United States Patent

Sacks

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[54] DEVICE FOR EVACUATING CONTAINERS

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[51] **Int. Cl.**.....**B65b 31/02**

[58] **Field of Search**.....53/88; 141/65; 206/46 B; 220/44 R, 24 R

[56] **References Cited**

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[57] **ABSTRACT**

A manually-actuated pump is attached to the lid of a container for substances such as ground coffee, which deteriorate in the presence of air. The pump consists of a cylindrical bellows which can be compressed toward the lid and extended. A first flap-type check valve is installed on said lid and a second flap-type check valve is installed on a closure on the outer end of the bellows. A seal cap fits over the second valve to maintain the vacuum once the container has been evacuated.

4 Claims, 2 Drawing Figures

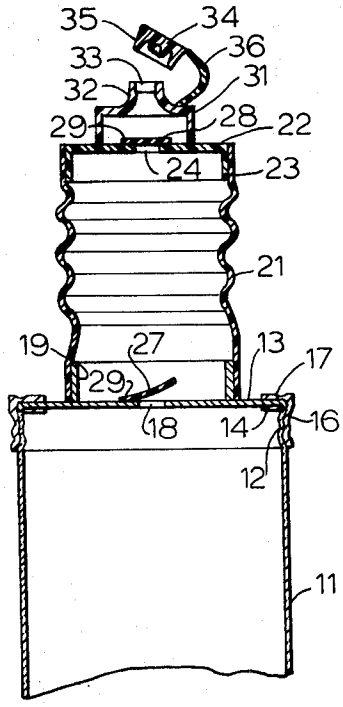


FIG. 1

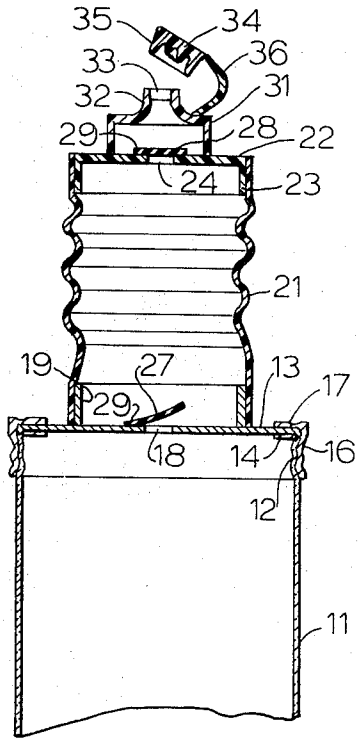
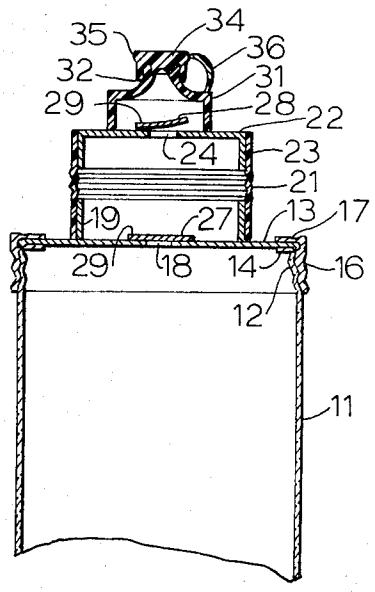


FIG. 2



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DEVICE FOR EVACUATING CONTAINERS

This invention relates to a new and improved device for evacuating containers. Certain items, such as ground coffee, deteriorate rapidly when exposed to air. Customarily, such items are packaged in hermetically sealed containers, but once the consumer has opened the container, air causes deterioration of the unused portion remaining in the container. Various means have heretofore been suggested for protecting the item from air, but these have had only limited commercial development. The present invention provides means which may be used to evacuate a container containing material which deteriorates on exposure to air.

A principal purpose of the present invention is to provide a device which may be used conveniently by the consumer and involves no special tools for its application nor any particular skill in use.

Another principal feature of the invention is its relative inexpensiveness and that it may be used repeatedly, so that its use is economical.

A further feature of the invention is the fact that it has no moving parts in the sense of ordinary valves, that there is no friction which might cause the valves to stick and that the valve members hereinafter described are simple, inexpensive, and relatively trouble free.

Another feature of the invention is the fact that no guides or means of alignment of the parts are required, thereby simplifying the construction and reducing the expense of manufacture.

Another important feature of the invention is the fact that simple flap valves are used and these operate under differential air pressure. Such valves can be used because a seaing cap is provided which protects the container from air while the evacuating mechanism is not in use, and hence there is no leakage through the simple flap-valves.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings in which similar characters of reference represent corresponding parts in each of the several views.

In the drawings:

FIG. 1 is a fragmentary sectional view through a device in accordance with the present invention showing the bellows extended and the sealing cap open.

FIG. 2 is a view similar to FIG. 1 with the bellows compressed and the sealing cap in place.

The present invention is attached to container 11, which may be a glass mason jar, a metal container or other container, preferably formed with screw threads 12 at its open end or neck. The container 11 may be filled with the contents of another container in which the item was originally sold, or the container 11 may be fabricated for use with the mechanism as an original package for the item. Although screw threads 12 are illustrated and described herein, other means may be used to attach the remaining portion of the evacuating mechanism, so long as the container is formed with means for effectively sealing the contents and means for easily obtaining access to the contents for subsequent dispensing.

Connected to the neck 12 is a top 13 which preferably has around the periphery of its inside a gasket 14 which, when the top is pressed against the neck of the container, seals with an air-tight seal. One means for securing the top in place is an internally threaded ring 16 which engages the thread in neck 12 and which has an in-turned flange 17 which grips the periphery of the top 13. Disc 13 is formed with a first aperture 18, preferably approximately in the center thereof.

A cylindrical first flange 19 is formed on the upper surface of top 13 and this receives one end of the bellows 21, which may be a sleeve or flexible tube. Various means may be used to seal bellows 21 to flange 19 such as the use of plastic cement. On the other hand, it will readily occur to one skilled in the art that the lower end of the bellows 21 may be secured to the top 13, surrounding first aperture 18, by other convenient means. The bellows 21 is formed of a flexible plastic material which may be pumped between the extended position of FIG. 1 and the contracted position of FIG. 2. Closure 22 is attached to the upper end of the bellows 21, and for this purpose, a second cylindrical flange 23 may be formed on the closure 22 to receive the upper end of the bellows 21 and may be secured thereto by cement or other means. Closure 22 has a second aperture 24. When the user grips the closure 23 and pushes it downwardly, the bellows 21 is compressed for a purpose which hereinafter appears. A flap 27 of thin rubber or the like is placed over the first aperture 18 and secured to the upper surface of top 13 at line 29 by cement, vulcanization or other convenient means. Similarly, a second flap 28 is secured on the outside of closure 22 over the second aperture 24 and is tacked in place at line 29. When the bellows 21 is compressed from the position of FIG. 1 to the position of FIG. 2, the pressure in the bellows 21 pushes closed flap 27 and pushes open flap 28, allowing the air within the bellows 21 to escape to atmosphere. The user then pulls the bellow to the position of FIG. 1 and this causes the flap 28 to be closed and the flap 27 to be opened. This draws some of the air out of the container 11 and into the bellows 21. By repeating the operation several times, the container 11 may be substantially evacuated.

In order to prevent air from re-entering the container, a ring 31, which protects the flap 28, is positioned on closure 22 surrounding aperture 24. The upper end of ring 31 is formed with a nipple 32 having an opening 33. A sealing cap 34 formed with a depending skirt 35 seals over the nipple 32 and is attached to ring 31 by a flexible strap 36. After the container 11 has been evacuated, the cap 34 is pressed over the nipple 32, as is shown in FIG. 2, and seals the device against entry of air.

When it is necessary to dispense contents from the container 11, the ring 16 is removed.

The evacuating device may be used repeatedly either with the same container 11 or other containers. As has previously been stated, the container 11 may be initially formed with a threaded neck 12 or other means for attachment to ring 16. In such instances, the container 11 may be discarded after the contents have been dispensed and the remaining portion of the device used with another container.

It will be understood that a common usage for the present invention is on containers which are subject to vacuum. However, some commodities are packaged under pressure (e.g., tennis balls). To pressurize the container in these instances, the device is constructed with the valves 27, 28 reversed in direction, being secured to the lower surfaces of members 13 and 22, so that expansion and contraction of bellows 21 pumps air into container 11.

What is claimed is:

1. A device for evacuating a container comprising a top shaped for detachable sealing engagement with the container to be evacuated and formed with a first aperture, a flexible hollow tube fixed at one end to said top, a closure for the opposite end of said tube formed with a second aperture, a first check valve for said first aperture, a second check valve for said second aperture, and detachable means external to said closure for sealing said second aperture.

2. A device according to claim 1 in which said means comprises a nipple on the exterior of said closure surrounding said second aperture and enclosing said second check valve and a cap detachably fitting on said nipple with an air-tight fit.

3. A device according to claim 1 in which said valves comprise flaps of bendable material which open and close said apertures as said tube is manually compressed and extended.

4. A device according to claim 1 in which said top is formed with a cylindrical first flange to which said one end of said tube is attached and said closure is formed with a cylindrical second flange to which said opposite end of said tube is attached.

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