Sept. 6, 1955 G. M. HILL 2,717,103

DISPENSERS FOR COLLAPSIBLE TUBES

Filed Feb. 16, 1954

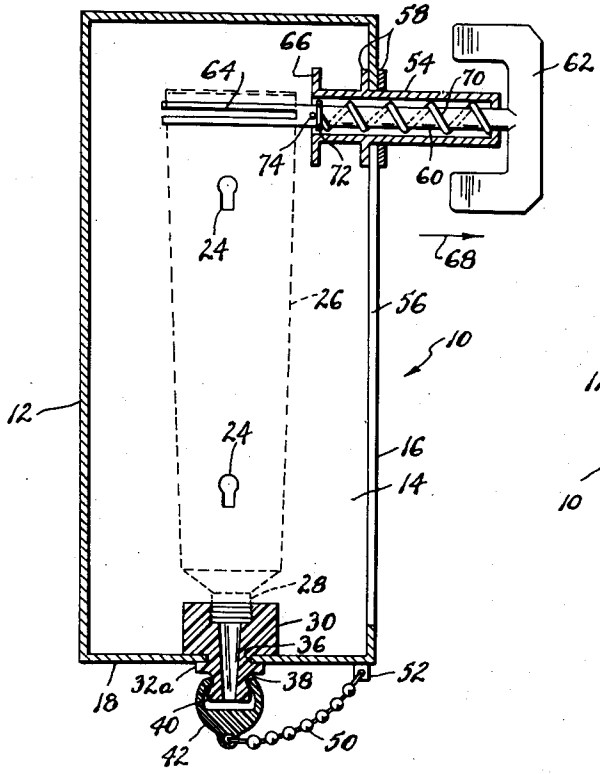


FIG. 1.

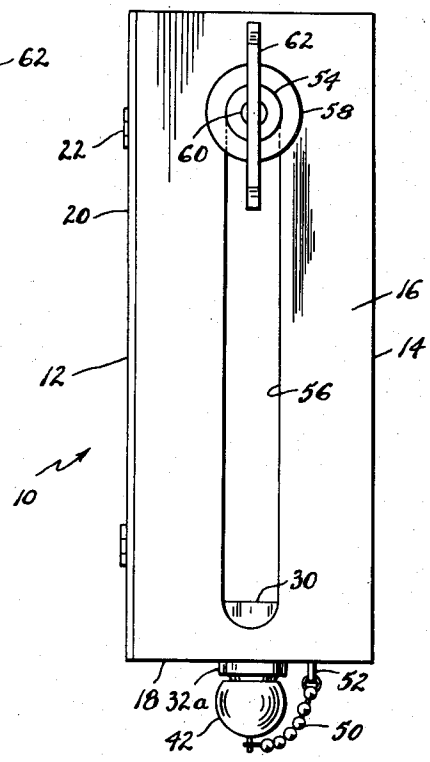


FIG. 2.

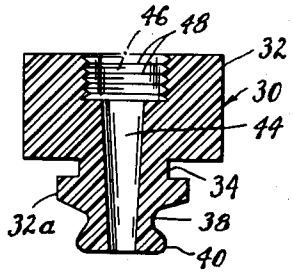


FIG. 3.

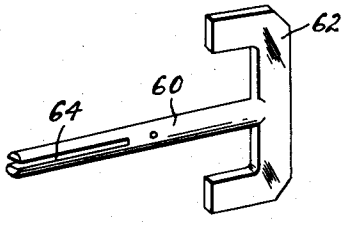


FIG. 4.

INVENTOR.

Glenn M. Hill

United States Patent Office 2,717,103 Patented Sept. 6, 1955

2,717,103

DISPENSERS FOR COLLAPSIBLE TUBES

Glenn M. Hill, Kansas City, Kans.

Application February 16, 1954, Serial No. 410,617

5 Claims. (Cl. 222—100)

This invention relates to new and useful improvements and structural refinements in dispensers for collapsible tubes, and the principal object of the invention is to provide an apparatus of the character herein described, which may be conveniently and effectively employed for dispensing the contents of tubes of tooth paste, shaving cream, medicinal preparations, and the like, in an efficiently controlled manner, whereby to avoid wastage, drying out, or contamination, such as frequently results when the contents of such tubes are dispensed in a conventional manner.

More specifically, this invention concerns itself with the provision of an apparatus including a housing which is adapted to accommodate a collapsible tube therein; means in the bottom portion of the housing which perform the combined function of supporting the collapsible tube and affording a dispensing passage for the contents ejected therefrom; and further means carried by the housing for collapsing the tube. In addition, the invention contemplates the provision of a removable cap which is connected to the housing and affords a closure for the dispensing passage, so as to prevent leakage, drying out and contamination when the apparatus is not in use.

The essence of novelty in the invention resides, on one hand, in the specific structural arrangement of the combined tube supporting and dispensing member together with its closure cap, this member having means for engaging and frictionally holding the customary screw-threaded neck of a collapsible tube, which means are automatically adjustable so as to accommodate tubes with necks of varying diameters and screw-threads.

Also, novelty is being predicated on the tube collapsing means which cooperate with the structure of the housing and with the arrangement of the tube supporting member, so that the tube from which material is to be dispensed may be quickly and easily installed or removed.

Some of the advantages of the invention reside in its simplicity of construction, in its efficient operation, in its durability, and in its adaptability to economical manufacture.

With the above more important objects and features in view, and such other objects and features as may become apparent as this specification proceeds, the invention resides in the arrangement of parts and details of construction as shown in the accompanying drawings wherein like reference numerals are used to designate like parts and wherein:

Figure 1 is a vertical sectional view of the invention;

Figure 2 is a side elevational view thereof;

Figure 3 is a cross-sectional detail, on an enlarged scale, of the combined tube supporting and dispensing member used in the invention; and

Figure 4 is a perspective view of the tube collapsing shaft and handle.

With reference now to the accompanying drawings in detail, the dispenser is designated generally by the numeral **10** and embodies in its construction a vertically

elongated housing **12** formed from any suitable material. This housing includes, inter alia, a back wall **14**, a side wall **16**, a bottom wall **18** and a front wall or door **20** which is connected to the housing by suitable hinges **22**.

The back wall **14** is provided with keyhole-shaped apertures **24** to receive suitable nails or screws for mounting the entire device on a wall or some other support. It will be also observed that the housing **12** is of such size as to accommodate therein a collapsible tube **26**, from which material is to be dispensed. The tube **26** is installed in the housing in an inverted position, that is, with the usual screw-threaded neck **28** of the tube extending downwardly.

A combined tube supporting and dispensing member **30**, formed from resilient material such as hard rubber, or the like, is carried by the bottom wall **18** of the housing, this member including a substantially cylindrical body portion **32** provided with an annular groove **34**. The bottom wall **18** of the housing is formed with an opening **36** to receive the body portion **32**, so that an annular portion of the bottom wall **18** at the edge of the opening **36** is disposed in the groove **34** and the entire member **30** is thereby held in position.

The member **30** also includes a depending neck **38** formed integrally with the body portion **32** and disposed below the bottom wall **18**. As will be noted, this neck is provided with a rounded enlarged head **40** which is receivable in a removable closure cap **42**, hereinafter described.

A bore **44** extends axially through the member **30** and affords a dispensing passage, the upper end of said bore being provided with a counterbore **46** which affords a socket for the screw-threaded neck **28** of the collapsible tube **26**. Moreover, a plurality of vertically spaced, annular ribs **48** are provided in the counterbore **46** and are adapted to frictionally engage the screw-threads of the neck **28**, so as to supportably attach the entire tube **26** to the member **30** and hold the tube in an inverted upright or vertical position in the housing.

Because of the inherent resiliency of the material from which the member **30** is formed, the counterbore **46** and the ribs **48** will automatically adjust themselves so as to accommodate collapsible tubes with necks of varying diameters and screw-threads. In this regard it is to be understood that the ribs **48** are truly annular rather than helical in form, so that the screw-threaded neck **28** of the tube **26** may be readily inserted in or removed from the counterbore **46** by a simple pushing or pulling action, as the case may be, and without any turning or rotation of the collapsible tube.

It may be also explained at this point that the intermediate portion **32***a* of the member **30** is larger than the opening **36** in the bottom wall **18**, but is sufficiently small so that it may be compressed and passed through that opening when the member **30** is installed in the housing.

When the tube **26** is collapsed in a manner hereinafter to be described, the material ejected from the tube flows through the dispensing passage **44** and outwardly therefrom, as will be clearly understood. The aforementioned cap **42**, which is also formed from resilient material such as hard rubber, or the like, may be applied to the neck **38** so as to provide a closure for the passage **44** and thereby prevent leakage, drying, or contamination of the material when the device is not being used. The cap **42** is hollow so as to fit over the head **40** and frictionally embrace the neck **38**. A suitable flexible anchoring element **50**, such as a chain, or the like, is attached at one end to the cap **42** while its other end is connected to a bracket **52** secured to the housing **12**, whereby the cap **42** is prevented from

being displaced or lost after it is removed from the neck 38.

The means for collapsing the tube 26 consist of a substantially tubular guide 54 which projects laterally from the housing 12 and is movable upwardly and downwardly in a vertical slot 56 formed in the side wall 16. To prevent the guide 54 from tilting or rocking in the slot 56, a pair of spaced plates 58 are provided intermediate the ends of the guide and slidably engage the inner and outer surfaces of the side wall 16.

A shaft 60 is rotatably and slidably mounted in the guide 54, the outer end of this shaft being provided with a suitable fingerpiece or handle 62 while the inner end portion of the shaft is formed with a slot 64 to receive the usual flattened end portion of the collapsible tube 26. Thus, when the shaft is rotated, the collapsible tube will be wound around the slotted end portion of the shaft and the contents of the tube will be ejected while the shaft together with its guide 54 are gradually shifted downwardly in the slot 56. A flange 66 is provided at the inner end of the guide 54 to assure that the collapsible tube is wound evenly on the slotted end portion of the shaft 60.

In order that the collapsible tube 26 may be easily and simply installed in and removed from the housing, the shaft 60 may be slid laterally in the guide 54 as indicated by the arrow 68, so that the slotted end portion of the shaft is retracted into the guide. In so doing, the slotted end portion of the shaft may be readily withdrawn from the collapsible tube wound around it, and the screw-threaded neck of the tube may then be easily pulled out from the counterbore 46 of the member 30. Similarly, a new tube may be installed with equal expediency.

However, means are provided for urging the slotted end portion of the shaft 60 to its projected, operative position, that is, to a position wherein it engages the collapsible tube. These means consist of a compression spring 70 which is positioned on the shaft 60 in the guide 54, one end of the spring abutting the closed outer end of the guide, while the other end of the spring bears against a washer 72 held on an intermediate portion of the shaft 60 by a pin 74. Thus, when the shaft is pulled outwardly in the direction of the arrow 68, the spring 70 is compressed and is in readiness to automatically return the shaft to its initial position when outward pulling on the shaft is discontinued.

It is believed that the advantages and use of the invention will be readily apparent from the foregoing disclosure and accordingly, further description thereof at this point is unnecessary. However, various modifications may become apparent to those skilled in the art to which the invention relates, and accordingly, it is not desired to restrict the spirit and scope of the invention other than by the limitations expressed in the accompanying claims.

What is claimed as new is:

1. In a dispenser for collapsible tubes, the combination of a vertically elongated housing adapted to receive therein an inverted collapsible tube, said housing including a bottom wall and a side wall provided with a vertically extending slot, a combined tube supporting and dispensing member carried by said bottom wall, a substantially tubular guide projecting laterally from said housing and movable upwardly and downwardly in said slot, a shaft rotatably mounted in said guide and having a slotted inner end portion adapted to operatively engage a collapsible tube for collapsing the same, and a handle provided at the outer end of said shaft.

2. The structure as defined in claim 1 together with a pair of spaced plates provided on an intermediate portion of said guide and slidably engaging the inner and outer surfaces of said side wall.

3. The structure as defined in claim 1 wherein said shaft is slidable in said guide whereby the slotted inner end portion thereof may be projected and retracted in the guide, and means for sustaining said slotted inner end portion of said shaft in its projected position.

4. The structure as defined in claim 1 wherein said shaft is slidable in said guide whereby the slotted inner end portion thereof may be projected and retracted in the guide, and a spring positioned in the guide and urging said slotted inner end portion of said shaft to its projected position.

5. The structure as defined in claim 1 together with a collapsible tube guiding flange provided at the inner end of said guide.

References Cited in the file of this patent

UNITED STATES PATENTS

2,500,274	Brown	Mar. 14, 1950

FOREIGN PATENTS

109,222	Switzerland	Feb. 6, 1924
378,357	Great Britain	Aug. 11, 1932