

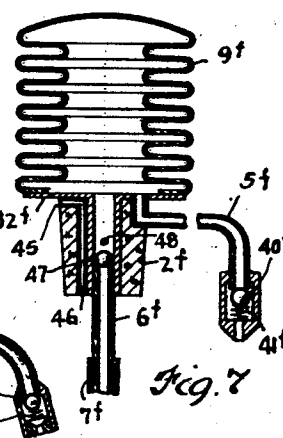
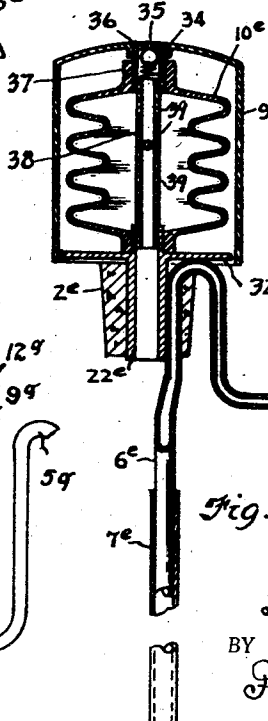
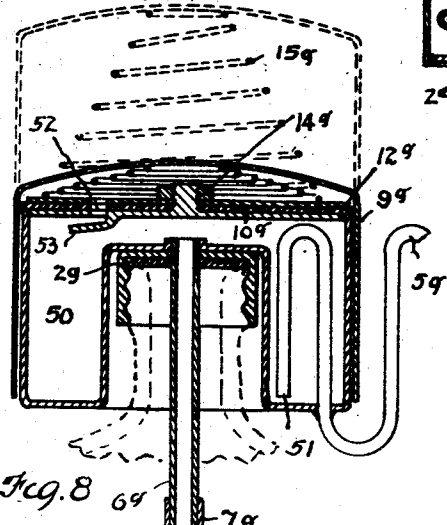
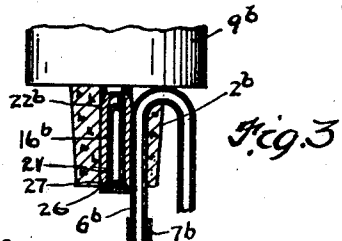
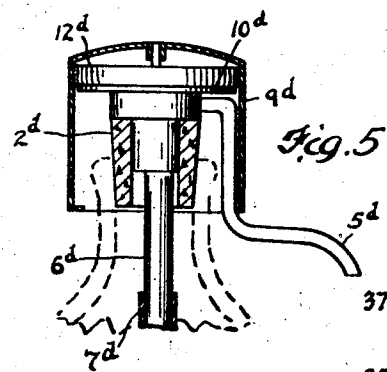
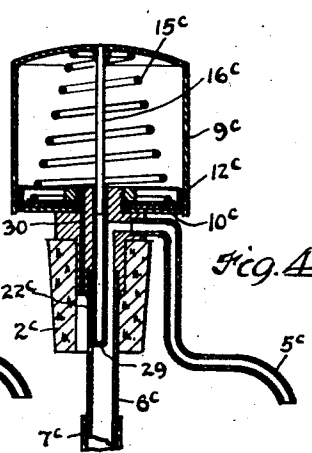
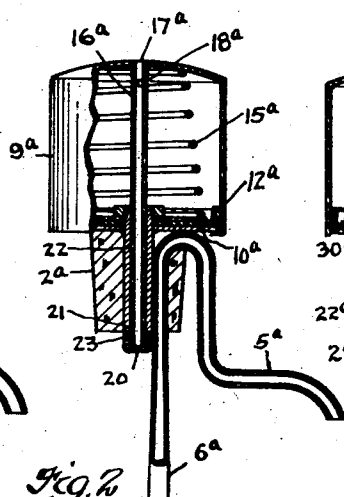
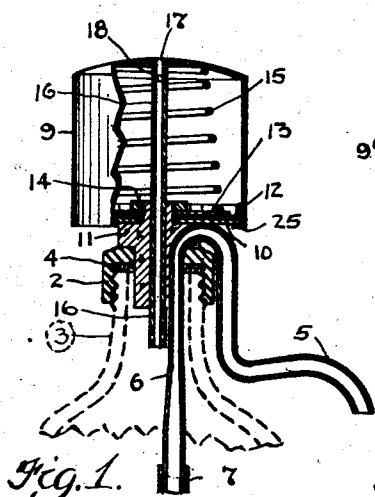
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DISPENSING APPARATUS FOR BEVERAGES

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8 Claims. (Cl. 221-77)

This invention relates to beverage dispensing; and it is among the objects of the invention to provide equipment capable of drawing the required amount of the liquid without necessity of great care on the part of the operator. Other objects and advantages will appear as the description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described, and particularly pointed out in the claims, the following description and the annexed drawing setting forth in detail certain illustrative embodiments of the invention, these being indicative however, of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawing:

Fig. 1 is a part side elevational, part sectional view of an embodiment of the invention; Figs. 2 and 3 are similar views of slight modifications; and Figs. 4-8 inclusive, are vertical sectional views showing other modifications.

Referring more particularly to the drawing, there is shown a discharge spout and in communication therewith a conduit normally extending to a point beneath the surface of the liquid to be drawn, and a pump chamber carried on a closure adapted to close a container holding the liquid to be dispensed. Depending upon the size and character of the container, whether a keg with a bung-hole or a demijohn or bottle, the precise form of the closure may vary. In Fig. 1 the closure element 2 is in the form of a screw-threaded closure adapted to screw onto a threaded container 3, a packing gasket 4 being interposed, and carried by the closure element is a discharge spout 5 continuing into communication with an extension tube 6. Preferably, the latter has also a telescoping section 7 whereby the bottom of the container may be reached, with allowable variations. Carried also on the closure element is a pump chamber 9, this comprising a metal cylinder slidable or reciprocable on a piston 10 which is secured to the head 11 of the closure element. The piston 10 is provided also with a suitable packing 12, which may be in the form of a flexible element having its margin engaging the inner wall of the pump cylinder 9. A suitable expanding means for assuring sealing contact of the packing element 12 with the cylinder wall is desirably applied, such as a resilient or spring-plate backing 13. This with the interposed packing element may be tightened into place on the head of the closure by a nut 14. A coil spring 15 interposed between

the piston and the pump cylinder 9 serves to normally maintain the latter in its upper or expanded position. Extending through the head of the closure element is an air tube 16 open below to the space above the liquid, and open above to the atmosphere by a port 17. A port 18 opens from the tube into the pump cylinder 9 near its upper end.

In operation, this device being suitably attached by its closure element to the container of the liquid, the operator grasps the upper end of the pump cylinder 9 and forces it down. At the same time, the port 17 is closed by the operator's finger, valve-like, and correspondingly the air forced down on top of the liquid occasions a flow-delivery of a corresponding volume of the liquid through the conduit 6, 7 and through the discharge spout 5 to the glass or the like to receive it.

With a different type of container, having a plain opening, whether bung-hole or bottle, the closure element may take the form of a tapered body 2a, as in Fig. 2, and this again carries a discharge spout 5a and communicating conduit 6a with telescopic extension 7a; also the pump cylinder 9a of similar construction as in Fig. 1, including the piston 10a, packing ring 12a, return-spring 15a, and air-tube 16a, the latter with its ports 17a and 18a. The lower end of the air-tube 16a is closed at the point 20, while lateral ports 21 are provided above the lower end. The air-tube 16a being secured to the pump cylinder 9a, on the reciprocation of the latter slides through a guide 22 in the closure, and the latter constitutes a valve for the air-tube ports 21. As the pump cylinder 9a is pushed down, the air ports 21 are carried below the guide 22 and into exposure or open position. A washer 23 is desirably provided below the air ports 21, being conveniently seated for instance against a shoulder 40 or enlargement on the lower end of the air-tube 16a. In such construction, the washer 23 not only serves as a seal to seal off the air-tube 16a when the pump cylinder is in its upper position, but also serves as a stop preventing accidental removal of the pump cylinder from the piston assembly. In the construction shown in Fig. 1, such accidental removal may be prevented by the provision of a stop-element 25 secured to the lower part of the pump cylinder 9 in any suitable way. Instead of a washer 23 shouldered upon the lower end of the air-tube 16a, as in the construction shown in Fig. 2, it is in some cases desirable to expand the lower end of the air-tube 16b (see Fig. 3) as at 26, thereby providing a

taper valve such as to seal against the tapered lower end 27 of the guide 22b as a seat. The construction of the pump cylinder, 9b with its contained stationary piston on the closure 2b, and the air-tube with its upper port within the cylinder and its valve-port at the top opening to the atmosphere, etc., are the same as in the constructions just described. Likewise, the liquid discharge conduit 6b and spout.

10 Instead of an air-tube carried by the pump cylinder and riding in a guide in the closure element as foregoing, it is in some cases desired to retain the guide function in the form of an imperforate stem 16c (Fig. 4) carried from the top of the pump cylinder 9c and riding not hermetically tight in a guide-way 22c in the closure element, such guideway being sealed at its lower end 29. An air-duct 30 in such case extends from the interior of the pump cylinder to communicate with the air space above the liquid in the container. On return of the cylinder 9c to its upper position after a downstroke for a discharge of liquid, air may re-enter from outside through conduit 6c, bubbling through the liquid, and again re-fill the cylinder 9c. The pump cylinder here also is provided with the stationary piston 10c, and the return spring 15c, as in the foregoing constructions; also the liquid discharge conduit 6c, extension 7c, and discharge spout 5c.

Omitting the return spring 15, etc., as in the foregoing, the pump cylinder may be employed also as an enveloping protector of the closure element, when not in use. As shown in Fig. 5, the closure element 2d carries the stationary piston 10d, provided with its suitable packing ring, etc., and the pump cylinder 9d reciprocates thereon as described. As in the case of the pump cylinder 9c in the preceding construction an air-duct extends from the pump cylinder through the stopper head to communicate with the air space above the liquid in the container, and air for balance may re-enter from outside through conduit 6d, bubbling through the liquid, and re-fill the cylinder 9d as it is raised. With the absence of a return spring, the pump cylinder 9d normally takes its lowermost position, as illustrated, and to such extent securely covers over the assemblage. The liquid discharge conduit 6d, 7d, 8d, is as foregoing.

In some cases, in lieu of a piston in cooperation with the pump cylinder, I may employ, as shown in Fig. 6, a collapsible rubber bellows 10e, this being mounted on a plate or disk 32 carried by the closure 2e, and engaging the pump cylinder 9e at its upper end. The pump cylinder here has a sleeve 34 and a valve port 35 controlled by a valve 36, a spring 37 serving normally to hold the valve in seated position. Extending below the valve 36 is a tube 38 which is provided with air ports 39, and which slides in a guide 22e. The liquid discharge conduit 6e, 7e, 8e, is as foregoing. In cases where desired however, an additional valve 40 may be provided on the discharge spout, a spring 41 serving to normally maintain the valve closed against its seat at the end of the discharge spout. This construction may be somewhat further simplified in the form of a collapsible metal bellows 9f of general cylindrical form (Fig. 7). A suitable non-corrosible metal, as Monel, etc., may be employed, and the pump chamber thus formed is carried on the plate or disk 32f of the closure 2f. An air duct 45 extends through the closure from a point outside to an opening 46 above the top of the liquid. Through the closure

there is also provided a conduit 6f opening into the interior of the pump chamber 9f, discharge spout 5f thence leading to without. The discharge spout 5f may be provided also with a valve 40f and spring 41f, as foregoing. A valve 47 is positioned in relation with the conduit 6f, and a stop means 48, such as a pin transversely placed in the conduit serves as a preventative of overdisplacement of the valve 47.

In the form shown in Fig. 8, the pump cylinder 9g again coacts with a stationary piston 10g, this being provided with a sealing ring 12g and retaining plate, and nut 14g, as in Fig. 1, etc., also return spring 15g. The stationary piston here is in effect expanded or supplemented to form a hollow chamber 50 for reception of fluid, the chamber being in communication with the liquid below by conduit 6g passing through the closure body 2g. The discharge spout 5g connects through a double goose-neck to its open end 51 in the lower part of the chamber 50. An air port 52 is provided between the pump cylinder 9g and the piston-chamber 50, and a baffle 53 is desirable as a guard against liquid splashing through the port into the pump cylinder 9g. In the use of this form of device, as in the foregoing, the pump cylinder 9g is pushed down by the operator and is released, thereby allowing flow of liquid up into the chamber 50, which upon being filled, flows off through the discharge spout 5g.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided the features set forth in any of the following claims, or the equivalent of such, be employed.

I therefore particularly point out and distinctly claim as my invention:

1. Dispensing apparatus for applying to a container for beverages, etc., which comprises a closure adapted to seal the outlet of a container for liquids, a piston on said closure, a pumping cylinder slidably mounted on said piston, an air conduit communicating with the interior of the cylinder and extending through the piston and closure, said air conduit being reciprocable in said closure, a valve at the lower part of said conduit for controlling communication with the container, and a dispensing conduit extending through the closure and adapted to communicate from liquid in the container to a discharge spout outside and preventing contact of the liquid with the inner surface of said hollow reciprocable element.

2. Dispensing apparatus for applying to a container for beverages, etc., which comprises a closure adapted to seal the outlet of a container for liquids, a pumping chamber including a stationary plate mounted directly upon and overhanging and protecting said closure and a hollow displacement element reciprocable on said plate to accomplish dispensing of a charge of the liquid, and conduit means extending through the closure and adapted to communicate from liquid in the container to a discharge spout outside and preventing contact of the liquid with the inner surface of said hollow reciprocable element, said stationary plate being set closely over said conduit, and the liquid end of said conduit means having a telescoping extension.

3. Dispensing apparatus for applying to a container for beverages, etc., which comprises a closure adapted to seal the outlet of a container for liquids, a stationary plate mounted on and protectively extending beyond the limits of said

closure, a hollow displacement element reciprocable on said plate for dispensing of a charge of liquid from the container, an air passage directly connecting the space above said plate and the space between said closure, and conduit means extending through the closure and adapted to communicate from liquid in the container to a discharge spout outside and preventing contact of the liquid with the inner surface of said hollow reciprocable element, said stationary plate being set closely over said conduit.

4. Dispensing apparatus for applying to a container for beverages, etc., which comprises a closure adapted to seal the outlet of a container for liquids, a stationary plate on said closure, a hollow displacement element reciprocable on said plate for dispensing of liquid from the container, coacting guide and guideway elements through said closure, one of said elements being connected to the reciprocable hollow element, the other extending through said closure, and conduit means extending through the closure and adapted to communicate from liquid in the container to a discharge spout outside and preventing contact of the liquid with the inner surface of said hollow reciprocable element.

5. Dispensing apparatus for applying to a container for beverages, etc., which comprises a closure adapted to seal the outlet of a container for liquids, a stationary plate on said closure, a hollow displacement element reciprocable on said plate, an imperforate guideway through said closure, a guide element in said guideway connected to the reciprocable element, and conduit means extending through the closure and adapted to communicate from liquid in the container to a discharge spout outside and preventing contact of the liquid with the inner surface of said hollow reciprocable element.

6. Dispensing apparatus for applying to a container for beverages etc., which comprises a closure adapted to seal the outlet of a container

for liquids, a stationary plate on said closure, a hollow displacement element reciprocable on said plate, a guideway through said closure, a tubular element in said guideway connected to said reciprocable element and having communication therethrough to the atmosphere, and conduit means extending through the closure and adapted to communicate from liquid in the container to a discharge spout outside and preventing contact of the liquid with the inner surface of said hollow reciprocable element.

7. Dispensing apparatus for applying to a container for beverages, etc., which comprises a closure adapted to seal the outlet of a container for liquids, a stationary plate on and extending beyond and protecting said closure, a hollow displacement element reciprocable on said plate, conduit means extending through the closure and adapted to communicate from liquid in the container to a discharge spout outside and preventing contact of the liquid with the inner surface of said hollow reciprocable element, a tube within said hollow displacement element, and an air inlet port in the top of said hollow reciprocable element communicating with said tube, said tube extending through said closure.

8. Dispensing apparatus for applying to a container for beverages, etc., which comprises a closure adapted to seal the outlet of a container for liquids, a stationary piston on said closure, a pumping cylinder reciprocable on said piston to a position enveloping the closure, and conduit means extending through the closure and adapted to communicate from liquid in the container to a discharge spout outside and preventing contact of the liquid with the inner surface of said hollow reciprocable element, said conduit means in part at least being enveloped by the reciprocable element when in its lower position.

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