Nov. 17, 1953 A. E. SMITH 2,659,370

CLOSURE

Filed Aug. 26, 1950

Fig. 1.

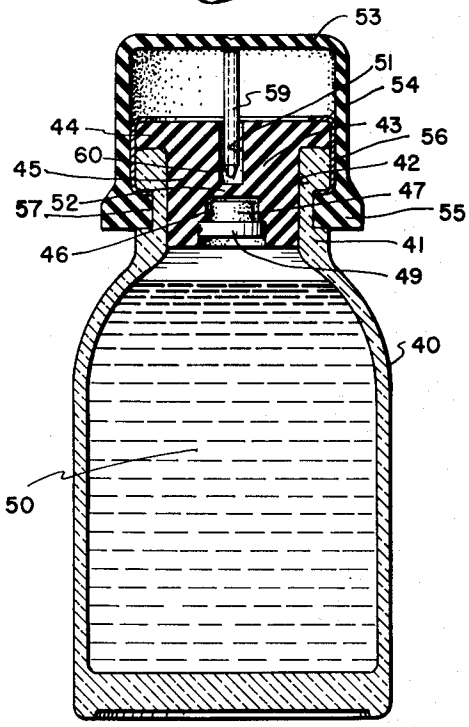


Fig. 2.

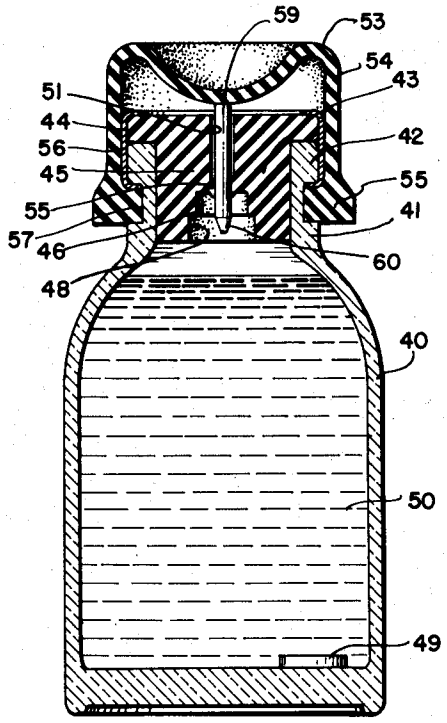


Fig. 3.

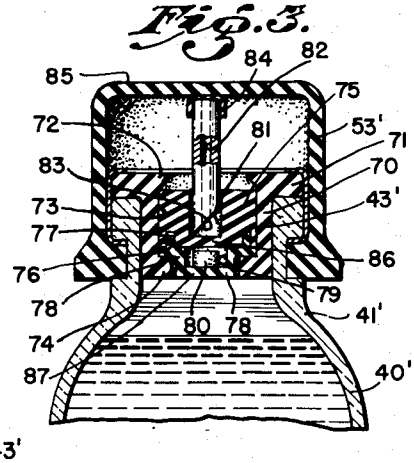


Fig. 4.

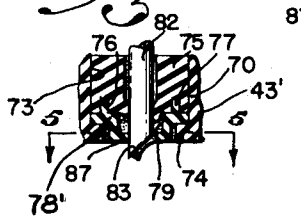
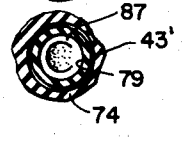


Fig. 5.



INVENTOR,
ARTHUR E. SMITH

BY

ATTORNEY

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CLOSURE

Arthur E. Smith, Los Angeles, Calif.

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2 Claims. (Cl. 128—272)

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This invention relates to a container closure.

The general object of the invention is to provide a closure for use on bottles and other containers and wherein the closure is of an improved type providing for the ready preparation of a fresh solution.

Another object of the invention is to provide a novel container closure which includes a stopper portion and a resilient and/or flexible portion, the movement of which causes a tablet to be released into a vehicle in the container to thus prepare a fresh solution.

A further object of the invention is to provide a container closure including a displaceable or rupturable portion and wherein movement of a tubular member carried by a portion of the closure serves to displace or break the rupturable portion after which a hypodermic needle may be inserted through the tubular member to extract the preparation.

A further object of the invention is to provide a closure having a tubular cutting member therein and wherein the closure may be cut by the member to permit ready insertion of a hypodermic needle through the tubular portion into the container to extract the contents of the container.

Other objects and advantages of my invention will be apparent from the following description taken in connection with the accompanying drawings, wherein:

Fig. 1 is a central, sectional view, showing a portion of a container with my improved closure thereon;

Fig. 2 is a view similar to Fig. 1, showing the parts in another position;

Fig. 3 is a view similar to Fig. 1, showing a modification;

Fig. 4 is a view similar to Fig. 2, showing the cut trap door, and

Fig. 5 is a section taken on line 5—5, Fig. 4, and with the piercing member withdrawn.

This application is a continuation in part of my prior application Ser. No. 791,428, filed December 12, 1947, now Patent No. 2,524,364, granted October 3, 1950.

Referring to the drawing by reference characters, I show my invention as embodied in a bottle 40, having a neck 41 and a collar 42 and provided with a closure 43 which has a flanged skirt 44 engaging the collar 42. The closure 43 includes an inwardly directed sleeve portion 45 which has an axial recess 46 in which a tablet 47 is arranged.

The recess 46 communicates with an enlarged

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recess 48 in which a sealing disc 49 is arranged to hold the tablet in place and normally prevent its contact with the vehicle 50 in the bottle 40. The stopper includes an outwardly opening axial recess 51, closed at the inner end by a diaphragm 52.

A flexible cap 53, having a skirt 54 and a bead 55 engages the closure 43. A band 56 holds the closure 43 in place. An internal head on the skirt 54 fits in a recess 57 in the neck 41 to hold the closure cap 53 in place. The recess 51 receives a tube 59, the lower end 60 of which is sharpened to form a piercing point.

In using the closure the cap 53 is depressed, thus pushing inwardly the tube 59 so that the sharpened end 60 thereof pierces the diaphragm 52 and thus engages the tablet 47 and thereafter causes removal of the disc 49 so that a fresh solution is prepared.

In Fig. 3, I show a modification of my invention. In the drawing of the modification parts similar to those previously described are designated by single primed reference numerals.

In the modification a closure 43' includes a sleeve portion 70 which has an external flange 71 engaging the end of the bottle 40'. Aligned with the flange 71 is an inwardly directed bead 72 which is at the top of an axial recess 73, the lower portion of the recess including an inwardly directed flange 74. Within the recess I arrange a closure member which includes a body 75 having a rabbet 76 which receives a bead 77 on a container member 78. The container member 78 has an outwardly directed flange 78' which engages the flange 74. The container includes a recess 79 in which a medicinal preparation 80 is arranged. The upper end of the container closure 75 engages the inner wall of the sleeve portion 70 directly below the bead 72. The parts 75 and 78 may be suitably secured together by adhesive so that the preparation 80 is securely held in place against contamination. The parts may be made of a good grade of flexible rubber or similar material.

The closure 75 includes an outwardly open hole 81 in which a piercing member 82, having a sharpened end 83, is arranged. A rubber closure 84 closes the top of the piercing member 82. The cap 53' is flexible so that the top 85 thereof may be depressed to push in on the piercing member 82, causing the tip 83 thereof to pierce a diaphragm 86 disposed at the lower end of the hole 81. The piercing member would then engage the tablet preparation 80 and would move to pierce a diaphragm 87 which closes the lower end of

the recess 19. Thus the tablet would be discharged into the bottle and the trap doors formed would move towards closed position when the piercing member is withdrawn.

The disc 49 shown in Figs. 1 and 2 is inert in the solution made from the preparation and does not contaminate the solution.

From the foregoing description it will be apparent that I have invented a novel container closure which can be economically manufactured and which is highly efficient for its intended purpose.

Having thus described my invention, I claim:

1. A closure comprising a body portion having a sleeve portion adapted to fit within a bottle neck, said sleeve portion having an axial recess therein, a container in said recess, said container having a recess therein, a diaphragm closing the inner end of said container recess, a closure for said container, said container closure being disposed in said sleeve portion recess and engaging said container to close said container recess, said container closure having an axial hole therein, a diaphragm closing the inner end of the hole, a medicinal preparation in said container recess, a tubular piercing member having a bevelled sharpened lower end disposed in said hole, and a resilient cap on the outer end of said piercing member.

2. A closure comprising a body portion and an auxiliary closure portion, said body portion having a sleeve portion adapted to fit within a bottle neck, said sleeve portion having an axial recess

therein and having an inwardly directed bead at the outer end of the axial recess, said body portion having an inwardly directed flange at the inner end of the axial recess, a container in said axial recess, said container having a recess therein and having an outwardly directed flange thereon, said last mentioned flange engaging said closure flange a closure for said container, said container closure having a circular rabbet, a bead on said container fitting said rabbet, said container closure engaging the inner wall of said sleeve directly below said bead at the outer end of the sleeve portion axial recess, said container closure having an outwardly open axial recess, a diaphragm closing the inner end of said container closure recess, a diaphragm closing the inner end of the container recess, a medicinal preparation in said container recess, said auxiliary closure including a flexible body having a skirt thereon, said skirt being adapted to engage the neck of a bottle, a tubular piercing member having a bevelled sharpened lower end disposed in said hole, said tubular piercing member being movable when the end of the body of the auxiliary closure is moved inwardly to pierce the diaphragms and form trap doors therein.

ARTHUR E. SMITH.

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