Nov. 3, 1964 W. WALDHERR 3,155,294

CONTAINER WITH CLOSURE CAP

Filed June 26, 1961 4 Sheets-Sheet 1

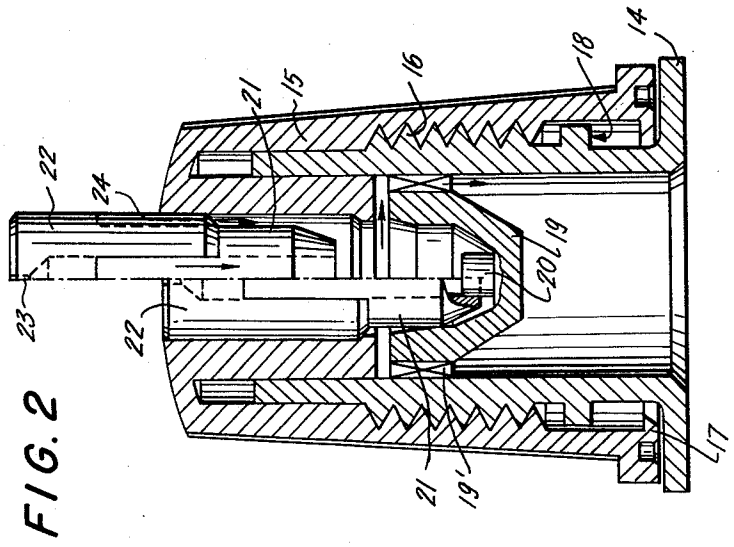


FIG. 2

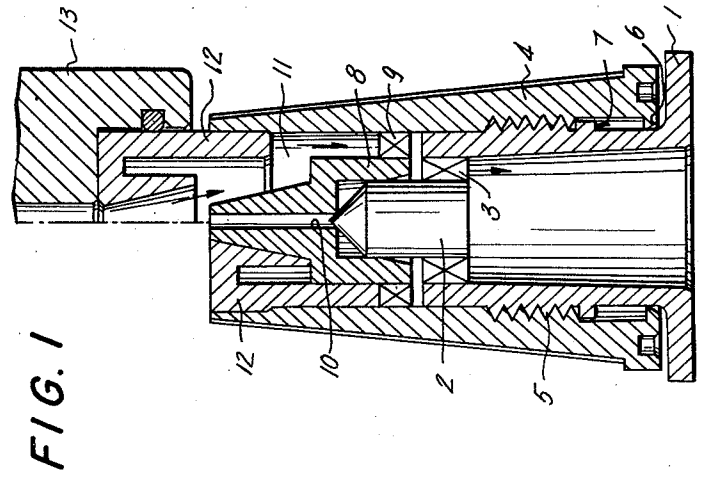


FIG. 1

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FIG. 3

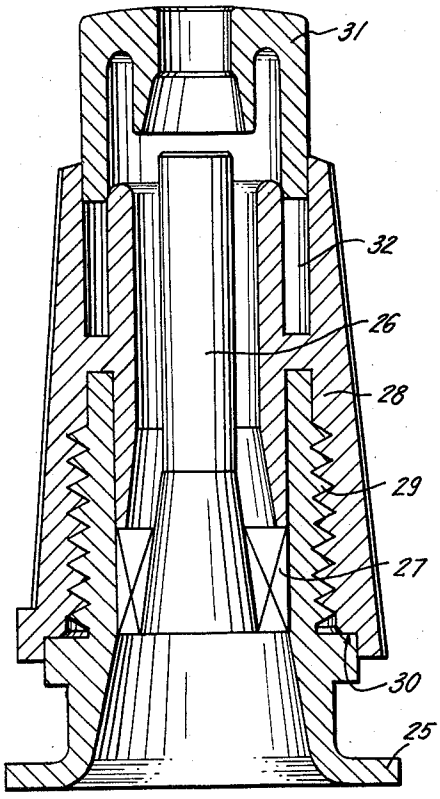
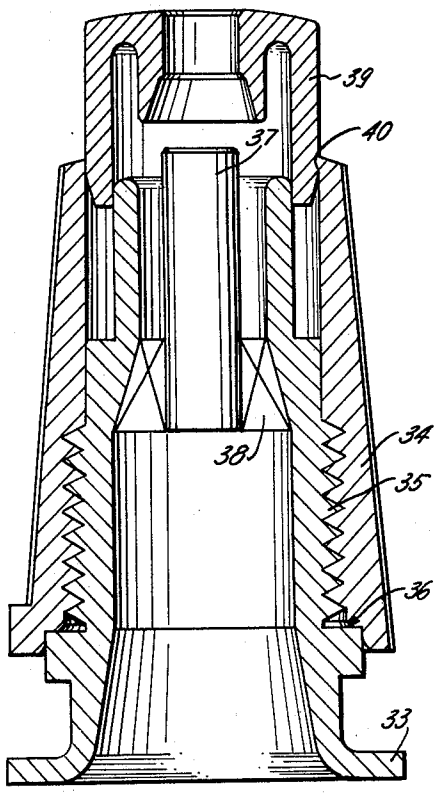


FIG. 4



CONTAINER WITH CLOSURE CAP

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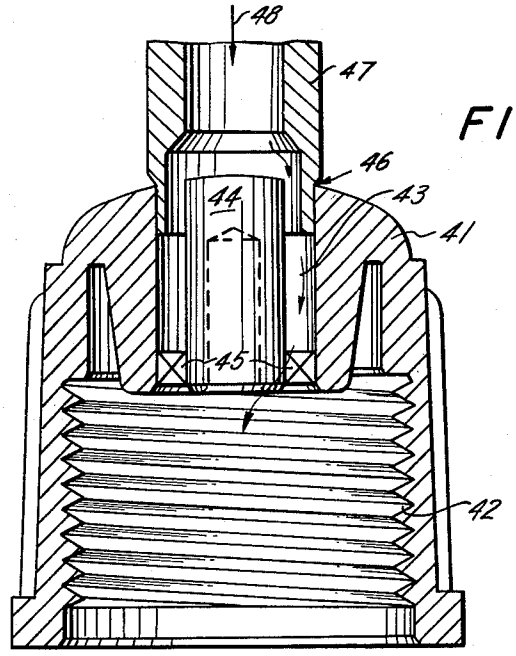


FIG. 5

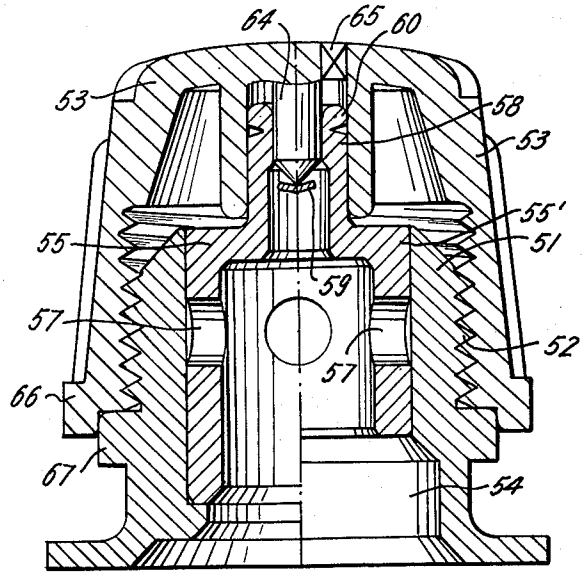


FIG. 6

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CONTAINER WITH CLOSURE CAP

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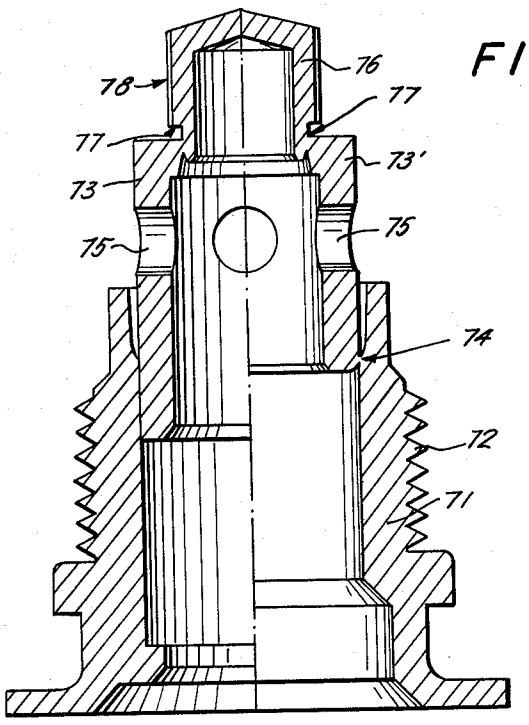


FIG. 7

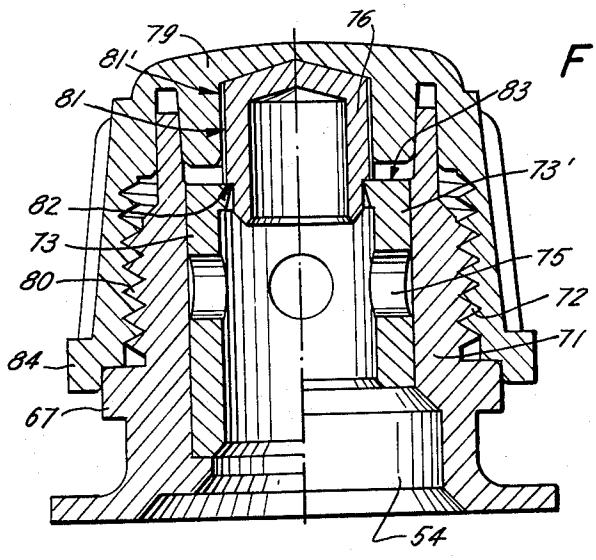


FIG. 8

United States Patent Office 3,155,294 Patented Nov. 3, 1964

3,155,294

CONTAINER WITH CLOSURE CAP

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18 Claims. (Cl. 222—521)

The present invention relates to closure caps for containers. It is known to fill tubes and similar containers through the closure cap, however the sealing of the cap after the filling heretofore has been associated with difficulty.

It is an object of the invention to make possible the automatic filling of containers such as tubes or the like in very simple manner.

The container with closure cap according to the invention is characterized by a hollow stopper associated with the container or the cap and having at least one opening for the filling of the container, which hollow stopper is constructed so that it may be pressed in for closing the filling opening in the part connected with it.

In the accompanying drawing there are shown embodiments of the invention and wherein:

FIGURE 1 shows a container mouthpiece with a closure cap. On the right side of the center line the cap is shown in the filling position, while on the left side of the center line the cap is shown after the filling operation has been completed,

FIGURE 2 shows another embodiment of the container mouthpiece; with the closure cap in the filling position (on the right) and in the position after the filling has been completed (on the left),

FIGURE 3 shows another constructional form of a container mouthpiece with the closure cap shown in the filling position,

FIGURE 4 is a modification with respect to FIGURE 3,

FIGURE 5 shows a screw cap before the filling,

FIGURE 6 is a further construction of the container mouthpiece with closure cap screwed on completely,

FIGURE 7 is a container mouthpiece with a hollow stopper with a dome, and

FIGURE 8 shows the embodiment of FIGURE 7 with the closure cap screwed on.

According to the embodiment shown in FIGURE 1 the container comprises a mouthpiece 1 which carries internally a pin 2 centrally supported by means of stays 3. On the mouthpiece 1 is threadably engaged a cap 4 which can be adjusted as to height by means of screw-thread 5. The cap 4 comprises an inwardly projecting annular nose 6, which in the highest position of the cap 4 comes to abut against an edge 7 of the mouthpiece. In the interior of the cap 4 is provided a mouthpiece 8 which is provided with a central bore 10 and which is held by means of star-shaped stays 9 in the cap 4. The central bore 10 in the mouthpiece is in correspondence with the point of the pin 2. Further there is provided an annular space 11 between the inner wall of the cap 4 and the mouthpiece 8, through which filling can be effected. After the filling operation is completed annular space 11 is closed by a hollow stopper 12, which is forced into the annular space 11 or held by means of tear-off notches. Upon application of a filling head 13 the material to be filled is introduced in the direction of the arrows into the container. After the filling is completed the hollow stopper 12 is pressed into the cap 4, as may be seen from the left-hand side of FIGURE 1.

If it is now desired to extract filling material from the container, the cap 4 is slightly unscrewed so that the point

of the pin 2 clears the mouth of the bore 10. According to the degree of unscrewing of the cap 4 there may be effected a certain metering of the filling material to be extracted.

Another embodiment is illustrated in FIGURE 2. The mouthpiece 14 of the container carries a cap 15 which again is adjustable as to height by means of a screw-thread arrangement 16. The adjustment in height is limited by a projecting nose 17 of the cap 15, which in the highest position comes to abut against an edge 18.

In the mouthpiece 14 is a cup-shaped part 19, which is held by means of radial spaced stays 19' that provide permanent passage apertures there around. In the cup 19 is centrally arranged a pin 20 which serves as a closure.

In the central bore of the cap 15 is provided a two part hollow stopper 21, 22, of which the inner part 21 is provided with an extrusion opening 23. The filling is effected in the first instance through the star-shaped gap 24 provided at the edge of the stopper part 22. In the right-hand half of FIGURE 2 the path of the filling is indicated by arrows. After the filling of the container is completed the stopper 21, 22 is pressed into the cap 15, as appears from the left-hand half of FIGURE 2.

For the extraction of filling material from the container the cap 15 is screwed upwardly to provide a pathway extending from the central bore of the stopper to the container via the passages in stay 19' and the space between the lower edge of the slightly unscrewed cap 15 and the upper edge of cup 19.

In FIGURE 3 is illustrated a further embodiment of the invention. The mouthpiece is indicated by numeral 25. Therein is held, by means of stays 27, a long pin 26 projecting out of the mouthpiece. Further provided is a cap 28 which is screwed on the mouthpiece 25 by means of screw-threads 29. The lowermost position is limited by the lower edge of the cap which abuts a projecting edge 30 of the mouthpiece 25. Further is provided a hollow stopper 31 which consists of two concentric sleeves and which can accommodate pin 26 in sealing fashion. The hollow stopper 31 can be forced into the complementary annular space 32 of the cap 28 or may be fastened thereat by means of tear-off notches.

In FIGURE 3 can be seen the position of the stopper before the filling is completed. After the filling operation is completed the hollow stopper 31 is pressed into the cap 28. The latter is raised for the purpose of the extraction of material from the container. The material passes through the annular space around the pin 26 and out through the bore of the hollow stopper 31.

A further modification is illustrated in FIGURE 4. A container mouthpiece 33 carries a screw cap 34 and is adjustable as to height by means of a screw-thread 35. In the lowermost position the lower edge of the cap 34 abuts against annular edge 36. In the interior of the mouthpiece 33 a pin 37 is held centrally by stays 36, and the mouthpiece 33 surrounds the pin 37 to a substantial height in order thereby to achieve a better sealing. At the upper edge of the cap 34 there is supported by means of tear-off notches 40 a hallow stopper 39 consisting of two conjoined sleeves, the illustrated position of the same corresponding to that during the filling process. The filling material passes through the central bore of the hollow stopper 39 and through the annular space around the pin 37 into the interior of the container. After filling of the container is completed the hollow stopper 39 is pressed into the cap 34. For the purpose of subsequent extraction of filling material the cap 34 is unscrewed slightly to provide an extraction path through the annular space around pin 37 and through the bore of stopper 39.

In FIGURE 5 is illustrated a screw cap 41 which comprises a screw-thread 42 adapted for threadably engaging the container mouthpiece. The cover of the screw cap

has a central bore 43 in which is accommodated a pin 44 held centrally by stays 45. Between the pin 44 and the wall of the bore 43 remains an annular space through which can be introduced the filling material from above with cap 41 screwed onto the container. On the edge 46 of the bore 43 is supported a sleeve-like hollow stopper 47 through which filling material can be dispensed into the interior of the container in the direction of the arrow 48.

After filling is completed the hollow stopper 47 is pressed into the bore 43, whereby the pin 44 is tightly surrounded. It will be appreciated that the stopper 47 is tightly engaged with the cap 41 and when it is desired to remove the contents from the container the cap 41 is unscrewed therefrom thereby withdrawing stopper 47 therewith and breaking the seal between the stopper and the pin 44. To reclose the container, it is only necessary to screw the cap back into place on the container.

In FIGURE 6 is illustrated a further embodiment of the invention. The mouthpiece 51 with screw-thread 52 supports a closure cap 53 and is provided with a bore 54 in which a hollow stopper 55 is loosely inserted or fastened by means of tear-off notches. The hollow stopper 55 is provided with a bore 57. The stopper 55 is provided also with a central upper cover 59 over the mouth thereof which is pierced after the filling is completed. This thin portion 59 can also be suspended on the cover by means of a tear-off notch. Further the hollow stopper 55 comprises an axially extending dome 58 of reduced diameter, on which is placed the upper cover 59. Further tear-off notches may be provided in order to make it possible to tear off the upper portion of the dome.

After filling is completed through the bores 57 the hollow stopper 55 is pressed into the bore 54 by means of a press so that the container is completely closed and the filling head can be removed.

If the container is to be put to use, the ring 60 is removed at the notch along with the thin plate 59. Alternately the thin plate may be cut off or torn off. Another possibility is that closure cap 53 is provided with a pin 64 which upon complete screwing of the cap 53 on the mouthpiece 57 forces the thin plate 59 into the interior of the hollow stopper, as may be seen from FIGURE 6. The above-mentioned pin 64 is secured in the cover of the cap by stays 65. A limitation for the screw movement of the closure cap 53 is effected by the abutment of a lower annular bulge 66 against an annular bulge 67 of the mouthpiece.

A somewhat different embodiment can be seen from FIGURES 7 and 8. In a mouthpiece 71 with screw-thread 72 is a hollow stopper 73 either loosely inserted (left-hand in the drawing) or a hollow stopper 73' connected by means of tear-off notch 74 (right-hand half of the drawing). Bores 75 again serve as filling openings. The hollow stopper 73 or 73' carries a dome 76 which is connected with the actual hollow stopper by means of tear-off notches 77. The dome 76 may be provided with longitudinal ribs 78. After filling is completed the hollow stopper is pressed in by means of a press provided in the filling head so that the container or the tube is tightly closed.

If a suitable closure cap 79 with screw thread 80 (FIGURE 8) is screwed onto the mouthpiece 71, a central bore 81 provided in the interior of the closure cap 79 will receive the dome 76 of the hollow stopper 73 or 73' and press the dome 76 downwards so that it tears off at the notch 77. By means of an edge 82 the dome 76 then rests on the surface 83 of the hollow stopper 73 or 73'. The amount of screwing of the closure cap 79 onto the mouthpieces is limited by the abutment of a lower annular bulge 84 against annular bulge 85 of the mouthpiece. By virtue of the pressing in, the dome 76 rests fast in the bore 81 of the closure cap 79. This resting fast can be further reinforced by the arrangement of longitudinal ribs 81' in the bore 81. When the closure cap is unscrewed from the mouthpiece 71 of the container the dome 76 is held fast in the bore 81 of the closure cap 79 so that the filling material can be extracted from the container or the tube when the cap is entirely unscrewed from the container.

What I claim is:

1. In combination, a closure cap member, a container member and stopper means, said stopper means having an opening and being operatively associated with said members to provide access to the container member through said stopper means with the stopper means in a first filling position, said stopper means being displaceably supported in one of the members for being urged to a second position in which said access is blocked and the container member is sealed, said cap member being movably supported on the container member and being tightly secured thereto with the stopper means in the second position, said cap member being movable with respect to said container member to provide a dispensing position for said container member in which the container member is externally accessible through the opening in the stopper means.

2. In combination, a closure cap member, a container member and stopper means, said stopper means initially being positioned in an extended position with respect to said members to define a passageway establishing access to the container member whereby the latter may be filled, said stopper means being displaceably supported in one of the members for being urged to a second retracted position in which said passageway is blocked and said access to the container member closed, said cap member being adjustably supported on the container member and being tightly secured thereto with the stopper means in the second position, said cap member being movable with respect to said container member to provide a dispensing position for said container member in which the latter is externally accessible through said stopper means independently of the first mentioned passageway.

3. In combination, a container member, a closure cap member movably supported on the container member, and stopper means, said stopper means including a body having a bore therein, said body initially being supported in an extended position on the cap member, said cap member and container member cooperatively defining an opening with the cap member moved to a maximum position of closure on the container member, said opening being in communication with the container member and accessible with the body in the extended position to thereby enable filling the container member through the opening, said body being displaceably supported on the cap member for being urged to a retracted position in which the body is wedged against the cap member and the opening is closed by the body while the bore in the body is blocked, said body once wedged against the cap member being movable therewith with respect to the container member such that upon limited movement of the cap member with respect to the container member the bore in the body is exposed and the contents in the container member can be dispensed through said bore in the body.

4. In combination, a closure cap member, a container member and stopper means, the means including a body having a central discharge bore through said stopper means being operatively associated with both said members to provide in a first position of the stopper means external communication with the container member to allow filling the same, said stopper means being displaceably supported on the closure cap member for being urged after filling to a second position in which the external communication with the container member is blocked by the stopper means and the container member sealed, a pin in said container member extending towards the stopper means, said central discharge bore of said body being also blocked by said pin with the stopper means in said second position thereof, said cap member being movably supported on the

container member to provide a position for dispensing of the contents from the container member by movement of the stopper means with the cap member therewith away from the container member whereby the bore in the stopper means is moved away from said pin in the container member and the container member has external communication through said bore in the stopper means.

5. Apparatus comprising a container including a mouthpiece defining a relatively large opening, a closure cap threadably secured to said mouthpiece and a stopper having an opening and initially supported with respect to said mouthpiece to provide communication between the opening in the mouthpiece and the opening in the stopper to enable material to be fed into said container through said openings, said stopper being adapted for being wedged into a closed position for said container wherein the opening in the mouthpiece is blocked and the contents of the container cannot be dispensed therefrom, said stopper being movable along with said cap as the latter is slightly unscrewed from the container to provide a passageway for discharge of the contents from the container, said passageway being relatively small compared to the openings through which the material is fed into said container.

6. Apparatus as claimed in claim 5 comprising means including tear-off notches initially supporting the stopper on the cap integral therewith.

7. Apparatus as claimed in claim 5 wherein said stopper has a second opening separate from the first opening therein, only said second opening providing communication with the opening in the mouthpiece when the cap is slightly unscrewed from the container.

8. Apparatus as claimed in claim 7 comprising means limiting the amount of unscrewing of the cap from the container to always leave the cap threadably engaged with the container.

9. Apparatus as claimed in claim 5 comprising abutment means on said mouthpiece for limiting the threaded engagement of the cap on the mouthpiece, said cap being in contact with the abutment means and thereby limited to a maximum threaded position on the container when the opening in the mouthpiece and the opening in the stopper are in communication and the material may be fed into the container.

10. Apparatus as claimed in claim 5 wherein said opening in the stopper is centrally located therein.

11. A closure for a container adapted to permit filling and dispensing through the closure, said closure comprising a mouthpiece on the container and having an outwardly directed elongated neck portion, a cap threadably supported on the neck portion of said mouthpiece, an outer mouthpiece supported within said cap adjacent the mouthpiece of the container, said mouthpieces and cap defining an inlet channel providing communication with the container and enabling material to be fed into the container through said inlet channel, a stopper of a shape to fit into and close said inlet channel and thereby close the container, an outlet channel provided centrally in said outer mouthpiece, closure means supported within said mouthpiece on the container at a place normally to close the outlet channel, said stopper being supported in slidable fashion between said outer mouthpiece and said cap for being wedged therebetween by being moved to a closed position to close said inlet channel, said closure means remaining in fixed position within said mouthpiece of the container as said cap and outer mouthpiece therewith is unscrewed from the mouthpiece of the container whereby upon limited unscrewing of the cap from the mouthpiece on the container the outlet channel is opened and dispensing of the contents in the container can be effected through said outlet channel, said stopper remaining wedged between the outer mouthpiece and the cap as the latter is slightly unscrewed from the container whereby the inlet channel remains closed.

12. A closure as claimed in claim 11 wherein the closure means has the shape of a prong comprising an outer end portion of diminishing cross-section to permit variation of said outlet channel between completely open and closed position.

13. A closure as claimed in claim 11 including cooperating flanges on said mouthpiece on said container and said cap to limit unscrewing of the cap relative to the latter mouthpiece.

14. A closure as claimed in claim 13 including a plurality of radially extending spokes defining spaces for supporting said closure means interiorly of said mouthpiece on the container, the said inlet channel passing through said spaces between adjacent spokes.

15. A closure as claimed in claim 11 wherein the inlet channel has a relatively large cross-section compared to the outlet channel in the outer mouthpiece.

16. A closure for a container adapted to permit filling and dispensing through the closure, said closure comprising a first mouthpiece on said container and having an outwardly directed elongated neck portion, an elongated cap threadably supported on said neck portion of said first mouthpiece, a second mouthpiece mounted within said cap in radially spaced relationship thereto and, in axial direction, forward of said first mouthpiece, said cap and mouthpieces defining an inlet channel providing communication with the container, a stopper of a shape to fit into and close said inlet channel, and outlet channel provided centrally in said second mouthpiece, a central bore in said stopper disposed in alignment with said outlet channel, closure means supported within said first mouthpiece and extending inside said second mouthpiece to close said outlet channel when the cap is completely screwed on to the first mouthpiece, said stopper being supported in slidable fashion between said first mouthpiece and said cap for being wedged therebetween by being moved to a closed position to close said inlet channel, said closure means remaining in fixed position within the first mouthpiece, as said cap and the second mouthpiece mounted therein is slightly unscrewed from the first mouthpiece, whereby the outlet channel in the second mouthpiece may be opened and the contents of the container dispensed therethrough, said stopper remaining wedged between the second mouthpiece and the cap as the latter is unscrewed with respect to the first mouthpiece whereby the inlet channel always remains closed.

17. A closure as claimed in claim 15 wherein the inlet channel is relatively large compared to the outlet channel in the second mouthpiece.

18. A closure for a container adapted to permit filling and dispensing through the closure, said closure comprising a first mouthpiece on said container and having an outwardly directed elongated neck portion, an elongated cap threadably supported on said neck portion of said first mouthpiece, a second mouthpiece mounted within said cap in radially spaced relationship thereto and, in axial direction forward of said first mouthpiece, said cap and mouthpieces defining an inlet channel providing communication with the container, an outlet channel provided centrally in said second mouthpiece, a stopper having an outer cylindrical contour and a cylindrical wall adapted to fit between said second mouthpiece and said cap by being inserted therebetween, said stopper having a central bore in alignment with said outlet channel, said inlet channel having a cylindrical portion adapted to accommodate the cylindrical wall of the stopper for being closed thereby and an outwardly widening passageway extending from the cylindrical portion, said stopper when partially inserted between the second mouthpiece and cap leaving the cylindrical portion of the inlet channel free while said cylindrical portion of the stopper closes the inlet channel when inserted into the cylindrical portion thereof, closure means supported within said first mouthpiece and extending inside said second mouthpiece to close said outlet channel when the cap is completely screwed onto the first

mouthpiece, said stopper being supported in slidable fashion between said first mouthpiece and said cap for being wedged therebetween by being moved to a closed position to close said inlet channel, said closure means remaining in fixed position within the first mouthpiece as said cap and the second mouthpiece mounted therein is slightly unscrewed from the first mouthpiece whereby the outlet channel in the second mouthpiece may be opened and the contents of the container dispensed therethrough, said stopper remaining wedged between the second mouthpiece and the cap as the latter is unscrewed with respect to the first mouthpiece whereby the inlet channel always remains closed.

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