

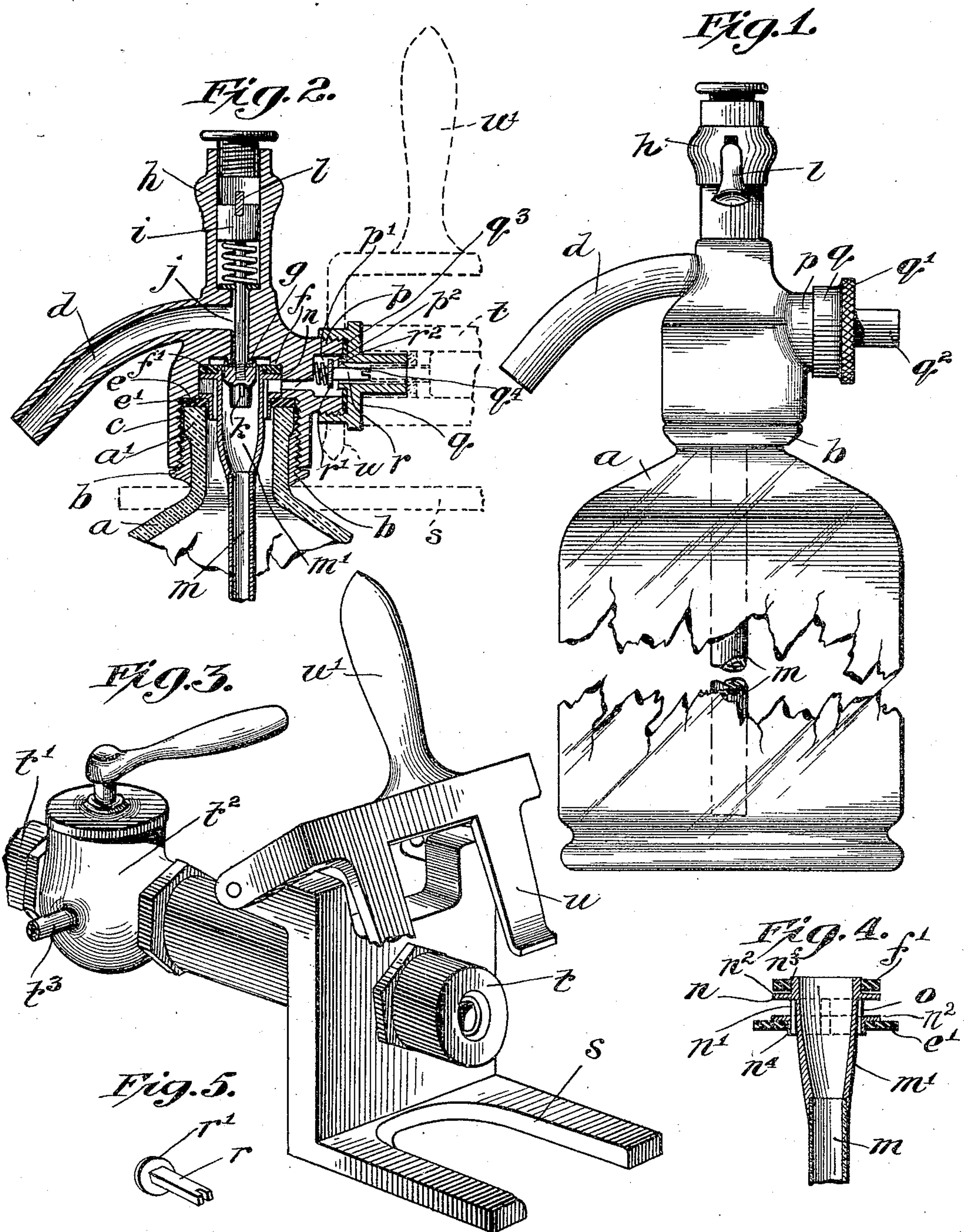
F. SPITZENBERG.

SIPHON BOTTLE.

APPLICATION FILED MAR. 28, 1907. RENEWED SEPT. 18, 1909.

956,443.

Patented Apr. 26, 1910.



Attest:  
*P. J. Waring.*

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 his Attys.



# UNITED STATES PATENT OFFICE.

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## SIPHON-BOTTLE.

956,443.

Specification of Letters Patent.

Patented Apr. 26, 1910.

Application filed March 28, 1907, Serial No. 364,973. Renewed September 18, 1909. Serial No. 518,432.

*To all whom it may concern:*

Be it known that I, FRANK SPITZENBERG, a citizen of the United States, residing at the borough of Brooklyn, in the city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Siphon-Bottles, of which the following is a specification, reference being had therein to the accompanying drawings, which form a part thereof.

My invention relates to siphon bottles and more particularly to that type of such which may be filled otherwise than through the discharge spout.

The main object of my invention is to provide a siphon bottle of this type equipped with appurtenances whereby the bottle may be filled otherwise than through the siphon tube, thus permitting the venting of gases placed under pressure, through the filling valve, when the pressures in the reservoir tank, and in the bottle become equalized, and accomplishing the rapid and complete filling of the bottle.

A further object is to provide a siphon bottle which may be secured with its charging nozzle in communication with the reservoir tank, thus permitting the aerated or charged water to be simultaneously charged into, and drawn from said bottle, in a manner to make it possible for the bottle to be used as a fixture for a bar or table.

A still further object is to provide a siphon bottle wherein the charging orifices will be so disposed that aerated or charged water, in entering the bottle will be sprayed directly through the free gases in the bottle in a manner to preserve or improve the quality of the water being bottled.

A still further object is to provide a siphon bottle which may be quickly attached to and detached from the charging fixture.

A still further object is to provide a siphon bottle wherein the venting incidental to the filling of the bottle, may be accomplished without wasting water and without having any water discharged as waste with the gases, or upon persons or property situated near the charging or filling fixtures.

And a still further object is to provide a siphon bottle the construction and arrangement of which will be simple and effective

for the purpose for which it is designed for use.

The invention consists primarily in the combination with a bottle, a siphon tube, therein, and a head thereon communicating with the tube, and having a packing rim with one or more openings exteriorly thereof communicating with the bottle, of a siphon head, embodying therein a spout, said head having a way therein establishing communication between said spout and said siphon tube, a valve seat adjacent to said way, a valve for said seat, means controlling said valve, a filling means having a channel communication with the exterior openings of said siphon tube head, a valve normally closing said channel and means whereby said last mentioned valve may be opened, and such other novel features of construction and combination of parts as are hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.

Referring to the drawings—Figure 1, is a side elevation of a siphon bottle and head embodying my invention. Fig. 2, is a cross section of the upper part thereof with the filler shown in part in dotted lines; Fig. 3, is a detail perspective view of the filler; Fig. 4, is a section of the upper part of the siphon tube and of the metallic head thereof, and Fig. 5, is a detail perspective view of the valve controlling the filling nozzle.

Like letters refer to like parts throughout the several views.

In the embodiment of my invention shown in the drawings I employ an ordinary glass bottle *a* the neck of which is provided with the customary lip *a'*. Secured to said bottle in any desired manner, preferably by means of the usual split ring *b*, is a siphon head the interiorly screw threaded bottom flange *c*, of which engages the threads of the ring *b*. The said head is provided with an ordinary spout *d*. Interiorly of said head adjacent to the flange *c*, is an annular shoulder *e*, adapted to engage a resilient packing or gasket *e'*, and compress it against the top of bottle *a*. Above the shoulder *e*, I preferably form a second shoulder *f* of smaller diameter than the other which shoulder as will more fully appear hereinafter, is adapt-



ed to engage the packing ring or gasket  $f'$ , and compress it against the head of the siphon tube. The top of the chamber so formed within the siphon head, is channeled adjacent to the shoulder  $f$ , to form a narrow annular valve seat  $g$  substantially centrally of the said chamber.

The siphon head is provided with the customary top  $h$  having a cylindrical guide chamber therein for the valve stem mechanism  $i$ , the head being provided with a straight way  $j$ , extending between said cylindrical chamber and the chamber within the lower part of the head. The duct of the discharge spout  $d$ , opens into said way  $j$ . This way as in the ordinary siphon head, serves both as a housing for the valve stem mechanism and as a duct establishing communication between the siphon tube and the discharge spout. The bottom of the cylindrical chamber heretofore referred to, is packed in the usual and well known manner. The actuating means for the valve  $k$ , which is of the customary construction, is the same as now ordinarily employed except that the handle of the lever  $l$ , projects from one side of the top  $h$ , relative to the spout  $d$ .

Arranged within the bottle  $a$ , in the usual and well known manner, is a siphon tube  $m$ , having a metallic head  $m'$ , provided with an annular and angular rim,  $n$ . A peripheral channel  $n'$  is formed in said rim and the top and the bottom of the said ring are reduced to form oppositely disposed substantially parallel flanges forming bearing shoulders  $n^2$ , adapted respectively to engage the gaskets  $e'$ , and  $f'$ , to pack said head above and below said rim, and hubs  $n^3$  and  $n^4$  adapted to prevent the spreading of the gaskets  $e'$ ,  $f'$ , in a manner to interfere with the charging of the bottle. The rim  $n$  of the tube head has a plurality of exterior openings  $o$  therein establishing communication between the channel  $n'$  and the space about the bottom of the rim  $n$  within the bottle, said openings extending through the lower flange  $n^2$ , and the hub  $n^4$  thus providing means whereby the bottle may be filled exteriorly of the siphon tube. This construction permits water to be drawn from the bottle through the tube  $m$ , which permits the bottle to be simultaneously charged through said opening or duct, proper means being provided to introduce water into the channel  $n'$ .

Heretofore it has been the practice to fill siphon bottles by means of a special machine in which the bottle is held in an inverted position with the valve opened, to permit the charging of water through the nozzle or spout, the pressures within the bottle and within the filling tank or reservoir being equalized by means of a vent cock in a pipe connection between the nozzle and said tank. This construction permitted water properly aerated or charged with gases

and under the necessary pressure to be charged into the bottle until such time as the air or other gases in the upper part of the bottle, were placed by the accumulation of water in the bottom of the bottle under pressure equaling that in the said tank. It was necessary to invert the bottles because in filling, the liquid was passed through the siphon tube and the bottom of the tube would otherwise be submerged in the water causing the gases under pressure to be at the closed end of the bottle. The necessity for this manner of filling was due to the practice of filling the bottle through the tube. To obviate these difficulties, I provide a siphon head wherein aerated or charged water is supplied to the bottle through a channel exterior to the siphon tube, thus causing the accumulation of free air or gases under pressure at a point adjacent to the entrance openings for the incoming fluid. This arrangement permits the old style of vent cock and at the same time permits the water to be drawn from the bottle simultaneously with the entrance of other water thereto. This filling means comprises a boss  $p$ , having an enlarged chamber therein,  $p'$ , said chamber being in communication through an opening  $p^2$ , with the channel  $n'$  in the head of the siphon tube  $m$ .

Secured to the boss  $p$ , in any desired manner, as by screw threads, is a cap  $q$ , having a knurled rim  $q'$ , and a nipple  $q^2$ , adapted to form one part of a coupling to facilitate the connection of the siphon bottle with a fitting for charging same. A suitable packing gasket  $q^3$ , encircles a valve seat  $q^4$ , within said cap, to make said cap and said boss  $p$ , perfectly water tight. Mounted in the opening of the nipple  $q^2$ , is an angular stem  $r$ , the head  $r'$ , of which acts as a valve gate coöperating with the valve seat  $q^4$ . This stem is normally forced outward by means of a spring  $r^2$ , to close the valve and maintain it so, although the pressure within the bottle will ordinarily be such as to prevent the accidental opening of said valve. The stem  $r$ , has a transverse cut in the head thereof as shown, for the purpose in part of facilitating the assembling of the device and in part for increasing the flow of water through the boss  $p$ . The filling attachment with which this bottle is adapted to be used, is shown in Fig. 3, and indicated in dotted lines in Fig. 2, for the purpose of more clearly indicating the functions and mode of operation of the various parts of the siphon head, the filling valve, for the head in the said Fig. 2, being open. This attachment comprises a forked support  $s$ , the arms of which are adapted to straddle the neck of the bottle and engage beneath the ring  $b$ ; and a coupler fitting  $t$ , adapted to pass over that of the nipple  $q^2$ , and enter the opening therein to engage and operate the valve



stem  $r$ , said fitting  $t$ , being in communication with the pressure tank or reservoir (not shown) through the pipe connection  $t'$ , having in its length an ordinary filling valve  $t^2$ , the vent of which is indicated at  $t^3$ .

Pivotaly mounted on the filling or charging fixture above the fork  $s$ , is a yoke  $u$ , the arms of which are adapted to straddle and engage the ring  $q'$ , of the cap  $q$ . This yoke is provided with an operating handle  $u'$ . The function of the yoke  $u$ , is to force and hold the bottle in the proper intimate relation to the coupler  $t$  in a manner to form a perfectly tight joint between said fitting and the nipple  $q^2$ , and cause this coupling  $t$ , to open the valve  $r'$ , and hold it open until the bottle is filled.

The operation of the heretofore described bottle is substantially as follows: The various elements having been assembled in the manner described, and the siphon head screwed upon the ring  $b$ , to an extent to simultaneously compress the gaskets  $e'$ , and  $f'$ , between the shoulder  $e$ , and the bottom flange  $n^2$ , and the neck of the bottle; and between the upper flange  $n^2$ , and the shoulder  $f$  respectively, the bottle  $a$ , which is assumed to be empty, is so brought as to slip the ring  $b$ , through the arms of the fork  $s$ , with the nipple  $q^2$ , projecting into the coupler fitting  $t$ . As the said nipple enters said fitting, the stem  $r$  is forced backward against the tension of the spring  $r^2$ , until the head  $r'$ , is free from the seat  $q^4$ . To properly pack the said nipple relative to said coupler fitting, and to hold the bottle in place on said forked support  $s$ , the yoke  $u$  is turned downwardly, by means of the handle  $u'$ , thereby causing the arms of said yoke to straddle and engage the rim  $q'$ . A subsequent movement of said yoke, will result in a slight and gradually diminishing wedging action sufficient to force the co-operating parts of the coupler, (the fitting  $t$ , and the cap  $p$ ), into the necessary close relation to form a perfectly tight joint. Thereupon the valve  $t^2$ , is opened, and the aerated or charged water is passed through the nipple  $q^2$ , about the stem  $r$ , to the passage communicating with the channel  $n'$ , and through the openings  $o$ , to the bottle exteriorly to the siphon tube. It will be observed that the openings  $o$ , pass through the hub  $n^4$ , thus providing a shield between the said openings and the packing ring or gasket  $e'$ . It will also be observed that the said hub projects sufficiently below said ring or gasket to prevent the latter from so spreading and overlapping it as to close or obstruct the said openings. These openings being minute and reasonably numerous, spray the water into the bottle at all points about the tube, thus not only rapidly filling the bottle but causing the water to be sprayed through the free gases accumulated

within and adjacent to, the neck of the bottle in a manner to cause it to absorb or take up a part of said gas to an extent to greatly improve the quality of the contents of the bottle.

It has been found in practice that the bottle will become substantially half filled with water before the pressure therein equals that in the filling tank. When this condition is reached, however, it is merely necessary to operate the valve  $t^2$ , in the usual and well known manner thus permitting the gases accumulated upon the water and contained within the bottle  $a$ , to pass through the openings  $o$ , the channel  $n'$ , the boss  $p$ , and the members of the coupling to the vent pipe  $t^3$ , whence they are discharged into the open or into an exterior tank as desired. When the pressure in the bottle is reduced to the necessary extent, the valve  $t^2$  is again operated to cause additional water to flow into the said bottle in volume sufficient to fill same, or to again raise the pressure. When the bottle has been filled it may be released from the coupler and charging fitting, by a reversal of the operation heretofore described and used in the usual way. The construction of the siphon bottle is such, however, that if desired the said charging and coupler fitting, may be made a permanent part of the bar or table fixture, and a bottle may be attached thereto and used while so attached. It will thus be observed that water may be drawn from the bottle proper while it is so connected with the tank or other source of supply, the discharge duct being in all respects independent of the filling channel; or in other words, the water instead of being discharged into the bottle through the siphon tube is charged directly into the bottle about said tube. If desired the valve  $t^2$  may be left open thus causing the bottle to be automatically refilled when the pressure of the free gases is brought below that in the filling tank, by the withdrawal of water through the siphon tube and the resultant expansion of the gases in the upper part of the bottle. It will also be observed that with a siphon bottle of this character, an expensive machine to fill bottles is not required and that the labor and time required to operate said valve  $t^2$ , is much less than with the type of machine heretofore referred to as now being generally used. It will be further observed that with a simple filling machine, dealers in mineral waters may readily refill bottles themselves without an expensive equipment thus minimizing the necessity for storing a quantity of bottles both filled and empty for the conduct of their business.

I am aware of the fact that heretofore siphon bottles have been made wherein separate ports have been provided for filling and discharging and it is not my intention



to claim such broadly. I believe however, that it is broadly new, to provide a single supplemental charging nozzle which is used not only to introduce the charged waters  
 5 into, but also to vent, the bottle, and I intend to claim such broadly.

It is not my intention to limit the invention to the details of construction shown in the drawings and heretofore described, it  
 10 being apparent that such may be varied without departing from the spirit and scope of the invention.

Having described my invention, what I claim as new and desire to have protected  
 15 by Letters Patent is:—

1. In a siphon bottle, the combination with a bottle, a siphon tube therein, and a head on said tube communicating therewith and having a packing rim with one or more openings exteriorly thereof communicating with  
 20 the bottle, of a siphon head embodying therein a spout, said head having a way therein establishing communication between said spout and said siphon tube, a valve seat adjacent to said way, a valve for said seat,  
 25 means controlling said valve, a filling means having a channel communicating with the exterior openings of said siphon tube head, a valve normally closing said channel and  
 30 means whereby said last-mentioned valve may be opened.

2. In a siphon bottle, the combination with a bottle, a siphon tube therein, and a head on said tube communicating therewith  
 35 and having a packing rim with one or more openings exteriorly thereof communicating with the bottle, of a siphon head embodying therein a spout, said head having a way therein establishing communication between  
 40 said spout and said siphon tube, a valve seat adjacent to said way, a valve for said seat, means controlling said valve, a filling means having a channel communicating with the exterior openings of said siphon  
 45 tube head, a cap for said means having a nipple and a valve seat interiorly thereof, a valve for said seat, located within said channel, a spring normally closing said valve, and a valve stem projecting into said nipple  
 50 whereby said valve may be opened.

3. In a siphon bottle, the combination with a bottle, a siphon tube therein, and a head on said tube communicating therewith and having a packing rim with one or more  
 55 openings exteriorly thereof communicating with the bottle, of a siphon head embodying therein a spout, said head having a way therein, establishing communication between said spout and said siphon tube, a valve seat  
 60 adjacent to said way, a valve for said seat, means controlling said valve, a filling means having a channel communicating with the exterior openings of said siphon tube head, a cap for said means having a nipple and a  
 65 valve seat interiorly thereof, a valve for

said seat located within said channel, means normally closing said valve, and an angular valve stem, projecting into said nipple, whereby clearance is provided about said stem, said stem is guided and said valve may  
 70 be opened.

4. In a siphon bottle, the combination with a bottle, a siphon tube therein, and a head thereon communicating therewith and having a packing rim with one or more openings  
 75 exteriorly thereof communicating with said bottle, of a siphon head embodying therein a spout, said head having a way therein, establishing communication between said spout and said siphon tube, a valve seat ad-  
 80 jacent to said way, a valve for said seat, means controlling said valve, a filling means having a channel communicating with the exterior openings of said siphon tube head, a cap for said means having a projecting  
 85 rim adapted to be engaged by a clamping member of a charging device, a nipple and a valve seat interiorly thereof, a valve for said seat, and means whereby said valve may be actuated.  
 90

5. In a siphon bottle, the combination with a bottle, a siphon tube therein, and a head on said tube, communicating therewith and having a packing rim with one or more  
 95 openings exteriorly thereof communicating with the bottle, of a siphon head embodying therein a spout, said head having a way therein establishing communication between said siphon tube and said spout, a boss having  
 100 a chamber therein, a plurality of substantially parallel shoulders within said head, said head having a channel therein extending from within said head to said chamber intermediate said shoulders and communicating with the exterior openings of said  
 105 siphon tube head, packing rings or gaskets respectively disposed between the top of said rim and one of said shoulders, and between the bottom of said rim and the other said shoulder and the neck of the bottle, a valve  
 110 seat adjacent to the way leading to said spout, a valve for said seat, means controlling said valve, a filling means communicating with said chamber, and means whereby said filling means may be opened and closed.  
 115

6. In a siphon bottle, the combination with a bottle, a siphon tube therein, and a head on said tube communicating therewith, comprising a rim having a peripheral channel therein forming oppositely disposed packing  
 120 flanges, the lower of said flanges having openings extending therethrough and communicating with the bottle, of a siphon head embodying therein a spout said head having a way therein establishing communi-  
 125 cation between said spout and said siphon tube, a valve seat adjacent to said way, a valve for said seat, means controlling said valve, a filling means having a channel communicating with the peripheral channel in  
 130



said rim, and means whereby said filling means may be opened and closed.

7. In a siphon bottle, the combination with a bottle a siphon tube therein, and a head on said tube communicating therewith comprising a rim having a peripheral channel therein forming oppositely disposed flanges and a hub below the bottom flange, said bottom flange and said hub having openings extending therethrough and communicating with the bottle, of a siphon head embodying therein a spout, said head having a way therein establishing communication between said spout and said siphon tube, a valve seat adjacent to said way, a valve for said seat, means controlling said valve, a filling means having a channel communicating with the peripheral channel in said rim, and means whereby said filling means may be opened and closed.

8. In a siphon bottle, the combination with a bottle, a siphon tube therein and a head on said tube communicating therewith, com-

prising a rim having a peripheral channel therein forming oppositely disposed flanges, 25 a hub above the top flange and a second hub below the bottom flange, said bottom flange and said last mentioned hub having openings therethrough communicating with the bottle, of a siphon head embodying therein a 30 spout, said head having a way therein establishing communication between said spout and said siphon tube, a valve seat adjacent to said way, a valve for said seat, means controlling said valve, a filling means having a 35 channel communicating with the peripheral channel in said rim, and means whereby said filling means may be opened and closed.

In witness whereof, I have hereto affixed my signature this 25 day of March, 1907, in 40 the presence of two witnesses.

FRANK SPITZENBERG.

Witnesses:

ELISHA W. HINMAN,  
SAMUEL F. TAGGART.