

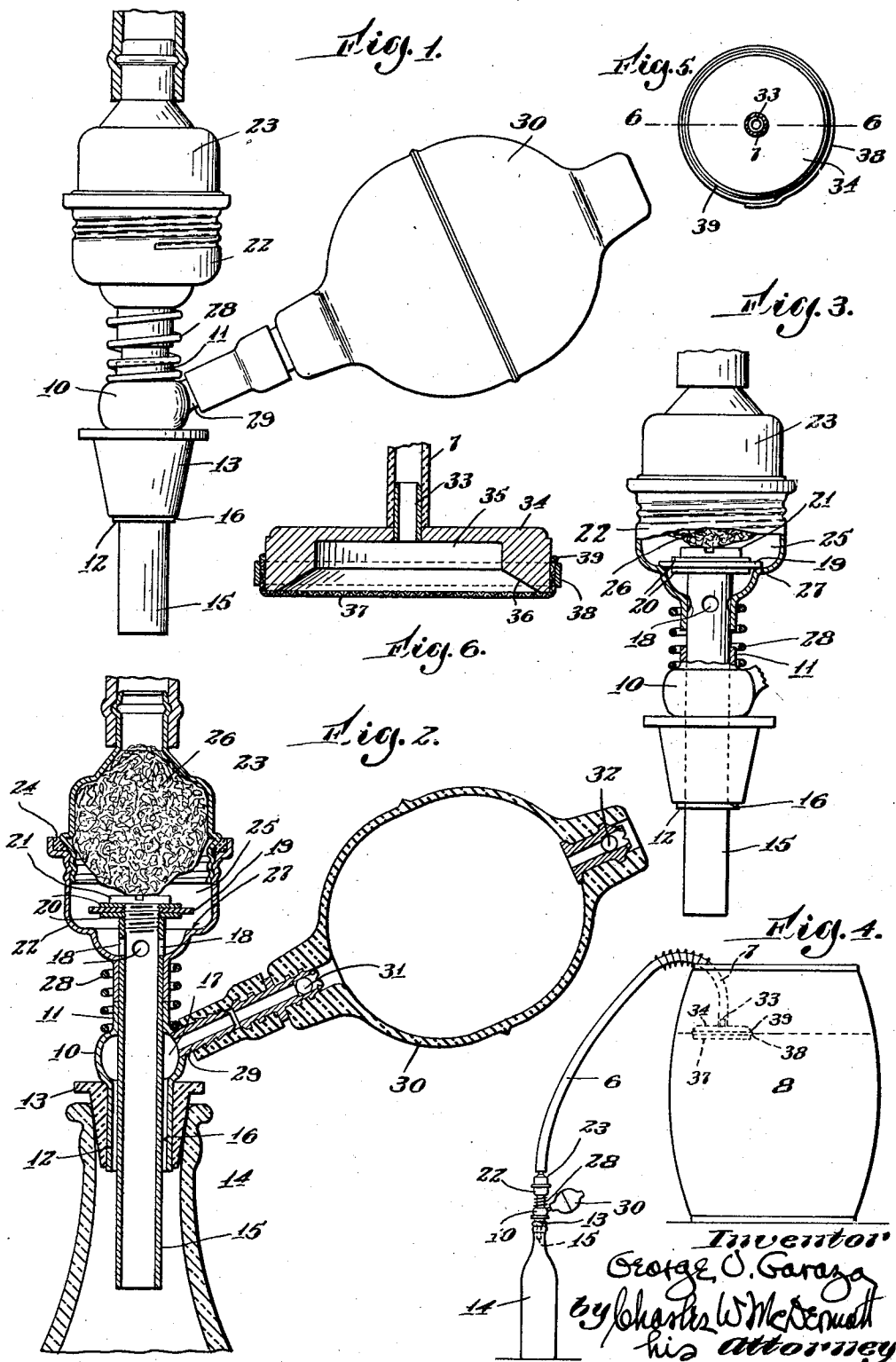
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BOTTLE FILLING DEVICE

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BOTTLE FILLING DEVICE

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The present invention relates to bottle filling devices which are used to draw liquid into the long legs of siphons and to discharge the liquid so drawn into bottles.

5 The principal object of the present invention is to provide a bottle filling device with an improved means for creating a condition of unbalanced pressure between the interior of the bottle and the surface of the source of supply with which the short leg of the siphon communicates.

10 To the accomplishment of this object, and such others as may hereinafter appear, the various features of the invention relates to certain devices, combinations and arrangements of parts, hereinafter described and then set forth in detail in the appended claims which possess advantages readily apparent to those skilled in the art.

15 The various features of the present invention will be readily understood from an inspection of the accompanying drawings illustrating the best form of the invention at present known to the inventor, in which,

20 Figure 1 is a view in elevation of a bottle-filling device adapted to be connected to the long leg of a siphon;

25 Fig. 2 is a view in sectional elevation showing how the valve is unseated from the valve seat when the device is engaged with the mouth of the bottle to be filled;

30 Fig. 3 is a view similar to Fig. 1 except that the bulb is removed and the parts are broken away to show the internal construction;

35 Fig. 4 is a view in elevation showing the device connected to the long leg of a siphon;

40 Fig. 5 is a detail view in sectional plan of the float, and

45 Fig. 6 is a detail view in sectional elevation on the line 6—6, Fig. 5.

Referring to the drawings, the device 5 (Fig. 4) is adapted to be connected to the long leg 6 of a siphon, the short leg 7 of which is inserted into a source of liquid supply such as the barrel 8. Siphons of this type have a varied general use in bottling beverages and in draining aquariums, fish store tanks, wash boilers, washing machines,

batteries, gasoline tanks on automobiles and the like.

The device 5 comprises a hollow shell provided with a central enlargement 10 and cylindrical ends 11 and 12 of different diameters, the end 11 being smaller than the end 12. Mounted on the large end 12 is a rubber stopper 13 adapted to fit tightly the mouth of a bottle 14. Fitted tightly to the small end 11 of the shell is a hollow tube 15 which extends downwardly through the large end 12 of the shell into the interior of the bottle, the construction being such that an air conduit 16 and an air chamber 17 are formed between the exterior of the tube 15 and the interior of the large end 12 of the shell and the interior of the enlargement 10, respectively.

The hollow tube 15, near its upper end is provided with a series of apertures 18. Upon its upper end the tube 15 is provided with a rubber disk 19 interposed between two metal washers 20 smaller in diameter than the disk 19. The disk 19 and the washers 20 are held in place by a headed screw 21 which fits into and closes the upper end of the hollow tube 15.

Slidably mounted upon the exterior of the tube 15 is an outlet shell 22 having internal threads engaged by external threads on an inlet shell 23. The shells are provided with shoulders which embrace a rubber washer 24 to prevent leakage. The inlet shell 23 is fitted to the lower end of the long leg of the siphon so that liquid may flow therefrom into a liquid chamber 25 formed by the shells. This chamber 25 is provided with a sponge 26 which acts as a filter media for the liquid.

In order to maintain the disk 19, constituting a valve, engaged with a valve seat 27 (Figs. 2 and 3) formed on the outlet shell 22 a coiled spring 28 is interposed between the air chamber shell and the liquid chamber shell. As shown in Fig. 3 the spring 28 normally maintains the valve seat 27 engaged with the valve 19 thus to prevent the liquid in the liquid chamber 25 from flowing into the tube 15 through the apertures 18.

To unseat the valve 19 from the valve seat

27 to permit the liquid in the liquid chamber 25 to flow through the apertures 18 into the hollow tube 15, the stopper 13 is inserted into the mouth of the bottle 14 and the shells 22 and 23 are moved downwardly as a unit on the tube 15 against the tension of the spring 28. As shown in Fig. 2 the liquid in the liquid chamber is free to flow through the apertures 18 into the hollow tube 15.

In order to withdraw air from the interior of the bottle and thus create a condition of unbalanced pressure between the interior of the bottle and the surface of the source of supply such as the barrel 8, the air chamber 17 is provided with an outlet 29 to which is connected a rubber bulb 30 provided with the usual check-valves 31 and 32. When the bulb 31 is collapsed by hand pressure the air within the bulb is expelled through the opening containing the valve 32, the check-valve 31 closing to prevent the air from the bulb passing into the air chamber 17. When the bulb collapsing pressure is released the check-valve 32 closes and the check-valve 31 opens to permit air from the interior of the bottle to flow through the conduit 16 and air chamber 17 into the interior of the bulb from which the air may be expelled by the next succeeding collapsing movement of the bulb under hand pressure.

The bulb is used to start the siphon action. When a bottle is filled downward pressure on the liquid chamber 25 is released to permit the spring 28 to close the valve 19 and the stopper 13 is removed from the mouth of the filled bottle. The stopper 13 is then inserted into the mouth of an empty bottle and the shells 22 and 23 pressed downwardly to unseat the valve 19 from the valve seat 27 and thus cause the liquid in the liquid chamber 25 to flow through the apertures 18 into the hollow tube 15. The air in the empty bottle is expelled by the entering liquid into the air chamber 17 from which it may be withdrawn by a few hand closing movements of the bulb 30.

The provision of a hand bulb as a part of the bottle filling device renders the device self contained, and thus permits it to be used where hydraulic air exhausting means is not available. The hand bulb also permits the bottle filling device to operate advantageously where the bottle to be filled is located well above the surface of the source of liquid supply.

Referring to Fig. 4 the short leg 7 of the siphon fits over a hollow tube 33 carried by a cylindrical piece of wood 34 adapted to float upon the surface of the liquid in the barrel 8. The float 34 is provided with a central cylindrical chamber 35 which communicates with a frusto-conical chamber 36. The entrance to the chamber 36 is covered with a piece of circular cloth 37 constituting a filter media which is held in position by a

hoop 38 mounted to clamp a peripheral up-turned skirt 39, on the cloth 37, to the peripheral surface of the float 34. With this construction all the liquid drained from the barrel 8 passes through the filter media before entering the siphon. The filter media may be removed for cleaning or replacement by removing the hoop 38.

It will be clear to those skilled in this class of devices and with the general objects of the present invention in view, that changes may be made in the details of structure, the described and illustrated embodiment thereof being intended as an exploitation of its underlying essentials, the features whereof are definitely stated in their true scope in the claims herewith.

What is claimed as new, is:

1. In a bottle filling device, the combination with a liquid chamber, an air chamber having a cylindrical conduit terminating in an enlargement for conducting air from the bottle to the air chamber, and a hollow tube mounted within and spaced from the conduit for conducting liquid from the liquid chamber into the bottle, of a hand operated bulb connected to the enlargement for withdrawing the air therein to the atmosphere.

2. In a bottle filling device, the combination with a liquid chamber adapted to be connected to the long leg of a siphon, a hollow tube for conducting the liquid from the chamber into a bottle, and a shell having portions of different diameters one of which is secured to the tube and another one of which is spaced from the tube to form an air conduit communicating with the interior of the bottle, of means for withdrawing air from the interior of the bottle through the conduit.

3. In a bottle filling device, the combination with a liquid chamber, adapted to be connected to the long leg of a siphon, having an inlet, an outlet and a valve seat adjacent the outlet, a hollow tube for conducting the liquid from the chamber into the bottle having a valve adapted to engage the valve seat, a shell having a portion secured to the tube and another portion spaced from the tube to form an air conduit communicating with the interior of the bottle, and means for withdrawing air from the interior of the bottle through the conduit of means for relatively moving the liquid chamber and the tube to seat the valve on the valve seat to prevent the flow of liquid from the liquid chamber and to unseat the valve to permit the flow of liquid from the liquid chamber.

4. In a bottle filling device, the combination with a hollow shell having cylindrical end portions of different diameters, a stopper adapted to fit the mouth of a bottle carried by the large end of the shell, a hollow tube, closed at one end and open at its other end, having apertures nearer its closed end

than its open end and a valve secured to the
tube between said apertures and its closed
end, said tube being carried by the small end
of the shell and extending in spaced relation
5 with the large end of the shell into the bottle,
a liquid chamber having an inlet adapted to
be connected to the long leg of a siphon, an
outlet slidably mounted upon the tube, and
a valve seat adjacent the outlet, and a spring
10 interposed between the liquid chamber and
the shell for maintaining normally the valve
engaged with the valve seat to prevent the
flow of liquid in the liquid chamber into the
apertures of the hollow tube, of a hand oper-
15 ated bulb connected to the shell for with-
drawing air from the bottle through the con-
duit and air chamber.

In testimony whereof I have signed my
name to this specification.

20 GEORGE V. GAVAZA.