

Oct. 28, 1941.

N. CORDIS

2,260,968

SIPHON BOTTLE AND CAP

Filed Feb. 4, 1938

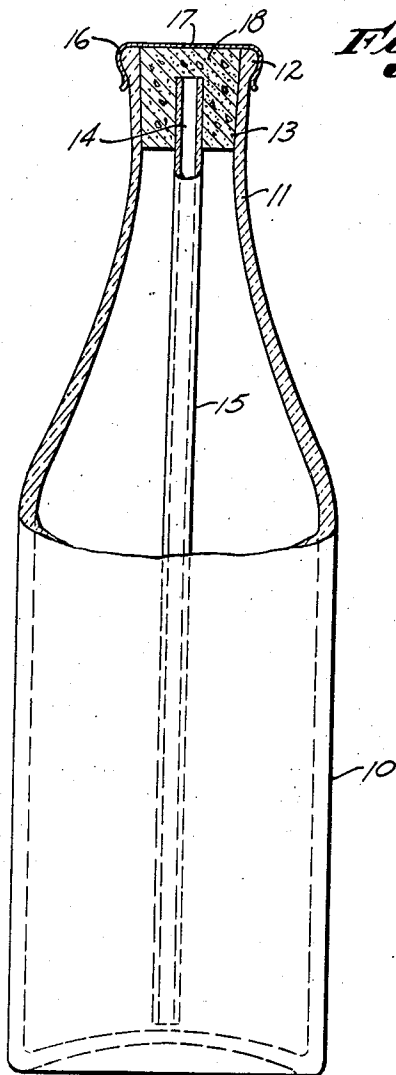


Fig. 1.

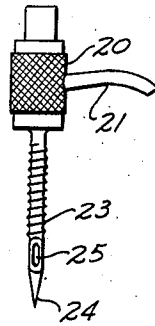


Fig. 2.

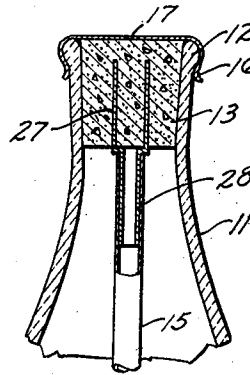


Fig. 3.

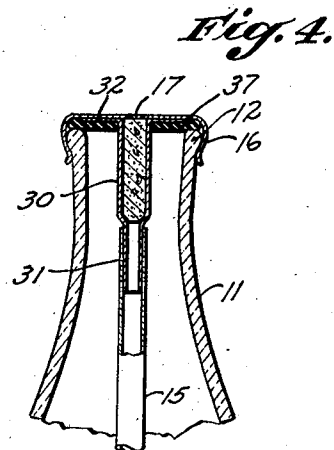


Fig. 4.

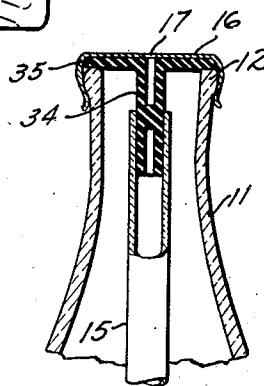


Fig. 5.

BY

INVENTOR.
Nat Cordis,
Robert W. Lulwider
ATTORNEY.

UNITED STATES PATENT OFFICE

2,260,968

SIPHON BOTTLE AND CAP

Nat Cordis, Los Angeles, Calif.

Application February 4, 1938, Serial No. 188,718

3 Claims. (Cl. 215-4)

This invention relates generally to the art of siphoning liquids under pressure from containers and has particular reference to a novel type of container and cap adapted to have a valve member attached thereto for siphoning out the contents of the container. Since siphons are usually employed with bottles, I will illustrate and describe my invention as applied to bottles, it being understood that wherever in the specification and claims I use the term bottle, I mean to include all suitable containers, such as tin cans and the like.

Siphon bottles have long been used as a convenient means for periodically withdrawing small quantities of carbonated liquids in such a manner as to retain the gas pressure within the bottle, so that over a period of time in spite of numerous withdrawals of liquid, the remaining liquid in the bottle does not become flat or lifeless. The usual type of siphon bottle is made substantially as a unit and comprises a bottle with a relatively narrow neck into which a complete siphon attachment is inserted and sealed. In this usual type of siphon bottle, the siphon attachment is inserted in the bottle at the time of bottling and is not removable therefrom, so that the transportation of said bottles from the bottling works to the ultimate consumer presents considerable of a problem due to the irregular shape of the valve mechanism which prevents the bottles being laid upon their side or turned up-side-down as is often desirable when packing or shipping bottles of carbonated liquids.

It is of course impossible to use a cork in a bottle which contains liquid under pressure unless additional holding means is provided to take the strain of the internal pressure, this being particularly true where the bottles are to be subjected to various temperatures, or varying altitudes, since while it may be possible in some instances to successfully cork a bottle under pressure, any increase in temperature or increase in the altitude with its consequent decrease in atmospheric pressure, will cause the cork to blow out.

The common practice in bottling carbonated liquids or other liquids under pressure where siphon bottles are not used is to place the liquids in a flanged bottle under pressure, and then compress a crowned cap over the mouth of the bottle and around said flange, it being possible by utilizing this type of cap to successfully maintain a comparatively high pressure in the bottle. The crown type of cap is well-known to the public since most of the soft drinks, beers, ales, and the like which are marketed today are bottled and

capped in that fashion. Numerous devices have been placed on the market for piercing the aforementioned crown cap and inserting therein a siphon tube and valve adapted to make the ordinary crown cap bottle into a siphon bottle. However, so far as I have been able to ascertain none of these devices has proved satisfactory, principally for the reason that they do not provide a fluid-tight connection between the siphon tube and the cap during the piercing step, or after the siphon is inserted, and the gas pressure in the bottle, therefore, falls to a point where the siphon does not work, or the liquid is substantially flat and lifeless.

It is the major object of my invention to provide a capping means which can be installed in the ordinary crown-cap type of container, so that the advantages of that type of container are retained, while at the same time the assembly is adapted to have a piercing valve mechanism inserted therein to convert the container into a siphon. By use of said capping means, the pressure in the bottle is maintained both during the piercing operation and after the siphon valve has been installed. It is a further object of my invention to provide a bottle assembly of the above-mentioned type which can be manufactured at a very slight increase in cost over the normal cost of manufacturing the bottles themselves, and which can be easily made and installed in the ordinary crown-cap type of bottle.

These and other objects of my invention will become apparent from the following description of preferred and alternate forms thereof, and from the accompanying drawing, in which:

Fig. 1 is a vertical elevation partially in section of one form of bottle and cap assembly made according to my invention,

Fig. 2 is a side elevation of a suitable piercing valve mechanism adapted to be used with the siphon bottle of my invention,

Fig. 3 is a partial elevational section of a modified form of capping means,

Fig. 4 is a partial elevational section of another form of capping means, and

Fig. 5 is a partial elevational section of a fourth form of capping means.

Referring now to the drawing, and particularly to Fig. 1 thereof, the numeral 10 indicates a container of suitable material, such for instance as a bottle of conventional size and shape provided with a generally cylindrical lower portion and a reduced neck portion 11, which is provided with a flange 12 around the mouth or open end thereof. A stopper 13 made of cork, rubber, or other re-

silient compressible material is inserted in the neck of the bottle in the usual manner. In the form shown in Fig. 1, the stopper 13 is provided with a cylindrical cavity or bore 14, extending upwardly from its lower face to a point adjacent to but spaced from its upper face, there being sufficient cork, or other material as the case may be, between the end of the bore 14 and the top of the stopper, which portion I will designate by the numeral 18, to withstand considerable pressure from the inside when supported as hereinafter described. The bore 14 is preferably, but not necessarily, centrally disposed. A siphon tube 15 made of glass or other suitable material is inserted in the bore 14 and is of such a diameter as to form a snug fit therein. The length of the tube 15 is such that its lower end is spaced a slight distance above the bottom of the bottle 10 when the stopper 13 is in place in the neck of the bottle as illustrated.

The upper face of the stopper 13 is substantially flush with the mouth of the bottle and a crown-cap 16 is fastened on the mouth of the bottle by crimping it over the flange 12 in the usual manner. The cap 16 may be of the conventional type, except that it is provided with an aperture 17 which is aligned with the siphon tube 15 and is preferably somewhat smaller in diameter than the internal diameter of said tube, although this is not absolutely essential. When the siphon bottle is assembled in this fashion, it comprises a siphon tube 15 terminating within a resilient stopper 13 which insures a fluid-tight connection around the tube 15 in the neck of the bottle 11, and a cap 16 crimped around the flange 12 to withstand any reasonable pressure within the bottle, the cap 16 being provided with an aperture 17 which is co-axial with the siphon tube 15.

Referring now to Fig. 2 wherein is illustrated one suitable form of piercing valve structure, the numeral 20 indicates a substantially cylindrical housing of any suitable material, containing a suitable valve and passage (not shown) since any suitable type of control valve mechanism may be utilized. The housing 20 may be provided with a lateral spout or discharge tube 21 and a depressible control button or valve. On the lower end of the housing 20, an elongated tubular stem 23 with a sharpened point 24 is provided, the stem 23 having an aperture 25 near its lower end preferably spaced back a short distance therefrom. Stem 23 may be threaded as shown in Fig. 2, or it may have smooth sides and rely solely upon the point 24 for insertion, as hereinafter described.

In the operation of my device as a siphon bottle, the point 24 of the stem 23 is inserted in the aperture 17 of the cap 16 and is pushed and screwed, down through the portion 18 of the stopper 13 and into the upper end of the tube 15, which as previously mentioned is housed within the bore 14 of the stopper 13. As will be evident, the aperture 25 in the stem 23 makes fluid connection with the interior of the tube 15 when it has been moved downwardly a sufficient distance to pass through the portion 18 of the stopper. By providing the portion 18 of the resilient stopper, a fluid-tight connection is insured around the stem 23, during and after the piercing operation, so that no gas can possibly escape therearound. It will also be noted that the base of the valve casing is adapted and arranged to be drawn into engagement with the sealing cap by the thread on the stem thus perfecting the seal against the escape of the pressure from the bottle. The

thread on the stem not only facilitates the sealing of the opening caused by the stem, but also prevents undue disruption of the sealing member during insertion of the stem thus further perfecting the seal.

When it is desired to withdraw some of the liquid from the bottle 10, it is merely necessary to depress the button at the top to open the valve connection between the spout 21 and the stem 23, and thence through the aperture 25 into the tube 15 of the bottle. The pressure in the bottle above the liquid will then, of course, cause the liquid to flow upwardly through the siphon tube and out through the spout 21 in the usual manner.

It will thus be seen that I have provided a bottle and cap therefor, adapted to have inserted therein a valve mechanism which when the assembly is completed provides satisfactory siphoning action and insures a fluid-tight connection between all parts. Furthermore, by providing the aperture 17 in the cap 16, I make it a relatively easy and simple matter for anyone to insert the siphon valve stem into the bottle cap without the necessity of employing tools or other assistance. On the other hand, the aperture 17 is sufficiently small, and the section 18 of the stopper is sufficiently thick so that a considerable pressure can be maintained in the bottle without blowing the portion 18 through the aperture 17.

Referring now to Fig. 3, the numeral 11 again represents the neck of a conventional bottle, the numeral 12 indicates the flange around the mouth of the bottle, and the numeral 16 denotes a crown-cap crimped around the flange 12. Likewise, the numeral 15 indicates a siphon tube, the numeral 13 designates a stopper, and the numeral 17 again indicates an aperture in the top of the cap 16. In this form of my device, the bore 14 is omitted from the stopper 13, and instead a cylindrical sleeve 27 of metal or other suitable material is forced up into the stopper. The sleeve 27 has a downwardly-extending portion with a reduced diameter indicated by the numeral 28, it being noted that the upper end of the sleeve 27 terminates some distance below the upper face of the stopper 13, and that the inside of the sleeve 27 is filled with cork or other resilient material, which has not been displaced by the insertion of the sleeve.

In this form of my device, I prefer to form the tube 15 out of Cellophane or some other equally rugged and cheap material, which is preferably transparent, and can be secured by any suitable means such as cement to the reduced portion 28 of the sleeve 27.

The type of valve assembly illustrated in Fig. 2, can also be used in this form of my invention, although as will be evident from the drawing, it is necessary that the stem 23 be longer in this case than it was in the case of the stopper apparatus illustrated in Fig. 1. The stem 23 is either pushed or screwed down through the cork within the sleeve 27 until the aperture 25 is beneath the lower face of the stopper so as to make fluid connection with the tube 15. As before, the aperture 17 in the cap 16 makes it a very simple matter for the operator to insert the sharpened point 24 into the stopper with a minimum of effort, and the resilient material of the stopper insures a fluid-tight connection at all times.

Referring now to Fig. 4, the same numerals indicate the same parts as in the preceding forms of my invention, to wit: a bottle neck 11 with its flange 12, cap 16 with its aperture 17,

and tube 15 extending down into the bottle 10. In this form of my invention, a sleeve 30 is provided, which is similar to the sleeve 27 of Fig. 3 in that the major portion of it is cylindrical, and it is provided with a reduced portion 31, upon which the tube 15 is secured. However, in this case, the sleeve 30 is provided with a horizontal outwardly-extending apertured disc 32 on its upper end which is adapted to fit over a sealing washer or gasket 37 and under the cap 16, it being noted that the interior of the sleeve 30 is filled with cork, rubber, or the like, so as to insure a fluid-tight connection around the stem 23 when it is inserted through the aperture 17 and into the sleeve 30.

In Fig. 5, I have shown still another modification of my invention, and it will be seen that I again provide a bottle with a neck 11 provided with a flange 12 around which a cap 16 with an aperture 17 is fastened. A sleeve 34 which is provided with a horizontal outwardly-extending disc 35 similar in shape to the disc 32 on the sleeve 30 of Fig. 4. The sleeve and disc in this instead of being formed of metal as in the form shown in Fig. 4, are preferably made out of rubber or similar material, the disc being securely fastened over the mouth of the bottle by the cap 16. The sleeve 34 is provided with a pair of co-axial bores extending inwardly from its upper and lower faces, there being a solid wall of rubber between their inner ends to provide an effective seal between the tube 15 and the atmosphere.

The operation of this form of my device is similar to that already discussed; the stem 23 of the valve mechanism is inserted through the aperture 17 of the cap 16 and the upper bore in sleeve 34, and is then screwed or punched through the intermediate wall between the bores, so that it passes into the lower bore of the sleeve and hence makes fluid connection with the tube 15 in the manner before described.

As will be seen from the foregoing, in each of the forms of my invention a fluid-tight connection between the stem of the valve mechanism and the stopper assembly is insured during and after the piercing operation. Likewise, in each form the cap 16 is provided with an aperture, which is preferably centrally disposed, which practically eliminates all trouble and effort in the insertion of the valve which converts the bottle into a siphon. Furthermore, I have provided a bottle which has the siphon tube already in place and one which, therefore, can be readily marketed to the general public who do not have to employ a complicated valve mechanism with an attached siphon tube, but merely need a very

simple valve mechanism with a piercing stem to convert the bottle into a siphon. However, it will be understood that if desired, the siphon tube may be omitted and the stem of the valve mechanism lengthened so that it serves as a siphon tube.

While I have illustrated various specific forms of my invention in the drawing and foregoing description, it is to be understood that they are illustrative only, and are not to be deemed to limit the scope of my invention as defined in the appended claims.

I claim as my invention:

1. The combination with a container having a discharge neck, of a penetratable sealing member for said neck; a metallic retaining cap fitting over said neck and holding said sealing member in place, said retaining cap having a central perforation; a discharge tube secured to said sealing member in registration with the opening in said cap and extending into the lower portion of the container; and a discharge valve having a threaded stem adapted and arranged to penetrate said sealing member and enter said tube, the base of said valve casing being shaped and arranged to be drawn into sealing engagement with said cap by said thread.

2. The combination with a container having a discharge neck, of a penetratable compressible sealing member for said neck; a metallic retaining cap fitting over said neck and holding said sealing member in place, said retaining cap having a central perforation; and a discharge valve having a threaded stem adapted and arranged to penetrate said sealing member, the base of said valve casing being shaped and arranged to be drawn into sealing engagement with said cap by said thread.

3. In a container having a discharge neck, a penetratable sealing member in said neck, a metallic retaining cap fitting over said neck and holding said member in place and said cap having a central perforation adapted to permit the passage of a sealing member piercing stem of a discharge valve therethrough; said sealing member comprising a hollow stem arranged axially in the neck of said bottle and spaced from the sides thereof, means sealing said stem intermediate the ends thereof, and a siphon tube fitting over said stem in frictional engagement therewith, said siphon tube frictionally engaging said stem and extending upwardly over the same to a point where it surrounds at least a part of that portion of said stem wherein is located said stem sealing member.

NAT CORDIS.