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A. E. SMITH

2,642,870

RECEPTACLE CLOSURE

Filed Aug. 26, 1950

Fig. 1.

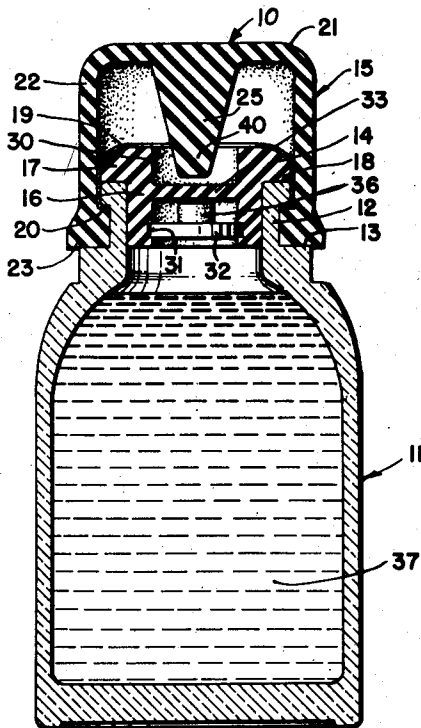


Fig. 2.

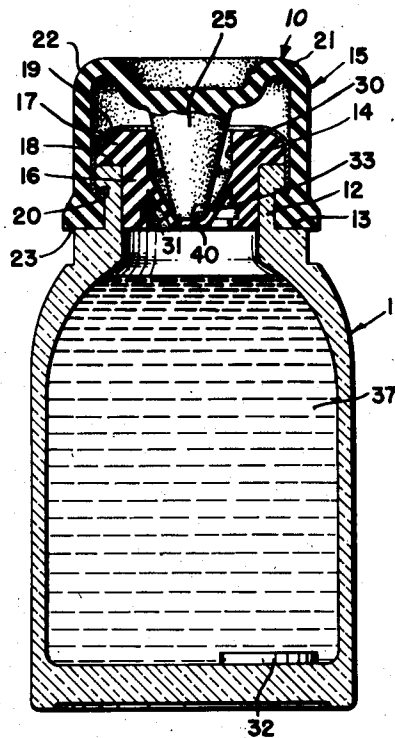


Fig. 3.

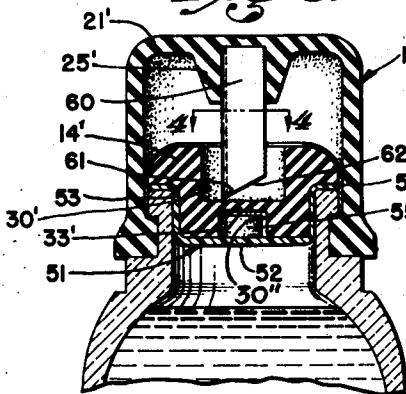


Fig. 5.

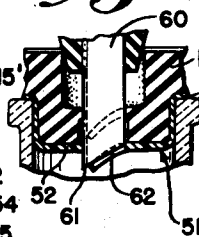


Fig. 4.



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RECEPTACLE CLOSURE

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1 Claim. (Cl. 128—272)

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This invention relates to a container closure device.

The general object of the invention is to provide an improved closure device for a container and wherein the closure device includes a recess for a medicinal tablet and sealing means therefore and wherein novel means is provided for causing release of the sealing means.

A more specific object of the invention is to provide a closure device including a novel inner member.

Another object of the invention is to provide a closure device including a novel outer member.

An additional object of the invention is to provide a closure device including novel inner and outer closure members.

A further object of the invention is to provide a closure device including a novel diaphragm.

Other objects and advantages of the 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 container closure device embodying the features of my invention;

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

Fig. 3 is a fragmentary, sectional view similar to Fig. 1, showing a modification of my closure,

Fig. 4 is a section taken on line 4—4, Fig. 3, and

Fig. 5 is a fragmentary sectional view similar to Fig. 3 and showing the modification.

This application is a continuation in part of my prior application Serial No. 4089, filed January 24, 1948, now Patent No. 2,524,607, granted October 3, 1950.

Referring to the drawing by reference characters, I have shown my invention as embodied in a closure device which is indicated generally at 10. As shown the closure device is arranged on a bottle 11. The bottle has a neck 12 which includes an outwardly directed groove 13.

My closure device consists of an inner member 14 and an outer member indicated generally at 15. The inner member includes a sleeve 16 which has an integral flange 17 resting upon the end 18 of the bottle. A sealing band 19, which may be made of metal or plastic, engages the flange 17 and the upper wall 20 of the groove 13 to hold the parts in place.

The outer member 15 has a top or body 21 which has a downwardly directed integral skirt 22 thereon. The skirt has an enlarged flange 23 at the lower end. The flange 23 is removably

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received in the groove 13 so that normally the parts occupy the position shown in Fig. 1. The body 21 and the skirt 22 are preferably made of a good grade soft, resilient rubber and the body includes a depending, integral, tapering stem member 25 which is made of rubber which cures harder than the rubber of which the body 21 is made so that the member 25 does not flex readily and therefore does not bend when the closure is operated, as will be later described.

The inner member 14 is made of resilient, elastic rubber and the sleeve 16 forms an axial cavity 20. A groove 31 is arranged in the lower end of the cavity wall. In this groove I seat a seal which is in the nature of a disc 32, which is held in place by the resiliency of the sleeve member 16. The cavity 30 is closed by an elastic diaphragm 33 which is integral with the inner member. Between the diaphragm 33 and the disc 32 I arrange a medicinal preparation 36 which is adapted to be discharged into a vehicle 37 in the bottle 11.

The stem member 25 has a lower end 40 which normally is disposed adjacent to the diaphragm wall 33. When the body 21 of the outer member is depressed to the position shown in Fig. 2, the elastic wall 33 will be stretched as shown in Fig. 2, thus allowing the parts to be moved to the position shown to force out and release the disc 32 and allow the medicinal preparation 36 to drop into the vehicle. The freshly prepared solution is then ready for use, and by removing the outer member 15 the operator may insert a hypodermic needle through the diaphragm 33 and withdraw the desired amount of liquid from the bottle without any chance of the contents becoming contaminated.

In Figs. 3, 4 and 5, I show a modification of my invention.

In the drawing parts similar to those previously described are designated by single primed reference numerals.

In the modification the inner body portion 14' has an outer recess 30' and an inner recess 30'' which are separated by a diaphragm 33'. The recess 30' is of substantially the same diameter but is of greater depth than the cavity 30 and the disc 32 is omitted. The lower part of the recess 30'' is closed by a resilient rubber closure member 51 which includes a body portion 52 and an annular side wall 53 with an end flange 54. The closure member 51 is held in place by the inner cap member 14'. A medicinal tablet 55 is arranged in the recess 30''.

The tip 25' of the outer closure member 15'

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has a metal piercing tube 60 embedded therein. This tube, at its lower portion, is cut away and shaped as shown in Figs. 3 and 4 to form a point 61 and beveled cutting edges 62, which latter edges diverge as shown in Fig. 4.

When the member 21' is pushed inwardly the tip 62 will then engage and be forced through the body 52 of the resilient closure. This will cause a V-shaped trap door to be formed in the closure, and the closure being resilient, the door will move towards closed position when the member 60 is withdrawn.

The disc 32 and the cutting member 60 are inert in the solution and do not contaminate the solution.

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

Having thus described my invention, I claim: 20

A closure device comprising an inner body portion and a flexible outer closure, said body portion having a flanged portion adapted to engage the end of the neck of a bottle, said inner body portion having a sleeve portion adapted to fit 25

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within a bottle neck, said sleeve portion having an elastic, normally planar diaphragm intermediate the length thereof, there being an inner and an outer recess in the body portion with the diaphragm closing communication between the recesses, a closure member engaging the inner body portion and including a body portion closing the inner end of the inner recess, the closure member including an annular side wall adapted to engage a bottle neck and an end flange adapted to engage the end of a bottle, a medicinal preparation in said inner recess, said outer closure having an inwardly directed stem movable therewith, and a piercing tube carried by said stem, said piercing tube having a beveled sharpened point adapted to pierce said diaphragm and said closure member body portion.

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Number	Name	Date
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