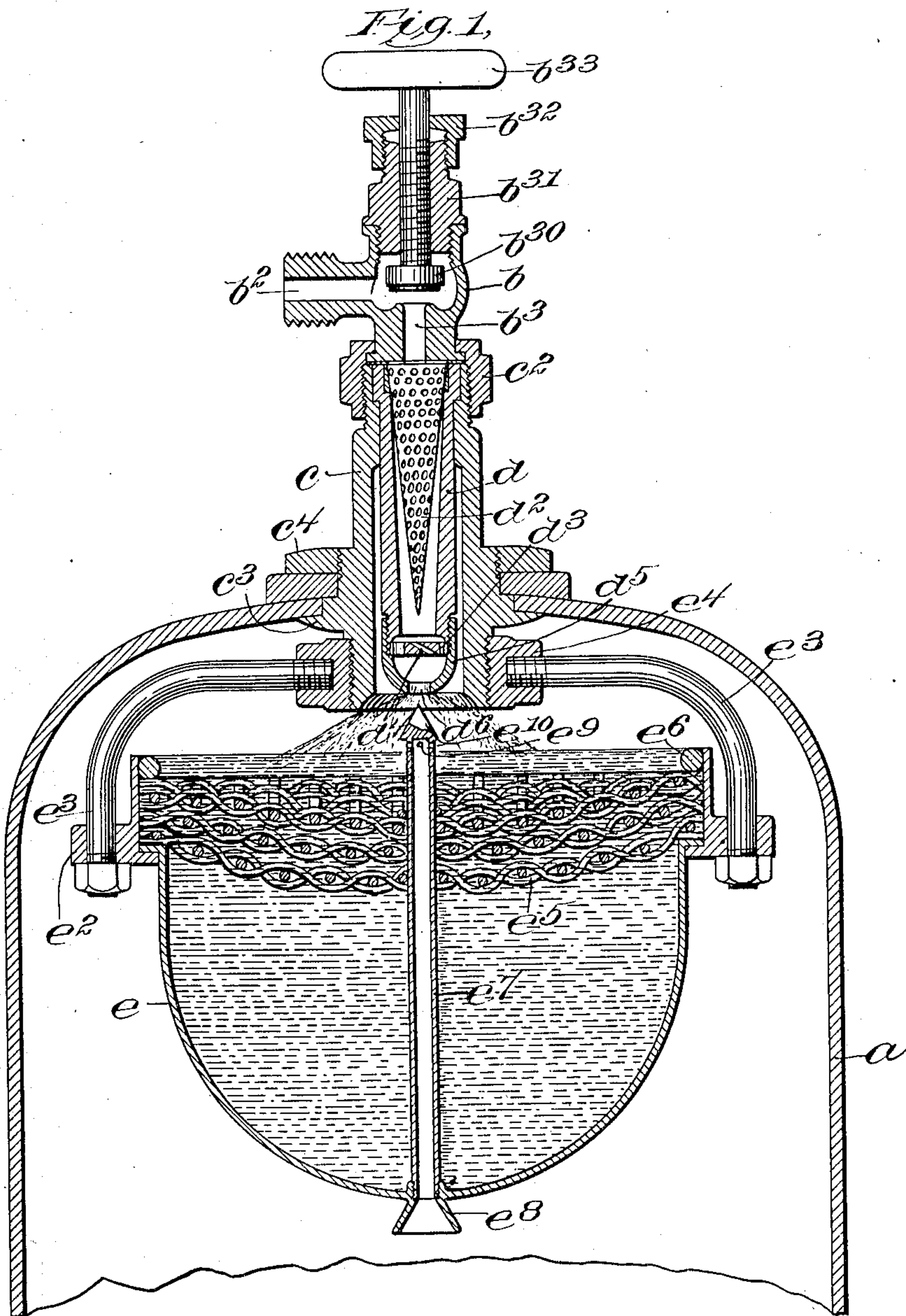


No. 871,174.

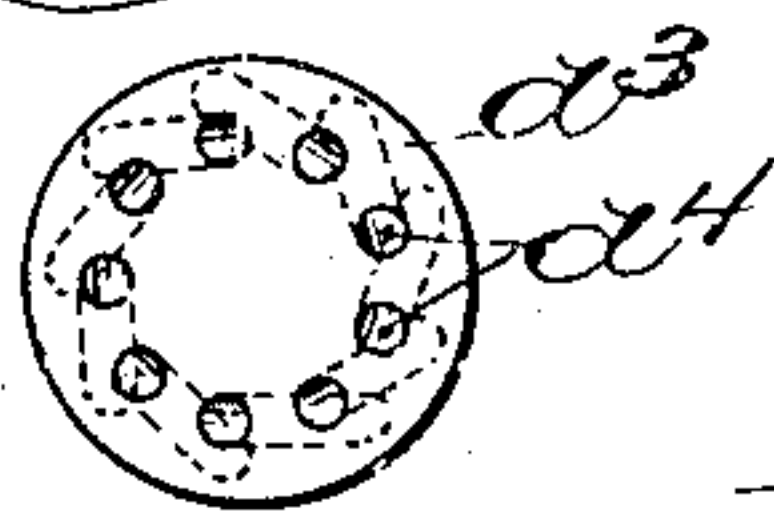
PATENTED NOV. 19, 1907.

E. E. MURPHY.  
CARBONATOR.

APPLICATION FILED JAN. 15, 1904.



*Fig. 2,*



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attys.



# UNITED STATES PATENT OFFICE.

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MANUFACTURING COMPANY, A CORPORATION OF MAINE.

## CARBONATOR.

No. 871,174.

• Specification of Letters Patent.

Patented Nov. 19, 1907.

Application filed January 15, 1904. Serial No. 189,186.

*To all whom it may concern:*

Be it known that I, EDWARD E. MURPHY, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented an  
5 Improvement in Carbonators, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 The present invention relates to a carbonator of that type in which plain water is pumped into a carbonator chamber which also receives gas, the gas and water being mixed in the chamber, and the chamber  
15 supplied with water and gas to maintain the supply of carbonated water.

The invention relates mainly to a novel construction and arrangement whereby the mixing of the water and the gas is rendered  
20 more thorough, the water being sprayed through the gas in the chamber and collected in a mixer which is open at the top and closed at the bottom, in which the water and gas become thoroughly mixed, and from  
25 which the carbonated water overflows into the main body of the carbonator chamber.

In accordance with the invention, the chamber, which is supplied with gas in any suitable or usual way, is provided at the  
30 top with an inlet for the water, having a suitable spraying device; and below said inlet is suspended a mixer such as above described, into which the water is sprayed through the gas in the chamber, thus mingling with the gas and carrying it into the  
35 mixer which concentrates the water and brings it into intimate union with the gas carried along with the water, the thoroughly carbonated water finally filling the  
40 mixer and overflowing from the top thereof. As herein shown, the mixer is further provided with a coarse strainer across the top, which assists in the mixing process, and the water inlet, which is directly over the mid-  
45 dle of the mixer, is arranged to spread the spray towards the sides thereof, and when the carbonator chamber is supplied by an ordinary plunger pump, the spray will spread more or less, in accordance with the  
50 stroke of the pump, so that the thin layer of sprayed water will move back and forth toward and from the middle of the mixer, thereby more thoroughly mingling with the gas through which it passes.

55 Figure 1 is a vertical section through the

middle of a carbonator embodying the invention, at the top of the carbonator chamber; and Fig. 2 is a detail showing a plan view of a portion of the spraying nozzle.

The chamber *a*, which may be supplied  
60 with gas in any suitable or usual way, is provided at the top with an inlet *b*<sup>2</sup> for water, which inlet is so arranged as to cause the water to be converted into spray as it enters the chamber.

As herein shown, the inlet *b*<sup>2</sup> is formed in a member *b* which is connected by means of a coupling piece *c*<sup>2</sup> with a tubular member *c* having a flange *c*<sup>3</sup> and nut *c*<sup>4</sup>, by means of which it is clamped in an opening in the top  
70 of the carbonator chamber *a*<sup>1</sup>. The said member *c* also affords a support for the spraying device which consists of a tubular member *d* which is supported within the member *c*, and which contains a strainer *d*<sup>2</sup>, below  
75 which is a disk *d*<sup>3</sup> having a series of inclined openings *d*<sup>4</sup> (Fig. 2) through which the water passes into a cup-shaped member *d*<sup>5</sup> having an opening *d*<sup>6</sup> through the middle. The member *d*<sup>5</sup> is shown as screw-threaded upon  
80 the end of the member *d*, and provided with shoulders between which and the end of said member is clamped the disk *d*<sup>3</sup>.

The water forced in through the inlet *b*<sup>2</sup> passes downwardly through the channel *b*<sup>3</sup>  
85 into the member *d*, through the strainer *d*<sup>2</sup>, and, in passing through the inclined openings *d*<sup>4</sup>, is forced tangentially against the curved inner surface of the member *d*<sup>5</sup>, thus acquiring a whirling motion, so that it passes  
90 through the outlet *d*<sup>6</sup> in a thin, cone-shaped spray which spreads towards the edges of the mixer *e* which is supported within the carbonator chamber *a*, directly below the inlet. The said mixer *e* is closed, except at the top,  
95 and is shown as shaped like a pot or cup, and provided with an annular rim *e*<sup>2</sup> to which are connected arms *e*<sup>3</sup> which, in turn, are secured in a nut *e*<sup>4</sup> which is threaded upon the lower extremity of the member *c*  
100 which is in the interior of the carbonator chamber *a*. The spray entering the chamber *a* passes through the atmosphere of gas therein, a portion of which gas is carried along with the spray into the mixer, the  
105 direction of the spray being such that in the beginning it impinges against the interior walls of the mixer *e* and the gas becomes intimately mixed with the water as the latter fills the mixer. When the mixer has  
110



become filled to overflowing, the spray passing through the gas above the mixer entrains the gas and carries it down into and through the water in the mixer. To assist  
 5 in breaking up the spray, and in causing a perfect admixture of the gas and water, the mixer *e* may be provided with a strainer *e*<sup>5</sup>, herein shown as a net-work of coarse wires extending across the top of said receiver and  
 10 held in place by means of a ring *e*<sup>6</sup> which may be soldered, or otherwise secured, to the annular member *e*<sup>2</sup>. The mixer *e* is preferably substantially hemispherical in shape, so that the gas and the spray forced into the  
 15 water in the mixer are brought into smaller compass as the force of the spray is overcome by the resistance of the water, which assists in the thorough mixing of the gas with the water.

20 In order to assist in the distribution of the gas over the mixer *e*, the said mixer may be provided with a vertical pipe *e*<sup>7</sup>, projecting upward through the middle and having a flaring inlet portion *e*<sup>8</sup> for the gas at the  
 25 bottom, and lateral outlets *e*<sup>9</sup> for the gas near the top of the mixer. This provides for an atmosphere of gas within the conical sheet of spray, so that a full volume of gas meets the surface of the sprayed water at  
 30 both sides. As herein shown, the said pipe *e*<sup>7</sup> is closed at the top, and provided with a conical deflector *e*<sup>10</sup> to keep the water away from the lateral outlets *e*<sup>9</sup>.

The inlet passage *b*<sup>3</sup> may be provided with  
 35 a valve *b*<sup>30</sup>, herein shown as mounted on a threaded stem, projecting through the member *b*<sup>31</sup>, threaded in the top of the member *b*, the said stem extending through a packing gland *b*<sup>32</sup>, and having a handle *b*<sup>33</sup> for  
 40 opening and closing the valve. This valve is provided merely for the purpose of closing

the carbonator chamber when it is not in continuous operation.

What I claim is:

1. In a carbonator, the combination with 45 a closed chamber provided at the top with a spraying device consisting of a disk having a series of inclined openings and a cup-shaped member having an opening through the middle; and a mixing receptacle suspended 50 below said spraying device, said receptacle being open at the top and closed at the bottom and being substantially hemispherical in shape and substantially larger in diameter than the spraying device, to receive the 55 water admitted through the spraying device; and a coarse strainer across the top of the receptacle, substantially as described.

2. In a carbonator, a receptacle provided at the top with a spraying device having 60 inclined openings and a cup-shaped member having an opening through the middle, whereby a cone-shaped spray is obtained; a mixing receptacle suspended within the main receptacle below said spraying device, 65 said mixing receptacle being substantially hemispherical in shape and closed at the bottom and open at the top the opening at the top being substantially larger in diameter than the spraying device; and a pipe 70 projecting upward through said mixing receptacle and provided at the top with a conical deflector and one or more lateral ducts or passages, substantially as described.

In testimony whereof, I have signed my 75 name to this specification in the presence of two subscribing witnesses.

EDWARD E. MURPHY.

Witnesses:

MARGARET E. COVENEY,  
 HENRY J. LIVERMORE.