past the neck portion 41 and out of the exit nozzle 43. This process is continued until the pushbutton 61 on the valve actuating means 53 is released whereupon spring 72 forces valve stem 67 upwards to block off opening 71 in rubber gasket 69. The third compartment 29 of the lower housing 15 allows the valve 45 and valve actuating means 53 enough room to coact.

The removably mounted nozzle cap 55 is normally on exit nozzle 43 in a closed position, thus prohibiting the

flow of toothpaste. To open the exit nozzle 43, the nozzle cap actuating means 57 is actuated. The nozzle cap actuating means 57 (see FIGS. 1 and 4) is similar to the retraction-protraction mechanism found on ballpoint pens. This mechanism is explained sufficiently in the F. T. Johmann U.S. Pat. No. 3,051,132, which is incorporated herein by reference. In brief and with the explanation given in the Johmann patent in mind, the action of the nozzle cap actuating means is as follows: A pushrod 73 extending through the top 13' and corresponding to unit 20 or stem 44 in the Johmann patent is connected to upper cam-like latch member 77, which receives lower cam-like latch member 79, corresponding to upper latch member 32 and lower latch member 36 in the Johmann patent. The upper and lower latch members 77 and 79 respectively coact with spaced ears 81, to achieve an action like that described in the Johmann patent, to hold plunger 83 in a lower or protracted position. A spring 85 forces the plunger 83 back into an upper or retracted position when upper and lower latch members 77 and 79 respectively are in the retracted position by acting against plunger guide 87 and projection 89 on plunger 83. In other words, to retract plunger 83, pushbutton 73 is pushed downwardly and released. To lower the plunger 83, pushbutton 73 is again pushed downwardly and released.

A pivotally mounted lever 91 having a first end 91' and a second end 91'' is positioned in the upper housing 13. The lever 79 is pivotally attached to the upper housing 13 at bushing 93. Pivot rod 95 passes through bushing 93 and attaches to the sides of upper housing 13 at points not shown. The second end 91'' of lever 91 is pivotally attached to plunger 83 at bushing 97. Pivot rod 99 passes through bushing 97 and attaches to plunger 83. The first end 91' of lever 91 is attached to the removably mounted nozzle cap 55. When the nozzle cap actuating means 51, and thus plunger 83, are moved towards the protracted position, lever 91 turns about pivot rod 95. The second end 91'' of lever 91 is, therefore, lowered and turns about pivot rod 83. The first end 91' of lever 91 is, therefore, raised and the removably mounted nozzle cap 55 is removed from exit nozzle 43.

In the operation of the toothpaste dispenser 11 the first step is to remove the nozzle cap 55 from the exit nozzle 43 by depressing the pushrod 73 of the nozzle cap actuating means 57. Next, the pushbutton 61 of the valve actuating means 53 is depressed while a toothbrush is inserted through opening 59 in the upper housing 13 to receive toothpaste from the exit nozzle 43. The pushbutton 61 is released when sufficient toothpaste has been dispensed.

When the toothpaste is completely dispelled from the first container means 33 of the holder means 31, the upper housing 13, if desired, may be removed from the lower housing 15 and placed on a new lower housing, not shown.

Although the invention has been described and illustrated with respect to a preferred embodiment thereof, it is not to be so limited since changes and modifications may be made therein which are within the full intended scope of the present invention.

I claim:

1. An automatic dispenser comprising a lower housing and an upper housing fitted on said lower housing, said upper housing having an opening therein; means in said lower housing dividing said lower housing into a first compartment, a second compartment for containing gas under pressure and a third compartment; holder means including first container means disposed in said lower housing for containing the material to be dispensed, said holder means including a flexible portion in said first compartment, and neck means communicating with the interior of said container means and terminating in an exit nozzle extending into said upper housing adjacent said opening for directing the material to be dispensed, conduit means in said lower housing communicating said second compartment with said first compartment, valve means interposed in said conduit means and operable between open and closed positions for respectively releasing the gas from said second compartment and stopping the gas flow therefrom, means for opening said valve means including a pushbutton in said first compartment removably coupled to said valve means for opening said valve means upon depression of said pushbutton and closing of said valve means upon release of said pushbutton, cap means in said upper housing removably mounted on said exit nozzle, actuating means mounted in said upper housing and coupled to said cap means including a pushrod movable to cause lifting and holding of said cap means in a removed position spaced from said exit nozzle and to cause lowering of said cap means into a closed position on said exit nozzle, and said upper housing being removable from said lower housing for placement on another lower housing similar to said lower housing.

2. The dispenser of claim 1 in which said actuating means comprises a pivotally mounted lever having a first end attached to said cap means and a second end, a plunger pivotally attached to said second end, means movably mounting said plunger for vertical movement between retracted and protracted positions, spring means urging said plunger towards said retracted position, means operably coupling said push rod and said plunger for causing movement of said plunger to cause movement of said lever to lift said cap means and to hold said cap means in said removed position upon downward movement of said push rod and release thereof and to cause movement of said lever to lower cap means to said closed position upon subsequent downward movement of said push rod and subsequent release thereof.

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