

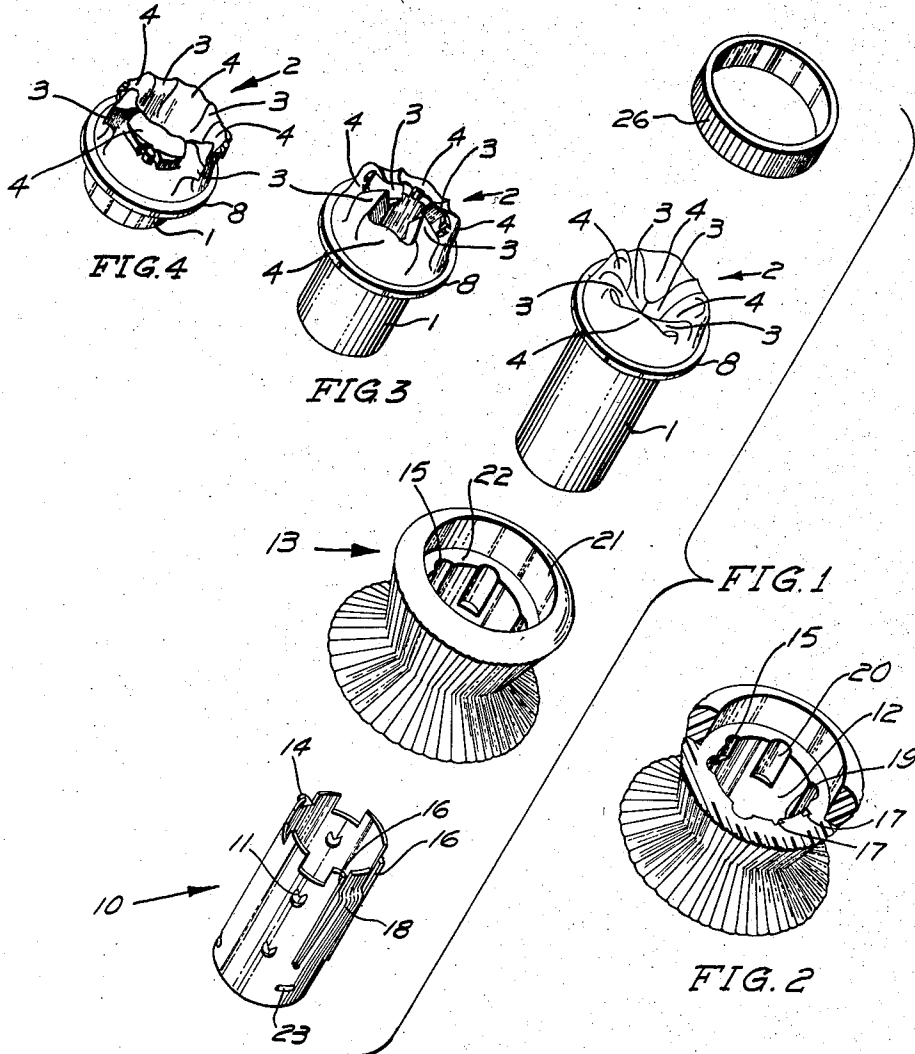
Oct. 21, 1958

W. A. KUEHNE
EXTROVERTIVE CLOSURE

2,857,071

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3 Sheets-Sheet 1



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3 Sheets-Sheet 2

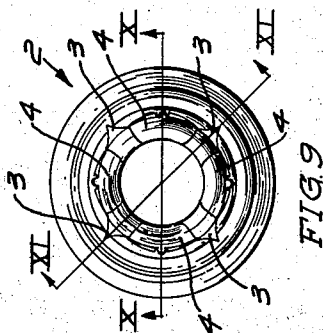


FIG. 9

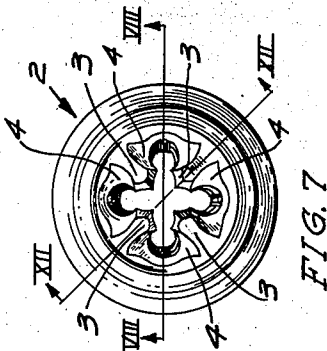


FIG. 7

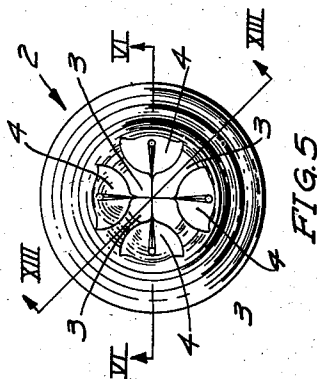


FIG. 5

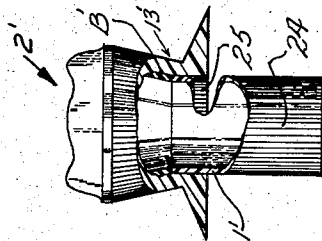


FIG. 20

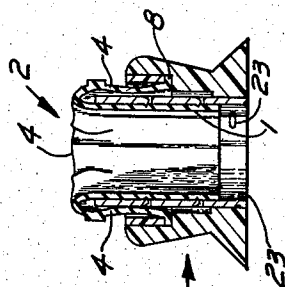


FIG. 10

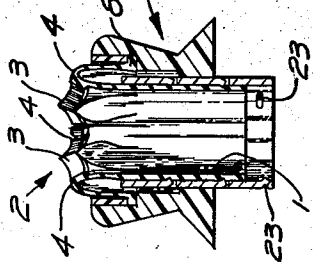


FIG. 8

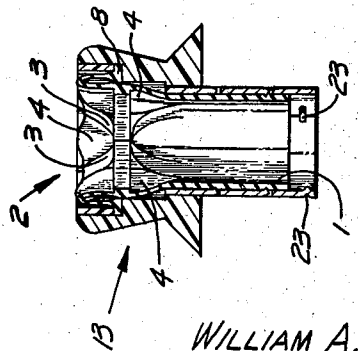


FIG. 6

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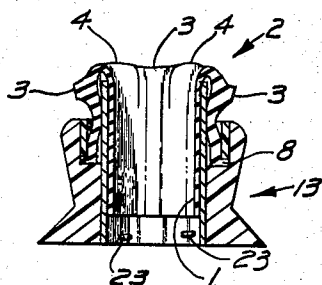


FIG. 11

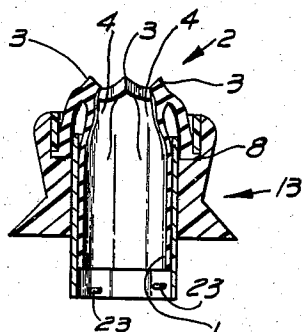


FIG. 12

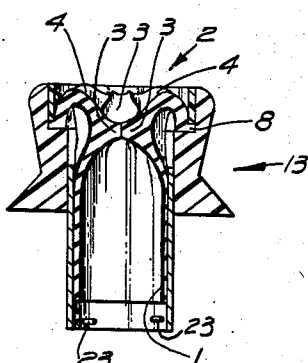


FIG. 13

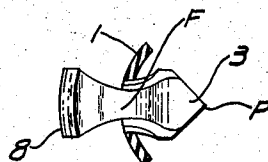


FIG. 14

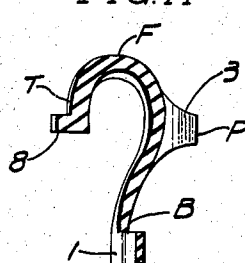


FIG. 15

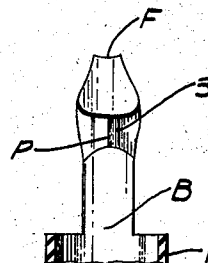


FIG. 16

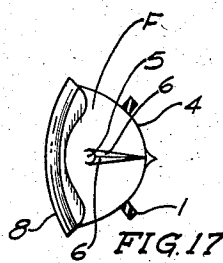


FIG. 17

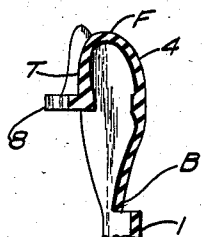


FIG. 18

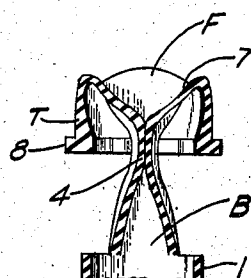


FIG. 19

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2,857,071

EXTROVERTIVE CLOSURE

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Application December 3, 1956, Serial No. 625,749

14 Claims. (Cl. 220—24)

Generally speaking, the present invention relates to the closure art and, more particularly, to an extrovertive closure cooperable for attachment with respect to an aperture which is to be closed—such as the threaded apertured neck of a collapsible tube of the type which customarily carries a relatively viscous material therein, or the like, although the present invention is not so limited.

Applicant is aware of the fact that numerous closure devices, and particularly closure devices for collapsible tubes, have been invented and developed heretofore. However, most of these have had major disadvantages of one type or another.

For example, the commonest type of prior art closure for a collapsible tube comprises a threaded cap adapted to selectively removably threadably engage the apertured threaded neck of a collapsible tube. However, it will readily be understood that upon removal of the threaded cap, it is ordinarily placed upon some convenient surface nearby, after which the viscous material customarily contained in such collapsible tube is dispensed and used, subsequent to which the cap is normally replaced. However, the procedure outlined above frequently leads to loss of the cap and to consequent deleterious action on the contents of the collapsible tube. Furthermore, the unthreading opening operation and the threading closing operation of such a cap are unnecessarily lengthy, which is highly undesirable.

It should also be noted that several types of self-sealing caps have been invented and developed in the past. However, all of these known to applicant are relatively complex, costly, and do not function sufficiently well for widespread usage.

It was as a result of careful study of the above-mentioned disadvantages of prior art closure devices, that applicant conceived and invented the improved extrovertive closure device of the present invention, which completely overcomes all of the above-mentioned prior art disadvantages.

Generally speaking, one form of the present invention may be said to consist of the following: a hollow closure stem; elastic closure extroversion means, said closure extroversion means being extrovertively openable and reversely closable and consisting of a plurality of movable closure elements positioned in edge-to-edge connected relationship; each of said movable closure elements having a first end, an intermediate return-loop-flare portion, and a second end, said first ends of said movable closure elements being connected to said stem; longitudinally movable flange means connected to said second ends of said movable closure elements, said flange means extending around the exterior of all of said movable closure elements and being longitudinally movable with respect to said stem, each of said movable closure elements being provided with engaging projection means between said first end and said return-loop-flare portion; said projection means being movable, in response to manually controlled longitudinal movement of said flange means with respect to said stem, between closed position,

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with said projection means in abutting sealing relationship, and open position, with said projection means separated and effectively defining open port means; at least certain of said closure elements comprising interfold closure elements including fold means therein normally closed when said projection means are closed and cooperable to provide the necessary effective dimensional increase when they effectively become part of said return-loop-flare portion during opening movement of said projection means.

It should also be noted that in a preferred form of the present invention, at least certain of said closure elements comprise actuator closure elements effectively positioning said interfold closure elements properly during opening and closing operations.

It should also be noted that a preferred form of the present invention includes fastening means for effectively fastening the hollow stem with respect to an aperture which is to be closed, which in one specific version takes the form of tube means effectively fastened with respect to the hollow stem and provided with means fasteningly cooperable with respect to an aperture which is to be closed.

It should also be noted that one preferred form of the present invention may include a hollow operating sleeve cooperable for attachment to the flange means and for mounting in longitudinally movable relationship with respect to said fastening means, in one specific version of which said sleeve takes the form of tube means.

One specific preferred form of the present invention may be defined as follows: a hollow cylindrical closure stem; elastic closure extroversion means, said closure extroversion means being extrovertively openable and reversely closable and consisting of a plurality of movable closure elements of a first kind and a similar plurality of movable closure elements of a second kind alternately effectively circumferentially positioned in edge-to-edge integrally connected relationship; each of said movable closure elements having a first end, an intermediate return-loop-flare portion, and a second end, said first ends of said movable closure elements being integrally connected to the top of said stem and forming an upward effectively hollow extension thereof; longitudinally movable flange means integrally connected to said second ends of said movable closure elements, said flange means encircling the exterior of all of said movable closure elements and being longitudinally movable with respect to said stem, each of said movable closure elements being provided with engaging projection means between said first end and said return-loop-flare portion and adjacent said return-loop-flare portion and convexly related with respect thereto; said projection means being movable, in response to manually controlled downward longitudinal movement of said flange means with respect to said stem, between closed position, with said projection means in inwardly directed abutting sealing relationship, and open position, with said projection means separated and effectively defining open port means; said first kind of closure elements comprising interfold closure elements including fold means therein normally closed and inwardly concavely directed when said projection means are closed and cooperable to provide the necessary effective dimensional increase when they effectively become part of said return-loop-flare portion during opening movement of said projection means; said second kind of closure elements comprising actuator closure elements effectively positioning said interfold closure elements properly during opening and closing operations; tube means effectively fastened with respect to the hollow stem and provided with means fasteningly cooperable with respect to an aperture which is to be closed; and a hollow operating sleeve cooperable for attachment to the flange means and for mounting in longitudinally movable relationship with respect to said

tube means. It should also be noted that in this specific preferred form of the present invention said projection means carried by said first kind of closure element comprises a nubble and two tapered shims positioned in a horizontal plane in the closed concave portion of an interfold closure element whereby to effectively seal same and said projection means carried by said second kind of closure element comprises inwardly directed prism means.

In one specific preferred form of the present invention, the integral connection of each interfold closure element with respect to the adjacent actuator closure element in the region of said return-loop-flare portion comprises faired fillet means.

From the above description of basic and several preferred forms of the present invention, it will be apparent to those skilled in the art that virtually all of the hereinbefore mentioned prior art disadvantages are virtually entirely eliminated and/or overcome in and through the use of the present invention.

For example, it is obvious that the extrovertive closure of the present invention cannot be lost because it is actually affixed to a container having an aperture which is to be closed and is not normally removed therefrom during use.

Furthermore, it is obvious that the device of the present invention is of extremely simple, largely molded, construction of a nature such as to be easily openable and closable by mere longitudinal reciprocation of the flange means (usually by means of the sleeve). Furthermore, the construction is of a nature such as to virtually eliminate the possibility of its failure to completely seal upon each closure thereof, thereby overcoming the major disadvantage of prior art constructions.

It should also be noted that the extrovertive closure of the present invention will return to the interior of the closure device any viscous material which may have been positioned adjacent the edges of the device when open, thus eliminating the possibility of some of the viscous material being trapped between closing portions of the device and exposed to ambient atmosphere which would normally cause the material to harden and interfere with subsequent operation of the device. This major prior art disadvantage does not occur in the closure of the present invention because of the extrovertive nature of the opening operation and the reverse nature of the closing operation.

With the above points in mind, it is an object of the present invention to provide a new and improved closure which is of an extrovertive nature and which operates by applying a longitudinal force—a first force in one direction causing the device to fully open by a process of extroversion, and a second and opposite longitudinal force causing the device to fully close by the reverse process.

It is a further object of the present invention to provide an improved extrovertive closure of the type set forth in the preceding object, which is of extremely simple, cheap, and fail-safe construction and which provides a very effective and complete seal upon closure.

Other and allied objects will be apparent to those skilled in the art after a careful perusal, examination, and study of the accompanying illustrations, the present specification, and the appended claims.

To facilitate understanding, reference will be made to the hereinbelow described drawings, in which:

Fig. 1 is an exploded perspective view of one illustrative embodiment of the present invention showing one form of hollow stem carrying one form of elastic closure extroversion means (which is fully closed), one form of serrated locking ring adapted to lock the closure means within the sleeve, and one form of tubular fastening means adapted to engage the stem and also adaptable for engagement with respect to an aperture which is to be closed (such as the apertured threaded neck of a collapsible tube, or the like, for example);

Fig. 2 is a view, which is partly in vertical section and partly in horizontal section, showing the sleeve in the same position as shown in Fig. 1;

Fig. 3 is a perspective view of the hollow stem and closure extroversion means in partly open position, as seen from the same vantage point as Fig. 1;

Fig. 4 is another view similar to Fig. 3 but shows the closure extroversion means in fully open position;

Fig. 5 is a top plan view of the embodiment of the present invention illustrated in Fig. 1 when in fully assembled and fully closed position;

Fig. 6 is a vertical sectional view taken in the direction of the arrows VI—VI in Fig. 5;

Fig. 7 is a top plan view similar to Fig. 5 but showing the closure extroversion means in partly open position;

Fig. 8 is a vertical sectional view taken in the direction of the arrows VIII—VIII in Fig. 7;

Fig. 9 is a top plan view similar to Figs. 5 and 7 but shows the closure extroversion means in fully open position;

Fig. 10 is a vertical sectional view taken in the direction of the arrows X—X in Fig. 9;

Fig. 11 is a vertical sectional view taken in the direction of the arrows XI—XI in Fig. 9;

Fig. 12 is a vertical sectional view taken in the direction of the arrows XII—XII in Fig. 7;

Fig. 13 is a vertical sectional view taken in the direction of the arrows XIII—XIII in Fig. 5;

Fig. 14 is a top view of a fragment of the closure extroversion means which has been fragmentized primarily to aid in understanding the invention by showing what is referred to throughout this application as a movable closure element—this particular one being the actuator closure element in an orientation such as it would assume when the entire closure extroversion means is closed;

Fig. 15 is a front view of the actuator closure element shown in Fig. 14, which is a fragment of the whole integral closure extroversion means;

Fig. 16 is a right view of Fig. 15;

Fig. 17 is a top view of a fragment of the closure extroversion means which has been fragmentized primarily to aid in understanding the invention by showing what is referred to throughout this application as a movable closure element—this particular one being the interfold closure element in an orientation such as it would assume when the entire closure extroversion means is closed;

Fig. 18 is a front view of the interfold closure element shown in Fig. 17, which is a fragment of the whole integral closure extroversion means;

Fig. 19 is a right view of Fig. 18; and

Fig. 20 is an elevational view, partly broken away and partly in section, illustrating a slightly modified form of the present invention with particular reference to the hollow sleeve and the tube means.

The specific illustrative embodiment of my invention, which I have chosen to illustrate in Figs. 1–19, includes a hollow cylindrical closure stem 1, which integrally carries at the top thereof elastic closure extroversion means such as is generally indicated at 2, and which consists of a plurality of (in this specific example, four) movable closure elements of a first kind, as indicated at 4, and a similar plurality of (in this specific example, four) movable closure elements of a second kind, as indicated at 3. It should be noted that, in the specific example illustrated, said plurality of movable closure elements of a first kind, as indicated at 4, and said plurality of movable closure elements of a second kind, as indicated at 3, are alternately effectively circumferentially positioned in edge-to-edge integrally connected relationship. It should also be noted that each of said movable closure elements 3 and 4 has a first end (which in the specific example illustrated comprises a bottom end B, best seen in Figs. 15, 16, 18 and 19), a second end (which in the specific example

illustrated comprises a top end T, best seen in Figs. 15, 18 and 19) and an intermediate return-loop-flare portion, best seen in Figs. 14-19. It should be noted that said first or bottom ends B of both types of movable closure elements 3 and 4 are integrally connected to the top of the stem 1 and form an upward effectively hollow extension thereof.

In the specific example illustrated in Figs. 1-19, said first kind of closure elements 4 comprise interfold closure elements including fold means therein normally closed and inwardly concavely directed when the entire closure extroversion means 2 is closed, and cooperable to provide the necessary effective dimensional increase when they effectively become part of the return-loop-flare portion F during opening movement of said closure extroversion means 2, as seen in sequence in Figs. 1, 3 and 4. Said inwardly concavely directed fold means is best seen in Fig. 19 as indicated by f.

In the specific example illustrated in Figs. 1-19, the second kind of closure elements 3 comprise actuator closure elements effectively positioning the interfold closure elements 4 properly during opening and closing operations by reason of their relatively greater stiffness and wall thickness—in particular, as best seen in Fig. 15, note that the wall of the actuator closure element 3 is thicker adjacent its second end T than adjacent its first end where it is attached to the stem 1, and also note that the wall thickness of the actuator closure element 3, as best seen in Fig. 15, is thicker than the wall of the interfold closure element 4, as best seen in Fig. 18.

In the specific example illustrated in Figs. 1-19, each of the movable closure elements 3 and 4 is provided with engaging projection means between the first end B and the return-loop-flare portion F thereof, and adjacent said return-loop-flare portion F and convexedly related with respect thereto. It should be clearly noted that the expression "convexedly related," as used in the preceding sentence, actually means convexedly related when considering the entire extent from first end B to second end T rather than any local regions therealong, such as the intermediate portion of each of the interfold closure elements 4, which is locally concavely convoluted when the device is in closed position. In the case of each of the actuator closure elements 3, said projection means comprises inwardly directed prism means specifically indicated at P in Figs. 14-16 but not specifically indicated in the other figures for reasons of clarity; and in the case of each of the interfold closure elements 4, the projection means comprises a nubble 5 and two tapered shims 6 effectively or substantially positioned in the same horizontal plane as the prisms P carried by the actuator closure elements 3 (actually, said horizontal plane has some measure of vertical thickness and lies between two closely adjacent parallel horizontal planes). Said nubble and tapered shims being positioned (when the device is closed) inside of the closed concave fold f of each of the interfold closure elements 4, whereby to effectively seal same when closed in the position best seen in Figs. 17 and 19. It should be noted that the nubble 5 is at the inner apex of the fold f and that the tapered shims 6 form an unbroken surface with the sides of the adjacent prisms P of the adjacent actuator closure elements 3.

In the specific version of the present invention illustrated in Figs. 1-19, the integral connection of each interfold closure element 4 with respect to the adjacent actuator closure element 3, in the region of the return-loop-flare portion F, comprises faired fillet means such as is indicated at 7 in Fig. 19.

In the specific example illustrated in Figs. 1-19, longitudinally movable flange means is integrally connected to said second ends T of said movable closure elements 3 and 4, as indicated at 8, said flange 8 extending around the exterior of all of the movable closure elements 3 and 4 and being longitudinally movable with respect to the stem 1 to effectively open or close the

entire closure extroversion means 2 respectively in response to downward movement of the flange 8 (thus opening the closure extroversion means 2 in accordance with the sequence of steps shown in Fig. 1, Fig. 3, and Fig. 4), or in response to upward movement of the flange 8 (thus closing the closure extroversion means 2 in accordance with the sequence of steps shown in Figs. 4, 3 and 1).

In the specific example of the present invention illustrated in Figs. 1-19, tube means indicated generally at 10 is provided and is adapted to be effectively fastened around the exterior of the hollow stem 1 by means of inwardly directed locking detents 11 and is adapted to be inserted into a lower bore 12 in the bottom portion of a hollow sleeve indicated generally at 13. It should be noted that the tube means 10 is provided with an outwardly bent stop element 14 which is adapted to be slidably positioned in a fluted channel 15 and to abut and be stopped by the bottom of said channel 15 whereby to limit the tube means 10 against further downward movement with respect to the hollow sleeve 13. It should also be noted that the tube means 10 is provided with two outwardly extending vertical runners 16 which are adapted to vertically slidably engage similar vertical grooves 17 in the wall of the hollow sleeve 13 defining the lower bore 12, whereby to rotatably immobilize the tube means 10 with respect to the hollow sleeve 13. It should also be noted that the tube means 10 is provided with spring clip means 18 positioned between the two runners 16 and adapted to resiliently frictionally abut the portion 19 of the wall defining the lower bore 12 in the hollow sleeve 13 between the two grooves 17 whereby to frictionally maintain selected relative vertical position of the tube means 10 with respect to the hollow sleeve 13. It should also be noted that the lower bore 12 in the hollow sleeve 13 is provided with a plurality of recesses 20 to provide clearance for expansive movement of the interfold closure elements 4 during closure of the closure extroversion means 2.

In the specific form of the present invention illustrated, said flange 8 is adapted to be seated within an upper bore 21 in the hollow operating sleeve 13 resting on a shoulder 22 therein, and is adapted to be retained in said position by an exteriorly serrated locking ring 26, which is adapted to be forcibly inserted into the large bore 21 against the flange 8 resting on the shoulder 22, and to frictionally retain said flange 8 in said locked position on the shoulder 22, whereby vertical reciprocation of the hollow sleeve 13 downward with respect to the tube means 10 will effectively cause the closure extroversion means 2 to go through the sequence of positions shown in Fig. 1, Fig. 3, and Fig. 4, and will effectively cause the entire device to go through the sequence of three positions, a first one of which is shown (in different aspects) in Figs. 5, 6 and 13, and a second one of which is shown (in different aspects) in Figs. 7, 8 and 12, and a third one of which is shown (in different aspects) in Figs. 9, 10 and 11.

It should be noted that the tube means 10 is provided with inwardly directed fastening means (which, in the specific example illustrated, comprises an inward projection 23 adapted for threaded engagement with the exterior threads of the standard apertured neck of a customary collapsible tube) whereby to make it possible to fasten the tube means 10 onto such an apertured neck of a collapsible tube to mount the entire device of the present invention on such a collapsible tube permanently (that is, until the entire tube is empty and the device is to be removed for subsequent re-engagement with a new tube).

Operation of the device is extremely simple and may be described as follows: The hollow sleeve 13 is manually grasped and moved downwardly from the upper position shown in Figs. 5, 6 and 13 (with the closure extroversion means 2 completely closed and sealed) through the intermediate position shown in Figs. 7, 8

and 12 (with the closure extroversion means 2 in partly open position) into the lowermost position shown in Figs. 9, 10 and 11 (with the closure extroversion means 2 completely open) after which any material contained in an auxiliary container (not shown), such as a collapsible tube or the like, threadedly engaged with the bottom end of the tube means 10 by means of the fastening means 23, may be dispensed through the open port means defined by the completely open closure extroversion means 2. The closing operation is the reverse of the above, and ends up with the closure extroversion means 2 in completely closed and sealed position such as shown in Figs. 5, 6 and 13.

Fig. 20 illustrates in partly broken away and partly vertical sectional form a slight modification of the present invention, and parts generally corresponding to those shown in Figs. 1 through 19 and described hereinbefore, will be indicated by similar reference numerals, primed, however. The major difference of this form of the invention from the first form of the invention illustrated in Figs. 1-19 has to do with the structure of the stem 1' and its cooperative relationship, with respect to the interior of the hollow sleeve 13'. In this version of the present invention, the stem 1' is of substantially harder and less elastic material than the closure extroversion means 2' and is suitably affixed to the integrally joined first ends B' thereof in downwardly depending relationship. In this version, the exterior of the relatively hard stem 1' is longitudinally vertically serrated, as indicated at 24 and vertically slidably engages similar interior serrations 25 carried by the interior of the hollow sleeve 13'. The engagement of the serrations 24 and 25 is tight enough to impart considerable friction, whereby to vertically frictionally maintain any selected relative position of the tube means 1' with respect to the hollow sleeve 13' while preventing any relative rotation therebetween. The lower end of the tube means 1' may be provided with any suitable fastening means (similar to the fastening means 23 shown in the first form of the present invention, or the like) for fastening the device with respect to an aperture which is to be controllably closed.

Numerous modifications and variations of the present invention will occur to those skilled in the art after a careful study hereof. All such, properly within the basic spirit and scope of the present invention are intended to be included and comprehended herein as fully as if specifically described, illustrated and claimed herein.

The exact compositions, configurations, constructions, relative positionings, and cooperative relationships of the various component parts of the present invention are not critical, and can be modified substantially within the spirit of the present invention.

The embodiments of the present invention specifically described and illustrated herein are exemplary only, and are not intended to limit the scope of the present invention, which is to be interpreted in the light of the prior art and the appended claims only, with due consideration of the doctrine of equivalents.

I claim:

1. An extrovertive closure, comprising: a hollow closure stem; elastic closure extroversion means, said closure extroversion means being extrovertively openable and reversely closable and consisting of a plurality of movable closure elements positioned in edge-to-edge connected relationship; each of said movable closure elements having a first end, an intermediate return-loop-flare portion, and a second end, said first ends of said movable closure elements being connected to said stem; longitudinally movable flange means connected to said second ends of said movable closure elements, said flange means extending around the exterior of all of said movable closure elements and being longitudinally movable with respect to said stem, each of said movable closure elements being provided with engaging projection means

between said first end and said return-loop-flare portion; said projection means being movable, in response to manually controlled longitudinal movement of said flange means with respect to said stem, between closed position, with said projection means in abutting sealing relationship, and open position, with said projection means separated and effectively defining open port means; at least certain of said closure elements comprising interfold closure elements including fold means therein normally closed when said projection means are closed and cooperable to provide the necessary effective dimensional increase when they effectively become part of said return-loop-flare portion during opening movement of said projection means.

2. An extrovertive closure cooperable for attachment with respect to an aperture which is to be closed, comprising: a hollow closure stem; elastic closure extroversion means, said closure extroversion means being extrovertively openable and reversely closable and consisting of a plurality of movable closure elements positioned in edge-to-edge connected relationship; each of said movable closure elements having a first end, an intermediate return-loop-flare portion, and a second end, said first ends of said movable closure elements being connected to said stem; longitudinally movable flange means connected to said second ends of said movable closure elements, said flange means extending around the exterior of all of said movable closure elements and being longitudinally movable with respect to said stem, each of said movable closure elements being provided with engaging projection means between said first end and said return-loop-flare portion; said projection means being movable, in response to manually controlled longitudinal movement of said flange means with respect to said stem, between closed position, with said projection means in abutting sealing relationship, and open position, with said projection means separated and effectively defining open port means; at least certain of said closure elements comprising interfold closure elements including fold means therein normally closed when said projection means are closed and cooperable to provide the necessary effective dimensional increase when they effectively become part of said return-loop-flare portion during opening movement of said projection means; at least certain of said closure elements comprising actuator closure elements effectively positioning said interfold closure elements properly during opening and closing operations; and fastening means for effectively fastening the hollow stem with respect to an aperture which is to be closed.

3. An extrovertive closure, comprising: a hollow closure stem; elastic closure extroversion means, said closure extroversion means being extrovertively openable and reversely closable and consisting of a plurality of movable closure elements laterally positioned in edge-to-edge integrally connected relationship; each of said movable closure elements having a first end, an intermediate return-loop-flare portion, and a second end, said first ends of said movable closure elements being integrally connected to said stem; longitudinally movable flange means integrally connected to said second ends of said movable closure elements, said flange means extending around the exterior of all of said movable closure elements and being longitudinally movable with respect to said stem, each of said movable closure elements being provided with engaging projection means between said first end and said return-loop-flare portion and adjacent said return-loop-flare portion and convexly related with respect thereto; said projection means being movable, in response to manually controlled longitudinal movement of said flange means with respect to said stem, between closed position, with said projection means in inwardly directed abutting sealing relationship, and open position, with said projection means separated and effectively defining open port means; alter-

nate ones of said closure elements comprising interfold closure elements including fold means therein normally closed and inwardly concavely directed when said projection means are closed and cooperable to provide the necessary effective dimensional increase when they effectively become part of said return-loop-flare portion during opening movement of said projection means.

4. An extrovertive closure cooperable for attachment with respect to an aperture which is to be closed, comprising: a hollow closure stem; elastic closure extroversion means, said closure extroversion means being extrovertively openable and reversely closable and consisting of a plurality of movable closure elements laterally positioned in edge-to-edge integrally connected relationship; each of said movable closure elements having a first end, an intermediate return-loop-flare portion, and a second end, said first ends of said movable closure elements being integrally connected to said stem; longitudinally movable flange means integrally connected to said second ends of said movable closure elements, said flange means extending around the exterior of all of said movable closure elements and being longitudinally movable with respect to said stem, each of said movable closure elements being provided with engaging projection means between said first end and said return-loop-flare portion and adjacent said return-loop-flare portion and convexedly related with respect thereto; said projection means being movable, in response to manually controlled longitudinal movement of said flange means with respect to said stem, between closed position, with said projection means in inwardly directed abutting sealing relationship, and open position, with said projection means separated and effectively defining open port means; alternate ones of said closure elements comprising interfold closure elements including fold means therein normally closed and inwardly concavely directed when said projection means are closed and cooperable to provide the necessary effective dimensional increase when they effectively become part of said return-loop-flare portion during opening movement of said projection means; at least certain of said closure elements comprising actuator closure elements effectively positioning said interfold closure elements properly during opening and closing operations; fastening means for effectively fastening the hollow stem with respect to an aperture which is to be closed; and a hollow operating sleeve cooperable for attachment to the flange means and for mounting in longitudinally movable relationship with respect to said fastening means.

5. An extrovertive closure cooperable for attachment with respect to an aperture which is to be closed, comprising: a hollow cylindrical closure stem; elastic closure extroversion means, said closure extroversion means being extrovertively openable and reversely closable and consisting of a plurality of movable closure elements of a first kind and a similar plurality of movable closure elements of a second kind alternately effectively circumferentially positioned in edge-to-edge integrally connected relationship; each of said movable closure elements having a first end, an intermediate return-loop-flare portion, and a second end, said first ends of said movable closure elements being integrally connected to the top of said stem and forming an upward effectively hollow extension thereof; longitudinally movable flange means integrally connected to said second ends of said movable closure elements, said flange means encircling the exterior of all of said movable closure elements and being longitudinally movable with respect to said stem, each of said movable closure elements being provided with engaging projection means between said first end and said return-loop-flare portion and adjacent said return-loop-flare portion and convexedly related with respect thereto; said projection means being movable, in response to manually controlled downward longitudinal movement of said flange means with respect to said stem, between closed position, with said projection means in inwardly directed abutting sealing relationship,

and open position, with said projection means separated and effectively defining open port means; said first kind of closure elements comprising interfold closure elements including fold means therein normally closed and inwardly concavely directed when said projection means are closed and cooperable to provide the necessary effective dimensional increase when they effectively become part of said return-loop-flare portion during opening movement of said projection means; said second kind of closure elements comprising actuator closure elements effectively positioning said interfold closure elements properly during opening and closing operations; and tube means effectively fastened with respect to the hollow stem and provided with means fasteningly cooperable with respect to an aperture which is to be closed.

6. An invention of the character defined in claim 5, wherein said projection means carried by said first kind of closure element comprises a nubble and two tapered shims positioned in a horizontal plane in the closed concave portion of an interfold closure element whereby to effectively seal same.

7. An invention of the character defined in claim 5, wherein said projection means carried by said second kind of closure element comprises inwardly directed prism means.

8. An invention of the character defined in claim 5, wherein said projection means carried by said first kind of closure element comprises a nubble and two tapered shims positioned in a horizontal plane in the closed concave portion of an interfold closure element whereby to effectively seal same; and wherein said projection means carried by said second kind of closure element comprises inwardly directed prism means.

9. An invention of the character defined in claim 5, wherein said integral connection of each interfold closure element with respect to the adjacent actuator closure element in the region of said return-loop-flare portion comprises faired fillet means.

10. An extrovertive closure cooperable for attachment with respect to an aperture which is to be closed, comprising: a hollow cylindrical closure stem; elastic closure extroversion means, said closure extroversion means being extrovertively openable and reversely closable and consisting of four movable closure elements of a first kind and four similar movable closure elements of a second kind alternately effectively circumferentially positioned in edge-to-edge integrally connected relationship; each of said movable closure elements having a first end, an intermediate return-loop-flare portion, and a second end, said first ends of said movable closure elements being integrally connected to the top of said stem and forming an upward effectively hollow extension thereof; longitudinally movable flange means integrally connected to said second ends of said movable closure elements, said flange means encircling the exterior of all of said movable closure elements and being longitudinally movable with respect to said stem, each of said movable closure elements being provided with engaging projection means between said first end and said return-loop-flare portion and adjacent said return-loop-flare portion and convexedly related with respect thereto; said projection means being movable, in response to manually controlled downward longitudinal movement of said flange means with respect to said stem, between closed position, with said projection means in inwardly directed abutting sealing relationship, and open position, with said projection means separated and effectively defining open port means; said first kind of closure elements comprising interfold closure elements including fold means therein normally closed and inwardly concavely directed; said second kind of closure elements comprising actuator closure elements effectively positioning said interfold closure elements properly during opening and closing operations and being thicker adjacent their second ends than adjacent their first ends; tube means effectively fastened with

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respect to the hollow stem and provided with means fasteningly cooperable with respect to an aperture which is to be closed; and a hollow operating sleeve cooperable for attachment to the flange means and for mounting in longitudinally movable relationship with respect to said tube means.

11. An invention of the character defined in claim 10, wherein said projection means carried by said first kind of closure element comprises a nubble and two tapered shims positioned in a horizontal plane in the closed concave portion of an interfold closure element whereby to effectively seal same.

12. An invention of the character defined in claim 10, wherein said projection means carried by said second kind of closure element comprises inwardly directed prism means.

13. An invention of the character defined in claim 10, wherein said projection means carried by said first kind

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of closure element comprises a nubble and two tapered shims positioned in a horizontal plane in the closed concave portion of an interfold closure element whereby to effectively seal same; and wherein said projection means carried by said second kind of closure element comprises inwardly directed prism means.

14. An invention of the character defined in claim 10, wherein said integral connection of each interfold closure element with respect to the adjacent actuator closure element in the region of said return-loop-flare portion comprises faired fillet means.

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