

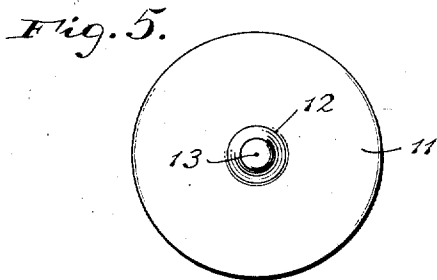
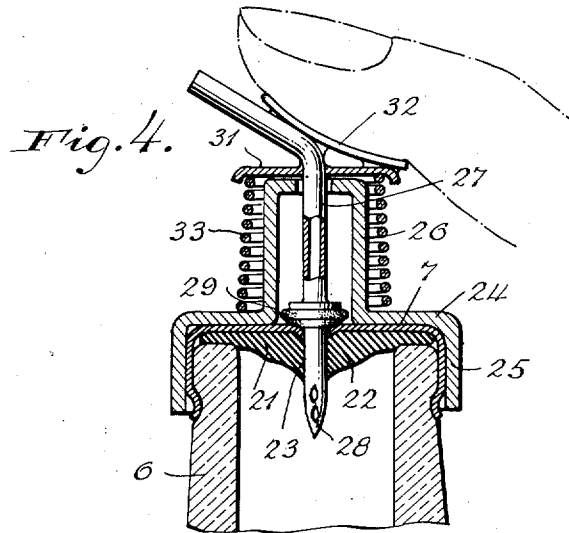
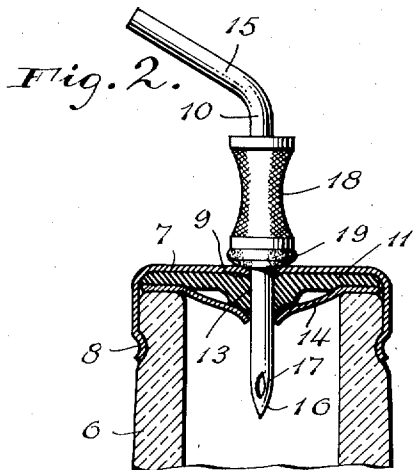
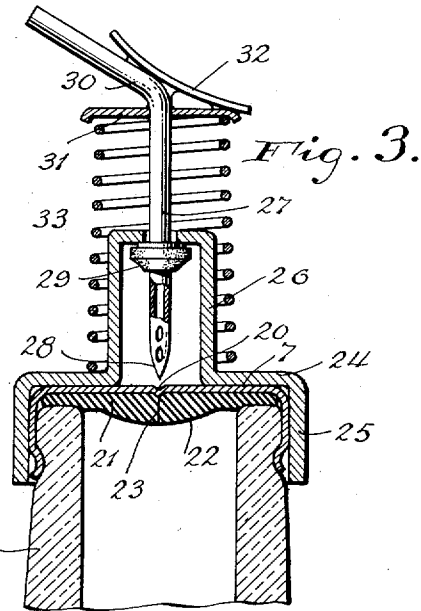
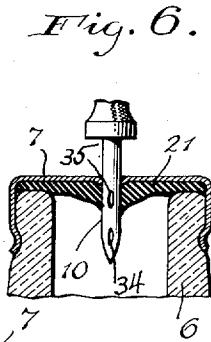
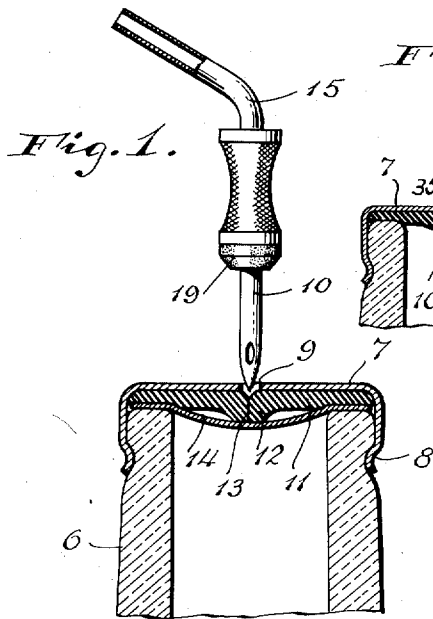
April 19, 1938.

F. G. ADAMS

2,114,583

RECEPTABLE CLOSURE AND DISPENSING DEVICE

Filed March 4, 1936



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UNITED STATES PATENT OFFICE

2,114,583

RECEPTACLE CLOSURE AND DISPENSING
DEVICE

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Application March 4, 1936, Serial No. 67,000

4 Claims. (Cl. 225-22)

This invention relates to improvements in receptacle closures and dispensing devices used in conjunction therewith, and has particular reference to a closure and cooperating dispensing device applicable to receptacles, such as bottles, for containing liquids under gaseous pressure.

An object of the invention is to facilitate the discharge of liquid under pressure from a container with a minimum loss of said pressure, by utilizing, in combination with a closure cap for the container which may remain permanently affixed thereto and which effectively seals the same against the escape of such pressure, a dispensing device having a nozzle made to penetrate said closure cap when discharging some of the contents of the container through said nozzle, and which is removable from said cap at the conclusion of the discharging operation to permit the cap to again seal the container.

Another object is to provide an improved device for dispensing the contents of a bottle without removing the closure cap thereof, and in which a nozzle of said device is designed to readily penetrate said cap preparatory to discharging said contents through the nozzle after which the device may be withdrawn from the closure cap without further discharge of any of said contents.

The above and other objects will appear more clearly from the following detailed description when taken in connection with the accompanying drawing which illustrates preferred embodiments of the inventive idea.

In the drawing:

Figure 1 is a vertical sectional view through a closure cap constructed in accordance with the present invention and showing the same affixed to the neck of a bottle, a dispensing device, shown partially in elevation and partially in section, being also illustrated in a position just prior to penetration of the closure cap by said device.

Figure 2 is a view similar to Figure 1 illustrating the dispensing device in its operative position with a portion of the nozzle thereof projected through the closure cap and into the neck of the bottle.

Figure 3 is a view similar to Figure 1, illustrating a different form of closure cap and dispensing device.

Figure 4 is a similar view illustrating the fully operated position of the dispensing device of Fig. 3.

Figure 5 is a bottom plan view of the resilient washer forming a part of the closure cap.

Figure 6 is a fragmentary vertical section show-

ing the nozzle of the dispensing device in a partially operated position.

Referring more particularly to the accompanying drawing, the numeral 6 indicates the outlet end of the neck of a receptacle such as a bottle of the type commonly employed for containing carbonated beverages and the like, the discharge opening for said bottle being closed by a metal cap 7. This cap may take the form of bottle caps now extensively used, in which the edge of the cap flange is crimped as indicated at 8 for secure attachment to the bottle and may be applied to bottles without altering the usual capping machinery. In accordance with the present invention and as illustrated in Figures 1 and 2, the described in more detail. In place of the ordinarily in the center thereof with a small opening 9 of a diameter sufficient to receive an end of nozzle 10 of a dispensing device later to be described in more detail. In place of the ordinary cork washer commonly employed with caps of this type, the present invention contemplates use of a resilient washer 11 made of a suitable rubber or like material. This washer is substantially flat and is of a diameter approximating that of the interior of the cap 7, and is designed to seat snugly against the interior surface of the central or closure portion of the cap so as to provide an effective seal for the opening 9. Preferably, though not necessarily, the central portion of the washer 11 may be enlarged on one surface thereof as indicated at 12 and this enlargement may take any desired form. Through the center of this enlargement there is provided an opening 13 of pinhole size which is normally closed by the contraction of the material of which the washer is made and this closure is further aided by pressure against the enlargement of the gaseous fluid within the bottle 6. In the manufacture of this washer, the opening 13 may not necessarily be formed therein in which event reliance may be placed upon the nozzle 10 to provide the opening when said nozzle is initially inserted through the cap. When formed in the washer, the opening 13 aligns with the opening 9 in the metal cap so that the nozzle will be directed into said opening when inserting the same through the cap. If desired, a thin flexible disc 14 of foil or other suitable material and of a diameter substantially equal to the washer 11, may be inserted into the cap before the latter is applied to a bottle and after the cap is affixed in position said disc will effectively cover the adjacent surface of the washer 11 and, besides forming an additional seal for the opening 13 to in-

sure against any possibility of escape of contents of the bottle before use, said disc 14 will also protect the washer against any chemical action that the contents of the bottle might have on the material of which the washer is made. When the cap 7 is in position, the washer 11 and disc 14 at their peripheral portions are securely held between the cap and the end of the bottle in the customary manner. The bottle is thus securely sealed and will remain so as long as the cap 7 is affixed thereto, except for the intervals when the dispensing device is inserted through the cap for the purpose of discharging some of the contents of the bottle.

The dispensing device shown in Figures 1 and 2 comprises an elongated tube constituting the nozzle 10 and said tube is bent intermediate its ends as indicated at 15 so that the contents of the bottle may be discharged into a glass without inverting the bottle to an absolute vertical position. The inner end of the nozzle 10 is preferably pointed as indicated at 16 to facilitate its projection through the closure cap and one or more small openings 17 are provided in said pointed end for permitting the contents of the bottle to pass into the nozzle. At an intermediate point of said nozzle between the bend 15 and inner end 16, the same is provided with a finger grip which extends longitudinally of the nozzle and is sufficiently long to permit the same to be readily grasped between the fingers and thumb when inserting the nozzle into the bottle. At the inner end of said grip 18 the same is provided with a rubber washer 19 which acts as a stop to limit the inward movement of the nozzle when being inserted into the bottle and which seats against the cap 7 so as to effectively close the opening 9 to prevent any possibility of escape of the contents of the bottle through said opening when discharging the contents.

In practice, when it is desired to discharge some of the contents of the bottle, the latter is first inverted so as to leave no air space between the liquid and disc 14 and the pointed end of the nozzle 10 is then inserted through the openings 9 and 13 and upon further inward movement the end 16 then punctures the disc 14. As the nozzle penetrates the washer it expands the opening 13 and distorts the portion of the washer immediately adjacent said opening so that the natural tendency of the material of the washer to contract causes it to snugly fit around said nozzle while the latter is in its penetrating position. After the nozzle has been forced inwardly until the washer 19 has contacted the cap 7 as shown in Figure 2, the bottle continues to be held in its tilted or inverted position until a sufficient amount of the contents has been forced outwardly through the nozzle by the pressure within the bottle, whereupon the nozzle may be withdrawn or detached from the closure cap with the bottle still in an inverted position, thus avoiding any possibility of the gaseous fluid within the bottle passing through the nozzle, as it would do if the bottle were first righted and the nozzle then withdrawn. In Figures 3 and 4, a slightly modified form of closure cap 7 is provided in which, instead of forming the opening 9 as in Figure 1, the cap at its center is weakened by scoring the same as indicated at 20 so that it can be readily penetrated by the pointed nozzle of either the dispensing device shown in Figure 1 or that shown in conjunction with the cap of Figure 3. The resilient washer 21 in the latter figure is substantially the same

as the washer 11 except for slight alteration of the configuration of the enlargement 22 in which the opening 23 is formed in alignment with the scoring 20. Also in the modification being described the use of the inner sealing disc 14 is discarded.

The dispensing device of Figures 3 and 4 comprises a metallic base 24 having an annular flange 25 which forms a recess of a diameter substantially equal to that of the cap 7 so that when the device is applied to the bottle it will engage said cap with such friction to hold the device in position but permit of a ready removal thereof when it is desired to utilize the device on some other bottle. The base 24 is also provided with a lateral extension 26 forming a tubular casing closed at one end except for an opening to receive the tubular nozzle 27 so that said nozzle is slidably mounted within said casing, with the outlet end projecting therefrom. Said nozzle at its inner end is pointed as indicated at 28 for easy penetration of the cap 7 and washer 21 and the portion of said nozzle within the extension 26 is provided with a washer 29 which acts as an abutment engageable with the closed end of the casing 26 so as to limit the outward movement of the nozzle. Adjacent its outer end the nozzle 27 is bent as indicated at 30 and contiguous to this bent portion there is secured to the nozzle a disc 31 and finger piece 32, the latter being employed as illustrated in Figure 4 to depress the plunger 27 when causing it to penetrate the closure cap, and the disc 31 providing an abutment for one end of coil spring 33 which is introduced between the base 24 and disc 31 and surrounds the extension 26. Said spring acts to yieldably maintain the nozzle 27 in a retracted or normal position with respect to the cap 7 and when inward pressure is exerted upon the nozzle said spring is placed under tension so that it will afterwards act to withdraw the nozzle from the operative position of Figure 4 when pressure thereupon is removed at the termination of the discharge operation of the contents of the bottle.

In Figures 3, 4 and 6, provision is made whereby the quantity of liquid flowing from the bottle 6 may be regulated. To this end, the inner end of the nozzle 10 may be provided with two or more longitudinally spaced openings 34 and 35 each communicating with the duct extending through the nozzle and each of a size less than the cross sectional area of said duct. With this construction, when the nozzle is inserted through the cap 7 and washer 21 to the position shown in Fig. 6, only the opening 34 will be immersed in the liquid while the opening 35, then disposed between the surfaces of the washer, will be closed by the latter and no liquid will pass therethrough into the nozzle. Thus, a quantity of liquid, less than the capacity of said duct, will flow through the opening 34. Should a more rapid flow be desired, it is only necessary to project the nozzle further into the bottle as shown in Fig. 4 so that the opening 35 will be uncovered, whereupon liquid will flow through both the openings 34 and 35.

What is claimed is:

1. A dispensing device for use in discharging the contents of a receptacle on which a closure cap is affixed and in which said contents are under pressure, said device comprising a base member having frictional engagement with said cap to removably retain the member in position thereon and provided with an extension, a nozzle slidable in said extension for movements to a normal po-

sition spaced from said cap and also to a projected position in which said nozzle penetrates said cap when discharging the contents of said receptacle through said nozzle, and means to yieldably retain said nozzle in its normal position and to withdraw the same from its projected position.

2. A dispensing device for use in discharging the contents of a receptacle having a closure cap affixed thereto and in which said contents are under pressure, said device comprising a nozzle having one end adapted for projection to different degrees through said cap and provided in said end with two or more longitudinally spaced openings each smaller than the cross sectional area of the duct in said nozzle, one of said openings being closed by a portion of said cap when said nozzle is partially projected into said receptacle.

3. In a dispensing means for use with a receptacle having an outlet and in which the liquid contents thereof are under pressure, the combination with a closure for said receptacle including a cap which seals said outlet during the entire discharge of said contents and which is provided with a penetrable portion constituting an entrance into said receptacle, a substantially flat, disc-like resilient washer seated within said cap and having an opening therein normally closed by contraction of the material of said washer and by the pressure from within said receptacle; of a dispensing device including a base member which loosely and removably receives said cap, a nozzle slidably mounted on said base member and operable for insertion through said penetrable portion and constituting the sole means through which said contents are discharged, said nozzle having a closed pointed end and a duct

extending therethrough which has an entrance through the wall of the nozzle at a point spaced from the closed end of the latter, and means to withdraw said nozzle upon completion of a discharge of the contents of said receptacle, the wall of said opening thereupon contracting to seal said cap against leakage of pressure from said receptacle after said nozzle has been removed from said cap.

4. In a dispensing means for use with a receptacle having an outlet and in which the liquid contents thereof are under pressure, the combination with a closure for said receptacle including a cap which seals said outlet during the entire discharge of said contents and which is provided with a penetrable portion constituting an entrance into said receptacle, a substantially flat, disc-like resilient washer seated within said cap and having an opening therein normally closed by contraction of the material of said washer and by the pressure from within said receptacle; of a dispensing device including a base member which loosely and removably receives said cap, a nozzle slidably mounted on said base member and operable for insertion through said penetrable portion and constituting the sole means through which said contents are discharged, said nozzle having a closed pointed end and a duct extending therethrough which has longitudinally spaced entrances through the wall of the nozzle each of which is smaller than the cross sectional area of said duct, and means to withdraw said nozzle upon completion of a discharge of the contents of said receptacle, the wall of said opening thereupon contracting to seal said cap against leakage of pressure from said receptacle after said nozzle has been removed from said cap.

FERDINAND G. ADAMS,

CERTIFICATE OF CORRECTION.

Patent No. 2,114,583.

April 19, 1938.

FERDINAND G. ADAMS.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, second column, line 16, strike out the words and syllable "described in more detail. In place of the ordi-" and insert instead the words and comma main or closure portion of the cap 7 is provided, ; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 24th day of May, A. D. 1938.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.

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2. A dispensing device for use in discharging the contents of a receptacle having a closure cap affixed thereto and in which said contents are under pressure, said device comprising a nozzle having one end adapted for projection to different degrees through said cap and provided in said end with two or more longitudinally spaced openings each smaller than the cross sectional area of the duct in said nozzle, one of said openings being closed by a portion of said cap when said nozzle is partially projected into said receptacle.

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