United States Patent [19]

Kiddon

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[54] **MULTI-PURPOSE CLOSURE**

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[52] **U.S. Cl.** **222/554,** 251/312

[51] **Int. Cl.** **B67d 3/00**

[58] **Field of Search** 222/507, 519, 520, 222/521, 531, 533, 536, 537, 544, 545, 547, 548, 554, 560, 562, 563, 142.9, 144, 542; 251/287, 289, 310, 311, 312, 192, 313, 309

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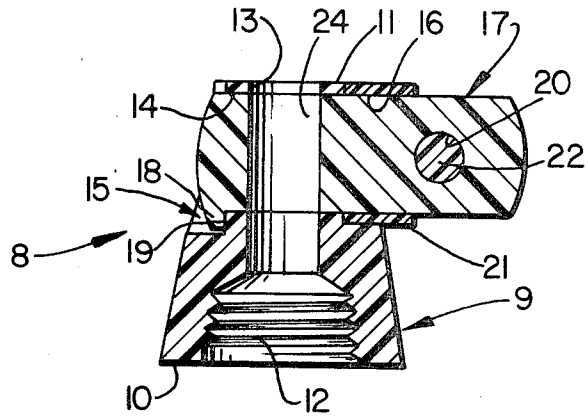
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Primary Examiner—Robert B. Reeves
Assistant Examiner—Larry Martin
Attorney—John N. Randolph

[57] **ABSTRACT**

A multi-purpose closure for attachment to the dispensing necks of closures, such as paste tubes and bottles, and which is provided with a manually actuated valve for opening or closing a bore of the closure which communicates with a bore of the dispensing neck, so that the closure need not be removed from the container neck until all of the contents of the container has been dispensed therefrom. A stop means formed in part by the valve body and in part by the closure body limits turning of the valve body through an arc of 90° between a completely closed and a completely open position. Cooperation between a bushing and a valve operating lever maintains the valve body correctly positioned in the closure body for complete registration of the valve body with the closure bore in the open position of the valve.

4 Claims, 7 Drawing Figures



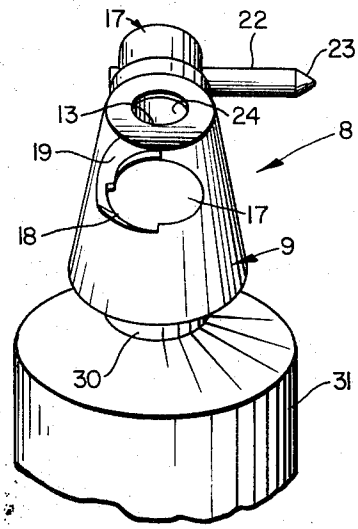


FIG. 1

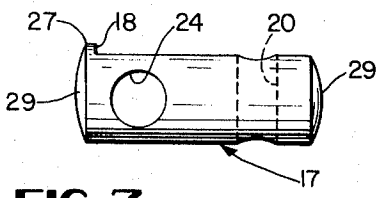


FIG. 7

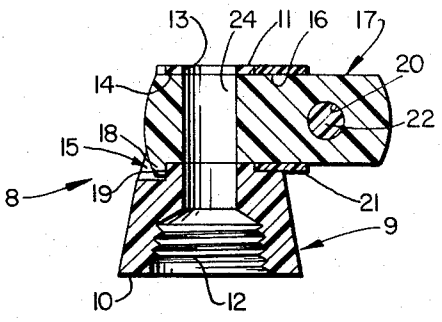


FIG. 3

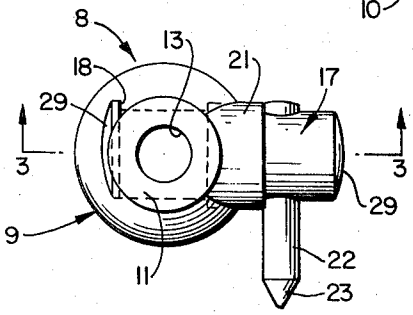


FIG. 2

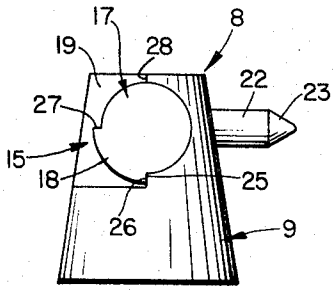


FIG. 5

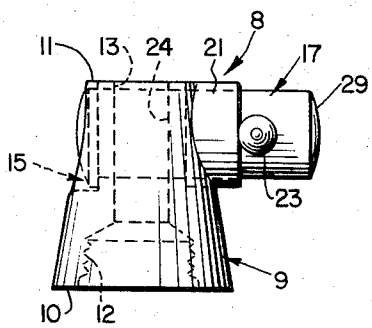


FIG. 4

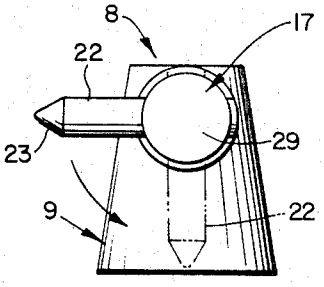


FIG. 6

MULTI-PURPOSE CLOSURE

SUMMARY

It is a primary object of the present invention to provide a closure for paste tube containers and which is also adapted for use on bottles and other containers for paste and liquids, which will remain in place until the contents of the container have been completely dispensed, and which may be readily opened or closed by turning the valve through a part of a revolution.

Another object of the invention is to provide a closure which will effectively close and seal a container to which it is applied and which does not have to be removed from a container until all of the contents thereof have been dispensed.

A further object of the invention is to provide a closure having a valve which is so constructed and arranged that it can be oscillated to a desired thickness of flow between a fully open and a fully closed position thereof.

Another object of the invention is to provide a closure which may be readily maintained in a clean and sanitary condition, which is adapted to be used over and over on any number of containers, and wherein the risk of loss is reduced to a minimum since the closure is not removed from the container neck for dispensing the container's contents.

Various other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawing, illustrating a presently preferred embodiment thereof, and wherein:

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of the closure showing it applied to a container neck;

FIG. 2 is a top plan view of the closure;

FIG. 3 is a sectional view, taken substantially along a plane as indicated by the line 3—3 of FIG. 2;

FIG. 4 is a side elevational view of the closure, looking from right to left of FIG. 1;

FIG. 5 is a similar view looking from left to right of FIG. 4;

FIG. 6 is a similar view looking from right to left of FIG. 4; and

FIG. 7 is a plan view of the valve body.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring more specifically to the drawing, the multi-purpose closure in its entirety and comprising the invention is designated generally **8** and includes a frustoconical closure body **9**, having an enlarged, substantially flat end **10** and a restricted, substantially flat end **11**, which ends are disposed substantially parallel to one another. The body **9** is provided with an internally threaded socket **12** which opens outwardly of its end **10**. A bore **13** extends axially through the body **9** from the inner end of the socket **12** through the restricted body end **11**.

The body **9** has a transverse bore **14**, of a larger diameter than the bore **13** and which intersects the bore **13**, near the body end **11**. A portion of the periphery of the body **9** is provided with a recess **15** into which one-half of one end of the bore **14** opens. The opposite end of the bore **14** opens in a substantially annular recess **16** of the body **9**.

A valve body or plug **17** is of a proper size and shape in cross section to fit rotatively in the bore **14**. One end of the body **17** has a portion of its periphery enlarged to define a segment **18** which extends through an arc of 90° and which defines a head of the body **17** which seats against the flat bottom **19** of the recess **15** to limit the extent that the body **17** can be inserted from left to right through the bore **14**. The body **17**, near to but spaced from its opposite end, has a bore **20** extending transversely therethrough. A sleeve or bushing **21** is disposed on the body **17** and has one end seating in the recess **16**. A pin **22** is driven through the bore **20** and has a press fit engagement therein. One end of the pin terminates in close proximity to a portion of the periphery of the body **17**, as seen in FIGS. **2** and **6**, while the opposite end **23** of said pin is disposed more remote from the valve body **17**. As best seen in FIG. **2**, the bore **20** is disposed so that a portion of the pin **22** will abut against the outer end of the bushing **21** to hold the body **17** properly positioned in the bore **14**, with the head **18** seating against the surface **19**, and with a transverse bore **24** of the body **17** disposed in full registration with the bore **13**, when the bore **20** and pin **22** are disposed crosswise of the bore **13**, as illustrated in FIGS. **1** and **6**.

The valve **17** is illustrated in open position in FIGS. **1** to **6** with a shoulder **25**, defining one end of the head **18**, in abutting engagement with the wall surface **26** of the recess **15**, which is disposed between the bore **14** and the enlarged end **10** of the body **9**. When the valve **17** is moved to a closed position by being turned counterclockwise through an arc of 90° from the full line to the dotted line position of the pin **22**, as seen in FIG. **6**, the bore **24** will be disposed crosswise of the bore **13** and completely out of registration therewith, so that no material can pass through said bore. When the valve is in its closed position, the other end surface or shoulder **27** of the head **18** will abut the wall surface **28** of the recess **15** to prevent movement of the valve **17** beyond its fully closed position, in the same manner that the shoulder **25** by abutting the wall **26** prevents counterclockwise rotation of the valve **17** beyond its fully opened position of FIG. **5**. The wall portions **25** and **28** are disposed in alignment with one another, and lengthwise of the body **9**, and are so located that continuations thereof would intersect the axis of the valve **17**.

The longer end of the pin **22**, which terminates in the tapered point **23**, provides a lever adapted to be manually engaged for turning the valve between its open and closed positions. The end **23** is tapered so as to clear the enlarged end of the body **9** when the valve **17** is in a closed position, and the pin **22** is disposed lengthwise of the body **9**, as seen in dotted lines in FIG. **6**. Likewise, the ends of the body **17** are convexly rounded, as seen at **29**.

The closure **8** is illustrated in FIG. **1** with its socket **12** threadedly engaging the externally threaded neck **30** of a conventional paste tube **31** from which the conventional closure cap has been removed, so that when the lever or pin **22** is swung from its dotted line to its full line position of FIG **6**, a part of the contents of the tube **31** can be dispensed from the neck **30** through the aligned bores **13** and **24**, by squeezing or rolling the end of the tube located remote from the neck **30**, in a conventional manner. It will be obvious that the socket **12** can be made in various sizes to accommodate the dis-

pensing necks of different sized tubes or other paste and liquid containers.

The parts **9, 17, 21** and **22** are preferably formed of a plastic, such as nylon, or an equivalent thereof.

The closure **8** may obviously be made in various sizes and exterior shapes and various other modifications and changes are contemplated and may be resorted to, without departing from the function or scope of the invention.

I claim:

1. A multi-purpose closure comprising an elongated closure body having a dispensing neck receiving socket opening outwardly of one end thereof adapted to receive and be secured to the dispensing neck of a paste or liquid container, said body having a longitudinally disposed bore extending from an inner end of said socket through the other end of the body, said body having a transverse bore disposed adjacent said last mentioned body end of larger diameter than the longitudinal bore and with which said longitudinal bore intersects, a valve body turnably fitting said transverse bore and provided with a transverse bore disposed for movement into and out of registration with said longitudinal bore, stop means for limiting turning movement of the valve body for moving the bore thereof between an open position in full registration with said longitudinal bore and a closed position crosswise of the longitudinal bore, said stop means comprising a recess formed in and opening outwardly of a part of the closure body and having a flat inner surface, a head projecting from a part of the periphery of one end of the valve body and disposed for limited oscillating movement in said recess, said head abutting said flat inner surface of the recess to limit movement of the valve body in one direction through the transverse bore of the closure body, said valve body having a second transverse bore near the end thereof disposed remote from said head, a pin extending through and secured in said last mentioned bore and having a portion forming a lever to facilitate manual oscillation of the valve body, and a bushing having one end seating in a part of the closure body and an opposite end abutting against said pin for biasing said last mentioned valve body end outwardly of the closure body for drawing said head into sealing engagement with said flat inner surface.

2. A closure as in claim **1,** said closure body bore and said first mentioned valve body bore being of the same cross-sectional size and shape.

3. A closure as in claim **1,** said recess having aligned wall portions disposed longitudinally of the closure body, and said head having end portions defining shoulders one of which abuts one of said wall portions in the fully open position of the valve and the other of which abuts the other wall portion in a fully closed position of the valve.

4. A closure as in claim **1,** said closure body being of frusto-conical shape, and said socket being internally threaded and opening outwardly of the enlarged end thereof.

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