May 4, 1937. S. C. ST. CLAIR 2,079,049

BOTTLE TAP

Filed Aug. 28, 1933

Fig. 1

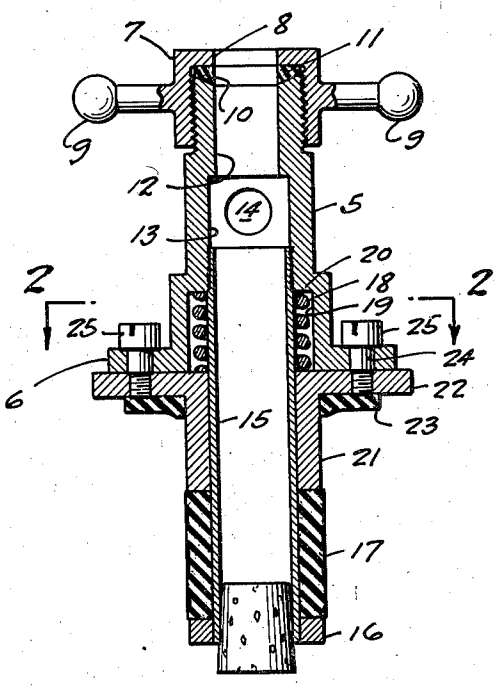


Fig. 3

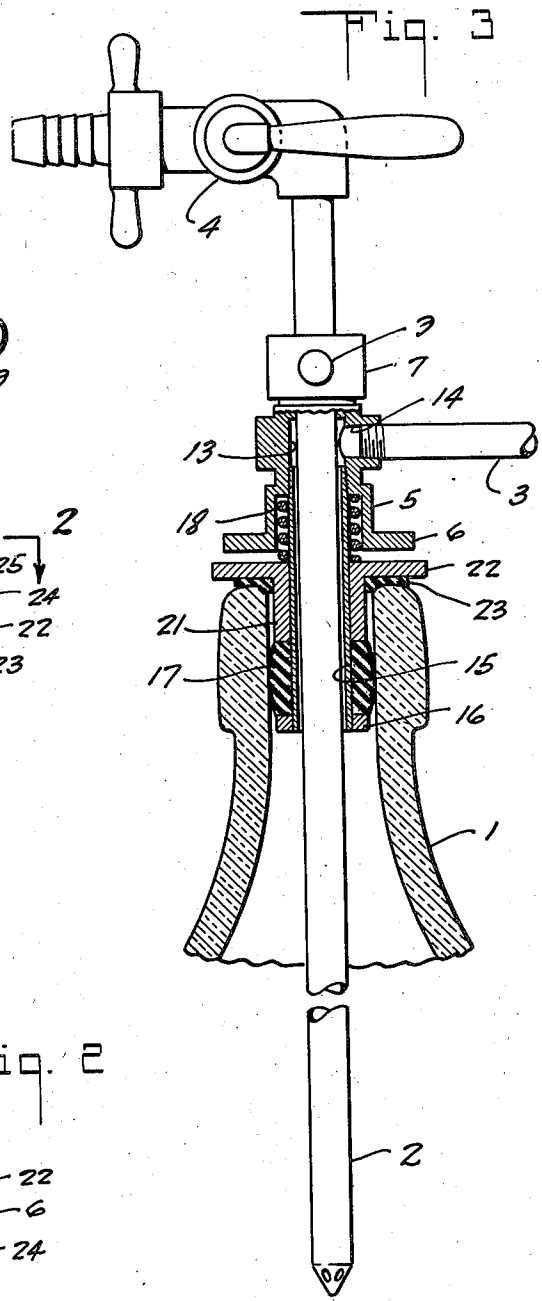
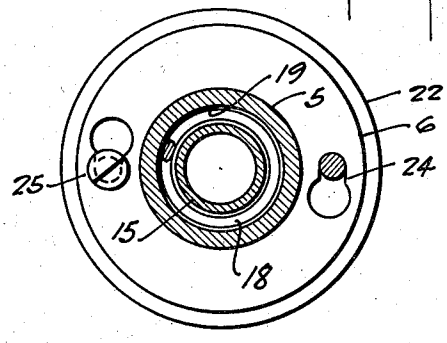


Fig. 2



INVENTOR
Sheridan C. St. Clair
BY
Joseph F. Westall
ATTORNEY

Patented May 4, 1937

2,079,049

UNITED STATES PATENT OFFICE

2,079,049

BOTTLE TAP

Sheridan C. St. Clair, Los Angeles, Calif.

Application August 28, 1933, Serial No. 687,145

6 Claims. (Cl. 215—52)

The present invention relates to tap-equipped stoppers for bottles, jugs, or other comparatively small containers, designed principally for liquid beverages, and has particular relation to such conduit-carrying closure devices which are adapted for use with gas pressure means for draft dispensing purposes.

The principal objects of my invention are to provide such a device adapted for dispensing beverages and chiefly beer, to avoid use of the usual cumbersome and space-consuming kegs, thus to permit efficient cooling of the contents of such containers with comparatively small and common refrigerating means, thereby avoiding expensive and specially designed cooling equipment.

Economy of construction, facility of operation, adaptability for general use with a large variety of different sizes and shapes of receptacles, ease of application to and removal from the container, and simplicity of structure, promoting sanitation by facilitating cleansing, are also among important objects of my invention. Other objects and corresponding advantages, such as durability, low cost, ease of replacement and repair of less permanent parts, will be quite obvious to those of skill in the art to which my invention relates, upon an examination of the accompanying drawing in the light of the following description in which—

Fig. 1 is a longitudinal section through the principal parts of the device with the draft-tube closure substituted by a cork;

Fig. 2 is a transverse section on line 2—2 of Fig. 1;

Fig. 3 is a longitudinal sectional view on a plane at a right angle to that of Fig. 1, illustrating, from such different angle, in addition to the principal parts of the device depicted in Fig. 1, the draft-tube and its connections in elevation, the whole being shown in operative relationship with the bottle-opening.

Referring more particularly to the drawing in which like numerals refer to similar parts throughout the several views, 1 indicates the neck of a bottle, 2 a draft-tube extending through the central bore of the principal closure means, which draft-tube is designed to pass downwardly into the bottle-receptacle, so that its lower end is immersed in the liquid contained therein.

3 designates a portion of the gas-pressure conduit from a source of supply, which, not being a part of the present invention, is not completely shown.

4 illustrates diagrammatically a suitable form of cock controlling the outlet through draft-tube 2 and its connections to a dispensing faucet, not shown.

A special form of pipe fitting 5, having, as part of its base, a radially disposed concentric flange 6, is exteriorly screw-threaded at its upper end to receive an interiorly screw-threaded cap 7. Concentrically through the top of said cap 7 a cylindrical bore 8 is provided for the extension therethrough of the draft-tube 2. Wrench handles 9—9 extend from opposite sides of said cap 7 to facilitate its manipulation. The upper surface of fitting 5 is beveled as shown at 10 (Fig. 1) to provide a seat for a suitable gasket 11, shaped to fit the annular chamber formed between the top of cap 7 and the bevel 10.

Draft-tube 2 is designed with an exterior diameter sufficient to closely but slidingly fit the upper bore 8 of cap 7, and the upper bore 12 of fitting 5, so that compression of gasket 11 by screw-tightening of cap 7 will force the inner periphery of said gasket into tight engagement with the outer adjacent surface of draft-tube 2, thus holding said tube in any adjusted vertical position and providing a liquid and gas-tight seal.

Below bore 12, fitting 5 is concentrically enlarged to provide an annular chamber 13 surrounding draft-tube 2, and into such annular chamber, a threaded opening 14 is provided for connection of gas-pressure pipe 3. Below annular chamber 13, the outside diameter of draft-tube 2 is less than the inside diameter of the bore through which said draft-tube passes, thus leaving an annular space for gas pressure downwardly into the liquid receptacle.

Threaded into the bottom of annular chamber 13, is a tube 15, which extends downwardly below the flange 6 of fitting 5, said tube 15, carrying, secured to its lower end, a radially-extending annular flange 16.

Carried above and supported by said flange 16 and closely surrounding tube 15 is a hollow cylindrical gasket 17 of slightly lesser diameter, when not under compression, than the bottle-opening it is designed to fill. Said gasket 17 may be of any suitable resilient material, but is preferably of rubber, having incorporated into it a spirally wound strip of fabric.

To expand said gasket 17, a coiled spring 18, surrounding the upper end of tube 15 and housed in bore 19 of fitting 5 is provided. The increased diameter of said bore 19 over that of chamber 13 provides an annular shoulder 20 which forms the upper abutment for said spring 18, which spring

is designed normally to expand below the bottom of flange 6 of fitting 5. Below spring 18, having a central bore closely but slidingly fitting the exterior of tube 15 is a gasket-expanding element 21, which is provided with a radially-extending flange 22. An annular gasket 23 of rubber or other suitable material is fitted beneath flange 22, and is so proportioned as to utilize the top of the bottle-opening as a seat, and to form, when compressed between the lower surface of flange 23 and said bottle-top seat, a tight seal at its points of annular contact.

Through opposite sides of flange 6 slots 24 are provided, and through said slots, screw-threaded into tapped holes in corresponding portions of flange 22 of expanding element 21, flat fillister-headed machine screws 25 are secured, the shanks of said screws corresponding in length to the thickness of flange 6 so that a range of relative rotative movement (limited by contact of the shanks of screws 25 with the ends of slots 24) of flanges 6 and 22 will, at the narrow ends of slots, lock said flanges into contact with each other, or, at the other end thereof, by reason of their increased diameter thereat permit the heads of said screws to be drawn below the surface of said flange to release contact of said flanges and permit a limited separation, in response to the expansion of spring 18.

To place the device in operative relationship, upon and with a container, spring 18 is held in contracted position by screws 25, between expanding element 21 and fitting 5. Expanding element 21 and the parts below it are then inserted into the neck of the bottle with the flange 22 of said expanding element, carrying gasket 23 below it, supported upon the upper periphery of the bottle opening. Slight manual pressure is then applied to cap 7 to permit screws 25 to be turned free of the narrow portions of the slots 24 and allow spring 18 to expand. Fitting 5 and expanding element 21, no longer being held in contact with each other are forced apart; element 21 being pressed against the bottle top causing air tight engagement therewith through the medium of gasket 23, while fitting 5 is raised in relation to said expanding element, consequently reducing the span between flange 16, located on the bottom of tube 15 which is screw-threaded into fitting 5, and element 21 causing the lateral expansion of gasket 17 (as illustrated in Fig. 3), thus forming two seals of the bottle-opening, the first between gasket 17 and tube 15 and the walls of the bottle-opening, and the second between the upper edge of the bottle-opening and flange 22 of expanding element 21. With the bottle-opening thus initially sealed, the expansive force of spring 18 maintains such condition until flanges 6 and 22 are brought into contact by manual pressure to again contract said spring. By turning fitting 5 in an opposite direction to bring the heads of screws 25 into registry with the smaller ends of slots 24, opposing flanges 6 and 22 may again be secured in contact (as illustrated in Fig. 2) and the gasket 17 maintained in non-engaging position relative to the bottle-opening to enable withdrawal of the device therefrom.

It will be quite obvious from the foregoing description that the device can be easily and quickly either applied to or removed from a container.

What I claim and desire to secure by Letters Patent is:

1. In a bottle-tap, the combination of a gasket of resilient material adapted to be placed within an opening into a receptacle, a conduit adapted to extend from the interior of said receptacle outwardly through and to support said gasket against distortion inwardly through compression, said conduit carrying means for the support of said gasket in operative position within said receptacle-opening, an expander abutment for said gasket having a limited range of sliding movement on the exterior of said conduit and carrying means adapted for its support on the outer rim of said receptacle-opening, a spring, seated on means carried by said conduit and adapted to actuate said expander to longitudinally compress said gasket, and means for latching said spring in compressed position.

2. In a bottle-tap, the combination of a cylindrical gasket of resilient material adapted to be placed within an opening into a receptacle, a conduit extending from the interior of said receptacle outwardly through said gasket, said conduit carrying means for the support of said gasket within said receptacle-opening, means for expanding said gasket by longitudinal pressure laterally within said receptacle-opening comprising a spring, a housing for said spring, secured to said conduit, an expanding element slidingly mounted upon said conduit, supporting means carried by said expanding element, an annular gasket carried by said supporting means and adapted to seal the space between it and the receptacle-opening, a draft tube passing through said conduit into said receptacle leaving an exterior annular passage between it and the walls of said conduit through which it extends, means to seal said annular passage at its upper end, and means to supply gas pressure through said annular passage to said receptacle.

3. In a tap, the combination of a gasket of resilient material and of hollow substantially cylindrical form adapted to be placed within an opening into a receptacle, and to be expanded by radial distortion outwardly against the walls of said opening, a cylindrical conduit adapted when in operative position to extend from the interior of such receptacle outwardly through and to support said gasket when under said compression against distortion radially inward, an annular flange carried by said conduit and adapted to bear upon the annular end of said gasket from within said receptacle, a cylindrical abutment loosely mounted on said conduit and relatively movable with respect thereto adapted to bear upon the opposite annular end of said gasket, said cylindrical abutment being provided with an annular flange for support by the edge of said receptacle opening, an annular gasket carried by said abutment and adapted to be compressed between said flange and the outer edge of said receptacle opening, a helical spring surrounding said cylindrical conduit and adapted to bear against the outer edge of said cylindrical abutment, a spring housing secured to the upper end of said cylindrical conduit and providing an annular seat for said spring, an annular flange extending radially outward from said spring housing, and means for releasably latching respective flanges of said spring housing and said cylindrical abutment upon compression of said spring in contact with each other.

4. In a tap, the combination of a gasket of resilient material and of hollow substantially cylindrical form adapted to be placed within an opening into a receptacle, and to be expanded by radial distortion outwardly against the walls of said opening, a cylindrical conduit adapted

when in operative position to extend from the interior of such receptacle outwardly through and to support said gasket when under said compression against distortion radially inward, an annular flange carried by said conduit and adapted to bear upon the annular end of said gasket from within said receptacle, a cylindrical abutment, loosely mounted on said conduit and relatively movable with respect thereto adapted to bear upon the opposite annular end of said gasket, said cylindrical abutment being provided with an annular flange for support by the edge of said receptacle opening, an annular gasket carried by said abutment and adapted to be compressed between said flange and the outer edge of said receptacle opening, a helical spring surrounding said cylindrical conduit and adapted to bear against the outer edge of said cylindrical abutment, a spring housing secured to the upper end of said cylindrical conduit and providing an annular seat for said spring, an annular flange extending radially outward from said spring housing, and a tap tube of smaller outside diameter than the inside diameter of said cylindrical conduit and adapted to extend therethrough into said receptacle.

5. In a tap, the combination of a gasket of resilient material and of hollow substantially cylindrical form adapted to be placed within an opening into a receptacle, and to be expanded by radial distortion outwardly against the walls of said opening, a cylindrical conduit adapted when in operative position to extend from the interior of such receptacle outwardly through and to support said gasket when under said compression against distortion radially inward, an annular flange carried by said conduit and adapted to bear upon the annular end of said gasket from within said receptacle, a cylindrical abutment loosely mounted on said conduit and relatively movable with respect thereto adapted to bear upon the opposite annular end of said gasket, said cylindrical abutment being provided with an annular flange for support by the edge of said receptacle opening, an annular gasket carried by said abutment and adapted to be compressed between said flange and the outer edge of said receptacle opening, a helical spring surrounding said cylindrical conduit and adapted to bear against the outer edge of said cylindrical abutment, a spring housing secured to the upper end of said cylindrical conduit and providing an annular seat for said spring, an annular flange extending radially outward from said spring housing, and means to supply gas pressure through the annular passage formed between said tap tube and the interior of said cylindrical conduit.

6. In a device of the character described, a resilient gasket, a tubular member for the support of said gasket, a second tubular member above said gasket, resilient means adapted to normally urge said tubular member together to compress said gasket, and screws located integral with one of said tubular members to engage in bayonet slots in the other of said members so as to releasably maintain said resilient means in contracted position.

SHERIDAN C. ST. CLAIR.