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VALVE CONTROL MEANS FOR COLLAPSIBLE MATERIAL HOLDING TUBES

Filed March 26, 1938

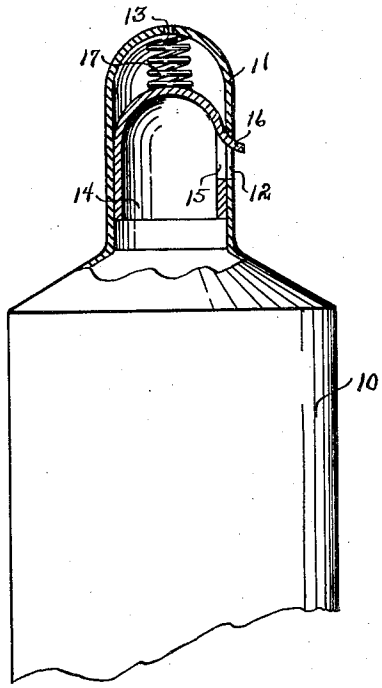


Fig. 1.

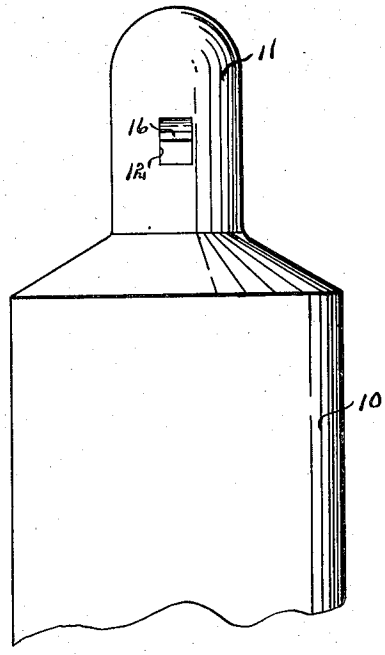


Fig. 2.

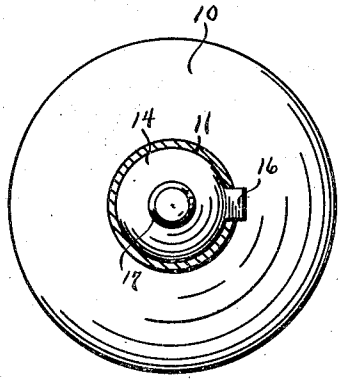


Fig. 4.

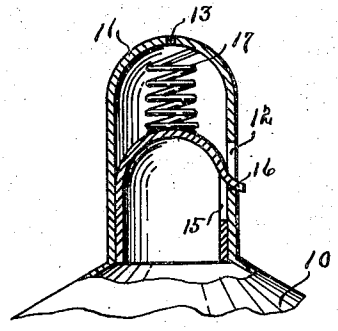


Fig. 3.

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VALVE CONTROL MEANS FOR COLLAPSIBLE MATERIAL HOLDING TUBES

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Application March 26, 1938, Serial No. 198,261

5 Claims. (Cl. 221—60)

This invention relates to tubes of the metal collapsible type that are used to hold plastic materials such as shaving cream soaps, cosmetic creams, tooth paste, glue, paint, medical creams, lotions, and the like.

The principal object of my invention is to provide an automatic valve for the outlet end of material-holding tubes, thereby eliminating the usual closing screw cap, which is not only troublesome to remove and replace, but is also subject to accidental loss.

A still further object of my invention is to provide an outlet control means for collapsible material-holding tubes that is easily assembled, economical in manufacture and durable in use.

These and other objects will be apparent to those skilled in the art.

My invention consists in the construction, arrangement and combinaton of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawing, in which:

Fig. 1 is a side sectional view of my automatic valve installed on a collapsible tube.

Fig. 2 is a front view of a collapsible tube using my valve.

Fig. 3 is a side sectional view of my valve installed and in a closed condition.

Fig. 4 is a top plan sectional view of my device on a tube.

The present method of opening and closing the discharge end of metal tubes of this class is with an ordinary cup cap screwed onto the threaded end of the tube's discharge nozzle. This is objectionable as it takes a considerable length of time to screw the cap completely off and then screw it back on. What often happens is that the detachable cap is lost or accidently dropped down a bathroom outlet pipe. I have overcome all such objections, as will be appreciated by those using tubes of this nature.

Referring to the drawing, I have used the numeral 10 to designate the ordinary body portion of a collapsible metal material-holding tube. Formed on the discharge end of this tube is an inverted cylindrical cup member 11, having a rounded outer end as shown in Fig. 1. The numeral 12 designates a rectangular port opening in the side of the member 11. The numeral 13 designates a small air passage way extending through the outer end of the member 11. The numeral 14 designates a thimble valve slidably mounted in the member 11. This thimble member has its cylindrical wall frictionally engaging the inner side wall of the member 11 and is hollow in order that its rear open end will communicate directly with the inside of the tube 10. The numeral 15 designates a port opening in the side of the member 14 capable of registering with the port opening 12 in the member 11 at times. The numeral 16 designates a rectangular tongue portion on the member 14 and which extends downwardly and outwardly from the top of the port opening 15 as shown in Fig. 3. This tongue portion 16 is made at the time the opening 15 is made in the member 14 and is merely cut along its sides and then bent outwardly and rearwardly to provide a portion of the opening 15 and to create the tongue portion 16. This tongue portion 16 extends outwardly through the port opening 12 and closely fits the sides of this opening. By this construction the tongue 16 will act as a lug for preventing the independent rotation of the member 14 to the member 11 and will also limit the relative forward movement of the member 14 in the member 11 and the relative rear movement of the member 14 in the member 11. The reciprocation of the member 14 forwardly and rearwardly in the member 11 will be relative to the height of the port opening 12. The numeral 17 designates a coil spring rigidly secured to the outer forward end of the member 14. To assemble my device, it is merely necessary to force the member 14 forwardly into the member 11 until the tongue 16 snaps into the opening 12. Although the parts may be made of any suitable material, it is desirable that the member 14 be made of springy material to permit this springing of the tongue 16 into the opening 12. If springy material is not used for the member 14, then the member 14 must be slid into the member 11 and an instrument used to bend the tongue 16 outwardly through the port opening 12. If for any reason it is desired to remove the member 14 from the member 11, it is merely necessary to spring the tongue 16 inwardly until the member 14 clears the port opening 12. With the member 16 extendng through the opening 12, the coil spring 13 will have one end engaging the inside of the member 11 and its other end engaging the top of the member 14, thereby yieldingly holding the tongue 16 in engagement with the rear side of the port 12 as shown in Fig. 3.

To use a tube employing my automatic valve, it is merely necessary to squeeze the collapsible tube thereby forcing the material forwardly into the neck portion of the tube. This pressure will

act on the member 14 forcing it forwardly and against the yielding action of the spring 17. With the member 14 moved forwardly and outwardly, the rectangular tongue 16 will engage the forward side of the opening 12 and material will pass directly through the port opening 15 and port 12 to point of use. This obtaining of material from the tube is automatic and immediately upon releasing the pressure on the tube, the spring 17 will move the member 14 rearwardly until the tongue 16 engages the rear side of the opening 12. Obviously this closing of the port openings is automatic. With the member 14 in a rear position, its port 15 will not be in communication with the port 12. The spring 17 will yieldingly hold the device closed at all times except when pressure is placed on the body of the tube in order to obtain material therefrom.

From the foregoing, it will readily be seen that I have provided a highly desirable, simple automatic valve mechanism for a collapsible tube.

Some changes may be made in the construction and arrangement of my improved valve control means for collapsible material-holding tubes device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim:

1. In combination with a collapsible metal tube, a hollow end portion on one end of said tube having an outlet port in its side, a cup member slidably mounted inside said hollow end portion having an outlet port capable of communicating with said first mentioned outlet port at times, a means for limiting the reciprocation and rotation of said cup member relative to said hollow end portion, and a coil spring having one end engaging the inside bottom of said hollow end portion and its other end engaging the forward end of said cup member.

2. In combination with a collapsible metal tube, a hollow end portion on one end of said tube having a rectangular outlet port in its side, a cup member slidably mounted inside said hollow end portion having a rectangular outlet port capable of communicating with said first mentioned outlet port at times, a rectangular tongue on said cup member extending through said first mentioned outlet port and a means for yieldably resisting the forward movement of said cup member in said hollow end portion.

3. In combination with a collapsible metal tube, a hollow end portion on said tube having a rectangular outlet port in its side, a cup member slidably mounted inside said hollow end portion having outlet port capable of communicating with said first mentioned outlet port at times, a tongue on said cup member extending through said first mentioned outlet port and having its side edges slidably engaging the side walls of said rectangular outlet port, having means for yieldably holding said cup member in a position where its outlet port is not in communication with said first mentioned outlet port.

4. In a device of the class described, a hollow cylindrical portion having a rectangular outlet port in its side, a hollow cylindrical cup member inverted and slidably mounted in said hollow portion having an outlet port capable of communicating with said rectangular outlet port at times, a projection on said cup member extending from a point above the outlet port in said cup member and yieldably functioning through said rectangular outlet port and a yieldably resilient member having one end engaging the inside of said hollow portion and its other end engaging the outer top of said cup member and yieldably holding in a position where said projection engages the rear end of said rectangular outlet port.

5. In a device of the class described, a hollow cylindrical portion having a rectangular outlet port in its side, a hollow cylindrical cup member inverted and slidably mounted in said hollow portion having an outlet port capable of communicating with said rectangular outlet port at times, a projection on said cup member extending from a point above the outlet port in said cup member and a coil spring secured to the outer forward top of said cup member and having its forward end capable of engaging the inside forward end of said hollow portion.

JAMES W. YOUNG.