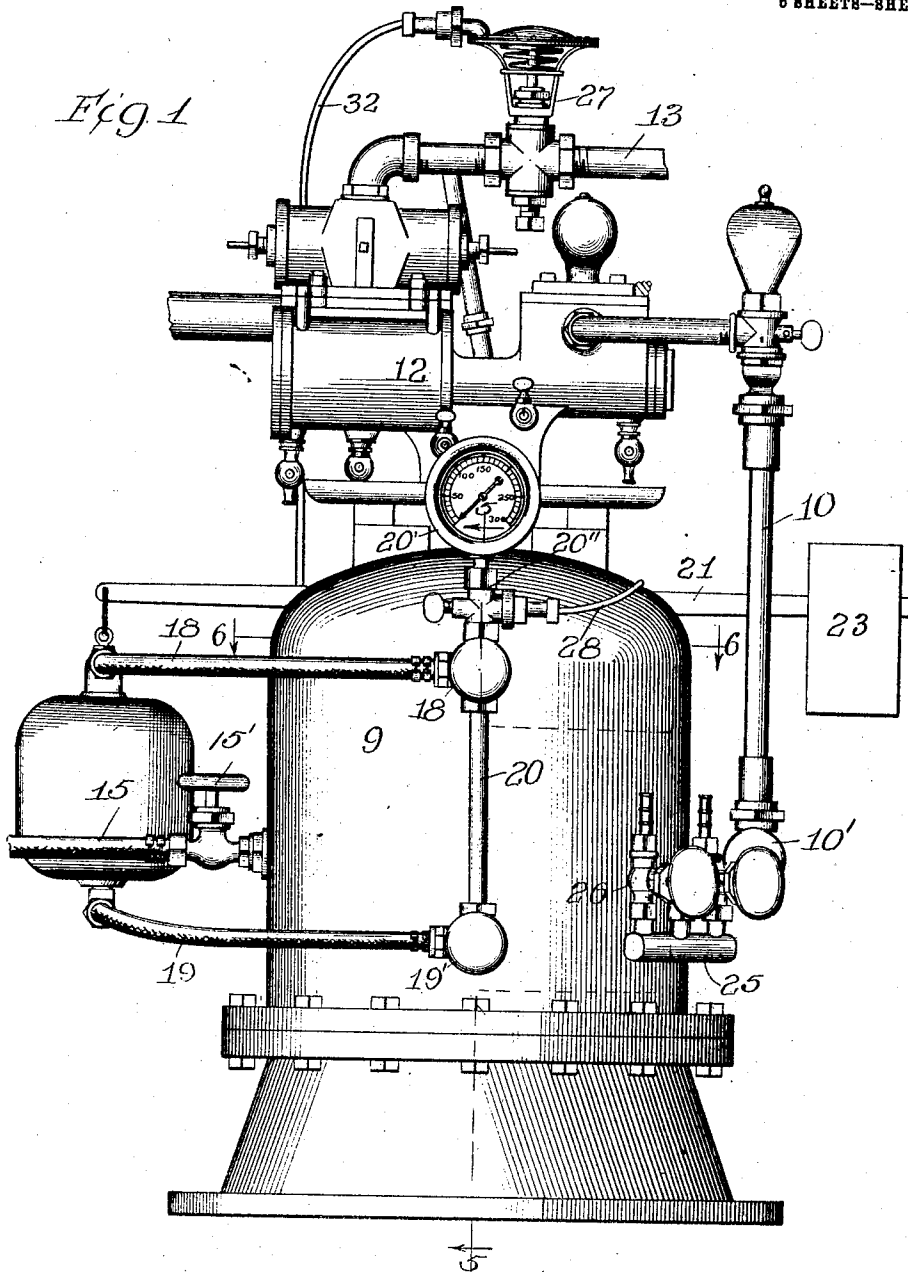


C. L. BASTIAN.
CARBONATING APPARATUS.
APPLICATION FILED NOV. 23, 1908.

932,093.

Patented Aug. 24, 1909.

6 SHEETS—SHEET 1.



Witnesses:

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M. A. Kiddie

Inventor:

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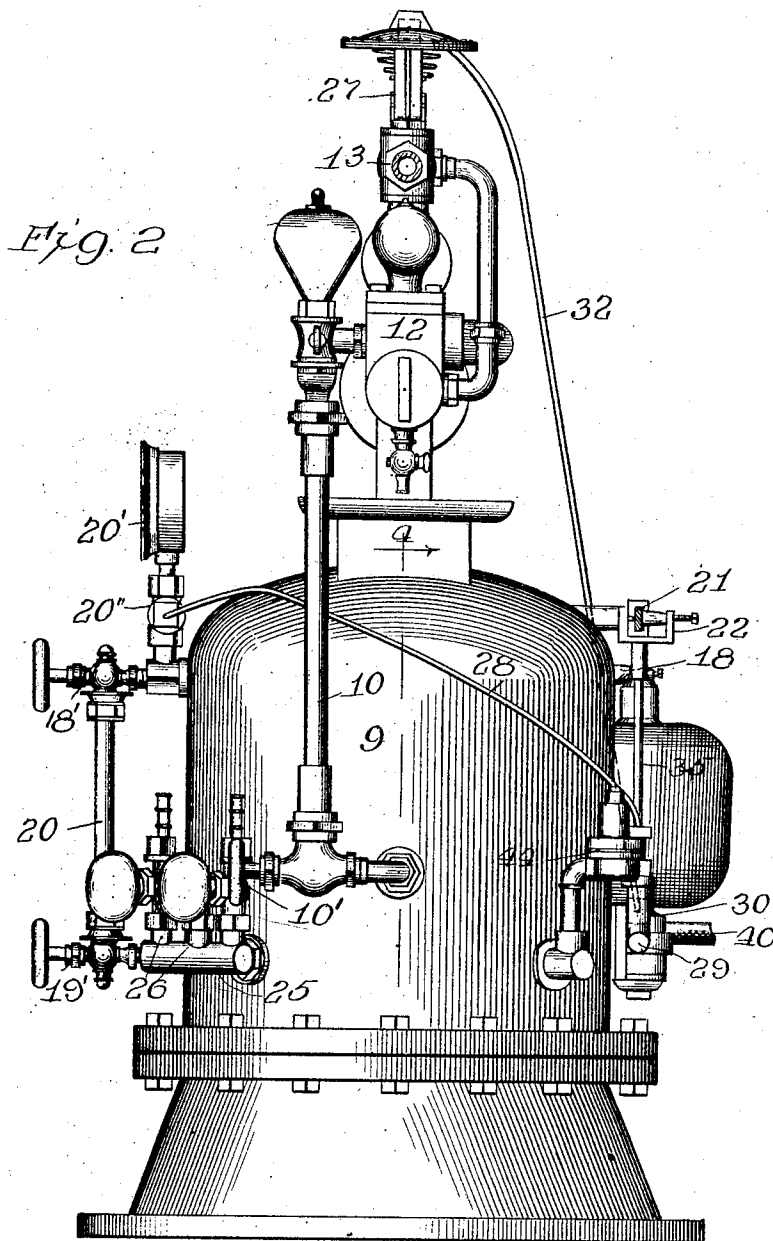
By *J. M. Delly* Atty.

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5 SHEETS—SHEET 2.



Witnesses:

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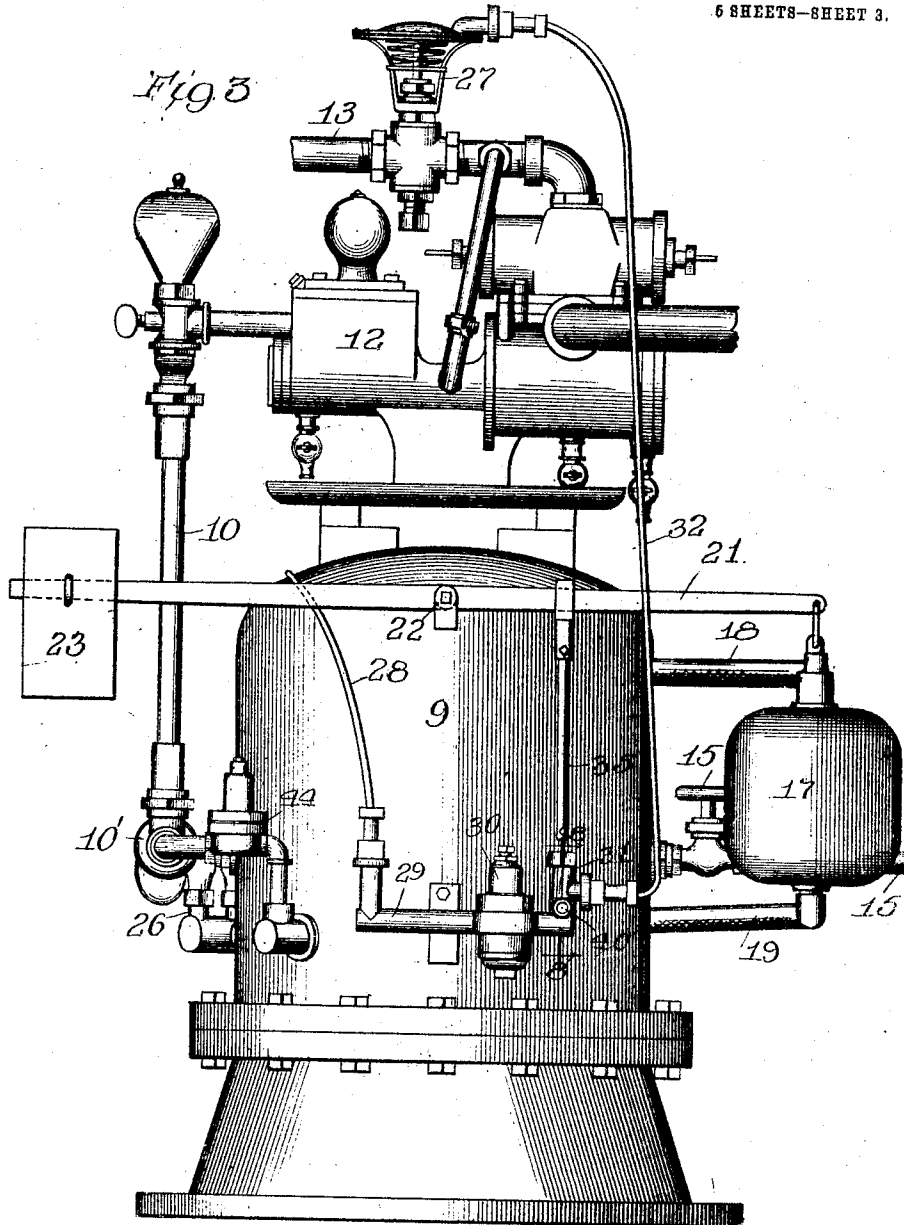
Charles L. Bastian
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5 SHEETS—SHEET 3.



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6 SHEETS—SHEET 4.

Fig. 4

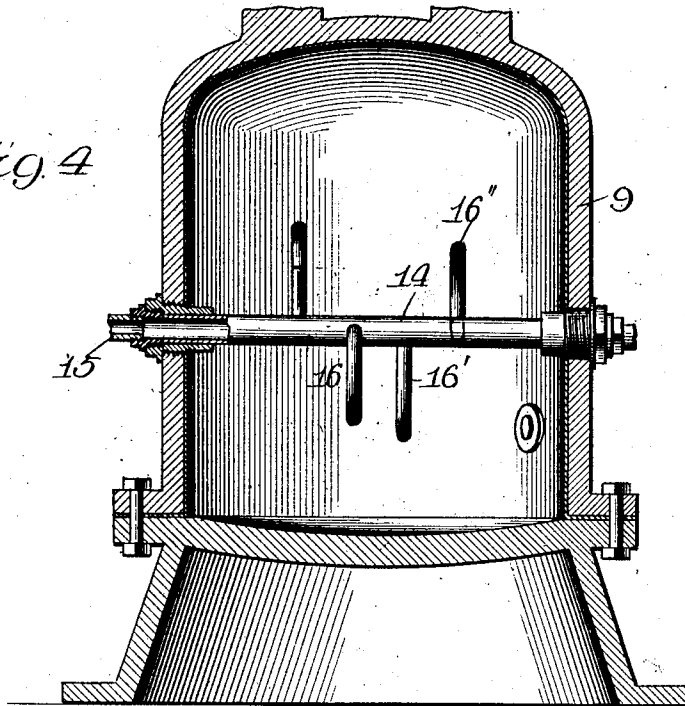
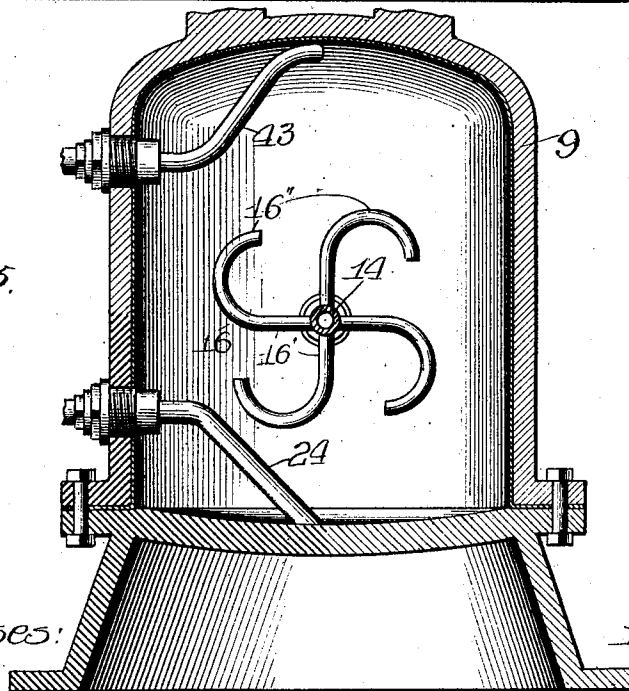


Fig. 5



Witnesses:

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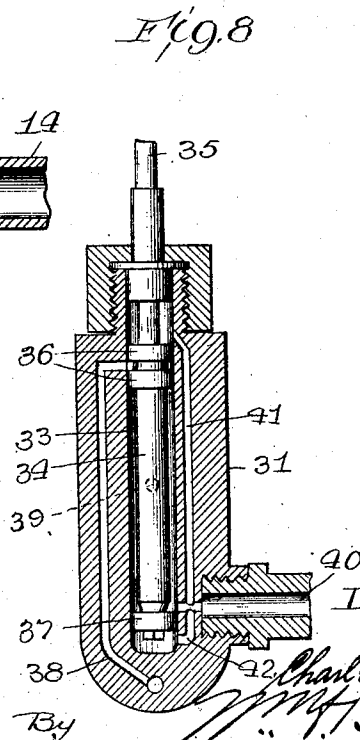
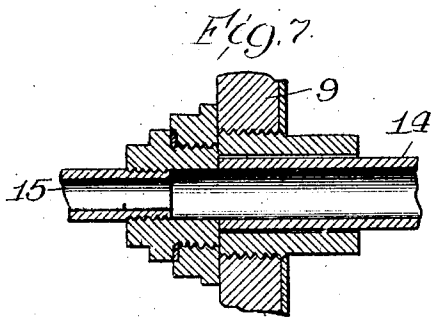
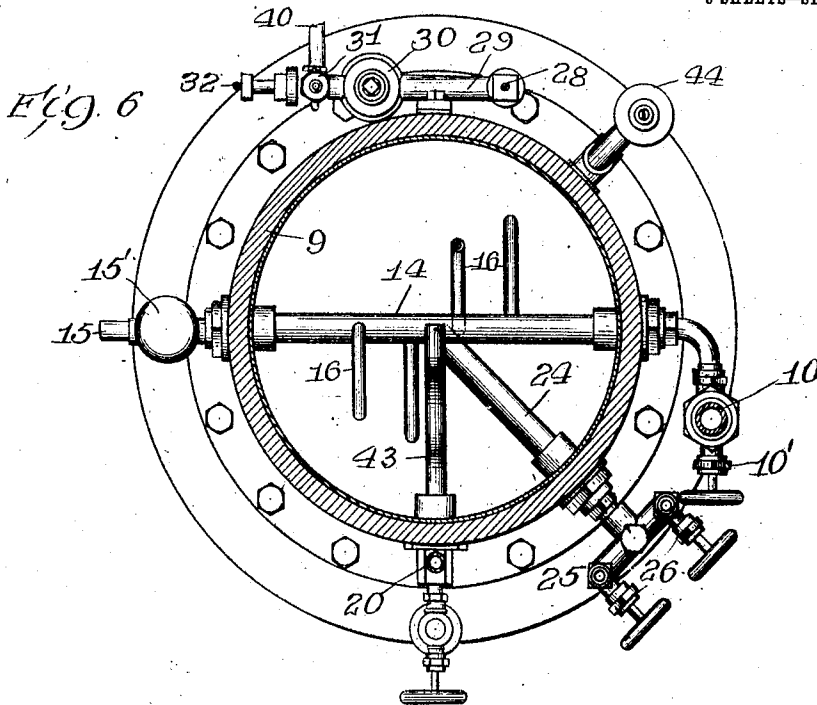
Charles L. Bastian
By W. M. Belk Atty.

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932,093.

Patented Aug. 24, 1909.

6 SHEETS—SHEET 5.



Witnesses:
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Inventor:
Charles L. Bastian
By *[Signature]*
Att'y

UNITED STATES PATENT OFFICE.

CHARLES L. BASTIAN, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE BASTIAN-BLESSING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

CARBONATING APPARATUS.

932,093.

Specification of Letters Patent.

Patented Aug. 24, 1909.

Application filed November 23, 1908. Serial No. 464,104.

To all whom it may concern:

Be it known that I, CHARLES L. BASTIAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Carbonating Apparatus, of which the following is a specification.

This invention relates to improvements in carbonating apparatus in which carbonic acid gas under pressure is combined with water, or other liquid, to produce a carbonated beverage.

The object of the invention is to provide an automatic machine of simple construction which will operate and govern itself automatically to regulate the inflow of liquid and gas whereby to maintain a predetermined quantity of carbonated liquid in the tank.

A further object of the invention is to provide an agitator for mixing the water and gas and which is automatically operated by the inflow of water and also by the inflow of gas to the tank.

In the accompanying drawings illustrating the invention Figure 1 is a front elevation of the machine. Fig. 2 is a side elevation. Fig. 3 is a rear elevation. Fig. 4 is a sectional view of the tank on the line 4—4 of Fig. 2. Fig. 5 is a sectional view of the tank on the line 5—5 of Fig. 1, at a right angle to the section of Fig. 4. Fig. 6 is a horizontal sectional view on the line 6—6 of Fig. 1. Fig. 7 is an enlarged detail sectional view showing the bearing for the agitator shaft in the tank and the connection of the supply pipe thereto. Fig. 8 is a sectional view on the line 8—8 of Fig. 3.

Referring to the drawings, 9 is a tank in which the water and gas are mixed and this tank is supplied with water through a pipe 10 which connects with a pump 12 provided with an inlet pipe 13. The pump is preferably of the water lift variety and is mounted on the tank and connected with the city service pipe in a suitable manner.

An agitator is arranged within the tank and it comprises a revoluble distributing pipe 14 (Figs. 4, 5) suitably journaled in the walls of the tank and connected at one end to the water pipe 10 and at the other end to the gas supply pipe 15. Shut-off valves 10' and 15' are preferably provided adjacent to the tank in the water and gas pipes, respectively, (Fig. 6). A plurality

of discharge pipes 16 are connected to the pipe 14 within the tank and each of said pipes projects outwardly at 16' at a right angle to the shaft and it is provided with a curved end 16''. All of said discharge pipes are constructed alike and their curved discharge ends are turned in the same direction so that whenever water or gas is admitted to the distributing pipe it will be discharged therefrom through the curved pipes and thereby cause said pipes and distributing pipe to revolve and produce an agitation of the liquid within the tank. A balanced tank 17 is connected at its top by a hose 18 and valved connection 18' to the tank, near the top thereof, and this balanced tank is connected at its bottom by a pipe 19 and valved connection 19' to the tank near its bottom so that the same level of liquid will be maintained in the balanced tank as in the main tank substantially at all times. A gage glass 20 is arranged between the connections 18', 19' and a pressure gage 20' is arranged above the connection 18' and connected therewith by a connection 20''. This tank is swung from one end of a lever 21 which is pivotally mounted at 22 on the tank and carries at its other end an adjustable weight 23. The carbonated liquid outlet pipe 24 leads from the bottom of the tank (Fig. 5) and communicates with a cross pipe 25 outside of the tank and provided with a plurality of valved branches 26.

A diaphragm regulating valve 27 of suitable construction is arranged in the water supply pipe 13 to regulate and control the supply of water to the pump, and this valve is itself automatically operated by the balanced tank through the medium of the devices which I will now proceed to describe.

A gas pipe 28 is coupled to the connection 20'' and also to an angle connection 29 mounted on the tank and provided with a reducing valve 30 and a controlling valve 34 inclosed within a casing 31 which is connected by a pipe 32 with the diaphragm chamber of the regulating valve. The casing 31 forms part of or is suitably connected with the angle connection 29 and is provided interiorly with a chamber 33 in which the valve 34 operates. This valve is carried by a stem 35 which is connected to the balanced lever 21 on the same side of its pivot as the balanced tank 17. The valve 34 has two slightly separated cup leathers 36 at its up-

per end and a single cup leather 37 at its lower end, that portion of the valve between the two upper cup leathers and the lower cup leather being of less diameter than the diameter of the valve chamber 33 to permit a circulation of gas or other actuating fluid therethrough. The valve casing is provided with an air inlet passage 38, an outlet passage 39, an exhaust passage 40; and waste passages 41 and 42 for the upper and lower ends, respectively, of the valve chamber.

In practice, the tank is supplied with water by the pump and with gas from a gas tank, and both the water and the gas enter the tank through the distributing pipe 14 and the curved agitator discharge pipes 16. The water enters the distributing pipe at one end and the gas at the other end and the inflow of water or gas will automatically revolve the agitator. The gas supply is regulated in the usual manner by a pressure regulator in the connection to the gas tank and the water supply is regulated by the balanced tank. When the liquid is at or above its predetermined level in the main tank and balanced tank the latter will overcome the weight of the counter-balance 23 and swing the balance lever 21 on its pivot, thereby moving the valve 34 to the closed position shown in Fig. 8. When the carbonated liquid is drawn off and the level in the tank reduced below the predetermined level, as controlled by the adjustment of the weight 23 on the balance lever, the said weight will swing the lever and raise the valve 34 so that air and gas which have accumulated in the top of the tank may flow through pipe 43 (Fig. 5) and pipe 28 to the reducing valve and thence through passage 38 to the valve chamber 33 and out through the port 39 and pipe 32 to the regulating valve 27 which is thereby automatically opened to turn on the water supply to the pump. When the supply of water in the tank has been replenished the balanced tank will operate the balance lever and close the valve 34. Any pressure remaining in the valve chamber 33 will escape through the exhaust passages 40, 41 and 42. The agitator is operated whenever the water flows into the tank and also whenever gas flows into the tank, regardless of the level of the water therein, so that a complete carbonation of the water is effected by an automatic self-acting agitator within the tank. I utilize the air and gas pressure which accumulates in the top of the tank for operating the water regulating valve and this dispenses with the necessity of blowing off such pressure. The valve 30 reduces this pressure to four or five pounds which is sufficient to open the water regulating valve.

A safety valve 44 of suitable construction may be located in any desired position on the tank.

My improved carbonator operates entirely automatically and the pump is driven by city pressure. With twenty-five pounds pressure the pump will work against one hundred and eighty pounds gas pressure, but for practical purposes the gas pressure should not be more than six times the water pressure in order to secure the most satisfactory operation of the pump.

What I claim and desire to secure by Letters Patent is:

1. In a carbonating apparatus, the combination of a tank, a self-acting agitator within the tank comprising a single distributing pipe journaled in bearings in the walls of the tank, curved agitating discharge pipes connected to said distributing pipe and extending outward therefrom, and means for supplying gas and water under pressure to said distributing pipe.

2. In a carbonating apparatus, the combination of a tank, a self-acting agitator within the tank comprising a distributing pipe journaled in bearings in the walls of the tank, curved agitating discharge pipes connected to said distributing pipe and extending outward therefrom, means for supplying water under pressure at one end of said distributing pipe, and means for supplying gas under pressure at the other end of said distributing pipe.

3. In a carbonating apparatus, the combination of a mixing tank, a balanced tank connected therewith, a counter-balance lever pivoted on the mixing tank and carrying said balanced tank, a pump for supplying water to the mixing tank, a supply pipe to said pump, a regulating valve in said supply pipe, a pipe connection between the top of the mixing tank and said regulating valve to conduct gas pressure from the top of the tank to the valve to operate the latter, and a valve in said connection operated by said counter-balance lever.

4. In a carbonating apparatus, the combination of a mixing tank, a balanced tank connected therewith, a counter-balance lever pivoted on the mixing tank and carrying said balanced tank, a pump for supplying water to the mixing tank, means controlled by the pressure of gas taken from the top of the mixing tank for regulating the operation of the pump, and a valve operated by said balanced lever for controlling the supply of pressure to the pump regulating means.

5. In a carbonating apparatus, the combination of a mixing tank, a balanced tank connected therewith, a counter-balance lever pivoted on the mixing tank and carrying said balanced tank, a pump for supplying water to the mixing tank, a supply pipe to said pump, a regulating valve in said supply pipe, a pipe connection between the top of the mixing tank and said regulating valve

to conduct pressure from the tank to the
valve to operate the latter, a reducing valve
and a controlling valve in said connection,
said controlling valve comprising a casing
5 having a valve chamber therein and an
inlet passage, an outlet port, an exhaust
port and exhaust passages, the latter com-
municating with the top and bottom of

said valve chamber, a valve operated in said
chamber, and a stem carrying said valve and 10
connected to said balanced lever between its
pivot and the balanced tank.

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Witnesses:

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