

[54] **MOTORIZED COLLAPSIBLE TUBE DISPENSER**

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[51] Int. Cl. **B65d 35/28**

[58] Field of Search 222/96-102, 333;
417/478; 100/155, 172,
176, 52

[56] **References Cited**

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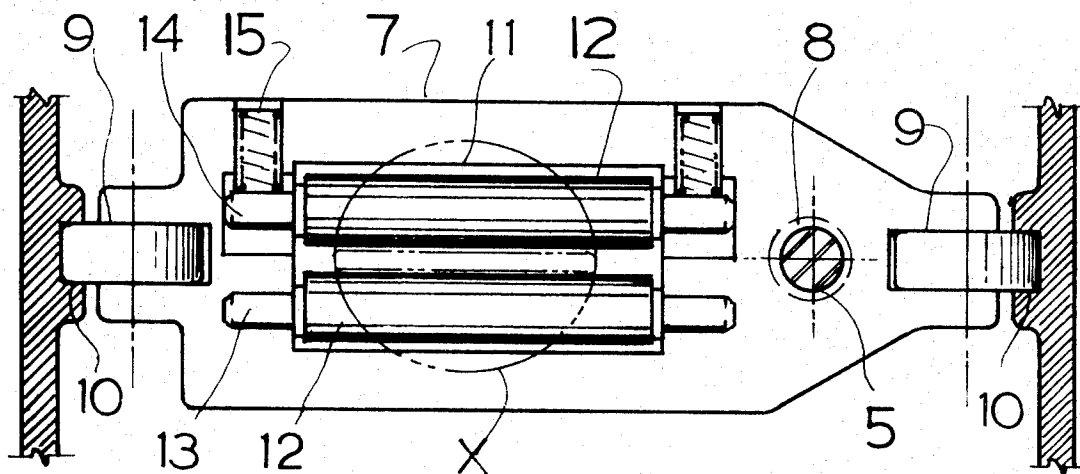
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[57] **ABSTRACT**

This invention consists of an electrically operated collapsible tube dispenser suitable for the dispensing of such products as tooth paste, shaving cream, etc. It comprises an enclosure in which the said tube is suspended by its base and its contents being discharged at the bottom of the enclosure. The squeezing pressure upon the tube is provided by a pair of rollers which travel downward on both sides of the tube, and which are activated by means of an electric motor.

1 Claim, 4 Drawing Figures



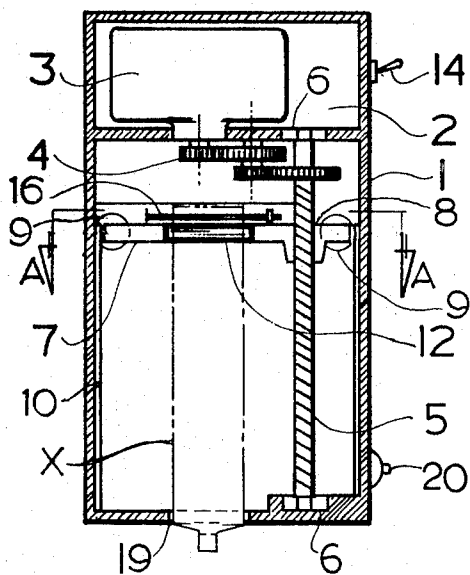


FIG. 1

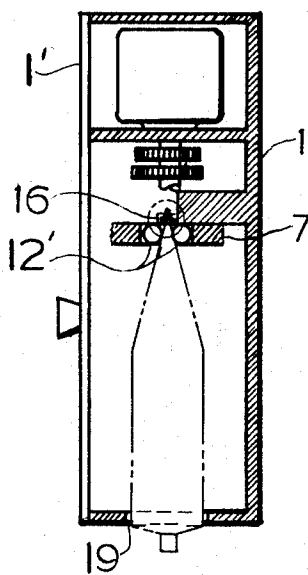


FIG. 2

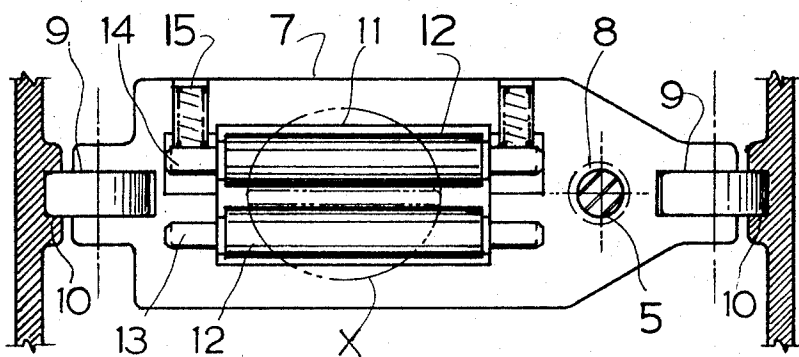


FIG. 3

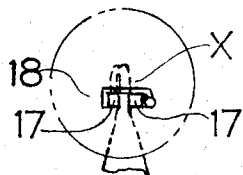


FIG. 4

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MOTORIZED COLLAPSIBLE TUBE DISPENSER

This invention consists of an electrically operated dispenser for such products as tooth paste, shaving cream, cosmetics, and other preparations which are being sold in paste form and contained in collapsible tubes.

At the present time the tubes containing such products are squeezed by hand in order to discharge the required quantity of the tube's contents. This usually results in a badly twisted messed up partly full tube always laying in full view on top of bathroom equipment, thus spoiling the general appearance and neatness of the room. Furthermore, in many cases, the squeezing of the tube is done by careless adults or children, so that a great deal of the tube's contents is lost when the tube is discarded. Also, many commercial products used in factories and other places of business are being dispensed in collapsible tubes, and much of such products are wasted due to inefficient handling of such tubes.

It is therefore the object of this invention to provide a dispenser for collapsible tubes which will totally enclose the collapsible tube so that it is kept out of view, and so that the contents of the tube will be squeezed out of the tube completely, smoothly, and uniformly.

This is accomplished in the invention by providing a totally enclosed container for the tube, in which it is clamped and held between two opposite rollers which squeeze out the tube's contents as the rollers travel downward towards the discharge end of the said tube. In describing the invention reference will be made to the attached drawings in which,

FIG. 1 shows the container in section to show the interior,

FIG. 2 shows a side elevation of the interior,

FIG. 3 shows an enlarged view of section A—A, and

FIG. 4 shows a diagram of the tube clamping device.

In the drawings is shown a container 1 which is provided with a door 1' for totally enclosing the interior. The container 1 is provided with a chamber 2, which houses a miniature but comparatively strong motor 3. Attached to and motivated by the shaft of this motor is a speed reducing gear train 4 which in turn rotates slowly a vertical threaded shaft 5 which is supported by the bearings 6,6.

A carriage 7 is provided with a tapped hole 8 through which passes the shaft 5, so that the rotation of the shaft 5 causes the carriage 7 to travel up or down depending upon the direction of rotation of the shaft 7. To provide smooth travel without binding of the carriage 7, it is provided with a centrally located wheel 9 at each end thereof. The wheels 9 are guided in tracks 10,10, which are part of the container 1.

In the center of the carriage 7 is a rectangular opening 11 in which are located two parallel and opposite rollers 12,12, which rotate freely on shafts 13 and 14. The shaft 13 is fixed, while the shaft 14 is spring loaded as shown in 15, so that the flat end of a collapsible tube X can be inserted between the rollers.

A clamp 16 which is permanently fixed to the inside of the container 1 consists of two prongs 17,17, between which the base of the tube X is inserted so that the crimped edge of the said tube is directly above and rests upon the prongs 17,17. After the insertion of the

tube X the prongs are locked with a clip 18.

The container 1 is also provided with a central circular opening 19 through which extends the discharge end of the tube X. A push button 20 is attached to the outside of the said container for activating the dispenser, and a toggle switch 21 is also provided on the outside of the said container for reversing the polarity of the motor 3 in order to rotate the shaft 5 clockwise or anti-clockwise, as required.

The container is loaded by having the carriage 7 at its uppermost position. The bottom end of the tube X is inserted between the rollers 12,12, and is clamped between the prongs 17,17. In order to discharge a required quantity of paste from the tube the push button 20 is depressed. This activates the motor causing the said rollers to move downwardly and at the same time pressing upon the walls of the tube. When the required quantity of paste has been released, the switch 20 is released and the discharge is stopped. This operation is repeated until the rollers reach the bottom of the tube, at which time, the tube is empty. If accidentally the motor is still activated when the rollers have reached the lowest position in the container, the shaft of the motor can continue to rotate without engaging the gear train by having the first gear of the gear train attached to the motor shaft by a simple washer type friction clutch.

In order to reload the container, the toggle switch 14 is moved to the position to change the rotation of the motor and the vertical shaft 5 so that the carriage travels back to the uppermost position when the switch 20 is depressed, before inserting the new tube.

Various other electrical methods known to the trade can be used in controlling the start and stop of the travel limits of the rollers, such as limit switches, etc. However, it is the object of the invention to simplify the construction of the unit as much as possible.

Having described the invention, what I claim is:

1. An electrically motorized device for dispensing the contents of a collapsible tube comprising a container for enclosing the said tube; an electric motor located within the said container; a speed reducing gear train motivated by the said motor and attached to the said motor by means of a friction clutch; a vertical, threaded, rotating shaft which is rotated by the speed reduced end of the said gear train; a carriage having a tapped hole therein through which passes the said vertical threaded shaft so that rotation in either direction causes the said carriage to travel up or down; a pair of opposite, parallel, and closely spaced rollers located within the said carriage, one of the said rollers being spring loaded to allow a spread between the said rollers; a vertical wheel at each end of the carriage which travels in a grooved track at each side of the said container for guiding the said carriage in its up or down travel; a clamp, for holding the crimped base of a collapsible tube, located above the uppermost position of the said rollers; a hole in the bottom of the said container through which extends the discharge end of a collapsible tube; a push button switch for starting the said motor; and a toggle switch for electrically reversing the rotation of the said motor.

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