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DISPENSING DEVICE FOR COLLAPSIBLE TUBES

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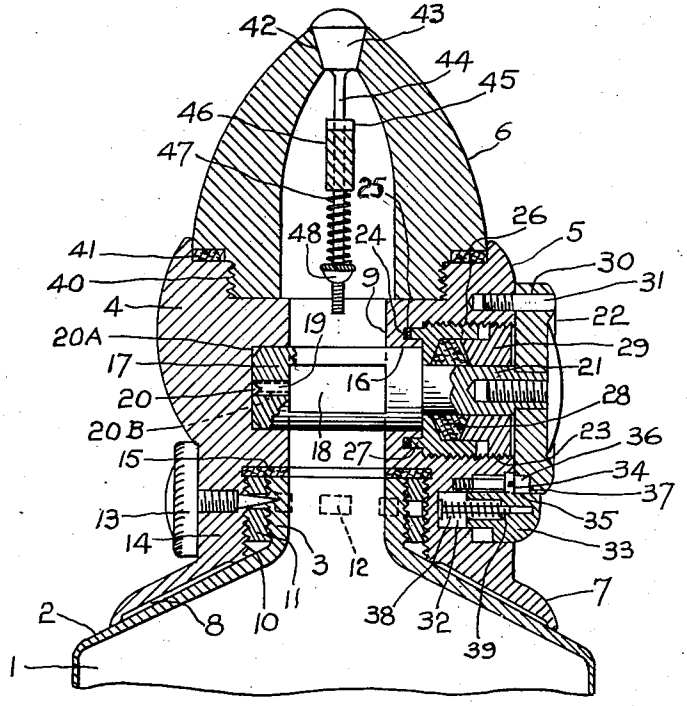


FIG. 1

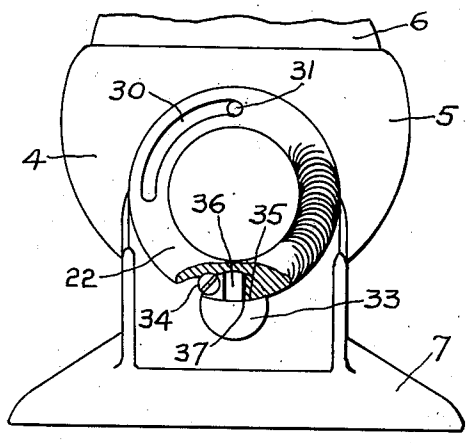


FIG. 2

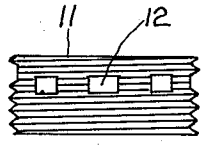


FIG. 4

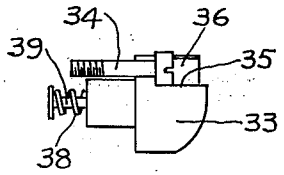


FIG. 3

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DISPENSING DEVICE FOR COLLAPSIBLE TUBES

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6 Claims. (Cl. 221—60)

My invention relates to improvements in dispensing devices for collapsible tubes. The objects of the invention are to provide means capable of being secured to a collapsible tube containing face cream, tooth paste, shaving cream or the like, through which the content of the tube may be expressed as desired; to provide means whereby inadvertent expression of the content can be prevented. Further objects are to provide a dispensing head which can be manufactured very cheaply on a quantity production basis and which may be readily removed from one tube and secured to another when desired. Further objects are to provide a device which will dispense with or replace the screw cap now used on collapsible tubes, which will be more sanitary due to the prevention of leakage and one which will prevent corrosion of the metal incidental to leakage of the contents adjacent the point of discharge.

The invention consists essentially of a head having a manually operable valve adjacent the nipple of the tube to which the head is secured and a spring tensioned valve adapted to be opened to express the contents of the tube in response to pressure exerted upon said tube, as will be more fully described in the following specification and shown in the accompanying drawing, in which:—

Fig. 1 is an enlarged sectional view of the invention fitted to the nipple of a collapsible tube.

Fig. 2 is a fractional elevation showing the turn button and lock of the control valve.

Fig. 3 is a side elevation of the locking button.

Fig. 4 is an elevational view of the adapter.

In the drawing like characters of reference indicate corresponding parts in each figure.

The numeral 1 indicates a collapsible tube of the usual type having shoulders 2 and a screw nipple 3 through which the contents of the tube are normally expressed by applying pressure to the body of the tube.

Screwed to the nipple 3 is an ejector head 4 consisting of a base 5 and a cap 6. The base is provided with a flange 7 adapted to fit onto the shoulder 2 of the tube 1 and the flange is provided with an annular recess 8 to bridge the lettering normally embossed upon said shoulder. The base is provided with a vertical bore 9 and is internally threaded at its lower end as at 10 to fit the largest type of tube nipple. Normally provided for the internal thread 10 is an adapter 11 of a size to fit a desired tube nipple which is internally and externally threaded and is provided with a plurality of peripheral apertures 12, see detail in Figure 4, which are disposed in line with the thread so as to progressively come into direct register with a pointed set screw 13 which threadedly engages the neck 14 of the base and is long enough to pass through one of the apertures 12 of the adapter 11, enter the nipple 3 and secure the base and adapter against turning. A gasket 15 is fitted between the nipple and the base 5 to prevent extrusion of the contents of the tube when it is pressed.

The base 5 is transversely bored as at 16 to receive a valve plug 17. The valve plug is provided with a port 18 which is adapted on the plug being turned to register with the bore 9 and a passage 19 is extended longitudinally through the inner end of the plug to a groove 20, an annular space 20A and a plurality of channels 20B, shown in dotted line in Figure 1, extending across the plug for the purpose of breaking the suction in the event of the removal of the plug. The outer end of the plug 17 is reduced to form a stem 21 to which is fitted a turn button 22 by any suitable fastening means.

The stem 21 is housed in a recess 23 which is internally threaded and is provided at its base with an annular groove 24 for receiving a packing ring 25.

A gland collar 26 having an annular rim 27 is screwed into the recess 23 so that its rim bears down upon the packing ring 25. The gland collar 26 is adapted to receive a suitable packing 28 which is adjustably compressed against the stem 21 by a follower 29 screwed into the recess 23.

The turn button 22 is provided with an arcuate slot 30 which embraces a pin 31 fitted into the base 5, the ends of the slot forming stops to limit the turning movement of the button when the valve plug has reached its fully open or fully closed position. A recess 32 is formed in the base in which a locking button 33 is slidably movable. The locking button is held against rotation by a stud 34, see Figure 3, which it engages and which is screwed into the base at the side of the recess 32. The button is recessed on one side of its outer face as at 35 and is provided with an upstanding dog 36, which dog is adapted to engage a notch 37 formed on the inner face of the turn button 22, so as to lock the valve plug against being moved to open position.

The locking button 33 is outwardly urged by a spring 38 which is held in line by a slidably mounted pin 39 carried at its free end by the locking button and abutting the base of the recess 32.

The cap 6 is secured to the base 5 by a thread 40 and is secured against leakage by a gasket 41. At the outer extremity of the cap 6 a valve seat 42 is formed, which is closed by a conical valve 43 having a stem 44 slidably extending through a boss 45 carried by a spider 46. The valve stem is provided with a tension spring 47 and a nut 48 by which the valve may be adjusted.

The head is affixed to a collapsible tube as shown and is normally left with the plug valve closed. When a supply of the contents is required, pressure is exerted upon the locking button 33 to depress it and remove the dog 36 from the notch 37 of the turn button 22, this turn button is then rotated in a clockwise direction, as viewed in Figure 2, until the end of the slot 30 is brought to rest against the pin 31, thus establishing communication between the tube 1 and the cap 6. As the tube is squeezed the contents flow through the valve plug and ultimately urge the conical valve 43 off its seat and extrude thereabout in a tubular ribbon. The contents emerging from the cap, though tubular at the point of discharge, collapse to a flat ribbon at a very short distance from the valve 43, which tends to economical delivery for tooth paste and similar commodity contents. As soon as pressure is relieved from the tube the valve 43 closes, thus cutting off the discharge and leaving the device clean and sanitary. By again turning the valve plug 17 further extrusion of paste is definitely prevented.

It will thus be seen that where it is now necessary to use both hands, usually wet from soap suds and remove the cap of the collapsible tube all this will be obviated with a tube having a dispensing device such as is above described, for with such a device the tube can be held with one hand, the locking button depressed and the turn button rotated at the same time, so that on pressure being applied a desired amount of the contents can be accurately discharged leaving the device clean and sanitary after use.

It will of course be obvious that the device may be made integral with the collapsible tube as well as an attachment therefor.

What I claim as my invention is:

1. A dispensing device for collapsible tubes comprising a hollow body adapted for connection to the discharge end of a collapsible tube, a manually controlled valve adjacent the tube discharge and a spring tensioned valve disposed beyond the manually controlled valve adapted to open in response to pressure upon the tube to discharge the contents of said tube after said contents have passed through the manually controlled valve.

2. In a dispensing device for collapsible tubes, a manually operable valve having a rotatable stem and a turn button, said turn button being mounted flush with the dispensing device and having a notch in its underside, a manually operable spring pressed lock button slidably mounted in the dispensing device, said lock button being disposed in contact with the turn button and having a dog normally engaging the notch therein to hold said turn button against rotation, said lock button being adapted to be inwardly pressed to disengage the dog from the recess of the turn button and to permit the rotation of said turn button.

3. In a dispensing device for collapsible tubes, a valve body having a central bore and a recessed chamber adjacent its outer end, a valve plug having a spindle rotatable within the bore, a gland collar having an annular rim adapted to register with a complementary groove at the base of the recess, means for securing said collar within the bore, a follower adapted to bear against a packing within the gland collar, and means for securing the follower in adjusted position.

4. A dispensing device for collapsible tubes comprising a body adapted for connection to the nipple of a collapsible tube, said body having a ported passage extending therethrough to discharge, a manually operable valve controlling the flow of material through said ported passage, manually operable means for locking the valve against operation and a spring pressed valve at the discharge end of the ported passage adapted to open in response to pressure upon the tube.

5. The combination with a threaded nipple and an internally threaded connector of greater diameter than the nipple, of an adapter consisting of an annular member internally and externally threaded, said connector having a set screw, said annular member having a plurality of peripheral apertures, said set screw being adapted to extend through any of said apertures and engage the nipple to prevent rotation of the connector and the annular member about the nipple.

6. The combination with a threaded nipple and an internally threaded connector of greater diameter than the nipple, of an adapter consisting of an annular member internally and externally threaded, said connector having a set screw, said annular member having a plurality of peripheral apertures disposed in line with the thread of said connector, said set screw being adapted to extend through any of said apertures and engage the nipple to prevent rotation of the connector and the annular member about the nipple.

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