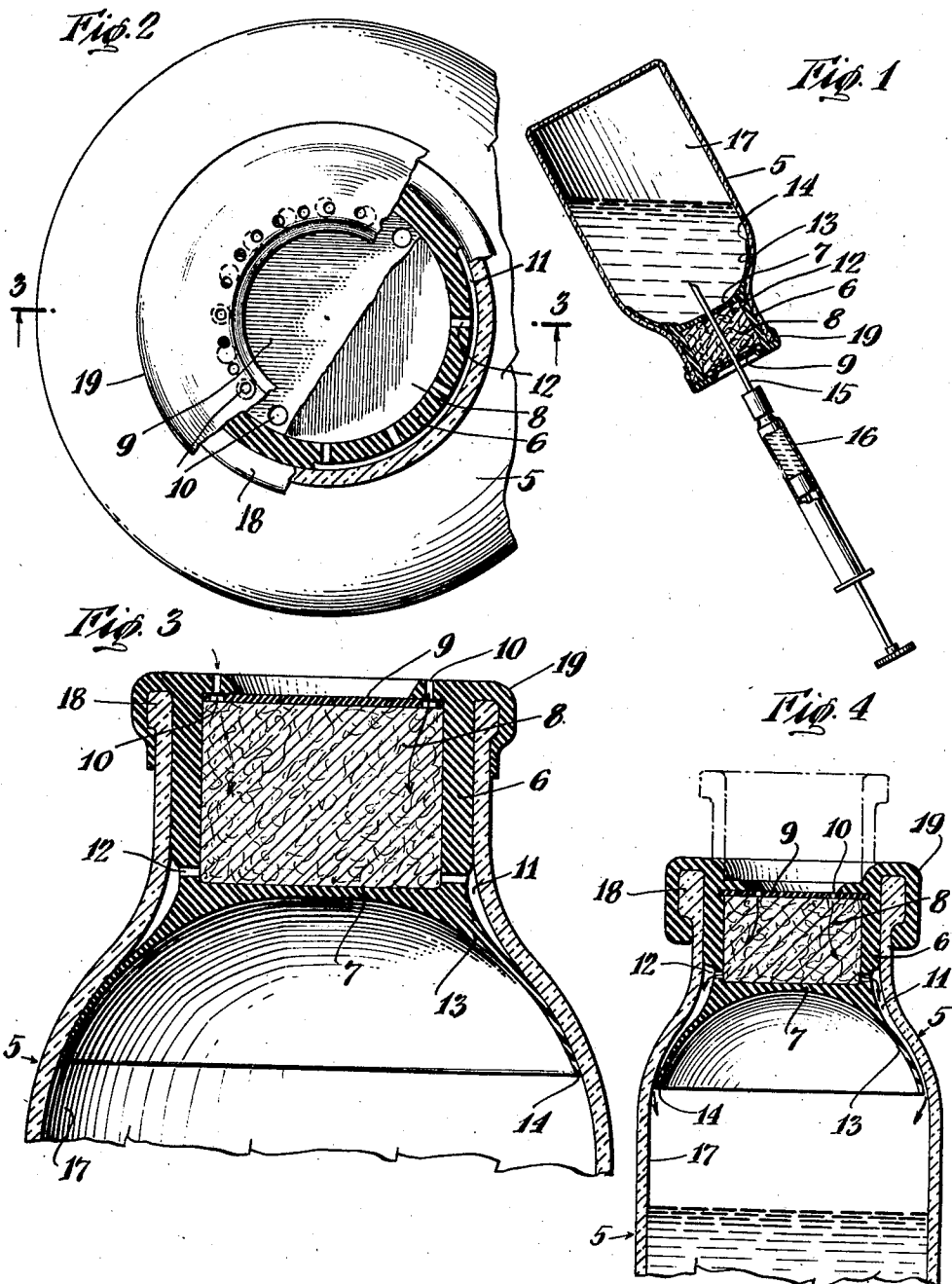


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ANTISEPTIC BOTTLE CLOSURE

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## ANTISEPTIC BOTTLE CLOSURE

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3 Claims. (Cl. 215—38)

This invention relates to a bottle closure and more particularly an antiseptic bottle closure to permit the withdrawal of liquid contents by means of a hypodermic needle and syringe.

5 In injecting various medicines into the body or veins of a patient, it is necessary that the liquid injected be in a highly sterilized and antiseptic condition and free from contamination by dirt, dust, spores or bacteria which are in the  
10 atmosphere under normal conditions.

An object of the invention is to maintain the sterility of the contents of a bottle during and subsequent to frequent withdrawals of said substances.

15 Another object of the invention is to provide an effective air-tight bottle closure of such construction that only filtered air can enter the bottle and come in contact with the contents thereof.

20 Another object is to permit at all times an equilibrium of filtered or sterilized air with the contents of the bottle.

Another object is to maintain equal atmospheric pressure at all times in the bottle, thus allowing rapid withdrawal of the contents.

25 Another object is to provide a closure of such construction that the bottle can be held in any position without loss of fluid or leakage of the contents into the filter thus preventing the contents from being concentrated by evaporation.

30 Although the novel features which are believed to be characteristic of this invention will be more particularly pointed out in the claims appended hereto, the invention itself may be better understood by referring to the following description taken in connection with the accompanying drawing in which specific embodiments thereof have been set forth for purposes of illustration.

In the accompanying drawing,

40 Fig. 1 shows a bottle having inserted therein an antiseptic closure embodying my invention, together with a hypodermic syringe and a hollow needle withdrawing some of the contents of the bottle;

45 Fig. 2 is a top plan view partly broken away;  
Fig. 3 is a sectional view of a bottle with the closure in position;

Fig. 4 is a sectional view of a modification thereof.

50 The numeral 5 denotes a bottle. The closure is made of some pliable, resilient material, preferably rubber, and is circular in form to fit tightly into the neck of the bottle. It has walls 6, a bottom 7 and a chamber 8 containing some  
55 absorbent material, preferably sterilized cotton.

The top of the chamber is covered by a flat, thin sheet of material, preferably rubber, 9, having air vents 10 to permit the ingress of air. At the bottom of the closure there is a groove 11 extending entirely around the closure. This  
5 groove 11 has air vents 12. To the bottom of the closure is secured, and preferably formed integral therewith, a depending flap or flange 13. The periphery 14 of the flange 13 is made  
10 of extremely thin and pliable rubber or similar material.

The operation of the device is as follows. Assuming the bottle to be completely filled with the liquid which it is desired to use, there is  
15 of course no air in the bottle. The fluid is withdrawn, as shown in Fig. 1, by inserting a hollow hypodermic needle 15 attached to the syringe 16 of usual construction. As the fluid is withdrawn, the space occupied by the amount withdrawn necessarily has to be filled up with air. 20 The atmospheric air, by passing through the vents 10, the sterilized absorbent material 8 and the vent holes 12 at the bottom of the closure, passes into the interior 17 of the bottle 5. When  
25 a certain amount of fluid has been withdrawn and the bottle placed in an upright or partially upright position, the incoming air will deflect the lower part 14 of the flange 13 away from the  
30 bottle and allow the air, which has been filtered by coming through the absorbent material, to enter the bottle, as shown in the modified structure in Fig. 4. When the bottle is inverted or  
35 partially inverted, as shown in Fig. 1, the fluid will press the member 14 closely against the side of the bottle and prevent the contents of the bottle from going into the absorbent material. It will thus be seen that the air in the bottle is  
40 at all times in a sterile condition.

It will be noted from Figs. 3 and 4 that the walls 6 of the structure extend upwardly, as  
45 shown in dotted lines in Fig. 4, and are then bent over the lip of the bottle 18 to form a shoulder 19. While the air vent in the upper portion of the structure 6, shown at 10, is in registry with the upper part of the closure, it will be  
50 understood that these vents 10, as shown in Fig. 4, may be placed anywhere in the top of the structure for convenience in manufacturing.

The closure is extremely simple and can be placed in the bottle by any unskilled person and  
55 can be made to fit bottles of any required size. The bottle can be held in any position without the use of a long needle to reach the bottom thereof and all the contents of the bottle can be conveniently removed by using the needle. If

there is any alcohol or other disinfectant solution used to rinse the needle and syringe, it does not get into the contents of the bottle because the needle is thoroughly cleansed as it passes through the absorbent cotton.

We claim:

1. An antiseptic bottle closure comprising a stopper made of soft, pliable, impervious material, said stopper having a chamber filled with absorbent sterilized material, and top and bottom walls above and below said chamber respectively adapted to be punctured by a syringe or the like to permit withdrawal of the contents of the bottle, said stopper having air vents positioned to permit passage of air into said bottle through said absorbent material as the contents of said bottle is removed and means associated with said stopper to prevent escape of liquid into said absorbent material through said air vents when the bottle is held in inverted position.
2. An antiseptic bottle closure comprising a stopper made of soft, pliable, impervious material, said stopper having a chamber filled with absorbent sterilized material, and top and bottom walls above and below said chamber respectively adapted to be punctured by a syringe or the like to permit withdrawal of the contents

of the bottle, said stopper having air vents positioned to permit passage of air into said bottle through said absorbent material as the contents of said bottle is removed and a depending skirt formed on said stopper in a position to engage the inner surface of the bottle and to prevent passage of liquid into said absorbent material through said air vents when the bottle is inverted.

3. An antiseptic bottle closure comprising a stopper made of soft, pliable, impervious material, said stopper having a chamber filled with absorbent sterilized material, and top and bottom walls above and below said chamber respectively adapted to be punctured by a syringe or the like to permit withdrawal of the contents of the bottle, a depending skirt formed on said stopper in a position to engage the inner surface of the bottle, air vents arranged in said stopper to permit passage of air through said absorbent sterilized material and around the outer surface of said skirt into the bottle, said skirt being adapted to close said air vents and prevent reverse passage of liquid into said absorbent material when the bottle is inverted.

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