Sept. 5, 1967 C. W. WHEELER 3,339,805

CARBONATED WATER CARBONATOR AND DISPENSER

Filed Sept. 21, 1966 2 Sheets-Sheet 1

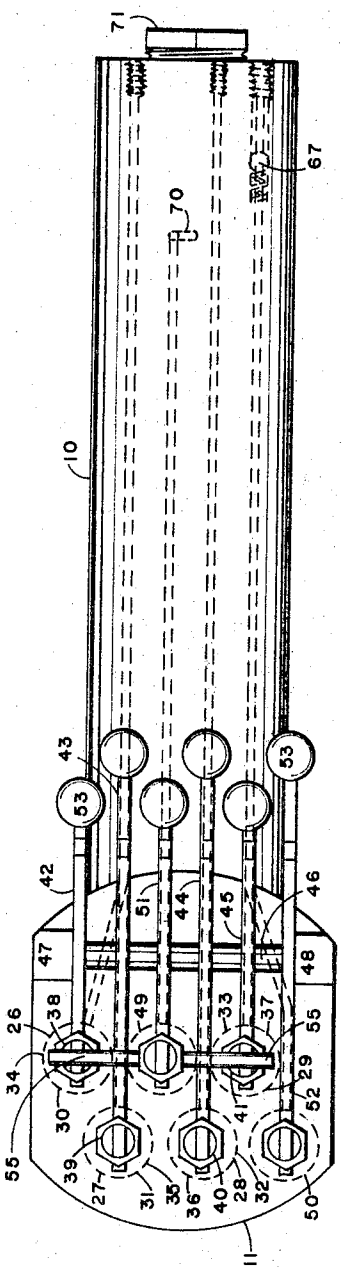


FIG. 2

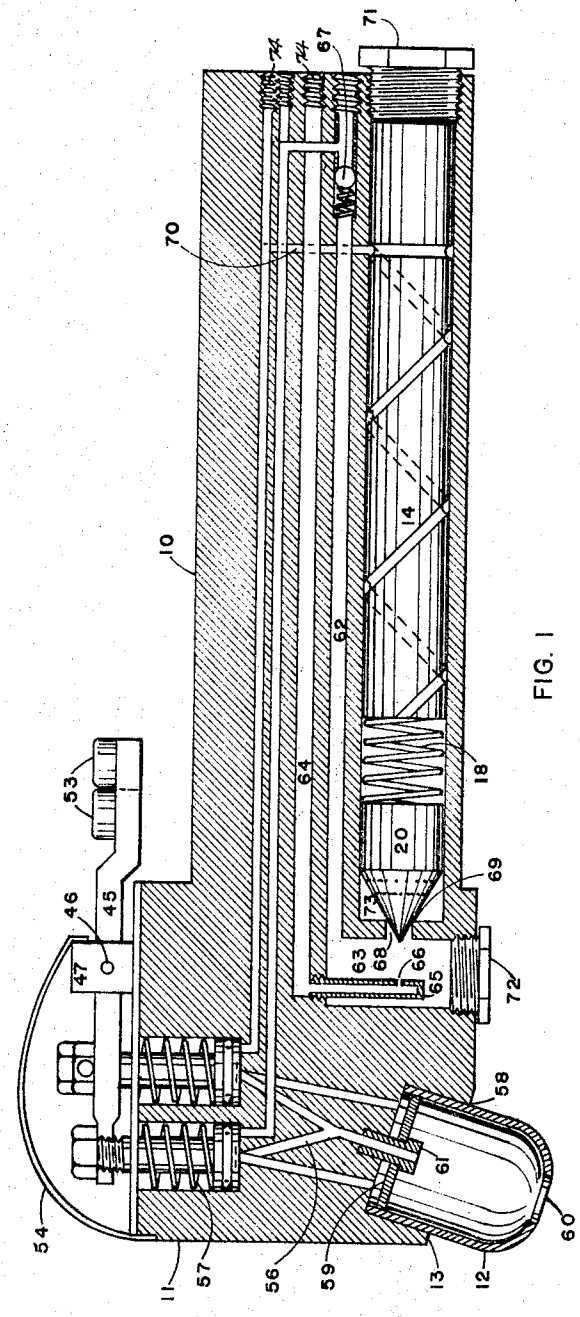


FIG. 1

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CARBONATED WATER CARBONATOR AND DISPENSER

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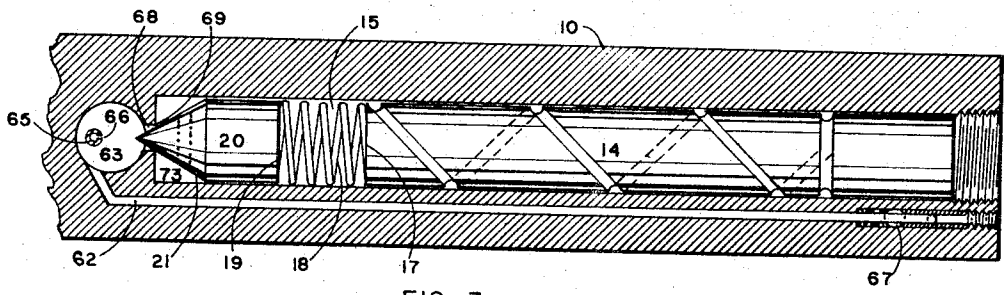


FIG. 3

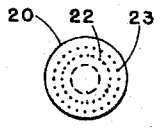


FIG. 7

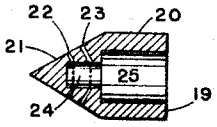


FIG. 6

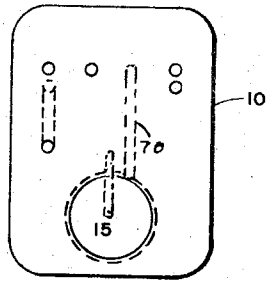


FIG. 5



FIG. 9

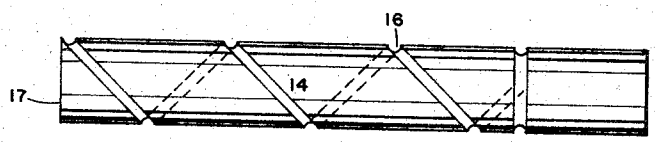


FIG. 8

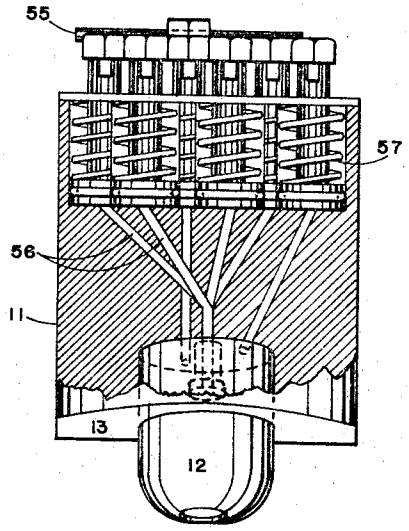


FIG. 4

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CARBONATED WATER CARBONATOR AND DISPENSER

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3 Claims. (Cl. 222—144.5)

The present invention relates to a carbonated water carbonator and dispenser in combination with a machine in which the size of the machine and weight thereof are such that the machine may readily be carried by hand for use as a soda fountain.

This invention also relates to a hand held dispenser of sufficient size to dispense four beverages of any desired flavor plus plain soda or plain water. The carbonator operates on city water at conventional city water pressure.

The purpose of this invention is to provide a carbonator which is small enough to be incorporated in a hand-held beverage dispenser and that may be installed or retained in a refrigerator; and by employing certain principles and combinations of principles of combining plain water, refrigerated to a certain degree, with CO_2, thereby producing a very fine grade of carbonated water.

The various elements of the invention are incorporated in a unique housing having a discharge nozzle controlled by buttons or levers whereby the carbonator may be held and operated by one hand.

The object of this invention is to provide a small beverage dispenser that may be carried in one hand and by which a high grade of carbonated water may be obtained.

Another object of this invention is to provide a dispensing carbonator that may be stored within a drugstore counter, or the like, when not in use.

Another important object of this invention is to provide an improved carbonator in which a high grade of carbonated water may be mixed with syrup of different flavors and combined with water.

A further object of the invention is to provide a carbonator for soda water, and the like, in which the device may be held and operated with one hand.

A still further object of this invention is to provide a carbonator in which a plurality of mixing elements are provided and in which the mixing elements are provided in the form of a perforated cone and spiral extended through the lower part of the handle of the carbonator.

And a still further object of the invention is to provide a carbonator having mixing elements therein in which the device is of simple and economical construction.

With these and other objects and advantages in view the invention embodies an elongated handle having spaced longitudinally disposed passages extended therethrough with a head having lever actuated valves therein on one end, and a conical-shaped mixer on the other and wherein the mixer and passages are positioned in the lower part of the handle and urged against a seat by a spring and spiral element.

Other features and advantages of this invention will appear from the following description taken in connection with the drawings, wherein:

FIGURE 1 is a longitudinal section through the carbonator with the nozzle shown in section.

FIGURE 2 is a plan view of the carbonator.

FIGURE 3 is a sectional plan through the spiral mixing element in the lower part of the handle of the carbonator with the mixing end of the handle broken away.

FIGURE 4 is a view of the mixing end of the handle of the carbonator with parts broken away to show the interior parts thereof.

FIGURE 5 is an end elevational view of the carbonator handle.

FIGURE 6 is a longitudinal section through the mixing cone of the carbonator.

FIGURE 7 is an end view of the mixing cone of the carbonator shown in FIGURE 6.

FIGURE 8 is a side elevational view of the spiral mixing element of the carbonator.

FIGURE 9 is an end elevational view of the spiral mixing element of the carbonator shown in FIGURE 8.

While one embodiment of the invention is illustrated in the above-referred-to drawings, it is to be understood that they are merely for the purpose of illustration and that various changes in construction may be resorted to in the course of manufacture in order that the invention may be utilized to the best advantage according to circumstances which may arise, without in any manner departing from the spirit and intention of the device, which is to be limited only in accordance with the appended claims. And while there is stated the primary field of utility of the invention it remains obvious that it may be employed in any other capacity wherein it may be found applicable.

Referring now to the drawings wherein like reference characters designate similar parts the carbonated water carbonator dispenser of this invention includes a handle **10**, extended from a head **11**, with a nozzle **12** extended angularly from the lower forward surface **13** of the head, and with a spiral mixing element **14** in a bore **15** of the handle. The element **14** is provided with a spiral groove **16** in the surface of the cylinder, as shown in FIGURE 8, and the inner end **17** is positioned in abutting relation with a spring **18** the opposite end of which is in abutting relation with a base **19** of a mixing cone **20**, as shown in FIGURE 3.

The tapering end **21** of the cone is provided with an inner row of openings **22** and an outer row **23**, and inner ends of the openings communicate with a counter-bore **24** that extends from a bore **25** shown in FIGURE 6.

As illustrated in FIGURES 1 and 2 the head **11** is provided with syrup valves **26**, **27**, **28** and **29**. The syrup valves **26** to **29** are mounted in cylinders **30**, **31**, **32** and **33**, and the valves are controlled by pistons **34**, **35**, **36** and **37** positioned on valve stems **38**, **39**, **40** and **41**. The valve stems and pistons are controlled by levers **42**, **43**, **44** and **45** pivotally mounted on a shaft **46**, the ends of which are mounted in trunnions **47** and **48**.

The carbonator head **11** is also provided with a soda valve **49** and a water valve **50** and the valves **49** and **50** are actuated by levers **51** and **52**, also pivotally mounted on the shaft **46**. Outer ends of the levers **42** to **45** and **51** and **52** are provided with buttons **53** whereby the levers may be actuated by the tips of the fingers of a hand.

The valves **26** to **29** and also the soda and water valves **49** and **50** are protected by a cover **54**; the syrup valves are also positioned to coact with the pin **55**.

The four syrup valves **26** to **29** are actuated by the levers **42** to **45** and as a syrup valve is operated it also actuates the soda valve, associated therewith.

The valves **26** to **29** and **49** and **50** are provided with springs **57** which bear against the upper ends of the pistons for urging the pistons to closed positions.

The nozzle **12** is mounted in an inclined position in an opening **58** in the head **11**, and the upper end of the nozzle is provided with a diffuser or spreader **59** which mixes soda and syrup to insure both the syrup and soda being discharged from an opening **60** of the nozzle. The syrup passages **56** which converge, as shown in FIGURE 1 and FIGURE 4, are discharged below the diffuser, and pass through the jet **61**, and into the nozzle, where they are mixed with the soda before being discharged from the opening **60** of the nozzle **12**. These passages **56** from all

four of the syrup valves converge and pass through the jet **61**.

Water supplied through passage **62** enters the mixing chamber **63** where it enters at a tangent, causing a swirling action, and at the same time, the CO_2 enters through passage **64** discharging into the chamber **63** through the jet nozzle **65**, and the opening **66** in the jet nozzle **65** is directed toward the mixing cone **20**. When the soda pressure rises in the mixing chamber **63** above the water supply pressure, check valve **67** prevents soda from backing up into the water supply line to the water valve. After preliminary mixing of CO_2 and water in chamber **63** the mix passes through passages **68**, on demand, as the soda lowers through discharge through nozzle **12**. The edge of the passage **68** in the chamber **15** serves as a seat **69** for the tapering end **21** of the mixing cone **20**.

When the soda valve **49** is opened drawing off soda water through the passage **70**, the lowering pressure permits the mixing cone to move away from the seat **69** and a fresh supply of premixed water and CO_2 passes from the premixing chamber **63** into chamber **73** around the tapering end **21** of the cone **20**. As the soda pressure is used the lowering pressure permits the premix to flow through the small openings **22** and **23** and this provides the final mix of the CO_2 and water.

The end of the bore **15** in the inner end of the handle is provided with a closure plug **71** that is threaded in the bore **15**. The lower end of the premixing chamber **63** is provided with a closure plug **72** that is threaded into the bore of the chamber **63**.

The outer ends of the syrup, water and CO_2 passages are provided with hose connections **74** as shown in FIGURE 1.

From the foregoing description, it is thought to be obvious that a carbonated water carbonator and dispenser constructed in accordance with this invention is particularly well adapted for use, by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that the invention is susceptible of some change and modification without departing from the principles and spirit thereof, and for this reason it is not desired to be limited to the precise arrangement and formation of the several parts herein shown in carrying out the invention in practice, except as claimed.

What is claimed is;

1. A carbonated water dispenser comprising:

(a) an elongated handle having spaced passages extended longitudinally therethrough,

(b) a head on one end of said handle and having a plurality of valves positioned in cylinders extended perpendicularly into said head and from the upper end thereof downwardly into the head,

(c) pistons vertically slidable in the cylinders of said head, and positioned vertically of said head,

(d) a nozzle carried by said head and having syrup, water, and soda passages providing communicating means between said nozzle and valves of said head,

(e) levers pivotally mounted on said head and positioned to operate said pistons through vertical travel thereof,

(f) a mixing cone having rows of radially spaced openings in the wall thereof for providing a mixing element positioned in the area between said handle and head,

(g) said mixing cone providing means for retaining pressurized gas around the mixing element,

(h) a spiral element positioned in the lower part of said handle for independently mixing products in said carbonated water dispenser,

(i) resilient means between said mixing cone and spiral element for urging a tapering end of the mixing cone against a valve seat in one side of the mixing cone,

(j) a check valve in one of said longitudinal passages for preventing return of the product in said passage,

(k) the inner end of said passage in which the check valve is positioned opening into a chamber in said head,

(l) a cross passage connecting said longitudinal passages providing communicating means between said passages,

(m) and a tube having an orifice in one side depending from said head and extended into said chamber.

2. A dispenser as described in claim **1**, including diffusing passages in said head and connecting said nozzle to said valve cylinders.

3. A carbonator-dispenser comprising a handle having spaced longitudinally disposed passages extended therethrough and having a head on one end, and a carbonator in the lower side, and positioned between the head and handle, for mixing plain water and CO_2 gas making a high grade of carbonated water, using city water pressure and pressure from CO_2, said carbonator having a mixing cone in the side in which the passages are positioned and also a spiral element for further mixing in said side in which the spiral element is positioned, a mixing chamber being connected in communication with a check valve for preventing the CO_2 gas in the carbonator backing up into the plain water, a plurality of valves in said head and communicating with said passages, and a plurality of manually actuated levers in said head and positioned to operate said valves, and a nozzle in said head and in communication with said valves.

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