

[54] **PUSH-PULL CAP AND NECK ASSEMBLY**

[75] Inventors: **Gerald J. Ardito**, Old Westbury;
Jerome S. Newman, Floral Park;
Samuel E. Sarris, Jamaica, all of
N.Y.

[73] Assignee: **Inventions Unlimited Incorporated**,
Fresh Meadows, N.Y.

[*] Notice: The portion of the term of this
patent subsequent to Sept. 20, 1988,
has been disclaimed.

[22] Filed: **Dec. 16, 1970**

[21] Appl. No.: **98,827**

[52] U.S. Cl. **222/546**

[51] Int. Cl. **B65d 47/12**

[58] Field of Search..... 215/41; 220/42 A,
220/42 B, 42 C; 222/92, 481, 498, 499, 519,
522, 525, 546, 559, 562, 563, 566, 567, 570

[56] **References Cited**

UNITED STATES PATENTS

2,721,004	10/1955	Schultz	222/519 X
1,993,043	3/1935	Spickard	222/519
2,931,543	4/1960	Thomas	222/546
3,422,998	1/1969	Murray	222/567
2,177,335	10/1939	Ruetz	222/519
3,386,626	6/1968	Kearney	222/567 X
2,898,017	8/1959	Redmond	222/519
2,179,423	11/1939	Parl	222/546

2,717,721	9/1955	Gibson	222/546 X
3,606,107	9/1971	Ardito et al.	222/546

FOREIGN PATENTS OR APPLICATIONS

544,334	11/1955	Italy	222/546
451,729	12/1966	Switzerland	222/546
554,861	11/1956	Belgium	222/499

Primary Examiner—Robert B. Reeves

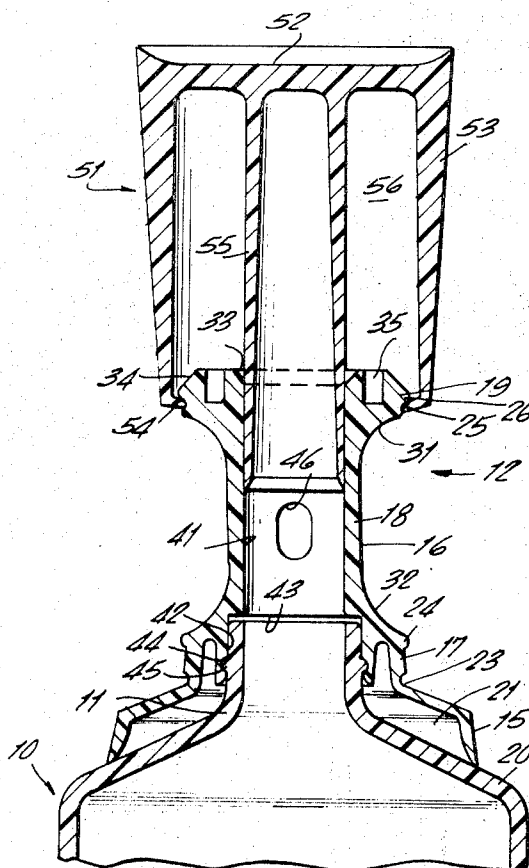
Assistant Examiner—Larry Martin

Attorney—Marn & Jangarathis

[57] **ABSTRACT**

A material dispensing neck having a dispensing orifice in the side thereof and provided with engaging recesses on the exterior and interior surfaces thereof. The cap of the container has a plunger which extends into the neck and an outer portion which fits over the container neck. The lower extremity of the outer portion of the cap is provided with an inwardly extending peripheral engaging lip which cooperates with the engaging recesses on the outer surface of the neck in open and closed positions. The plunger may also be provided with a resilient skirt which is compressed within the neck and outwardly biased to provide for sealing engagement, notwithstanding tolerance discrepancies. The neck is secured to an existing container neck by the engaging means on the interior surface thereof, thereby providing an existing container with a push-pull cap and neck assembly.

23 Claims, 8 Drawing Figures



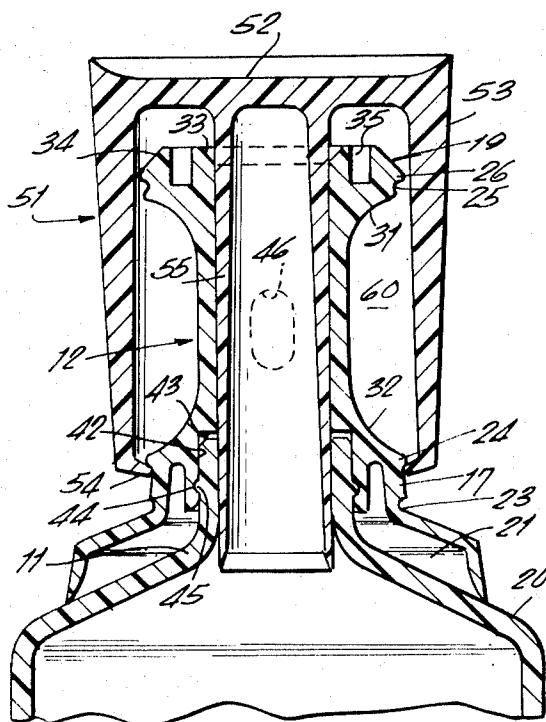


FIG. 2

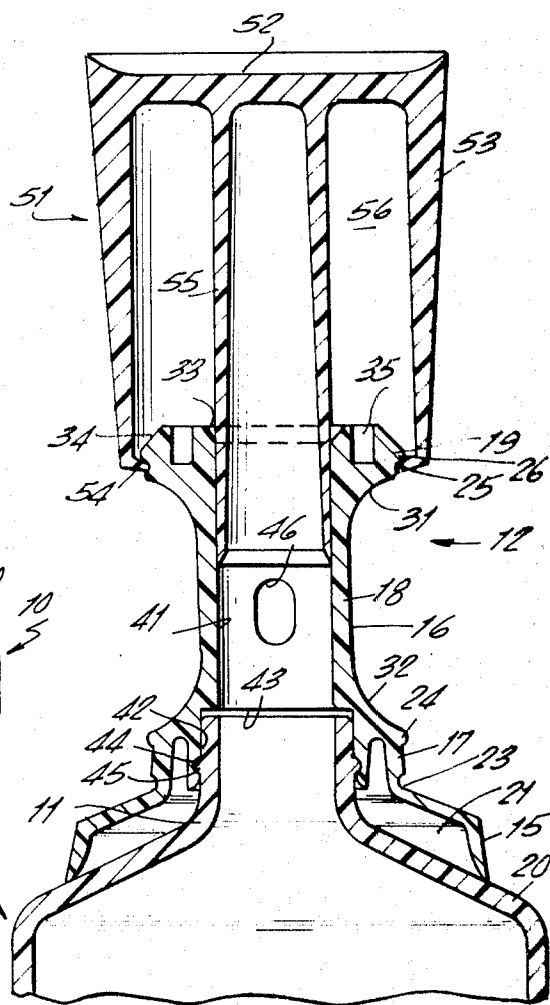


FIG. 1

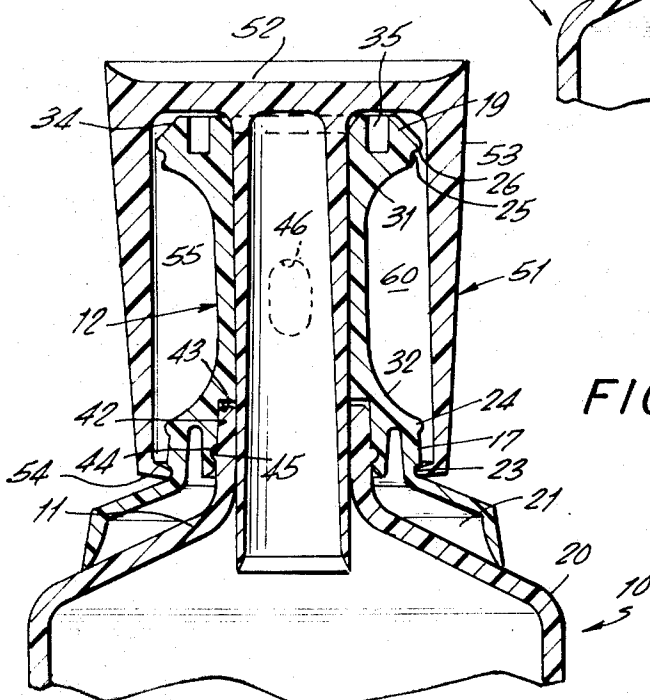


FIG. 3

INVENTORS
JEROME S. NEWMAN
GERALD J. ARDITO
SAMUEL E. SARRIS

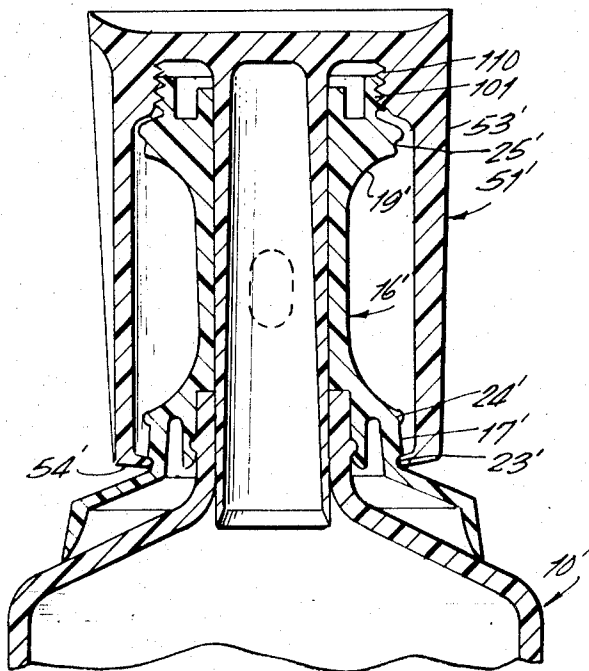


FIG. 5

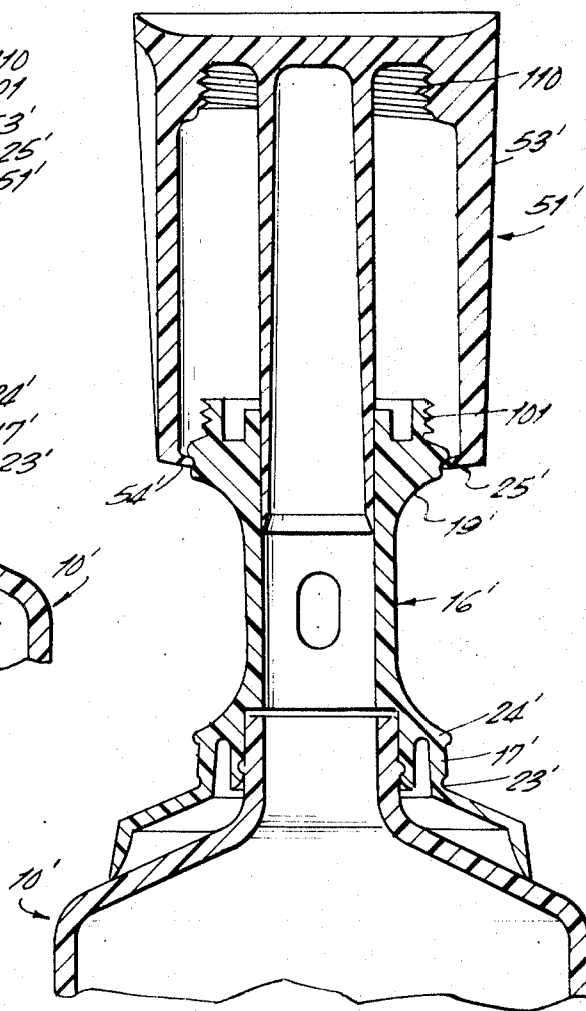


FIG. 4

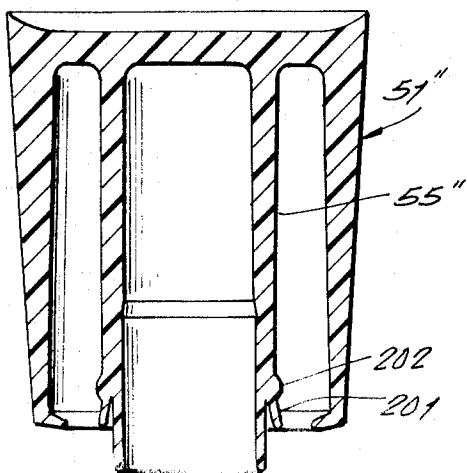


FIG. 6

INVENTORS
JEROME S. NEWMAN
GERALD J. ARDITO
SAMUEL E. SARRIS

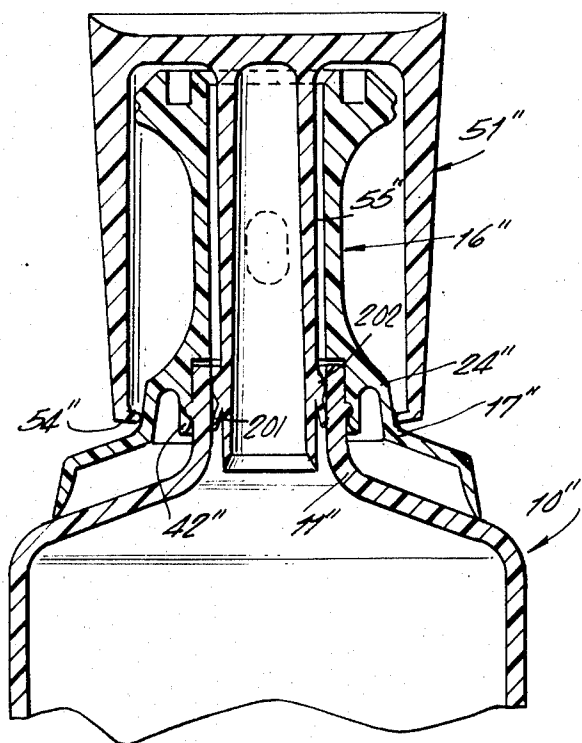


FIG. 8

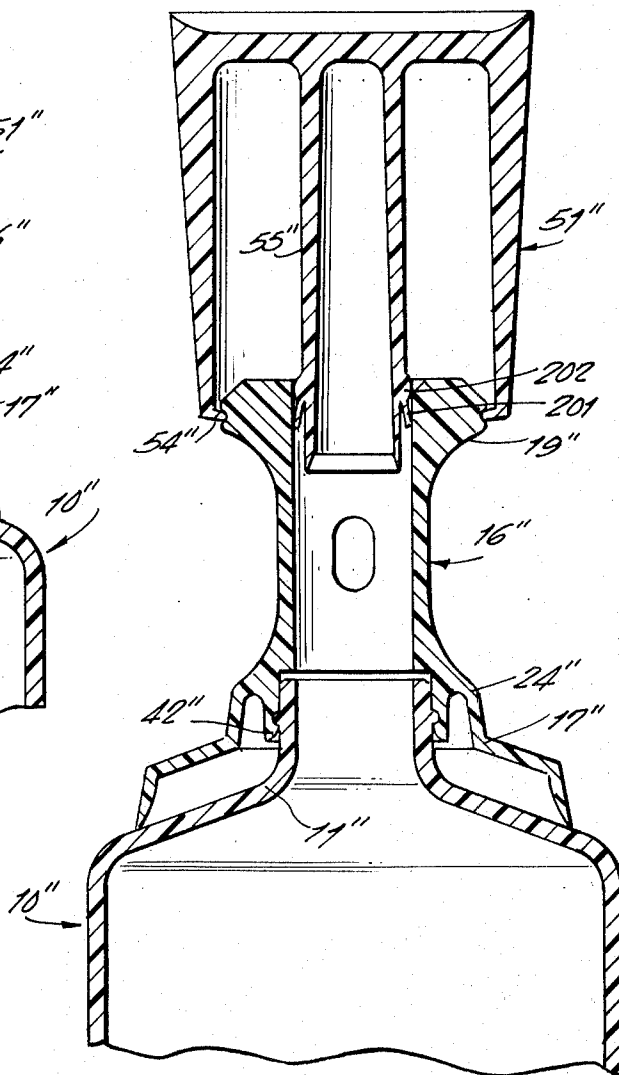


FIG. 7

INVENTORS
 JEROME S. NEWMAN
 GERALD J. ARDITO
 SAMUEL E. SARRIS

PUSH-PULL CAP AND NECK ASSEMBLY

BACKGROUND OF THE INVENTION

Many push-pull type of containers and caps therefor have been proposed to eliminate the need for complete removal of the cap in order to dispense material from the container. In U.S. Pat. No. 3,266,680, a push-pull material dispensing container and cap therefor was proposed which eliminated the unsightly appearance of accumulated material about the dispensing orifice and provided a means to reduce bacterial growth on such accumulated material by minimizing contact by air with such accumulation. Such design, however, did not prevent build-up of material above the dispensing orifice during continuous consumer operation and did not provide a more positive means of complete closure in a facile way. Additionally, tolerance discrepancies during manufacture of the cap and container sometimes resulted in a defective seal between the cap plunger and the inner surface of the neck of the container. Furthermore, such cap assemblies did not provide means for effecting easy securing of the assembly to an existing container neck.

OBJECTS

It is a general object of the present invention to provide an improved push-pull neck and cap assembly which overcomes the foregoing problems.

Another object of the present invention is to provide an improved neck and cap design for a push-pull container and cap assembly whereby more positive closure is attained in a facile way therebetween.

Still another object of the present invention is to provide an improved neck and cap design for a push-pull container and cap assembly whereby tolerance discrepancies during manufacturing do not adversely effect positive sealing therebetween.

A further object of the present invention is to provide an improved neck and cap assembly which may be employed with existing container necks.

Various other objects and advantages of the invention will become apparent from the following description of several embodiments thereof, and the novel features will be particularly pointed out in connection with the appended claims.

SUMMARY OF THE INVENTION

In essence the present invention is directed to a material dispensing neck and cap therefor which is to be employed with an existing container neck to thereby provide the container with a push-pull cap and neck assembly. The hollow dispensing neck is comprised of a base portion, an intermediate portion having a dispensing orifice and a top portion, the bottom and top portion having a greater diameter than the intermediate portion. The transition from the intermediate portion to the top and bottom portions is defined by outwardly curved surfaces, and the interior of the hollow neck is provided with means for engaging the exterior surface of a container neck. The cap of the container has a center portion or plunger which when inserted into the dispensing neck cooperates with the interior surface of the dispensing neck to provide an effective seal therebetween, and as the cap is pushed into a closed position, the plunger covers the orifice thereby preventing material from being dispensed from the container. The cap

is provided with an outer portion which extends over the dispensing neck, and such portion is provided with an inwardly extending lip which releasably engages the threaded top portion of the dispensing neck in the open position. The cap is also provided with threadable means on the inside of the top of the outer portion thereof to permit the cap to be screwed on the threaded top portion of the dispensing neck in the closed position. The base portion of the dispensing neck is provided with means for engaging the cap lip to retain the cap in a closed position, generally in the form of a peripheral abutment means and a lower axially displaced peripheral recess to engage the lip of the cap in the closed position to provide a positive outer seal therebetween, with the outer portion of the cap being spaced from the intermediate portion of the dispensing neck to define a closed chamber therebetween. In a simplified embodiment, the threads on the top portion are eliminated, and in its place there is provided an abutment and recess means to engage the lip of the cap in the open position. In a particular preferred embodiment, the exterior surface of the cap plunger is provided with resilient means which is compressed upon insertion of the plunger in the dispensing neck, and in compression, the resilient means is outwardly biased in sealing engagement with the interior of the dispensing neck. In this manner, an effective seal may be achieved, notwithstanding tolerance discrepancies between the plunger and the interior of the dispensing neck.

THE DRAWING

Understanding of the invention will be facilitated by referring to the following detailed description in conjunction with the accompanying drawing, in which:

FIG. 1 is a cross-sectional elevational view of a simplified embodiment of the invention with the container and cap assembly in open position;

FIG. 2 is a cross-sectional elevational view of a simplified embodiment of the invention with the container and cap assembly in a closed semi-locked position;

FIG. 3 is a cross-sectional elevational view of a simplified embodiment of the invention with the container and cap assembly in a closed fully-locked position;

FIG. 4 is a cross-sectional elevational view of another embodiment of the invention illustrating the container and cap assembly in open position wherein the container and cap are provided with threaded engagable means;

FIG. 5 is a cross-sectional elevation view of the container and cap assembly of FIG. 4 illustrating the assembly in a fully closed position;

FIG. 6 is a cross-sectional elevational view of another embodiment of a cap design including a resilient sealing means;

FIG. 7 is a cross-sectional elevational view of a cap and container assembly having the cap of FIG. 6 in open position; and

FIG. 8 is a cross-sectional elevational view of the cap and container assembly of FIG. 7 in closed position.

Referring now to FIGS. 1, 2 and 3 of the drawings, there is shown the upper portion of a tubular container 10 having a dispensing neck 11 and being further provided with the cap and neck assembly of the present invention, generally indicated as 12.

The neck 16 of the cap and neck assembly 12 is comprised of a lower peripheral skirt or leg portion 15, having a substantially L-shaped cross-section, a base 17, an

elongated substantially cylindrical central portion 18 and a top portion 19, the base 17 and top 19 having a greater diameter than the central portion 18. The neck 16 surrounds the dispensing neck 11 and upper portion of container 10, and the bottom of the leg portion 15 rests on the skirt portion 20 of container 10. The base 17 and leg portion 15 of neck 16 includes a cut-out portion 21, which is provided to facilitate molding of the neck 16, but it is to be understood that the base 17 and leg portion 15 may be solid throughout.

The exterior surface of the base 17 of the neck 16 is provided with a circular recess or groove 23 and with an outwardly extending circular bead portion 24, the bead portion 24 being above the recess or groove 23 and defining an abutment on the upper portion of base 17 for retaining a cap in a closed position, as hereinafter described. Similarly, the exterior surface of the top 19 of the neck 16 is provided with a circular recess or groove 25 and with an outwardly extending circular bead portion 26, the bead portion 26 being above the recess or groove 25 and defining an abutment on the upper portion of top 19 to prevent complete removal of a cap, as hereinafter described. The exterior surface of the intermediate portion 18 is outwardly flared at both the top and bottom thereof, whereby the transition from the narrower intermediate portion 18 to the thickened top and bottom portion 19 and 17, respectively, is defined by unobstructed curved surfaces 31 and 32, respectively, the curvature of surfaces 31 and 32 being selected to provide substantially continuous surfaces with portions of a cap for the container 10 in open and closed positions, respectively, as hereinafter more fully described.

The top portion 19 of the neck 16 has chamfered interior and exterior surfaces 33 and 34, respectively, to facilitate placement of a cap thereover, as hereinafter described. The upper peripheral surface of top portion 19 of neck 16 includes a circular cut-out portion 35, which is provided to facilitate molding of the neck 16, but it is to be understood that the top portion may be solid throughout.

The hollow interior of neck 16 is comprised of an upper substantially cylindrical bore 41 and a lower substantially cylindrical counterbore 42, the juncture of bore 41 and counterbore 42 forming a shoulder 43 which provides a seat or stop for the top peripheral portion of the container neck 11. The diameter of the bore 41 corresponds approximately to the inner diameter of the container neck 11, and the length thereof is substantially coextensive with the top 19 and intermediate portion 18 of the neck 16. The diameter of the counterbore 42 corresponds approximately to the outer diameter of container neck 11 and is substantially coextensive with the base portion 17 of neck 16. The counterbore 42 is provided with a circular recess 44 and the neck 16 fits over the container neck 11, with the counterbore 42 in sliding sealing engagement with the exterior surface of the container neck 11, the circular recess 44 releasably engaging a circular beaded portion 45 on the exterior surface of the container neck 11, thereby releasably locking the neck and cap assembly to the container neck 11.

The hollow interior of the neck 16 is in fluid flow communication with the interior of container 10 through container neck 11, whereby material may flow from the interior of the container 10 into the interior of neck 16. The intermediate portion 18 of the neck 16

is provided with a dispensing orifice 46 whereby material may be dispensed from the interior of the container 10. The orifice 46, as shown, is axially elongated in that the cap and neck assembly 12 of the illustrated embodiment is particularly adapted for use with tubular containers for dispensing toothpaste, the elongation of the orifice facilitating deposition of the paste on a toothbrush in ribbonlike form.

The neck portion 16 is provided with a substantially cylindrical cap 51 having a closed top 52 and open bottom, with the outer periphery of the cap 51 being defined by a substantially cylindrically shaped outer wall 53 which decreases in thickness from top to bottom and terminates in an inwardly extending circular lip 54 at the open bottom of the cap 51. The cross-section of the interior of the cap 51 increases from top to bottom, whereby the inner surface of the wall 53 has a frusto-conical shape. A substantially cylindrically shaped hollow plunger 55, having an open bottom, extends downwardly from the closed top 52 of the cap 51 concentric with the outer wall 53, and the wall of the plunger 55 decreases in thickness from top to bottom. The hollow interior of the plunger 55 increases in cross-section from top to bottom, and the exterior surface of the plunger 55 and the interior surface of outer wall 53 define an annular chamber 56. The length of outer wall 53 of cap 51 is substantially equal to the length of the neck 16 whereby in the closed position, the cap substantially encompasses neck 16. The length of plunger 55 is greater than the length of the outer wall 53, and in a closed position, the plunger 55 extends into the container 10. The cap 51 is preferably formed of a resilient material to facilitate sealing with the neck portion 16 of the container 10, as hereinafter described. The plunger 55 is preferably hollow, and the thickness of the walls thereof preferably decreases from top to bottom, as shown, to enhance the resiliency thereof, but it is to be understood that a solid plunger may also be employed.

Referring to FIG. 1, which illustrates the neck and cap assembly in open position, the plunger 55 of cap 51 extends into the interior of neck 16 with the outer diameter of the plunger 55 being substantially equal to the diameter of the bore 41 of the neck 16 and preferably slightly greater than the diameter of the bore 41 of neck 16 to provide a sliding sealing engagement between the exterior surface of plunger 55 and the interior surface of bore 41, thereby effectively closing the open top of the neck 16. The inwardly extending lip 54 of the cap 51 is in engagement with the recess or groove 25 on the top portion 19 of the neck 16 to hold the cap 51 in an upper or open position in which the plunger 55 of the cap 51 is positioned in the bore of neck 16 above orifice 46, whereby material may be dispensed from the interior of the container 10 through the orifice 46. The circular bead portion 26 of the top 19 prevents further upward movement of the cap 51, although the cap can be removed completely from the neck 16 by the application of a strong upward force, as a result of the deformability of the resilient material from which the cap 51 is generally constructed. In the open position, the outer surface of the lip 54 of the cap 51 and the curved surface 31 of the intermediate portion 18 of neck 16 define an unobstructed substantially continuous curved surface, thereby minimizing the chances of material entering chamber 56 while moving the cap from the closed to the open position.

The container 10 may be closed by the exertion of a downward force upon cap 51 thereby moving the lip 54 from engagement in the recess or groove 25 and further inserting the plunger 55 into the bore 41 of neck 16. The cap 51 may be moved to the position illustrated in FIG. 2 which is the semi-locked closed position wherein the lip 54 of the cap 51 is positioned below the bead portion 24 in a manner such that the curved surface 32 of the intermediate portion 18 of the neck 16 and the inner surface of the lip 54 of cap 51 define an unobstructed substantially continuous curved surface. The circular bead portion 24 of the base 17 prevents upward movement of the cap 51 without the application of an upward force. The cap 51 and the neck 16 define a closed annular chamber 60 therebetween, thereby minimizing or preventing contact between material about the neck 16 and the surrounding air. The plunger 55 is inserted into the bore 41 of neck 16 with the outer surface of plunger 55 being in sealing engagement with the inner surface of bore 41, thereby covering orifice 22 and preventing material from being dispensed from container 10. The lower portion of the plunger 55 extends beyond the bore 41 into the neck 11 of container 10, and this lower portion is in sliding sealing engagement with the interior surface of the container neck 11. The plunger 55 may enter into the main body of the container to thereby release the compressive force applied to the lower portion thereof, resulting in an outward expansion of the plunger 55. The cap 51 may be more securely locked to the container 10 by the exertion of a downward force to further downwardly move the cap 51 to a position in which the lip 54 of the cap 51 is engaged in the groove 23 of the base portion 17 of the neck 16, as illustrated in FIG. 3.

It is to be understood that numerous modifications and variations of the construction of the container neck and cap are possible within the spirit and scope of the invention. Thus, for example, the shape of the cap may be otherwise than as shown; e.g., the outer wall of the cap may be of constant thickness or increase in thickness from top to bottom, although the design as shown is preferred. Similarly, the length of the plunger may be about equal to or shorter than the combined length of the neck 16 and container neck 11, whereby the cap plunger 55 does not extend into the container in a closed position, as particularly shown. Alternatively, the thickness of the walls of the plunger may be substantially equal throughout the length thereof or increase from top to bottom, although the construction shown is generally preferred.

In another modification, the transition from the intermediate portion of the neck to the bottom and top portions thereof may be defined other than by an unobstructed substantially continuous curved surface, provided the outer surface of the cap lip and the outer surface of the neck, in the open position, define a substantially continuous unobstructed surface to minimize the changes of material entering chamber 56. The outwardly curved surface as particularly shown, however, is the preferred construction.

In a further modification, the lower recess on the neck may be eliminated and the bead portion employed as the sole means for preventing further upward movement of the cap without the exertion of an upward force. The slightly increasing diameter of the base portion, from top to bottom thereof, maintains a sealing relationship between the cap lip and base portion upon

movement of the cap below the bead. Similarly, the bead portion on the neck could be eliminated, in which case the locking of the cap in the closed position would be effected by engagement of the cap lip in the recess on the base portion of the neck.

In still another modification, the neck 16 may be releasably locked to the container neck in a manner other than as particularly shown; e.g., by providing mating threads for the container neck 11 and counterbore 42 of neck 16.

Another embodiment of the invention is illustrated in FIGS. 4 and 5 of the drawings which is substantially identical to the embodiment illustrated in FIGS. 1-3, except for the provision of threaded means for more securely locking the cap to the container and like parts are designated by like prime numerals. Referring now to FIG. 4 which illustrates the cap 51' in open position, the outer surface of top portion 19' of neck 16' is provided with a continuous thread 101 immediately above the recess 25', with the lower part of the thread 101 defining the abutment for preventing removal of the cap 51' from neck 16'. The recess 25' may be a portion of the thread 101. In this embodiment, the top portion 19' of the neck 16' does not have an exterior chamfered surface, although such a surface could be employed.

The inner surface of wall 53' of cap 51' is provided with threads 110 adjacent the closed top 52' thereof, the threads 110 being threads which mate with the threads 101 of the top portion 19' of neck 16'.

The opening and closing of the container 10' is substantially similar to the opening and closing of the container 10 described with reference to FIGS. 1-3 with the cap 51' in the open position illustrated in FIG. 4 having lip 54' engaged in recess 25' of the top portion 19'. The cap 51' is moved to a closed position by the exertion of a downward force and after the lip 54' of the cap 51' is pushed past the bead portion 24' of the base 17' of the neck 16', a point is reached short of engagement of the lip 54' with the recess 23' where further downward movement of the cap 51' is resisted as a result of initial contact of the threads 110 of cap 51' with the threads 101 of the top portion 19' of neck 16'. The cap 51' is further closed by twisting thereof whereby the threads 101 and 110 cooperate to cause further downward movement of the cap 51' until the lip 54' thereof is engaged in recess 23'. The cap 51' may be further twisted after engagement of the lip 54' in recess 23' as a result of the resiliency of the lip 54' and the further unengaged portions of the threads 101 and 110. The cap 51' may be opened by reversing the closing procedure, i.e., upward twisting of the cap to disengage the threads at which point the cap 51' may be pulled upwardly until engagement of the lip 54' in the recess 25'.

The embodiment of the invention illustrated in FIGS. 4 and 5 may be modified in numerous ways similarly to the embodiment of FIGS. 1-3.

A further embodiment of the invention is illustrated in FIGS. 6, 7, and 8 which is similar to the embodiment illustrated in FIGS. 1, 2, and 3, except for the provision of means for providing more effective sealing between the cap and the interior of the container neck, and the use of only a bead for locking the cap in the closed position and like portions are identified by like double prime numerals. Referring now to FIG. 6, there is shown a cap 51'', and the lower portion of the outer surface of plunger 55'' is provided with a downwardly

depending outwardly extending narrow resilient skirt 201 which extends continuously around the plunger 55'', with the upper end of the skirt 201 being integral with the plunger 55'' and the lower end thereof being outwardly spaced from the plunger 55''. The skirt 201 is capable of being elastically compressed, and under compression, the skirt 201 is outwardly biased whereby insertion of the plunger 55'' into the container neck results in a positive seal between the skirt 201 and the interior of the neck.

The exterior surface of the plunger 55'' of the cap 51'' is further provided with a resilient circular bead portion 202 positioned thereon above the skirt 201. The circular bead portion 202 provides additional sealing as the result of the elastic compression thereof upon placing the plunger 55'' into the container neck and also counterbalances the skirt 201, thereby maintaining the cap 51'' in even balance. It is to be understood, however, that the bead portion 202 may be eliminated or replaced with a skirt identical to skirt 201. Similarly, the plunger 55'' of cap 51'' may contain two or more skirts to increase the sealing effectiveness. Alternatively, the skirt 201 may be eliminated, and the sealing provided by the resilient circular bead portion 202, with this structure being least preferred.

In employing the cap 51'' with a container 10'', the cap 51'' in the open position (FIG. 7) engages the top portion 19'' of the neck 16'', as described with respect to the embodiments illustrated in FIGS. 1-3, with the bead portion 202 and the skirt 201 being placed within the interior of the neck thereby providing effective sealing engagement between the plunger 55'' of the cap 51'' and the interior surface of the container neck. In the closed position, the cap engages the neck as described with reference to FIG. 3, with the bead portion 202 and the skirt portion 201 being compressed within the interior of the container neck and the cap lip 54'' being engaged with bead 24'' on the base 17'' of neck 16''. The use of skirt 201 and beaded portion 202 and/or additional skirts 201 permits effective sealing, notwithstanding tolerance discrepancies between the outer dimensions of the plunger 55'' and the interior dimensions of the container neck. It is to be understood that additional skirts 201 may be provided on the exterior surface of plunger 55'' and such skirts 201 may be provided on the portion of the plunger 55'' which is within or outside of the container neck in the open position, with the chamfered surface on the top of the interior of the neck facilitating reentry and insertion of the plunger and skirt into the neck.

It is also to be understood that the cap, containing a resilient means, may be constructed as described with reference to FIGS. 4 and 5, i.e., with threads on the interior of the cap and the exterior of the container neck.

It is further to be understood that the embodiment illustrated in FIGS. 6-8 is subject to numerous modifications similar to the previously described embodiments.

In addition, the resilient means provided on the plunger of the cap may be constructed other than as particularly shown although the illustrated embodiment is preferred. Thus, for example, the plunger can be provided with a spring loaded bumper instead of the skirt as shown. It is also to be understood that the interior of the neck portion may be provided with resilient means in order to provide for tolerance discrepancies.

Furthermore, the counterbore 42'' of neck 16'' may be provided with resilient means similar to those hereinabove described with reference to the cap plunger 55'' to provide a more positive seal with the exterior of the container neck 11''.

The cap and neck of the present invention is particularly advantageous in that contact between material and the surrounding atmosphere is minimized while the cap is in the closed position while simultaneously minimizing the chances of material entering the interior of the cap during repeated opening and closing thereof. In addition, the cap and neck assembly are provided with specific structure which permits effective sealing without requiring unduly strict tolerance requirements. Furthermore, the cap and neck assembly may be facily attached to an existing container, thereby providing the container with the advantages of a push-pull cap and neck assembly of the present invention.

Various changes in the details, materials and arrangements of parts, which have been described and illustrated in order to explain the nature of the invention, may be made by those skilled in the art within the principle and scope of the invention as defined in the appended claims.

What is claimed is:

1. In combination, a cap and neck for dispensing material from a container, said neck being elongated and hollow and including a dispensing orifice for dispensing material from the hollow interior of the neck, said neck having an upper portion, an intermediate portion and a base portion, said intermediate portion having a thickness which is less than the thickness of both the upper portion and the base portion, the inner surface of the lower portion of the neck including an inner engaging means for securing the cap and neck assembly to a container neck, the outer surface of the upper portion of the neck including an upper engaging means and the outer surface of the base portion of the neck including a lower engaging means, said cap including an outer wall which surrounds the outer surface of the neck and a plunger which is positioned in the hollow interior of the neck in sliding sealing cooperation therewith, said cap being movable with respect to the neck to open and closed positions with the plunger thereof opening and closing said orifice, the lower portion of the outer wall of the cap including an inwardly extending lip, said lip being releasably engaged by the upper engaging means in the cap open position and releasably engaged by the lower engaging means in the cap closed position, the outer wall of the cap being spaced from the intermediate portion of the neck in the closed position to define a closed chamber therebetween.

2. The assembly as defined in claim 1 wherein the hollow interior of the neck is comprised of a bore and counterbore, the engaging means on the interior surface of the hollow neck being provided on the counterbore to engage the exterior surface of a container neck.

3. The assembly defined in claim 2 wherein an outwardly extending resilient bead is provided on the outer surface of the plunger said bead being positioned in the neck in a manner such that the bead is within the neck in the open and closed position.

4. The assembly as defined in claim 2 and further including resilient means on the exterior surface of said plunger to provide a portion of the plunger with an enlarged diameter, said resilient means being positioned on the portion of the plunger within the neck to main-

tain sealing engagement with the interior of the neck.

5. The assembly as defined in claim 2 wherein the plunger further includes at least one downwardly depending outwardly extending resilient skirt on the outer surface thereof, said skirt being positioned and compressed within the neck to maintain sealing engagement with the interior of the neck.

6. The assembly as defined in claim 2 wherein thread means are provided on the top portion of said elongated neck and the top inner portion of said outer wall of said cap.

7. The assembly as defined in claim 2 wherein the first thread of said thread means on said elongated neck is said upper engaging means on said elongated neck.

8. The assembly as defined in claim 2 wherein an upper portion of said elongated neck below the upper engaging means is outwardly curved and cooperates with the outer surface of the lip of said cap when engaged in the upper engaging means to provide a substantially continuous surface.

9. The assembly as defined in claim 2 wherein a lower portion of the neck above the lower engaging means is outwardly curved and cooperates with the inner surface of the cap lip when engaged in the lower recess to provide a substantially continuous surface.

10. The assembly as defined in claim 2 wherein the neck includes a base portion, an intermediate portion and a top portion, the intermediate portion having a diameter which is less than the diameter of both the top portion and the base portion, the outer wall of the cap being spaced from the intermediate portion of the neck in the closed position to define a chamber therebetween.

11. The assembly as defined in claim 10 wherein the upper engaging means comprises a recess in the top portion of the neck.

12. The assembly as defined in claim 11 wherein the lower engaging means comprises a bead portion on the base portion of the neck.

13. The assembly as defined in claim 11 wherein the lower engaging means comprises a recess in the base portion of the neck.

14. In combination with a container having a container neck, a hollow elongated dispensing neck and cap therefor, said dispensing neck fitting over the container neck, the interior surface of the dispensing neck including a first engaging means engaging the exterior surface of the container neck thereby placing the container neck and dispensing neck in fluid flow communication, said dispensing neck including a base portion, a top portion and an intermediate portion, said base and top portion having a greater diameter than the intermediate portion, the intermediate portion having outwardly flared surfaces at the top and bottom thereof terminating in the top and base portions, respectively, said neck including a dispensing orifice whereby material can be dispensed from the interior of the container; said base portion including second engaging means and said top portion including a third engaging means; said cap comprising a closed top and an open bottom, an outer wall terminating in an inwardly extending lip at the open bottom of the cap and a plunger extending

downwardly from the closed top of the cap, said cap being placed on the container with the plunger of the cap extending into the interior of the dispensing neck in sliding sealing engagement therewith and the outer wall of the cap surrounding the exterior of said dispensing neck, said cap being movable along the dispensing neck to open and close the dispensing orifice, whereby in the open position, said plunger is in sliding sealing engagement with the interior of the dispensing neck above the dispensing orifice and the inwardly extending lip of the outer wall of the cap is engaged in the third engaging means, and in the closed position, the plunger of the cap is in sliding sealing engagement with the interior of the dispensing neck below the dispensing orifice, the inwardly extending lip of the outer wall of the cap is engaged in the second engaging means and the outer wall of the cap is spaced from the narrower intermediate portion of the neck defining a chamber therebetween.

15. The combination as defined in claim 14 wherein, in the open position, the outwardly flared surface at the top of the intermediate portion of the dispensing neck and the outer surface of the inwardly extending lip of the cap cooperate to define a substantially continuous curved surface.

16. The combination as defined in claim 14 and further including resilient means on the exterior surface of said plunger to provide a portion of the plunger with an enlarged diameter, said resilient means being positioned in the portion of the plunger within the dispensing neck to maintain sealing engagement with the interior of the dispensing neck.

17. The combination as defined in claim 14 wherein the exterior of the plunger further includes a resilient skirt, one end of said skirt being spaced from the plunger, said skirt being positioned and compressed within the dispensing neck to maintain sealing engagement between the interior of the dispensing neck and said plunger.

18. The combination as defined in claim 17 wherein the exterior of the plunger further includes a resilient bead.

19. The combination as defined in claim 17 wherein the third engaging means is a recess.

20. The combination as defined in claim 17 wherein the second engaging means includes a bead portion and a recess positioned below the bead portion to provide two closed positions for the cap.

21. The combination as defined in claim 14 wherein the top portion of the dispensing neck and the top inner portion of the cap include mating threads to provide threaded engagement between the cap and dispensing neck in the closed position.

22. The combination as defined in claim 14 wherein the exterior surface of the container neck includes a circular bead portion, and the first engaging means is a circular recess, the circular bead portion being engaged in said circular recess.

23. The combination as defined in claim 14 wherein said dispensing orifice is an axially elongated orifice.

* * * * *