

May 17, 1938.

D. E. BOWMAN

2,117,271

COMBINED SIPHON BOTTLE AND CARBONATOR

Filed Aug. 17, 1937

2 Sheets-Sheet 1

FIG. 1.

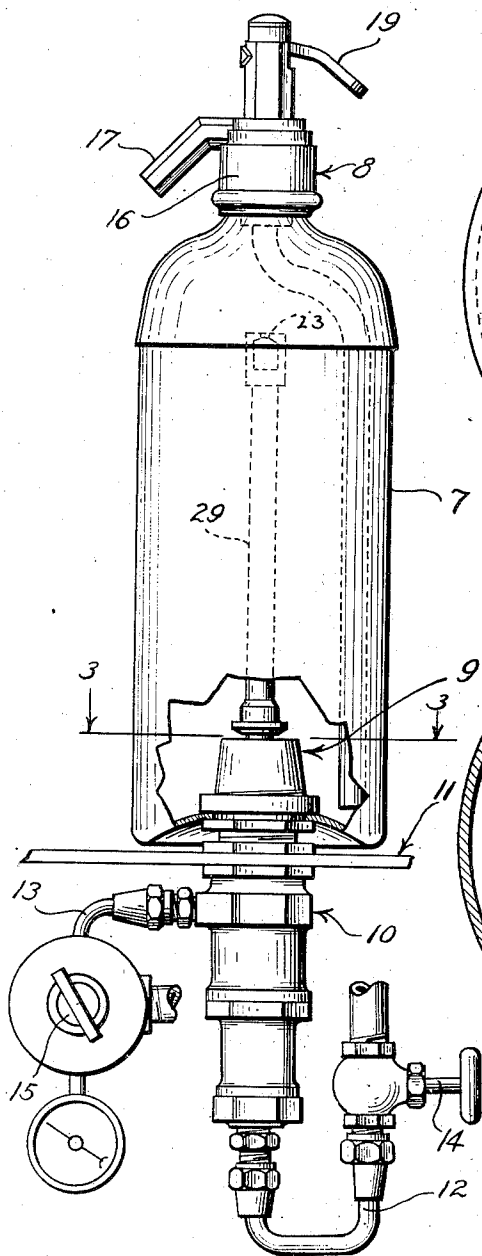


FIG. 2.

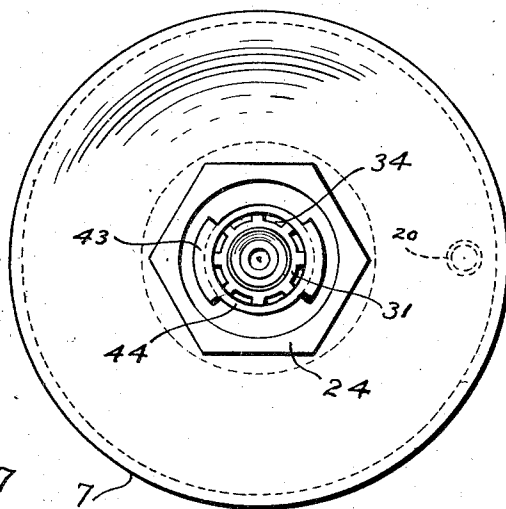
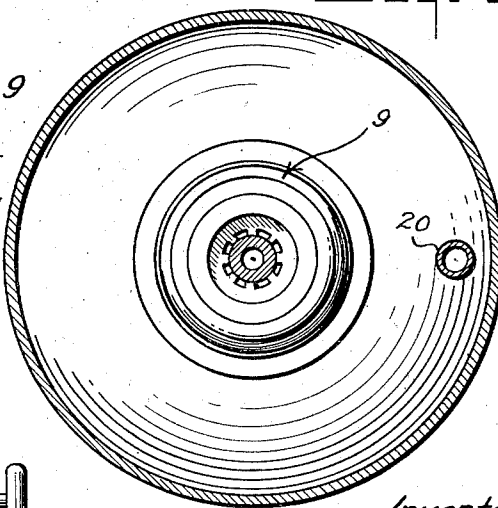


FIG. 3.



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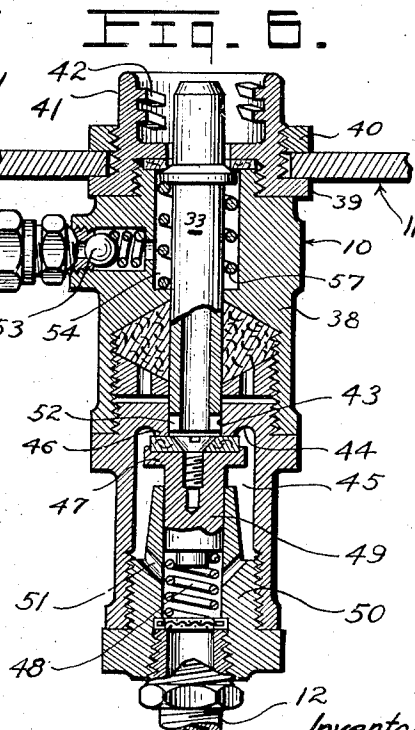
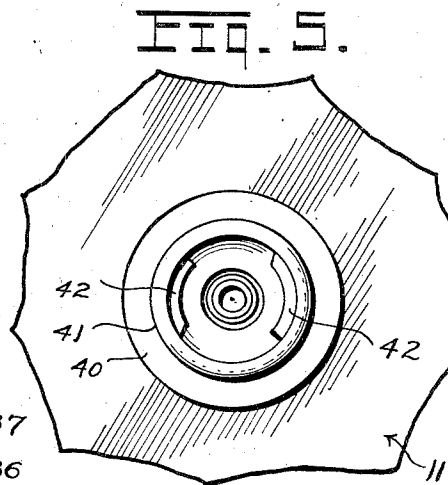
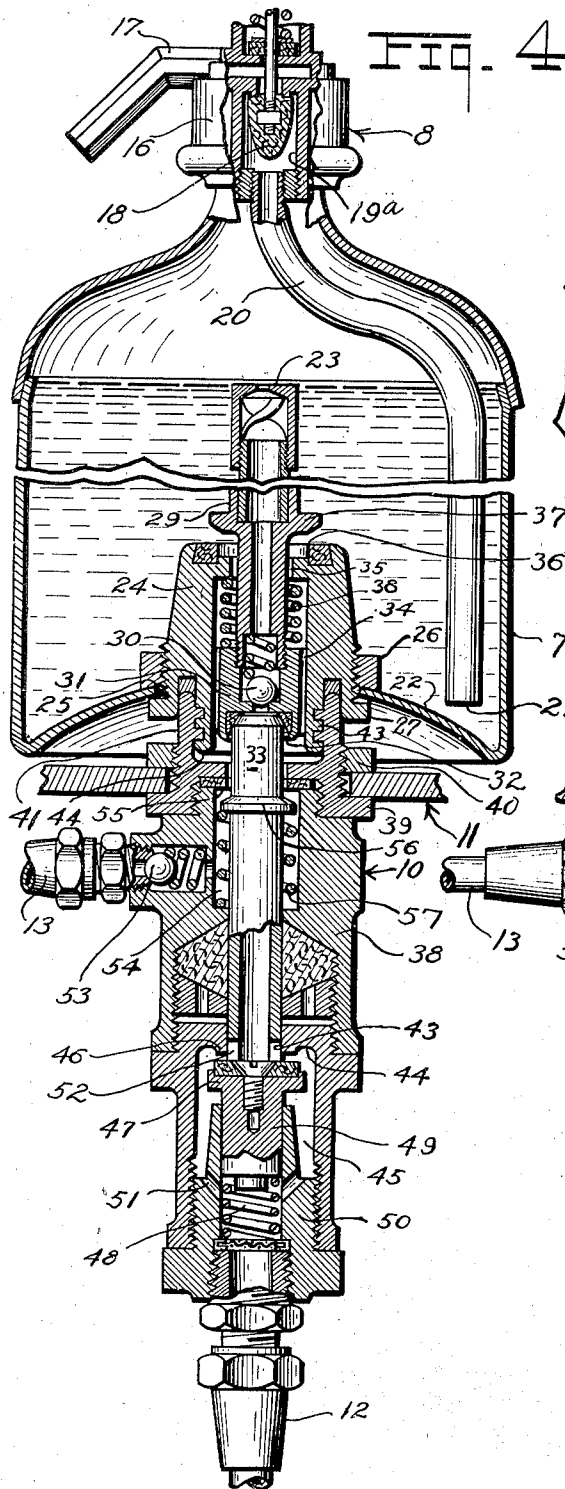
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COMBINED SIPHON BOTTLE AND CARBONATOR

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2 Sheets-Sheet 2



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COMBINED SIPHON BOTTLE AND CARBONATOR

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12 Claims. (Cl. 226—62)

This invention relates to and has for an object the provision of a combination siphon bottle and carbonator, or what may be termed a self carbonating siphon bottle, wherein upon introduction of liquid and gas thereto from sources under pressure, the liquid will be automatically, thoroughly saturated with the gas within the bottle during such introduction, whereby the bottle is therefore subject to being quickly, easily and conveniently charged or recharged.

Another object of this invention is to provide a self carbonating siphon bottle of the character described which is equipped with valve intaking means adapted to be engaged with a filling fountain from which separate streams of liquid and gas are directed through said valve means into the bottle upon the occasion of positioning the bottle in a predetermined manner relative to or upon said fountain or over said fountain whereby quick and convenient filling of the bottle adjacent the point of its use, such, for example, as upon a shelf or serving bar, is made possible. At the same time, a thorough carbonating action takes place within the bottle during the introduction of the liquid and gas thereto.

I have shown in the accompanying drawings a preferred form of combined siphon bottle and carbonator embodying my invention, subject, however, to modification, within the scope of the appended claims, without departing from the spirit of my invention.

Referring to the drawings:

Fig. 1 represents a side elevation of a combined carbonator and siphon bottle constructed in accordance with this invention, the bottle being broken away for the sake of clarity of illustration,

Fig. 2 is an enlarged bottom plan view of the bottle,

Fig. 3 is an enlarged sectional view taken on the plane of line 3—3 of Fig. 1,

Fig. 4 is an enlarged fragmentary vertical sectional view of the bottle as when in position to be charged with liquid and gas, showing the bottle substantially charged,

Fig. 5 is an enlarged fragmentary top plan view of the filling fountain,

Fig. 6 is a vertical sectional view of said fountain.

One embodiment of the combined siphon bottle and carbonator of this invention, as shown in the accompanying drawings, comprises a siphon bottle 7 equipped with the usual siphoning or dispensing head 8 and an automatic carbonating and intaking means 9, which latter is adapted to

be engaged with a filling fountain 10. As here shown, the fountain 10 is mounted upon a shelf, serving bar, or like support 11 so that the bottle may be stood upon or over the fountain in such manner that the means 9 will engage with the fountain to establish a filling connection therewith, and when disengaged from the fountain will cause the bottle to close as well as the fountain. Inasmuch as the fountain 10 is adapted to charge separate streams of liquid and gas into the bottle, it is connected with pressure sources of liquid and gas not shown by means of pipe lines 12 and 13, respectively, and by a control valve 14 in the liquid line 12 and a pressure regulating valve 15 of any suitable form in the line 13, the pressure of gas discharging through the fountain may be regulated, in consideration of the liquid pressure.

The siphoning head 8 comprises the usual body portion 16, having a discharge spout 17 and equipped with a spring loaded, normally closed valve 18, operated by means of a handle 19. Depending from the body into the neck of the bottle is a valve chamber 19^a supporting a siphon tube 20, the lower intake end 21 of which is disposed adjacent the concavo-convex bottom wall 22. Pressure of gas on the liquid in the bottle causes an upward flow thereof through the tube 20, past the valve 18 when open, and out through the spout 17 in the usual manner.

In accordance with this invention, the automatic carbonating and liquid and gas intaking means 9 is arranged so that a stream of gas under pressure is introduced adjacent the lower end of the bottle, whereas a stream of liquid under pressure is introduced through an atomizer or spray device 23 adjacent the upper end of the bottle. This atomizer causes a finely divided mist-like whirling spray to co-mingle with the gases rising from the point of the introduction thereof in such manner as to thoroughly saturate the liquid with the gas, at the same time that the liquid and gas are being charged into the bottle. It is now seen that this arrangement provides for a better carbonated product having highly desirable characteristics and which is created within the bottle at the time of the introduction of the ingredients for forming it. This taken into consideration with the fact that the liquid and gas may be quickly and conveniently introduced into the bottle by the mere placing of the bottle in a predetermined position with respect to the filling fountain, as, for example, the standing of the bottle over the fountain, makes possible advantages and conveniences and the

saving of time in the initial and refilling operations of siphon bottles constructed in accordance with this invention.

One form of the combined automatic carbonating and liquid and gas intaking means of this invention which I may use comprises a tubular valve body 24 mounted in an opening 25 formed in the center of the bottom 22 of the bottle and secured at such point by means of the nut 26 and cooperating flange 27, together with suitable packing or sealing means. Slidably supported within the valve body 24 is an upright liquid injection tube 29 terminating adjacent the upper end of the bottle in the atomizer 23. At its lower end, this tube is normally closed by an upwardly opening check valve 30 mounted in a housing 31, which has a socket portion 32 at its lower end adapted for reception of the liquid discharge spout 33 of the fountain 10. When this spout is engaged in the socket 32, the pressure of the liquid will open the valve 30 and the liquid will pass upwardly through the tube 29 and out through the atomizer 23, the valve closing automatically upon removal of the bottle from the fountain.

The gas discharges into the bore of the valve body 24 and passes upwardly through the grooves 34 and 35, formed respectively in the housing 31 and body 24. The uppermost grooves 35 open into a valve seat 36 controlled by a valve 37 carried by the tube 29. The valve 37 is normally held seated by the spring 38 mounted in the body 24 and particularly shown in Fig. 4, and this spring likewise holds the socketed end 32 in extended position. With this arrangement, it is seen that when the said socketed end engages the spout 33 of the fountain 10, the gas admission valve 37 in the bottle is open to permit introduction of gas into the bottle, and that this valve will automatically close upon detaching the bottle from the fountain.

The fountain 10, as here shown, comprises a sectional tubular body 38 adapted to be secured to the shelf or serving bar 11 by means of the threaded fittings 39 and 40. The fitting 39 is extended above the shelf or support 11 in the form of a tubular coupling member 41, having interrupted threads 42 interiorly thereof and adapted to cooperate with similar threads 43 provided on a tubular extension 44 of the body 24. The member 44 is arranged to fit within the coupling 41 when the bottle is positioned for refilling, and upon appropriate turning of the bottle, a quick, detachable, mechanical joint of the bottle with the fountain may be effected.

The liquid discharge spout 33 of the fountain 10 is slidably positioned within the bore of the body 38 so that its upper end is extended into the tubular coupling 41. The lower end of the spout 10 is slidable within the bore 43 of a closure 44 which defines the valve chamber 45 at the lower end of the body 38. This closure 44 is provided with an annular valve seat 46 surrounding the bore 43 and adapted to be engaged by a valve 47 normally held seated by a spring 48. The valve 47 has a stem 49 slidably supported in a plug 50, to which plug the liquid pipe line 12 is connected by any suitable means. Liquid entering the bore through the plug will flow through inclined outlets 51 into the chamber 45, and if the valve 47 is unseated, will enter the spout 33 through the lateral openings 52 in the lower end of said spout.

The gas discharge from the fountain 10 is controlled by an inwardly opening check valve

53 opening responsive to gas pressure from pipe line 13 to permit gas to flow into a chamber 54 in the body 38. The upper end of this chamber has an opening 55 which is grooved vertically and affords a sliding support for the spout 33 while permitting discharge of gas through the grooves thereof. The gas outlet thus formed around the spout 33, that is between the spout and the opening 55, is controlled by a valve 56 on the spout 33. A spring 57 normally holds the spout 33 in uppermost position whereby the valve 56 is seated to close the gas outlet. In this position of the spout, the lateral intake openings 52 in the lower end thereof are closed by the wall of the bore 43, as shown in Fig. 6.

It is now seen that when the bottle is positioned over the fountain, as shown in Figs. 1 and 4, with the socket 32 receiving the spout 33, the latter will be depressed, while, at the same time, the tubular member 29 will be elevated. Depression of the spout 33 allows the gas to pass from the chamber 54 through the opening 55 into the body 24, and through the grooves 34 and 35 into the bottle, the valve 37 having been unseated by the raising of the tubular member 29. At the same time, the valve 47 is unseated by the depressed spout 33, which latter has its lateral intake openings then exposed to the chamber 45, as shown in Fig. 4. Liquid under pressure in said chamber will then pass upwardly through the spout 33, check valve 30 and tubular member 29 so as to be discharged through the atomizer 23 in the form of a fine whirling mist which will shower downwardly and be intimately admixed with and saturated by the gas arising in the bottom.

It will be noted that the combined siphon bottle and carbonator of this invention provides for the complete saturation of the liquid with the gas within the bottle during the introduction of the liquid into the bottle. In the charging operation, the gas enters the bottle first and thereafter, as the liquid is discharged through the atomizer as a fine mist-like spray, it becomes effectively saturated with gas. When a body of liquid has collected in the bottle, the gas arising through it will further saturate the liquid to provide for a more thorough carbonating action. It is important to note that the filling fountain for introducing liquid and gas into the siphon bottle is so constructed that it may be conveniently placed within a refrigerator or ice box so that upon placing the siphon bottle in the box over the fountain, in accordance with this invention, the charging and carbonating action will take place automatically while the bottle is thus standing in the refrigerator.

I claim:

1. A combined siphon bottle and carbonator comprising a bottle having a head for dispensing a carbonated liquid therefrom, and a combined carbonating and liquid and gas intaking means, having elements thereof disposing interiorly and exteriorly of said bottle apart from said head for introducing gas and liquid into said bottle and saturating the liquid with the gas during said introduction of said liquid.

2. A combined siphon bottle and carbonator comprising a bottle having a head for dispensing a carbonated liquid therefrom, and a combined carbonating and liquid and gas intaking means, having elements thereof disposing interiorly and exteriorly of said bottle apart from said head for introducing gas and liquid into said bottle and saturating the liquid with the gas during said

introduction of said liquid, said last named means including a valve having a portion thereof extended through a wall of the bottle.

3. A combined siphon bottle and carbonator comprising a bottle having a head for dispensing a carbonated liquid therefrom, and a combined carbonating and liquid and gas intaking means, having elements thereof disposing interiorly and exteriorly of said bottle apart from said head for introducing gas and liquid into said bottle and saturating the liquid with the gas during said introduction of said liquid, said last named means including valves for controlling the introduction of liquid and gas into the bottle, and an element associated with said valves and extending through a wall of the bottle and operable to open said valves upon engagement of the said element with a filling fountain.

4. A combined siphon bottle and carbonator comprising a bottle having a head for dispensing a carbonated liquid therefrom, and a combined carbonating and liquid and gas intaking means, having elements thereof disposing interiorly and exteriorly of said bottle apart from said head for introducing gas and liquid into said bottle and saturating the liquid with the gas during said introduction of said liquid, said last named means including valves for controlling the introduction of liquid and gas into the bottle, an element associated with said valves and extending through a wall of the bottle and operable to open said valves upon engagement of the said element with a filling fountain, and a valved filling fountain adapted to be connected with sources of supply of liquid and gas under pressure and operable to open and introduce liquid and gas into the bottle when engaged by said element of said valve means.

5. A self carbonating siphon bottle comprising a bottle having a siphon head for dispensing carbonated liquid therefrom and a combined carbonating and intaking means for introducing liquid and gas from pressure sources thereof into the bottle apart from said head and operating to saturate said liquid with said gas during said introduction of said liquid.

6. A self carbonating siphon bottle comprising a bottle having a siphon head for dispensing carbonated liquid therefrom and a combined carbonating and intaking means for introducing liquid and gas from pressure sources thereof into the bottle apart from said head and operating to saturate said liquid with said gas during said introduction of said liquid, and including detachable valve devices carried by said bottle and separate therefrom, and engageable to effect the opening thereof for establishing a liquid and gas charging connection between said bottle and sources of liquid and gas under pressure.

7. A self carbonating siphon bottle comprising a bottle having a siphon head for dispensing carbonated liquid therefrom and a combined carbonating and intaking means for introducing liquid and gas from pressure sources thereof into the bottle apart from said head and operating to saturate said liquid with said gas during said introduction of said liquid, and including detachable valve devices carried by said bottle and separate therefrom, and engageable to effect the opening thereof for establishing a liquid and gas charging connection between said bottle and sources of liquid and gas under pressure, said bottle carried valve device including separate valve means controlling the introduction of the liquid and gas into the bottle.

8. A self carbonating siphon bottle comprising a bottle having a siphon head at its upper end for dispensing carbonated liquid therefrom and a combined carbonating and intaking means for liquid and gas located at the bottom of the bottle and including a valve means adapted to be engaged with a source of supply of liquid and gas under pressure and to be opened by such engagement to permit introduction of liquid and gas into the bottle, said combined carbonating and intaking means including elements providing for the saturation of the liquid with the gas within the bottle during said introduction of said liquid thereto.

9. A combined siphon bottle and carbonator comprising a bottle, a siphon head for dispensing carbonated liquid therefrom, and means carried by the bottle apart from said head providing for the introduction of liquid and gas under pressure into said bottle and the saturation of the liquid by the gas during the introduction of the liquid as aforesaid.

10. A combined siphon bottle and carbonator comprising a bottle, a siphon head for dispensing carbonated liquid therefrom, and means carried by the bottle apart from said head providing for the introduction of liquid and gas under pressure into said bottle and the saturation of the liquid by the gas during the introduction of the liquid as aforesaid, said last named means being located in the bottom of the bottle and having a portion thereof extended through said bottom.

11. A combined siphon bottle and carbonator comprising a bottle, a siphon head thereon for dispensing carbonated liquid from the bottle, an intake opening apart from said head and in one of the walls of the bottle through which liquid and gas are introduced under pressure, a tubular valve body mounted in said opening, a liquid injection tube vertically movably mounted in said body and extended upwardly into said bottle, atomizing means on the upper end of said injection tube, said tube and valve body defining between them a passage through which gas may be introduced into said bottle, a valve on said tube normally closing said gas passage, spring means operating to hold said valve closed, said tube having one end thereof extended through a wall of the bottle for connection with a source of supply of gas, an inwardly opening check valve controlling the entrance of said tube, and an extension of said valve body extending beyond said wall of said body for establishing a connection with a source of gas under pressure.

12. A combined siphon bottle and carbonator comprising a bottle, a siphon head thereon for dispensing carbonated liquid from the bottle, an intake opening apart from said head and in one of the walls of the bottle through which liquid and gas are introduced under pressure, a tubular valve body mounted in said opening, a liquid injection tube vertically movably mounted in said body and extended upwardly into said bottle, atomizing means on the upper end of said injection tube, said tube and valve body defining between them a passage through which gas may be introduced into said bottle, a valve on said tube normally closing said gas passage, spring means operating to hold said valve closed, said tube having one end thereof extended through a wall of the bottle for connection with a source of supply of gas, an inwardly opening check valve controlling the entrance of said tube, and an extension of said valve body extending beyond said wall of said body for establishing a connection

with a source of gas under pressure, a filling fountain having a passage through which gas is introduced from a source of supply, a liquid discharge spout movably supported in said fountain 5 through which liquid is introduced into said injection tube, valve means on said spout controlling the passage of gas from said fountain, similar valve means controlling the passage of liquid through said spout, spring means normally holding said spout in position to close said fountain valve means and adapted to yield when said spout is depressed by contact with said tube whereby said fountain valves are opened, and 5 coupling means for connecting said valve body and said fountain.

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