Aug. 31, 1937. H. LONGWAY 2,091,737

LIQUID DISPENSER

Filed Sept. 11, 1936

Fig. 1.

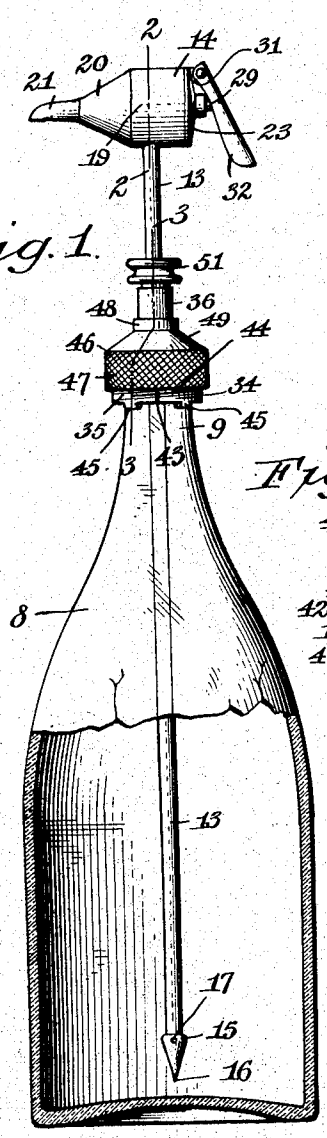


Fig. 2.

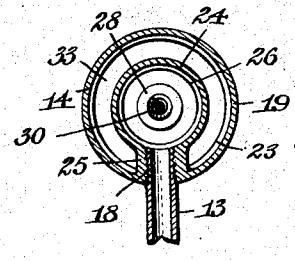


Fig. 3.

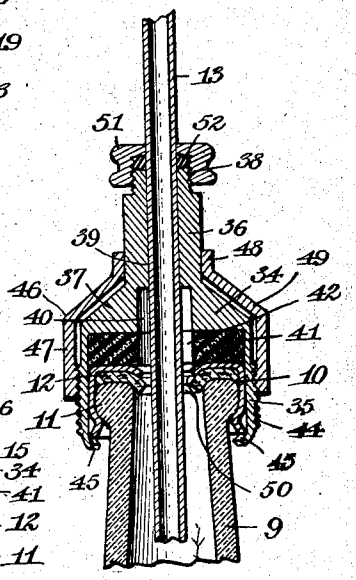


Fig. 4.

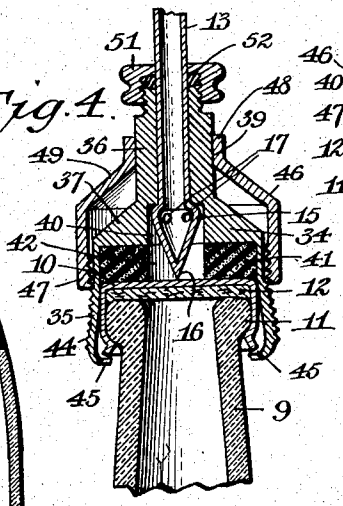


Fig. 5.

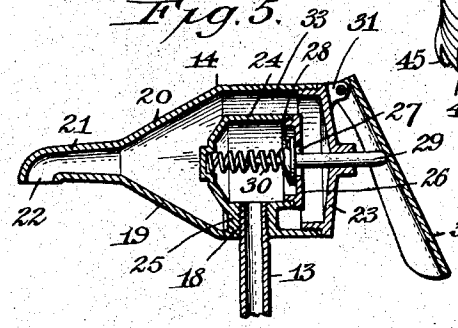


Fig. 6.

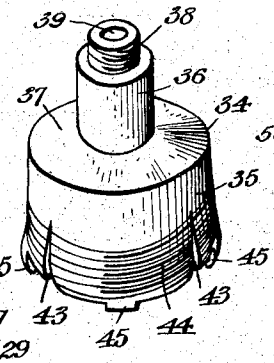
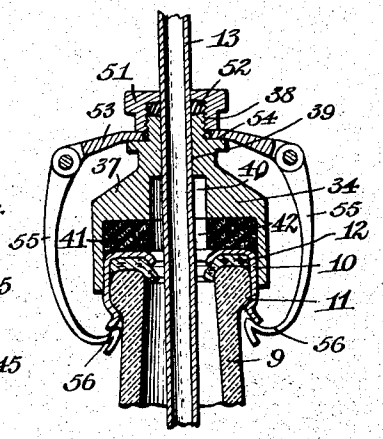


Fig. 7.



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LIQUID DISPENSER

Henry Longway, Buffalo, N. Y.

Application September 11, 1936, Serial No. 100,323

8 Claims. (Cl. 225—22)

My invention relates to improvements in liquid dispensers, and more particularly to means for dispensing charged liquids from bottles sealed by means of the conventional metallic caps; the device being of that type in which the cap is penetrated and a seal provided by the attachment of the device to the bottle so as to prevent the escape of the carbonic-acid or other gas with which the liquid is charged.

The primary object of my invention is to provide means to more effectively seal the dispensing device when applied to a cap, so as to maintain the contents of the bottle, after removing any quantity of liquid therefrom, in usable and palatable condition.

Another object of my invention is to provide simple and effective valve-control mechanism whereby the dispensing of the liquid can be effected in a simple and efficient manner, and to provide a device which can be easily applied and as readily removed for re-use on other bottles.

The invention also has for its object to provide a device which will be attractive when secured to a bottle, and by means of which the bottle can be conveniently tapped without removing the metallic cap therefrom.

With these, and other objects in view, to appear hereinafter, my invention consists in the novel features of construction and in the arrangement and combination of parts to be hereinafter described and more particularly pointed out in the subjoined claims.

In the drawing;

Fig. 1 is a side elevation of the device as it appears when applied to a bottle, the bottle being broken away to better illustrate the length and position of the discharge or dispensing tube forming part of the device.

Fig. 2 is an enlarged cross-section, taken on line 2—2, Fig. 1.

Fig. 3 is an enlarged vertical section, taken on line 3—3, Fig. 1, showing the tapping means of my improved device as it appears when connected to and sealing the bottle.

Fig. 4 is a similar view, showing the connecting means positioned loosely upon the bottle preparatory to securing the same thereto, the discharge or dispensing tube being shown in the position it assumes preparatory to piercing the bottle cap.

Fig. 5 is a longitudinal section through the valve casing and the valve mechanism therein by means of which the discharge of the liquid from the bottle is controlled.

Fig. 6 is a detached perspective view of the connector-cap adapted to lock the device to the bottle, and more particularly to the cap of the bottle.

Fig. 7 is a vertical section on the same scale as Figs. 3 and 4, showing a modified form of connector means.

Referring now more particularly to the construction of the device and the co-relation of the parts forming the same, the reference numeral 8 designates an ordinary bottle of the type usually containing charged waters or charged beverages of various kinds; and applied to the neck 9 of the bottle is a suitable closure, such as commonly provided in bottles used for charged waters or beverages, comprising a metallic cap 10 clinched in the usual way underneath a rib or flange 11 formed at the upper end of the neck. Between the metallic cap and the neck of the bottle, a cork or other washer or sealing disk 12 is interposed so that a perfect seal is provided for the bottle which will guard against the escape of the carbonic-acid gas with which the liquid in the bottle is charged.

My improved dispensing device or siphon, as it may be termed, comprises a discharge or dispensing tube 13 which has secured to its upper end a valve casing 14, and near its lower end is slightly enlarged, as at 15, and tapered from said enlargement to a point 16 which serves as a piercing element for the tube. The enlarged tapered lower end of this tube is provided with a plurality of liquid inlet-openings 17, and the upper end of the tube is threaded into the valve casing 14, as at 18.

The valve casing may be a die-casting, or it may be otherwise constructed, and it comprises an outer shell 19 which is cylindrical at one end and tapered toward its other end as at 20; and extending from the tapered portion is a discharge tube 21 having a discharge-opening 22 directed downwardly. This casing includes a cover 23 at its cylindrical end which is removable so that access may be had to an inner shell 24, preferably concentric with the outer shell and formed in piece therewith through a boss-like connection 25 into which the discharge or dispensing tube 13 is threaded.

The inner shell 24 also includes a cover 26; both covers 23 and 26 being preferably threaded in place so that they can be easily unscrewed to gain access to the interior of each shell, or chamber, as each may be termed. A large opening 27 is formed axially in the cover 26, which is normally closed by a valve 28 bearing against the inner side of said cover and having a valve-stem 29

extending through the opening 27 in the cover 26 and outwardly beyond the cover 23.

Within the inner chamber 24 an expansion spring 30 is arranged, one end bearing against the end of said casing distant from the cover 26, and the other against the valve 27 so as to normally maintain said valve firmly seated against the inner side of the cover 26 and effectively seal the opening 27 in the latter. Extending outwardly from the cover 23 is an ear 31 to which is pivotally secured a lever 32 which bears against the end of the valve-stem 29, and upon being swung inwardly towards said cover causes movement of the valve-stem 29, which will compel the valve to be unseated and uncover the opening 27 in the cover 26.

From the foregoing it will be apparent that the discharge or dispensing tube 13 opens directly into the inner chamber 24 of the valve-casing 14, and it is to be noted that the inner chamber is separated from the outer casing by an annular intervening space 33, except for the boss 25 connecting the peripheral wall of said inner chamber with that of the outer chamber.

The connector means utilized to connect the device to the bottle comprises a connector-cap 34, the lower portion 35 of which is cylindrical and hollow and has an internal diameter slightly larger than the diameter of the conventional metal cap employed on charged water or beverage bottles, so that it may be placed directly over and around the cap. This cylindrical lower portion 35 is connected with a cylindrical portion 36 of smaller diameter near the upper end of the connector-cap by a tapered portion 37, and at the upper end of this smaller cylindrical portion 36 the connector-cap is further reduced in diameter and provided with external screw-threads 38, for a purpose to appear hereinafter.

The connector-cap 34 has an axial bore 39 formed therein which extends from the hollow of the cylindrical lower portion 35 upwardly to the upper extremity of the cap, and this bore is enlarged or counterbored at its lower end, as at 40. Arranged within the hollow cylindrical lower portion 35 of the cap is a sponge-rubber or other suitable packing 41 in the form of an annulus, the axial opening 42 therethrough being preferably of the same diameter as the enlarged lower end of the bore 39, the upper wall of the hollow portion of this cap serving as a backing for the sponge-rubber or other packing. This packing is pressed into the hollow portion of the connector-cap and retained therein by its inherent resiliency.

The peripheral wall of the hollow cylindrical lower portion 35 is slit from its lower edge upwardly, as at 43; four such slits being provided, but any other number may be employed. These slits are preferably of elongated V-formation, and the outer surface of said peripheral wall is provided along the regions of these slits with screw-threads 44.

The connector-cap is formed of material possessing a certain degree of resiliency, the peripheral wall surrounding the hollow lower portion thereof being flared outwardly slightly, as illustrated in Figs. 4 and 6; and it also has at its lower edge, preferably between the slits formed therein, inwardly-curved retainer lugs 45.

Fitted over the connector-cap 34 is a securing member 46 which is hollow and comprises a cylindrical lower portion 47 adapted to surround the slited cylindrical lower portion 35 of the connector-cap, a second and smaller cylindrical member 48 connected to said cylindrical lower portion 47 by a tapered portion 49, which tapered portion conforms to the tapered exterior of the tapered portion 37 of the connector-cap. The upper cylindrical portion 48 of the securing member is slidably arranged on the cylindrical portion 36 of the connector-cap, and said securing portion is therefore both slidably and rotatably mounted on the connector-cap.

The peripheral wall of the cylindrical portion 47 of the securing-member is internally screw-threaded along its lower region, and these screw-threads are designed for threaded engagement with the external screw-threads 35 on the connector-cap. When these threads are brought into engagement and the securing member 46 rotated and lowered on the connector cap, the slitted outwardly flaring portion of the peripheral wall 44 of the connector-cap is forced inwardly, with the result that the inwardly-curved retainer lugs 45 are brought underneath the lower edge of the flange of the cap 10 and are firmly forced into contact therewith so that when said securing member is firmly tightened, the possibility of disengagement of the connector member from the bottle, and more particularly from the cap of the bottle, is entirely eliminated.

It may here be stated that while the securing member is being tightened around the connector-cap, the latter is pressed downwardly, with the result that the sponge-rubber or other packing 41 therein is brought into firm contact with the upper surface of the sealing cap 10, causing compression of said packing in the direction of the axis thereof and radial extension so as to effect a tight seal at all of its exterior surfaces. It is also to be noted that as the inwardly-curved retainer lugs are forced into firm contact with the lower edge of the sealing cap by the securing member 46, the concaved or inwardly-curved inner surfaces of said lugs tend to draw the connector-cap downwardly over the cap to more effectively act upon the packing.

While connecting the device to the bottle, the discharge or dispensing tube 31, which is carried by the connector cap due to the frictional contact between the two, is drawn upwardly to being the enlarged lower extremity thereof into the enlarged lower end of the bore 39 and into the axial opening formed in the packing 41, as clearly shown in Fig. 4, and in this position the pointed extremity of said enlargement is axially in contact with or in close proximity to the sealing cap. Therefore, after the connector-cap is firmly secured in place by the securing-member, the lower pointed extremity of the discharge or dispensing tube 13 is forced through the sealing cap and the cork or other washer 12 within the cap, and the tube then lowered into the bottle to assume the position shown in Fig. 1.

As clearly shown in Fig. 3, the connector-cap is in firm engagement with the sealing cap 10 of the bottle, it being so retained by the securing-member 46, and the sealing cap 10 and cork or other washer or disk 12 are pierced, as indicated at 50. Although the opening formed by piercing the sealing cap and washer would in most instances provide an axial opening in the cap somewhat larger than the discharge or dispensing tube, it is to be noted that the sponge-rubber packing 41 will have been previously firmly pressed against all surrounding surfaces, with the result that there will be no possibility of leakage of carbonic-acid gas from the bottle, nor any

leakage of liquid even though the bottle is inverted.

As stated, the discharge or dispensing tube 13 extends upwardly through the connector-cap, and to guard against the escape of carbonic-acid gas along this tube as well as to increase friction between the two, I thread a packing nut or cap 51 onto the external screw-threads 38 formed on the reduced upper extremity of the connector-cap, and between the two clamp suitable packing 52 which is firmly compressed around the tube 13, yet permits the tube to be slid under force within the connector-cap.

With the parts arranged as shown in Figs. 1, 3, and 5, the device will be firmly attached to the bottle to prevent the escape of any pressure from within the bottle, this being guarded against by the packing 41 in the connector-cap, the packing 52 around the tube 13, and the valve 28 in the valve-casing 14. The pressure within the bottle will have caused liquid to pass through the discharge or dispensing tube 13 and enter the inner chamber 24 of the valve-casing, where it is held against escape by the valve 28. When it is desired to dispense any quantity of the liquid, it is simply necessary to press the lever 32, whereupon the valve 28 will be opened and a continual flow of liquid take place through the valve opening 27 and the outer chamber 19, so that it may be discharged through the discharge opening 22 into a glass or other desired receptacle placed underneath said opening. Releasing the pressure applied to the lever 32 will immediately cause the spring 30 to close the valve 28 and prevent any further escape of liquid from the bottle. Any liquid remaining in the bottle will be maintained under pressure and therefore be kept in perfect condition until the contents of the bottle is fully discharged, regardless of the number of times the act of dispensing the liquid has taken place.

While I have thus far described the means which I now prefer to employ for securing the device to the bottle, this may be accomplished in various ways, and in Fig. 7, I have illustrated a modification of the connecting means illustrated in the preceding figures of the drawing. In this modification, although the sealing cap 10 and packing 12 are pierced in the same manner as described with reference to the constructions disclosed in Figs. 3 and 4, I reduce the length of the connector-cap so that the peripheral wall thereof encircles the upper portion only of the sealing cap 10. The said peripheral wall is continuous circumferentially, and therefore the slits 43 illustrated in the preceding figures are dispensed with, since it is not necessary in this modified construction to provide any resilient portion for the peripheral wall.

The upper portion of the connector-cap is reduced in length and the hollow securing-member 46 dispensed with. In lieu of the latter, I secure a yoke arm 53 between a shoulder 54 on the connector-cap and the packing nut or cap 51; the arm extending outwardly in opposite directions and having lock members 55 pivotally secured to their outer ends. These lock members are disposed at diametrically opposite sides of the connector-cap, and at their lower ends are curved inwardly and upwardly, as at 56, thereby forming lock-hooks adapted to engage underneath the flange of the sealing-cap 10. In order to engage these lock members, and more particularly the lock-hooks thereof with the sealing cap, it is necessary to depress the connector-cap 34 sufficiently to have the extremities of the lock-hooks pass underneath the edge of the sealing cap at diametrically opposite points, after which pressure on the connector-cap may be relieved to position the extremity of the lock-hooks between the free lower marginal portion of the sealing cap and the neck of the bottle. When depressing the connector-cap to engage the said lock-hooks with the sealing cap, the sponge-rubber packing 41, preferably used in this modification, will become depressed, and upon relieving pressure, compression on the packing will be relieved to a certain extent, yet sufficient compression of the packing will be retained to assure a tight sealing of the bottle at this point, and the packing will also serve to maintain the locking members in locking condition without the possibility of accidental disconnection of said lock members being made from the bottle-cap, since a direct axial pressure on the soft sponge-rubber in a downward direction will be required to release the device from the bottle.

From the foregoing it will be understood that the various parts of the device form a unit bodily applicable to and removable from the bottle, and that the parts of the device below the valve casing 14 are carried by the tube and serve to attach the tube to the bottle with the lower portion of the tube entered in the bottle and the upper portion projecting upwardly therefrom.

Having thus described my invention, what I claim is:

1. A device adapted to be secured to a bottle having a metallic cap applied to its upper end to close the same, comprising a tube adapted to be thrust into the bottle through said cap, securing-means carried by said tube and adapted to secure the latter to said cap, a valve-casing secured to the upper end of said tube having two chambers, one disposed within the other and separated from the latter by an intervening space, said tube opening into the inner of said chambers and said inner chamber having a valve-opening connecting its interior with said intervening space, said valve-casing having a discharge spout in connection with said intervening space, a valve within said inner chamber normally closing said valve-opening, and means for actuating said valve to open the same.

2. A device adapted to be secured to a bottle having a metallic cap applied to its upper end to close the same, comprising a tube adapted to be thrust into the bottle through said cap, securing-means carried by said tube and adapted to secure the latter to said cap, a valve-casing secured to the upper end of said tube having two concentrically-disposed chambers separated by an intervening space and into the inner of which chambers said tube opens, the outer of said chambers having a discharge spout, said inner chamber having a valve-opening, a valve closing said valve-opening and having a valve-stem guided for movement in a wall of the outer chamber and projecting outwardly therefrom, and a spring serving to maintain said valve in position to normally close said opening.

3. A device adapted to be secured to a bottle having a metallic cap applied to its upper end to close the same, comprising a tube adapted to be thrust into the bottle through said cap, securing-means carried by said tube and adapted to secure the latter to said cap, a valve-casing secured to the upper end of said tube and having an inner chamber into which said tube opens and an outer chamber separated from said inner chamber by a passage, said inner chamber having a valve-open-

ing in one of its walls, a spring-pressed valve normally closing said valve-opening and having a valve-stem extending through a wall of said outer casing and projecting beyond the latter, said outer casing having a liquid-discharge opening, and a lever pivotally secured to said outer casing for co-action with said valve-stem to open said valve and establish communication between the liquid-discharge opening of said outer casing and the interior of said bottle.

4. A device adapted to be secured to a bottle having a metallic cap applied to its upper end to close the same, comprising a tube adapted to be thrust into the bottle through said cap, securing means carried by said tube and adapted to secure the latter to said cap, a valve-casing secured to the upper end of said tube and having a cylindrical outer chamber and a cylindrical inner chamber separated from said outer chamber by an intervening space and having said tube opening thereinto, each of said chambers having removable end walls and said outer chamber having a liquid-discharge spout, the removable end wall of said inner chamber having an axial opening therein, a valve within said inner chamber serving to close said opening, a spring within said inner chamber adapted to maintain said valve in closed position, said valve having a valve-stem extending axially through the removable end wall of said outer chamber, and a lever pivotally secured to said removable end wall for actuating said valve-stem and through the latter causing said valve to become unseated against the resistance offered by said spring.

5. A device adapted to be secured to a bottle having a metallic cap provided with a depending flange clenched around the upper end of said bottle, comprising a tube having means at its lower terminal to pierce said metallic cap and after piercing the latter being positioned in said bottle with its lower piercing terminal at the bottom of said bottle, valve-mechanism at the upper end of said tube to control the discharge of liquid from said bottle, and securing-means carried by said tube having a connector-cap provided with a hollow lower end adapted to fit over said metallic cap, a compressible washer fitted into said hollow lower portion and bearing against the upper surface of said metallic cap, the peripheral wall of said hollow lower portion being slit at intervals around the same and having external screw-threads formed thereon, a securing-member vertically slidable and rotatable over and around said connector-cap and having internal screw-threads adapted to engage the external screw-threads of said connector-cap to cause the latter to engage said metallic cap and prevent disconnection of said securing-means therefrom.

6. A device adapted to be secured to a bottle having a metallic cap provided with a depending flange clenched around the upper end of said bottle, comprising a tube having means at its lower terminal to pierce said metallic cap and after piercing the latter being positioned in said bottle with its lower piercing terminal at the bottom of said bottle, valve-mechanism at the upper end of said tube to control the discharge of liquid from said bottle, and securing-means carried by said tube having a connector-cap provided with a hollow lower end adapted to fit over said metallic cap, a compressible washer fitted into said hollow lower portion and bearing against the upper surface of said metallic cap, the peripheral wall of said hollow lower portion being slit at intervals around the same and having external screw-threads formed thereon and inwardly-directed lugs at its lower end between said slits, a securing-member vertically slidable and rotatable over and around said connector-cap and having internal screw-threads adapted to engage the external screw-threads of said connector-cap to cause the said lugs to engage the edge of the depending flange of said metallic cap and to more firmly compress the said packing to secure the securing-means to the bottle and seal the latter.

7. A device adapted to be secured to a bottle having a metallic cap provided with a depending flange clenched around the upper end of said bottle, comprising a tube having a downwardly-tapered enlargement at its lower terminal to pierce said metallic cap and after piercing the latter being positioned in said bottle with its lower piercing terminal at the bottom of said bottle, valve-mechanism at the upper end of said tube to control the discharge of liquid from said bottle, and securing-means carried by said tube having a connector-cap adapted to fit over said metallic cap, a compressible annulus fitted into said hollow lower portion and bearing against the upper surface of said metallic cap, said connector-cap having an axial bore extending from the hollow lower portion thereof to its upper end in which said tube is slidably retained, said bore being enlarged at its lower end and the opening in said compressible annulus being of a diameter conforming to that of the enlarged portion of said bore to permit the downwardly-tapered enlargement at the lower end of said tube to be positioned within said opening and the enlarged portion of said bore preparatory to piercing said metallic cap and to guard against separation of said tube from said connector cap, and means carried by said connector-member for securing said securing-means to said bottle.

8. A device adapted to be secured to a bottle closed by a metallic cap, comprising a tube adapted to be thrust into the bottle, valve-mechanism carried by said tube to control the flow of liquid therethrough, and securing-means including a connector-cap slid over said metallic cap and having a tubular portion through which said tube is slidably passed, said tubular portion being externally screw-threaded at its upper end, a packing nut secured to said externally screw-threaded portion, and packing within said nut pressed against the upper end of said tubular portion and around said tube.

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