Oct. 22, 1957 B. FORMAN 2,810,499

DISPENSING CLOSURES FOR BOTTLES AND OTHER LIQUID CONTAINERS

Filed June 7, 1955

FIG. 1

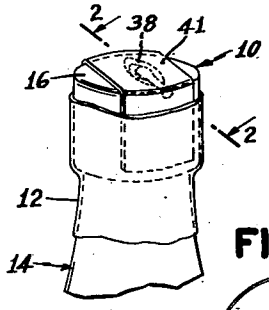


FIG. 1a

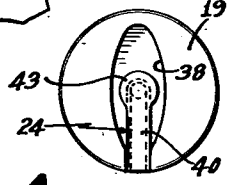


FIG. 2

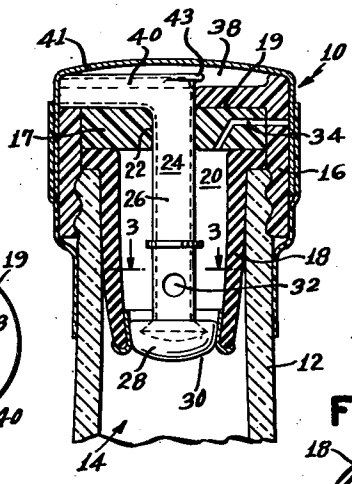


FIG. 3

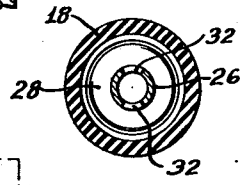


FIG. 4

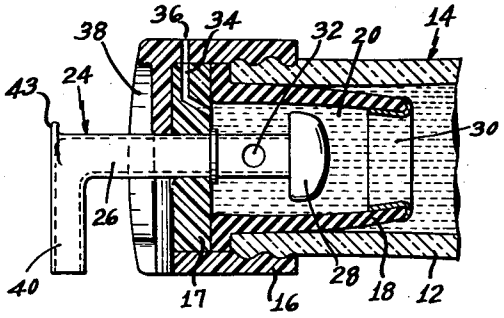


FIG. 5

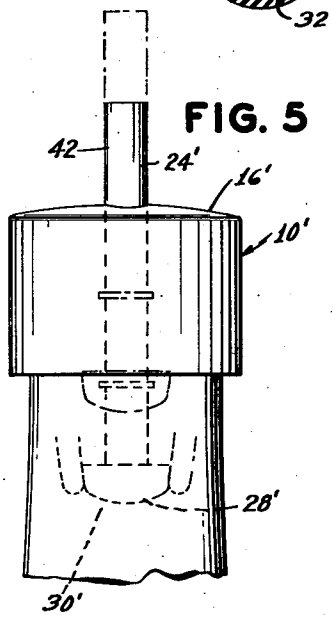


FIG. 6

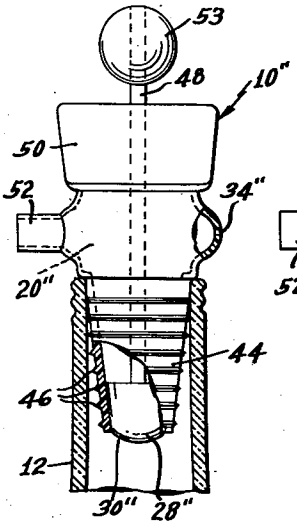
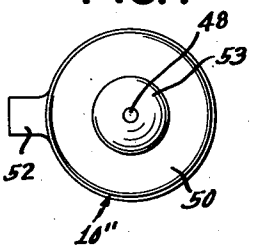


FIG. 7



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DISPENSING CLOSURES FOR BOTTLES AND OTHER LIQUID CONTAINERS

Benjamin Forman, Stelton, N. J.

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7 Claims. (Cl. 222—482)

This invention relates to closures for containers and particularly to closures for bottles having necks.

One object of the present invention is to provide a closure for liquid containers which closure includes new and improved means for dispensing the liquid within the container.

Another object of this invention is to provide a closure for a liquid container which closure provides new and improved means for dispensing the liquid within the container and provides for completely closing the container so as to prevent the liquid from flowing or evaporating therefrom.

Another object of the present invention is to provide a new and improved cap-type closure for a bottle having a neck which closure is provided with a movable pouring spout which permits the flow of liquid out of said bottle and when moved to one position and prevents liquid flow or evaporation from said bottle when in another position.

Still another object of the present invention is to provide a new and improved cap-type closure for a bottle having a neck which closure is provided with a movable pouring spout which permits the flow of liquid out of said bottle and when moved to one position and prevents liquid flow or evaporation from said bottle when in another position, and the pouring spout and the closure being arranged so that when the liquid flow and evaporation from the bottle is prevented, the pouring spout will be disposed so as to be flush with the cap-type closure thereby requiring no extra room for said spout.

Other objects of the present invention will become clear hereinafter as characteristic features of construction and mode of operation of this invention are described in detail.

Referring now to the drawings:

Fig. 1 is a perspective view of the neck of a bottle having a closure thereon embodying the present invention;

Fig. 1A is a plan view of the closure shown in Fig. 1;

Fig. 2 is a sectional view taken along the line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken along the line 3—3 of Fig. 2;

Fig. 4 is a view similar to Fig. 2 showing the closure in condition to permit liquid to be dispensed from the bottle;

Fig. 5 is a side elevation view illustrating another form of closure embodying the present invention;

Fig. 6 is a side elevation view illustrating another embodiment of the present invention with some parts broken away to more clearly illustrate this embodiment; and

Fig. 7 is a plan view of the closure shown in Fig. 6.

Referring now to the drawings in detail and particularly Figs. 1 and 4, the cap-type closure **10** is shown in threaded engagement with the neck **12** of a bottle **14**. The closure **10** includes an internally threaded cap **16** which may be made of any suitable material such as metal or plastic. Disposed within cap **16** and secured

thereto by any suitable means such as a pressed fit is a tubular member **18** which may be made of any suitable non-porous material such as plastic or rubber. It will be seen that cap **16** and hollow member **18** between them form a housing for a chamber **20**. A flat cap member **17** is disposed against the inner portion of upper surface **19** of the cap **16** to reenforce said upper surface. In the upper surface **19** of cap **16** and in member **17** is an upper opening **22** in which is disposed an inverted L-shaped tubular member **24** which is mounted in opening **22** for vertical slidable movement therein. Mounted on the vertically extending portion **26** of inverted L-shaped tube **24** is a suitable closure member **28** which is movable with tube **24**. Closure member **28** is proportioned to engage the walls adjacent opening **30** in the bottom of hollow member **18** so as to close off said opening and thereby prevent liquid in the bottle from flowing into chamber **20** through said opening **30**.

As shown in Fig. 2, the closure member **28** is in its sealing relation with opening **30** when member **24** is moved to its lowermost position. When tube **24** is moved upward to the position shown in Fig. 4, then liquid may enter chamber **20** through opening **30** in the hollow member **18**. Tube **24** provides means for liquid to flow out of the bottle through said chamber. In order for the liquid to flow out through said chamber, tube **24** is provided at the end thereof disposed within said chamber with a pair of apertures **32**. Furthermore, it will be seen that an air inlet **34** extends through said cap **16** and member **17** from the outside atmosphere into chamber **20** in order to provide suitable venting to atmospheric pressure to permit the liquid to flow out of said chamber through tube **24**. It will further be seen that by merely placing the finger over the outside opening **36** of air inlet **34**, liquid flow out of the bottle through tube **24** may be prevented, thereby providing for a simple means for controlling the flow of liquid out of the bottle even when the liquid is in the chamber. Furthermore, when closure member **28** is in sealing relationship with opening **30**, there is no means for the liquid in the bottle to pass into chamber **20** either in liquid or vapor form in order to pass from said chamber out into the atmosphere. Accordingly, a simple means is provided for preventing evaporation or spillage in a closure of the type described herein.

In accordance with another highly desirable feature of the present invention, it will be noted that the cap **16** is provided in its upper surface with a groove or recess **38** which is adapted to receive the horizontally extending portion **40** of tube **24** when said tube is in the lowermost position as shown in Fig. 2. With portion **40** of tube **24** disposed in recess **38**, it will be seen that the upper surface of tube **24** is flush with the upper surface of cap **16** thereby resulting in the tube or pouring spout taking up no additional room over an ordinary cap. Furthermore, such a cap as shown in Figs. 1 to 4 is particularly desirable when used on bottles for alcoholic beverages which bottles normally have Government tax stamps **41** affixed thereto in overlying relationship with the cap. With the tube **24** flush with the top of the cap, the presence of the tube will not interfere with the affixation of a stamp to the top of the bottle. Such an arrangement is shown in dotted lines in Fig. 1. In order to facilitate the raising of tube **24** to its upper or pouring position, groove **38** is preferably widened at the center thereof and tube **24** is provided with a flange **43** to provide means for gripping said tube so that it can be readily moved upward to its pouring position.

Referring now to Fig. 5, a closure **10'** is shown which is substantially identical in construction to the closure **10** but differs therefrom in that instead of tube **24'** being L-shaped as it is in Figs. 1 to 4, this tube is a straight ver-

tically extending tube and the portion extending above cap 10', that is portion 42, is adapted to extend a substantial amount above the top of cap 16' when the closure member 28' is out of sealing relation with opening 30' to thereby provide a substantial clearance when the bottle is moved to the horizontal position in order to pour liquid out through the tube 24'. Such an arrangement is highly advantageous for a closure which is sold separately from the bottle and which is to be used where clearance is not a determining factor such as for bar use and the like.

The present invention may also be embodied in a plug-type closure 10'' shown in Figs. 6 and 7. Such a closure is provided with a suitable housing, preferably made of resilient material such as polyethylene. The housing defines therewithin a hollow chamber 20'' and the housing is provided with a lower tapered portion 44 having a plurality of ridges 46 thereon which are adapted to engage the inner wall of neck 12 of a bottle and to thereby seal off the neck to prevent liquid from flowing between closure 10'' and the neck of the bottle. An opening 30'' is provided at the bottom of tapered portion 44, this opening being adapted to be closed by a closure member 28'' which is secured to a vertical member 48 slidably mounted for longitudinal movement in the upper surface 50 of the housing. By grasping knob 53 fixedly mounted on the upper end of member 48 and moving the member 48 upwardly, the closure member 28'' will be moved out of sealing relation with opening 30'' at the bottom of the housing in order to permit liquid to flow into chamber 20'' from the bottle.

The housing is also provided above the tapered portion 44 with an opening or outlet 52 which permits liquid to flow out of chamber 20'' when desired. An air inlet 34'' is also provided in said housing in order to permit air to enter said chamber when the liquid flows outward therefrom. Again, it will be noted that since the air inlet 34'' and outlet 52 are both disposed above the location of where the bottle is sealed from the closure 10'', there can be no liquid flow or evaporation through either outlet 52 or air inlet 34'' when the closure 28'' is in sealing relation with opening 30''.

Although I have herein suggested a use of my novel closure on bottles for alcoholic beverages, it will be obvious that the present invention is also highly desirable for use on all forms of liquid containers such as containers for liquid chemical reagents, ink and any other liquids that are commonly dispensed from containers or bottles.

Although I have herein shown and described several forms of the present invention, it will be understood that various changes and modifications may be made therein within the scope of the appended claims without departing from the spirit and scope of this invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A closure for the neck of a bottle, comprising a cap adapted to overlie the end of said neck, a hollow member secured to said cap and depending therefrom in chamber defining relation therewith, said hollow member being disposed within the neck of the bottle when said cap overlies the end of said neck, said hollow member having an opening at the bottom thereof for permitting liquid to flow from said bottle into said chamber, said cap having an opening in the top thereof extending into said chamber and further being provided with an air inlet extending into said chamber, an inverted L-shaped tube having the depending leg thereof slidably mounted in said cap opening and extending into said chamber, a closure member secured to said tube at the bottom thereof for closing off the lower end of said tube and being movable therewith to and from a position in which said closure member is in sealing relation with said hollow member opening whereby to prevent liquid from flowing or evaporating from said bottle, said tube having

an aperture in the wall thereof adjacent said closure member whereby when said closure member is out of sealing relation with said hollow member opening, liquid can flow out of said bottle by passing through said chamber and tube, said cap being provided with a recess therein for reception of the horizontal portion of said tube when said closure member is in sealing relation with said hollow member opening whereby said horizontal portion of said L-shaped tube is flush with said cap, said horizontal portion of said L-shaped tube being disposed above said cap when said closure member is out of sealing relation with said hollow member opening whereby to serve as a pouring spout.

2. A bottle top closure comprising a cap adapted to be releasably secured on the bottle top to close the latter, a hollow nipple depending from the cap into the bottle, the end of said nipple remote from said cap defining a valve seat, a tube extending through said cap and having the lower end thereof disposed within said nipple, said tube end being closed and having a valve element defining part, said tube being apertured above said valve element and the upper end of said tube extending outwardly of said cap and defining a dispensing spout, and said tube being movable from a retracted position in the upright disposition of the bottle wherein said valve element is engaged in said valve seat to prevent evaporation of liquid from said bottle to a projected position wherein said valve element is spaced from said seat to permit for the flow of liquid from the bottle through the nipple and tube aperture out of said spout.

3. A bottle top closure comprising a cap adapted to be releasably secured on the bottle top to close the latter, a hollow nipple depending from the cap into the bottle, the end of said nipple remote from said cap defining a valve seat, a tube extending through said cap and having the lower end thereof disposed within said nipple, said tube end being closed by a valve element defining part, said tube being apertured above said valve element and the upper end of said tube extending outwardly of said cap and defining a dispensing spout, and said tube being movable from a retracted position in the upright disposition of the bottle wherein said valve element is engaged in said valve seat to prevent evaporating of liquid from said bottle to a projected position wherein said valve element is spaced from said seat to permit for the flow of liquid from the bottle through the nipple and tube aperture out of said spout, and means for providing a finger-tip control of the flow of liquid from the bottle in the projected position of said tube.

4. A bottle top closure comprising a cap adapted to be releasably secured on the bottle top to close the latter, a hollow nipple depending from the cap into the bottle, the end of said nipple remote from said cap defining a valve seat, a tube extending through said cap and having the lower end thereof disposed within said nipple, said tube end being closed by a valve element defining part, said tube being apertured above said valve element and the upper end of said tube extending outwardly of said cap and defining a dispensing spout, and said tube being movable from a retracted position in the upright disposition of the bottle wherein said valve element is engaged in said valve seat to prevent evaporation of liquid from said bottle to a projected position wherein said valve element is spaced from said seat to permit for the flow of liquid from the bottle through the nipple and tube aperture out of said spout, and an air inlet defined in said cap and extending from the exterior thereof for providing a finger-tip control of the flow of liquid from the bottle in the projected position of said tube.

5. A bottle top closure comprising a cap adapted to be releasably secured on the bottle top to close the latter, a hollow nipple depending from the cap into the bottle, the end of said nipple remote from said cap defining a valve seat, a tube extending through said cap and having the lower end thereof disposed within said nipple,

said tube end being closed by a valve element defining part, said tube being apertured above said valve element and the upper end of said tube extending outwardly of said cap and defining a dispensing spout, and said tube being movable from a retracted position in the upright disposition of the bottle wherein said valve element is engaged in said valve seat to prevent evaporation of liquid from said bottle to a projected position wherein said valve element is spaced from said seat to permit for the flow of liquid from the bottle through the nipple and tube aperture out of said spout, and an air inlet defined in said cap and extending from the exterior thereof for providing a finger-tip control of the flow of liquid from the bottle in the projected position of said tube, the inner end of said inlet terminating upwardly of said valve seat whereby to prevent evaporation through said air inlet when said valve element is engaged in said valve seat.

6. A bottle top closure comprising a cap adapted to be releasably secured on the bottle top to close the latter, a hollow nipple depending from the cap into the bottle, the end of said nipple remote from said cap defining a valve seat, a tube extending through said cap and having the lower end thereof disposed within said nipple, said tube end being closed by a valve element defining part, said tube being apertured above said valve element and the upper end of said tube extending outwardly of said cap and defining a dispensing spout, and said tube being movable from a retracted position in the upright disposition of the bottle wherein said valve element is engaged in said valve seat to prevent evaporation of liquid from said bottle to a projected position wherein said valve element is spaced from said seat to permit for

the flow of liquid from the bottle through the nipple and tube aperture out of said spout, said cap being separable from said nipple.

7. A bottle top closure comprising a cap adapted to be releasably secured on the bottle top to close the latter, a hollow nipple depending from the cap into the bottle, the end of said nipple remote from said cap defining a valve seat, a tube extending through said cap and having the lower end thereof disposed within said nipple, said tube end being closed by a valve element defining part, said tube being apertured above said valve element and the upper end of said tube extending outwardly of said cap and defining a dispensing spout, and said tube being movable from a retracted position in the upright disposition of the bottle wherein said valve element is engaged in said valve seat to prevent evaporation of liquid from said bottle to a projected position wherein said valve element is spaced from said seat to permit for the flow of liquid from the bottle through the nipple and tube aperture out of said spout, and means provided on said tube to facilitate the withdrawal thereof through said cap to said projected position thereof, said means being adjacent the outer surface of the cap in the retracted position of the tube whereby to facilitate the sealing of said bottle by a seal which extends over said cap.

References Cited in the file of this patent

UNITED STATES PATENTS

1,784,795	Skonberg	Dec. 9, 1930
2,133,679	Woeltjen	Oct. 18, 1938
2,165,570	Olson et al.	July 11, 1939