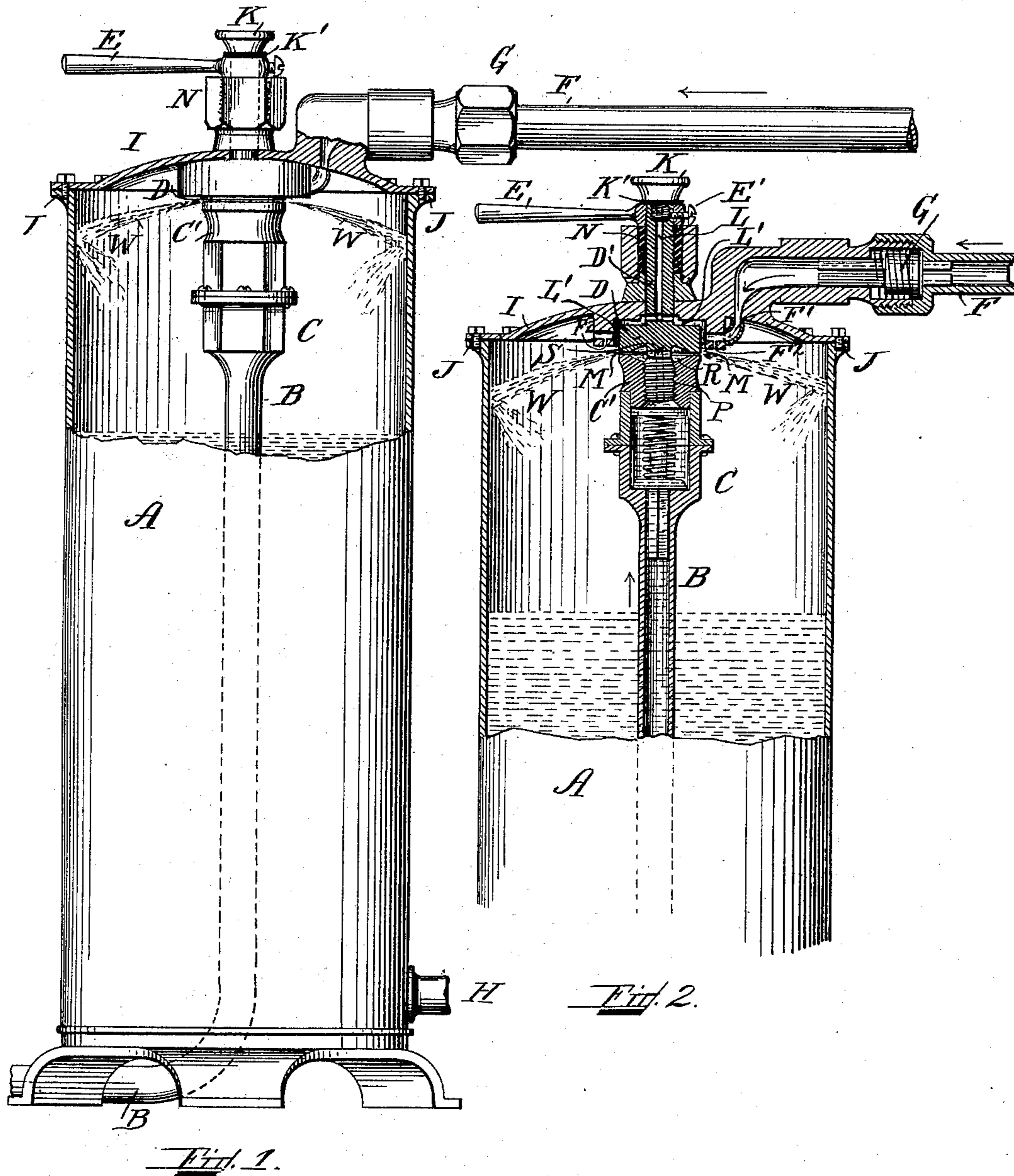


No. 671,176.

Patented Apr. 2, 1901.

C. H. BANGS.
CARBONATING DEVICE.
(Application filed Aug. 24, 1900.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES H. BANGS, OF EVERETT, MASSACHUSETTS.

CARBONATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 671,176, dated April 2, 1901.

Application filed August 24, 1900. Serial No. 27,884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. BANGS, a citizen of the United States, residing at Everett, in the county of Middlesex and State of Massachusetts, have invented a new and useful Carbonating Device, of which the following is a specification.

My invention relates to a carbonating device or apparatus for combining or impregnating water with carbonic-acid gas, and has for its object the production of an apparatus which will more expeditiously, effectively, and economically carbonate the water; and I attain said object by means of the apparatus hereinafter fully described, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a carbonator embodying my invention and showing the top portion of the tank in section to disclose the interior pipe and its attachments; and Fig. 2 is a similar view in sectional elevation, both views illustrating the method of admitting the water and gas into the tank.

Referring to the drawings, the principal parts of the carbonator are indicated by reference-letters as follows:

A represents the air-tight tank of the carbonator; B, the inlet or water pipe for feeding water under pressure to the tank; C, the check-valve in the water-pipe, through which the water is forced; D, the adjustable water spreader or deflector; E, the lever for turning and adjusting the deflector; F, the gas-inlet, through which carbonic-acid gas is forced under pressure, and G the check-valve in the gas-pipe.

The tank has an outlet or draft pipe H near its bottom (shown as broken off in Fig. 1) and a cap I of unequal thickness bolted to a flange J around the top thereof. The deflector D has a stem D', which passes upward through cap I, and upon the top of which is attached lever E, secured by a set-screw E', and into the top of the stem is threaded a cap-screw K, which turns against a washer K'. An interior air-passage L, closed at its top by the vent-cap K, runs through stem D' and communicates with a series of radial passages L', which open into a space around deflector D and through narrow openings M M into the tank A. Upon the upper part of stem D' is secured a stuffing-box N. Upon the under

side of deflector D, opposite stem D', is a hollow extension P, which is threaded into the upper part of the valve-body C'. The meeting faces of the valve-body C' and deflector D are concaved, so that a chamber R is formed between them. Into this chamber radial outlets S open, which communicate with the water-pipe, and thence the water spreads into the tank through the adjustable space between the meeting edges of the deflector D and the valve-body C' in the form of a thin circular sheet, as illustrated at W in the drawings, and breaks into spray against the wall of the tank. Thus the water is introduced under pressure into the tank in the most suitable form and condition to be readily and thoroughly mingled with and impregnated by the carbonic-acid gas which it encounters therein. This gas is introduced into the tank under suitable pressure through the pipe F and valve G and a smaller passage F', connecting with inlet-passages F², opening into the tank.

The practical operation of the device is as follows: Vent-cap K being first loosened to allow the air to escape from the tank as it is filled the water-pipe B is opened to allow the water to flow in under proper pressure, say about one hundred and seventy-five pounds, and when the tank is full the water is shut off and the cap K is closed down tight. Then the gas is turned in through pipe F under a pressure of about one hundred and fifty pounds, and the draft-pipe H is opened to allow the water to escape and is allowed to remain open until gas only escapes. Now the air having been expelled from the tank by filling it, as described, with the water, and the water having been drawn off while the gas pressed in, the tank is full of gas. Next the draft-pipe is closed and the inlet-pipe opened again, allowing the water to be forced in, when it passes up through pipe B, forces open the spring-valve C, passes through the chamber thereof into the passage in extension P, and thence through the outlets therefrom into the chamber R, from which it escapes into the tank through the adjustable circular space between the edges of the deflector D and valve-body C', by which it is spread into an attenuated sheet, as before stated, which is a most suitable form and

condition to be expeditiously and effectively carbonated by being commingled with the gas, and this method of spreading the water is capable of extremely fine adjustment, and
5 in case of any obstructive accumulations produced in the device between the edges of parts D and C' by the gas those parts can be pressed together tightly by means of the connecting-screw P, turned by the lever E, and
10 thus such particles will be crushed and the edges cleared when again separated by the action of the fluid. The tank being thus filled with the carbonated water or soda may be drawn from, and the supply will be auto-
15 matically kept good by the pressures of gas and water acting through the check-valves and other devices in the manner specified and commingled under the counteracting forces of the two supplies in the manner and
20 with the results stated.

This method of carbonating the water continuously and automatically as it is required to be drawn to serve customers obviates the necessity of keeping a large quantity of the
25 soda-water on hand in the metallic vessel, in which it is liable to become injuriously affected by the chemical action on the metal

and rendered impure and unsuitable for drinking purposes, and it also admits of the water's being passed through coolers previ- 30
ous to its admission into the carbonator, and thus reduced to a low temperature, which is a condition most favorable to its ready and complete commingling with and impregna-
tion by the carbonic-acid gas. 35

I claim—

A carbonator embodying the combination of a tank A; a valve-pipe B for feeding water to the tank; a valve-pipe F, for feeding gas to the tank; a deflector comprising a body D, 40
a stem D' having an air-passage L, a closing vent-cap K, a hollow extension P, threaded into a valve-body C' and having radial outlets S, opening into a chamber R, formed by the meeting concaved faces of bodies D and 45
C'; and means, as lever E, for moving and adjusting deflector D, relative to body C', to spread the water discharged from chamber R into the tank; all substantially as and for purposes specified.

CHARLES H. BANGS.

Witnesses:

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