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CLOSURE FOR CONTAINERS FOR AERATED BEVERAGES

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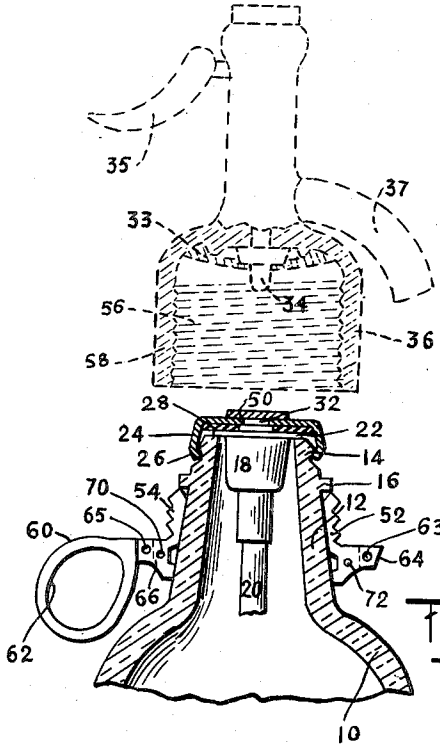


Fig. 1

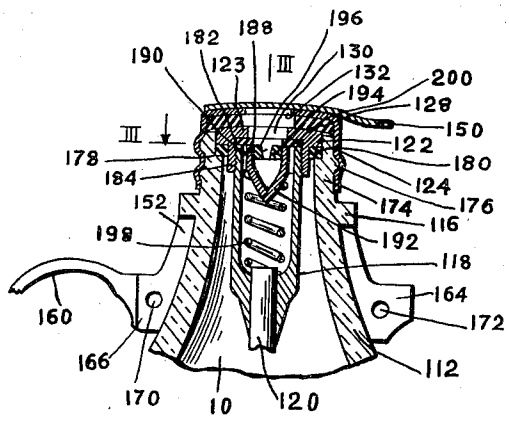


Fig. 2

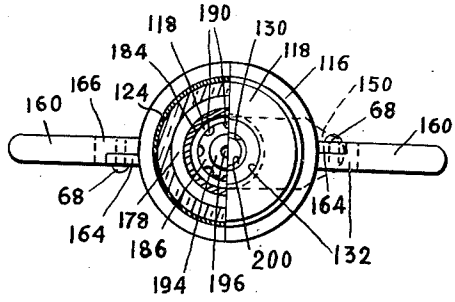


Fig. 3

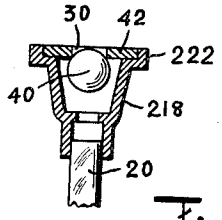


Fig. 4

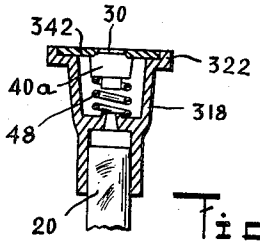


Fig. 5

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CLOSURE FOR CONTAINERS FOR AERATED BEVERAGES

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1 Claim. (Cl. 215—74)

The present invention relates to containers for aerated beverages and particularly to containers for aerated beverages such as soda-water in which the gas pressure is relatively high.

Aerated beverages, such as soda-water in which the gas pressure is relatively high are generally in bottled siphons. These siphons comprise a glass body into which is inserted the siphon-tube including a valve and said siphon-tube is generally held in position by means of a discharge head screwed on to a split collar applied externally to the glass body below an annular shoulder which serves as a stop for said collar, said discharge head having a spout or nozzle and comprising a stem connected to an external lever, said stem being adapted upon depression of said lever to unseat the siphon valve and thus allow the aerated beverage to be discharged.

Although such soda-water siphons may be readily disassembled for cleaning and sterilization purposes after the contents have been discharged, their general construction, particularly with regard to the discharge head and the siphon-tube, makes the cleaning and sterilization operations troublesome and relatively costly and there is, moreover, a considerable risk of breaking the siphon-tube. Even if such sterilization and cleaning operations are carried out before the soda-water siphon is recharged, the fact that each bottle carries its own head and that this head forms a convenient means of transporting the bottles individually gives rise to the following disadvantages: In the first place, a considerable amount of capital is tied up in the heads and, secondly, in the process of delivering the soda-water siphons to the individual consumer, the handling to which the heads including the spout are subjected may undo to a considerable extent, the effect of the cleaning and sterilization processes carried out in the bottling plant. Moreover, the spout is exposed to the atmosphere and consequently to any dust, dirt or microbes with which the atmosphere may be charged, so that after bottling and until use is made of the soda-water siphon, the spout may, apart from the handling to which it is subjected, become dirty or infected on the inside.

The principal object of the present invention is to provide a new closure for soda-water siphons and similar containers for aerated beverages which closure shall not necessitate for its efficacy the permanent present of a discharge head while permitting the ready and easy application at any time of any form of discharge device, including the standard type of discharge head.

A further object of the present invention is to provide a container of the type described in which the siphon-tube is secured in position by a detachable cap having a central aperture corresponding to the aperture of the valve housing of the siphon tube, said cap being so formed and dimensioned as to fit readily within the depending skirt of the standard discharge head.

Another object of the present invention is to provide in a container of the type described, and in combination with our novel closure, lifting means whereby the container may be lifted and transported without touching said closure, and said lifting means may likewise serve as securing means for a standard discharge head. Other objects and advantages of the present invention will become apparent in the course of the following detailed description.

In the drawing:

Fig. 1 is a vertical section of the upper portion of a siphon container fitted with our novel closure and lifting means, a standard discharge head being likewise shown in said figure partly in section and in a position in which it is about to be applied to the container with the improved closure.

Fig. 2 is a vertical section of the upper portion of a siphon container illustrating a modified embodiment of our invention.

Fig. 3 is a plan view of the container of Fig. 2 partly in section along the line III—III of Fig. 2.

Figs. 4 and 5 are vertical sections of the upper portion of the siphon-tube showing alternative types of valve.

With reference to Fig. 1, the container comprises a body 10 generally of glass and having a neck 12 which is, in general, of frusto-conical shape and is provided with an annular shoulder 16 against which the upper end of the split collar (shown in modified form and described in detail hereinafter) is adapted to abut. The container is also generally provided around its mouth with a lip 14. Within the container there is positioned a siphon-tube 20, the upper end of which carries a valve housing 18 which at its free end has a flange 22 adapted to rest on the free end of the neck 12, or in an annular recess provided at said free end.

As best seen in Fig. 4, the free end of the valve housing 18 is closed as by a plate 42 having a central opening 30 which is normally closed by a valve body 40. The valve housing is usually held in position by means of the discharge head

36, Fig. 1, which is screwed on to the split collar before-mentioned and has a compressible washer 33 which contacts with the top or plate 42 of the valve housing 18 and holds the later in position. The standard discharge head has a valve operating stem 34 suitably coupled to an external lever 35 and adapted upon depression of said lever 35 to pass through the opening 30 of valve housing 18 and unseat the valve.

According to the present invention the valve housing 18 is secured in position by means of a cap 24, which may either be of the crown type as shown in Fig. 1 in which case the skirt of the cap or portions thereof are bent inwardly underneath the lip 14, or the cap may be of the screw type as will be later described in connection with Fig. 2. In either event said cap has a central aperture 32 concentric with and preferably somewhat larger than, the opening 30 of the valve housing and there is interposed between the cap 24 and the flange 22 a compressible washer 24 so as to provide a gas-tight seal. In practice, the aperture 32 of the cap 24 is preferably covered by a wafer or strip of paper or the like indicated at 50, which is affixed to the outside of the cap after the container has been filled and preferably as shown in Fig. 2 projects beyond the cap, so as to enable it to be taken by the fingers and pulled off when it is desired to use the siphon.

The novel closure construction so far described does not provide any convenient means for lifting the container. Such means are, in practice, necessary inasmuch as the soda-water siphons and the like are generally delivered to the retailers or to individual purchasers in nested crates so that the siphons can only be withdrawn by taking hold of them in the neighbourhood of the neck. As previously pointed out, the usual discharge head 36 provides a convenient means for lifting, inasmuch as generally the lever 35 projects from the head in a direction diametrically opposite to that of the spout 37, Fig. 1, and thus the head offers convenient gripping arms. In accordance with one of the objects of the present invention, convenient lifting means are provided for the container fitted with our improved closure and in one embodiment these means may represent a modified form of the usual split collar for securing the discharge head. According to this embodiment which is illustrated in Fig. 1, a split collar 52 is provided, the inner surface of which is shaped so as to conform substantially to the outer surface of the neck portion 12 of the container 10, below the retaining shoulder 16. The outer cylindrical surface of the split collar has cut in it a screw thread 54 adapted to receive the female screw thread 56 formed on the inside of the depending skirt 58 of a standard discharge head. Below the screw thread 54 each half of the split collar has a radially projecting arm 60 with an enlarged end in which a fingerhole 62 is formed. At a point diametrically opposite to said arm 60 each half of the split collar has a projection 64 adapted to lie against a correspondingly shaped portion 66 formed near the root of the arm 60 of the other half of the collar. Said root portion and said projection are provided with a hole 65, 63 tapped to receive a securing screw as shown at 68 in Fig. 3. At a point on the root portion on the side of the tapped hole 65 remote from the arm, a counter-sink 70 is formed adapted to receive a tooth 72 formed on a corresponding position of the projection 64 of the other arm collar, so as to facilitate the proper alinement of the two parts before the discharge head is put on.

It will readily be understood that only one of the holes 63 or 65 need be tapped, the other being then made large enough to allow the screw to pass freely therethrough and preferably being counter-sunk at its exposed end. Similarly, one half of the collar may carry teeth both at the root portion and on the projection, the other half collar then carrying counter-sinks in the corresponding position. In like manner the arm 60 may be merely a downwardly curved arm instead of having an enlarged and perforated end.

In the modified form of our closure illustrated in Figs. 2 and 3, the cap 124 is designed to be screwed on to the extremity 174 of the neck 112 of the container 10. Said extremity is therefore provided with a moulded screw thread indicated at 176 in Fig. 2, the stop-shoulder for the lifting means being formed below said moulded screw thread 176 as indicated at 116. In this form there is preferably provided on the inside of the mouth of the container, an annular recess 178 in which the flange 122 of the valve housing 118 may fit there being preferably inserted between said flange and the bottom of said recess a compressible washer 180, in order to secure as gas-tight a joint as possible. For the like purpose, a compressible washer 128 is interposed between the cap 124 and said flange 122.

In Fig. 2, the lifting means is similar in construction to that shown in Fig. 1, except that in the modified form shown in Fig. 2, no screw thread is provided. Consequently, the registering counter-sinks 70 and teeth 72 may be omitted. Thus, as shown in Fig. 2, the lifting means comprises two halves each of which include a split collar portion 152 adapted to fit around the neck 112 and below the shoulder 116 and having at one point a radially projecting arm 160 which may be merely curved as shown or may have a fingerhole similar to the finger-hole 62 of the embodiment of Fig. 1. The modified lifting means has likewise at a point diametrically opposite said arm 160 a projection 164, adapted to fit against the root portion 166 of said arm 160 and said root portion and said projection are drilled and tapped as indicated at 170 and 172 to receive a fixing screw 68, shown in Fig. 3. It will readily be understood that the width of the arms 60 and 160 is greater than the thickness of the root portion or that of the projection 64 or 164 so that in the assembled condition of the lifting means the outer surface of the projections of the two halves will be substantially flush with the side face of the arm 60 or 160 on their own side.

In Figs. 2 and 3 a preferred valve construction is shown which comprises a valve housing 118 secured at one end to a siphon tube 120 and having cut on the outside of its other end a screw thread so that a cover 182 having an internally threaded depending skirt 184 may be screwed on to said housing. Said depending skirt 184 is formed on one side of the cover 182 between the outer edge of the cover and the central opening 130, so that the flange 122 is formed between said skirt and said outer edge and an annular portion 123 between said skirt and the edge of the opening 130.

Within the housing 118 there is positioned a valve comprising a body-portion 186 having a substantially cylindrical upper portion 188 on the outside of which a plurality of circumferentially spaced grooves 190 is cut. Said valve body

likewise comprises a central guide member 192 formed on one end of a cylindrical portion and lying within the circle of grooves. The body portion is centrally hollowed from the end of the cylindrical portion remote from the guide member and in the cavity so formed there is fitted a thrust member 194 having a central perforation or recess 196 adapted to serve as a guide and seating for the free end of a stem or similar valve depressing element of a discharge device.

Said valve body 186 is normally urged towards the annular portion 123 of the cover 182 by means of a spring 198 seated between the bottom of the housing 118 and the annular portion of the cylindrical part of the valve body surrounding the guide member 192.

In practice it has been found convenient to interpose between the free end of the housing 118 and the cover 182 a gasket 200 and the aforementioned annular portion of the cover, as well as said gasket should project inwardly a sufficient distance to cover the ends of the grooves 190. In these circumstances it will be clear that normally the valve 182 is held closed by means of spring 198 as well as by the pressure of the gas from the aerated beverage, but may be depressed when desired so as to uncover the grooves 190 through which the beverage will then escape after rising up the tube 120, said beverage passing then along the grooves 190 around the stem or other depressing element, through the central opening 130 of the valve cover 182 and through the aperture 132 of the closure cap 124, the protecting strip 150 having, of course, been torn away or perforated previously to the insertion of the valve-depressing member.

It will be clear that although the invention has so far been described in relation to the valve shown in Figs. 2 and 3, the scope thereof is not to be considered as limited to such valve construction. In effect other types of valves commonly employed in the valve housings attached to siphon-tubes may equally conveniently be employed in connection with the improved closures. For example, the ball valve illustrated in Fig. 4 comprising the housing 218 having a flange 222 in its upper end and closed by means of a cover plate 42 and containing a ball 40 may likewise be used, although as will be appreciated such a valve is held in its closed condition exclusively by the gas pressure obtaining in the container so that, if the gas pressure sinks below a critical point, the ball valve will be slack and thus allow of accidental spillage.

In Fig. 5 there is shown a spring-urged valve somewhat similar to that shown in Fig. 2, except that in Fig. 5 no grooves are provided on the valve body and that the cover plate 342 is secured to the flange 322 of the housing 318 by soldering or welding instead of by screwing. In this form of valve, no gasket is interposed between the valve body 40a and the cover plate 342.

In practising our invention we insert into the washed and sterilized container 10 a washed and sterilized siphon-tube 20 and valve 18, and we then apply the compressible washer 28 or 128 and the cap 24 or 124, as the case may be. The container is now ready for filling and is filled with a high pressure aerated beverage in the usual manner, by forcing the beverage through the aperture 32 past the valve and down the tube 20. Upon removing the container from the filling machine, the pressure within the container will close the valve and hold it closed either with or without the assistance of a spring. The protective cover-slip 50 or 150 may then be applied so as to prevent dust and dirt or the like from getting on to the valve. The lifting means is then secured around the neck of the container as already indicated and the container is ready for shipment. In order to use the container, the ultimate consumer will need to have some form of discharge device and it is assumed for the purposes of this description that the ultimate consumer will have this individual standard discharge head. On receiving the filled container, the consumer may tear off the protective strip 50 and screw onto the collar 52 the standard head 36, which since it remains in his possession may be cleaned and sterilized by himself and kept in a suitable place where it will not be exposed to dust, dirt and the like. Moreover, such standard head will be handled only by the actual consumer or with his knowledge and consent and not by transport and delivery employees. When the container is for all practical purposes empty, the consumer will remove the discharge device and he may, if he so desires, remove the cap 24 or 124 or at least, and particularly if the crown type of cap is used, render it useless as a closure for the refilled bottle, thus ensuring that on being returned to the bottling plant a new, clean cap will be applied. Even if the consumer does not render the cap useless as, for example, when screw caps as shown in Fig. 2 are employed,, the washing and sterilizing operations are rendered so easy and simple by means of the present construction that the bottlers could readily be relied upon to carry them out consistently and properly. When the empty or partly empty containers are returned to the bottling plant, the cap may be removed thus allowing of the extraction of the siphon unit for cleansing purposes and thereafter a fresh cap or the old cap after cleaning may be readily reapplied and the container refilled.

From the foregoing, it will be seen that our novel type of closure not only overcomes the difficulties associated with the practice of applying individual standard discharge heads to the soda-water siphons and thereby ensures that the consumer will receive his container in a clean and sanitary condition, but it also greatly facilitates the task of the bottlers in cleaning and washing and reassembling the returned empties.

What we claim is:

In a siphon bottle and similar container for storing and dispensing aerated liquid, having a neck comprising an outer threaded portion, and an inner annular shoulder formed in said neck; in combination, a valve housing within said neck, a siphon tube carried by said valve housing and extending into said bottle, said valve housing having outer screw threads formed therein, a cover positioned within said neck, the top of said cover being substantially flush with the top of said neck, said cover comprising a threaded depending skirt meshing with the outer screw threads of said valve housing, an outer flange and an inner annular portion, said skirt constituting a continuation of said outer flange and of said inner annular portion; a valve body situated within said housing and comprising a bottom portion constituting a guide member and a cylindrical upper portion having a plurality of outer grooves formed therein, said cylindrical upper portion being adapted to closely contact the inner walls of said valve housing and reciprocate therein along the axis of said neck; a thrust member within the upper portion of the valve body, said thrust member having a tapered recess formed

therein and adapted to serve as a guide for a valve depressing element, a spring situated within said housing and pressing said valve body toward the inner annular portion of said cover, an annular gasket situated between the upper portion of said valve body and the inner annular portion of said cover and carried by said valve housing, said gasket covering the ends of said outer grooves, a washer carried by the inner shoulder of said neck and engaging the outer flange of said cover to support said cover, a cap screwed upon the threaded portion of the neck, and another annular washer between said cap and said cover.

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