Oct. 5, 1937. J. ALEXANDER 2,094,778

CARBONATING MACHINE

Filed Aug. 31, 1935

Fig. 1.

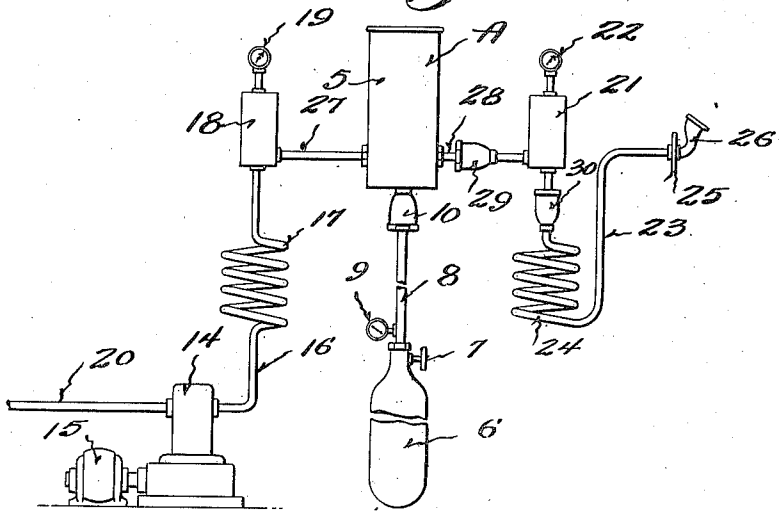
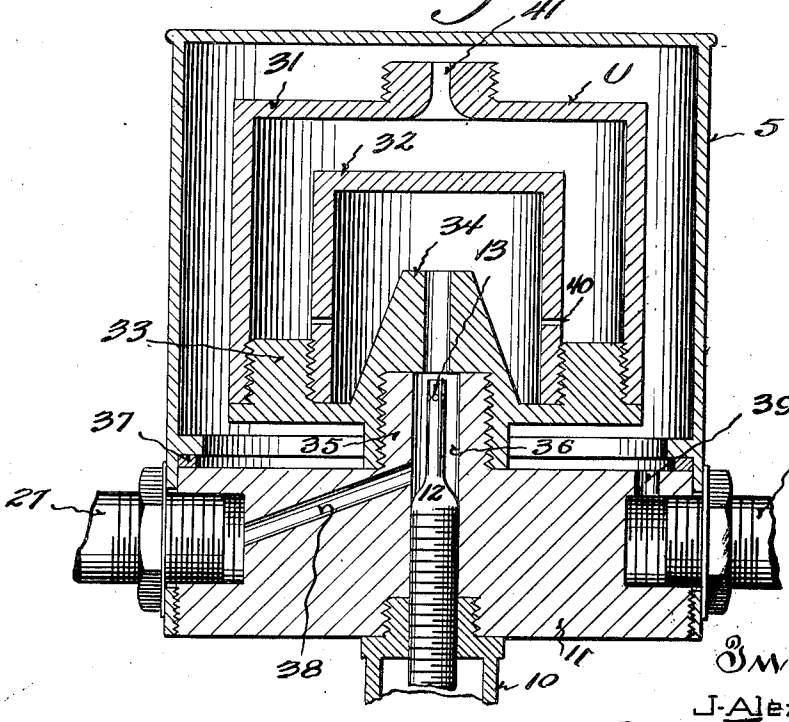


Fig. 2.



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CARBONATING MACHINE

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1 Claim. (Cl. 261—123)

This invention appertains to carbonating machines, and more particularly to machines for facilitating the filling of Seltzer bottles.

One of the primary objects of my invention is the provision of novel means for insuring the proper co-mingling of the liquid and the carbonic or other gas, whereby to form an effective sparkling beverage.

Another object of my invention is the provision of means for forcing the liquid and gas under pressure through a series of novelly arranged chambers in such a manner that the liquid will be effectively broken up, whereby to cause the desired charging of the liquid with the gas.

Another salient object of my invention is the provision of means for forcing the liquid under pressure into a passageway leading to one chamber, with a nozzle for the gas disposed centrally in the passageway having a series of radially extending outlets, so as to cause a turbulence within the passageway, and whereby the gas will be impinged against the liquid stream and co-mingle therewith as the liquid flows through the passageway.

A further object of my invention is the provision of a restricted outlet leading from the passageway for the liquid stream, whereby the liquid stream is caused to forcibly impinge against the top wall of a chamber to break up the liquid stream, and thereby bring about the thorough mixing of the gas and liquid.

A further important object of my invention is the provision of a series of chambers arranged one within the other, each chamber having restricted outlets leading to an adjacent chamber, so that the liquid stream will be subjected to a series of atomizing actions to bring about the proper carbonating of the beverage.

A still further object of my invention is to provide an exceptionally simple and durable carbonator of the above character, which will be efficient in use, and one that can be manufactured and placed upon the market at a reasonable cost.

With these and other objects in view, the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed and illustrated in the accompanying drawing, in which drawing:

Figure 1 is a diagrammatic view illustrating my improved carbonating device.

Figure 2 is an enlarged central section through one of the carbonating units.

Referring to the drawing in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter A generally indicates the improved apparatus which comprises a centrally disposed shell or casing 5 containing one or more of the novel carbonating units U.

Disposed centrally below the shell 5 is the tank 6 for the carbonic or other gas, and this tube or tank 6 can be of any desired or preferred construction having a control valve 7. Detachably connected with the tube or tank 6 is the conductor pipe 8 for the gas, and a pressure gauge 9 can communicate therewith to determine the pressure of the gas flowing through said pipe. The pipe 8 is connected by means of a coupling 10 with the base block 11 of the shell 5, and the base carries a nozzle 12 having a series of restricted, radially extending gas outlets 13.

Arranged at one side of the tank or tube 6 for the carbonic gas is a water pump 14, which can be of any desired character. The pump 14, however, is preferably of the rotary type, and is driven from an electric motor 15 having the desired rating.

Leading from one side of the pump 14 is the water-conducting pipe 16, which may have a coil 17 interposed in the length thereof. This pipe in turn communicates with a water-receiving tank 18 located at one side of the shell 5. A pressure gauge 19 can communicate with the water-receiving tank 18.

A water inlet pipe 20 leads to the opposite side of the pump 14 from the water outlet pipe 16. The pipe 20 can lead from any suitable source of supply.

Disposed on the other side of the shell 5 from the water-receiving tank 18 is the carbonated beverage-receiving tank 21. This tank can also be provided with a pressure gauge 22.

Coupled with the outlet end of the carbonated beverage tank 21 is the lead-off pipe 23 for the carbonated beverage, and this pipe may have incorporated therein a coil 24. The outlet end of the pipe 23 can be firmly secured to one face of a holding plate 25, and connected with the other side of the plate is the charging nozzle 26, which communicates with the said pipe 23. The Seltzer bottles (not shown) can be filled from the nozzle 26 in the ordinary way.

The various parts described can be, in actual practice, located in a desired compact manner on a suitable base or support, so that the entire apparatus will take up a minimum amount of space.

Leading toward the shell from the water tank 18 is a water-conducting pipe 27, and leading

from the shell 5 is a conductor pipe 28 for the carbonated beverage, which leads to the carbonated beverage-receiving tank 21. A check valve 29 is located within the length of the pipe 28, and a similar check valve 30 can be located within the length of the pipe 23, preferably between the carbonated beverage-receiving tank 21 and the coil 24.

Referring more specifically to the carbonating unit U, it will be noted that the same includes a series of inverted cup-shaped members 31 and 32. The member 32 is located centrally within the member 31, and both of the members are threaded onto a disc 33, which is provided with an axially disposed nozzle 34.

The nozzle 34 is threaded on a hollow boss 35 formed centrally on the base plate 11 for the shell 5, and the hollow boss forms an interior passageway 36, in which is received the nozzle 12 of the gas outlet pipe.

The shell 5 is fitted over the base plate 11 and can be united therewith by suitable threads or the like, and a gasket 37 can be fitted between the base plate 11 and a shoulder on the shell so as to form a fluid-tight connection therewith.

The water-conducting pipe 27 leading from the tank 18 is rigidly connected with the base 11, and a passageway 38 is formed in the base for communication with the pipe 27 and the passageway 36 below the restricted nozzle outlets 13. The pipe 28 for the carbonated beverage is also connected with the base block 11 and has communication with the interior of the shell 5 through passageways 39 formed in the said block.

The water is forced under pressure by the pump 14 into the receiving tank 18, from whence the same flows into the restricted outlet 38 and into the passageway 36. As the water flows under pressure through the restricted outlet 38, the same is broken up in the passageway 36, and as the water is broken up and flows through the passageway 36, the same is subjected to a series of carbonic gas jets issuing from the restricted outlets 13. Thus, the liquid and the carbonic gas are initially co-mingled at this point.

The gas and liquid now flow through the restricted nozzle 34, and the same impinges against the top wall of the inverted cup-shaped member 32 and into the chamber defined thereby. The forcible impinging of the gas and liquid against the walls of the chambers further causes the co-mingling of the liquid and gas together. The member 32, adjacent to its lower end, is provided with a series of extremely fine outlets 40, which cause fine streams of the co-mingling gas and liquid to impinge against the side walls of the member 31, and this further brings about the effective combining of the liquid and gas.

In the central portion of the member 31, a restricted outlet 41 is provided, so that the carbonated beverage will issue from the member 31 in a comparatively fine stream.

Particular attention is invited to the fact that one or more of the units U can be used, and where a series of the units U are utilized, the outlet 41 is coupled to an adjacent nozzle 34 of the next outlet.

In the showing in Figure 2, I have only shown one unit U within the shell 5, and consequently the carbonated beverage stream issuing from the outlet 41 impinges against the top wall of the shell 5, and the carbonated beverage flows down into the shell through the passageways 39 into the pipe 28.

This carbonated beverage now flows through the receiving tank 21, through the coil 24, through the pipe 23, and into the nozzle 26.

From the foregoing description, it can be seen that I have provided an exceptionally simple and durable means for combining a gas and a liquid to bring about the forming of an effective carbonated beverage.

Changes in details may be made without departing from the spirit or the scope of my invention, but what I claim as new is:

A carbonator comprising a base block having a centrally disposed passageway opening out through the upper end thereof, means for introducing a gas and a liquid in said central passageway, a shell connected with said base block over the passageway, a carbonated beverage outlet pipe connected with the base block, said base block having a port communicating with the shell and with said outlet pipe, a carbonating unit fitted within the shell including a disc connected centrally with the base block, and an annular upstanding rib provided with internal and external threads, and a pair of inverted cup-shaped members disposed one within the other and threaded respectively with the internal and external threads of the rib, the disc having an axially disposed nozzle communicating with the innermost cup-shaped member and the passageway, said innermost cup-shaped member having a series of radially extending outlets disposed adjacent to the rib, and the outermost cup-shaped member having a centrally disposed outlet communicating with the interior of the shell and terminating adjacent to the upper wall of said shell.

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