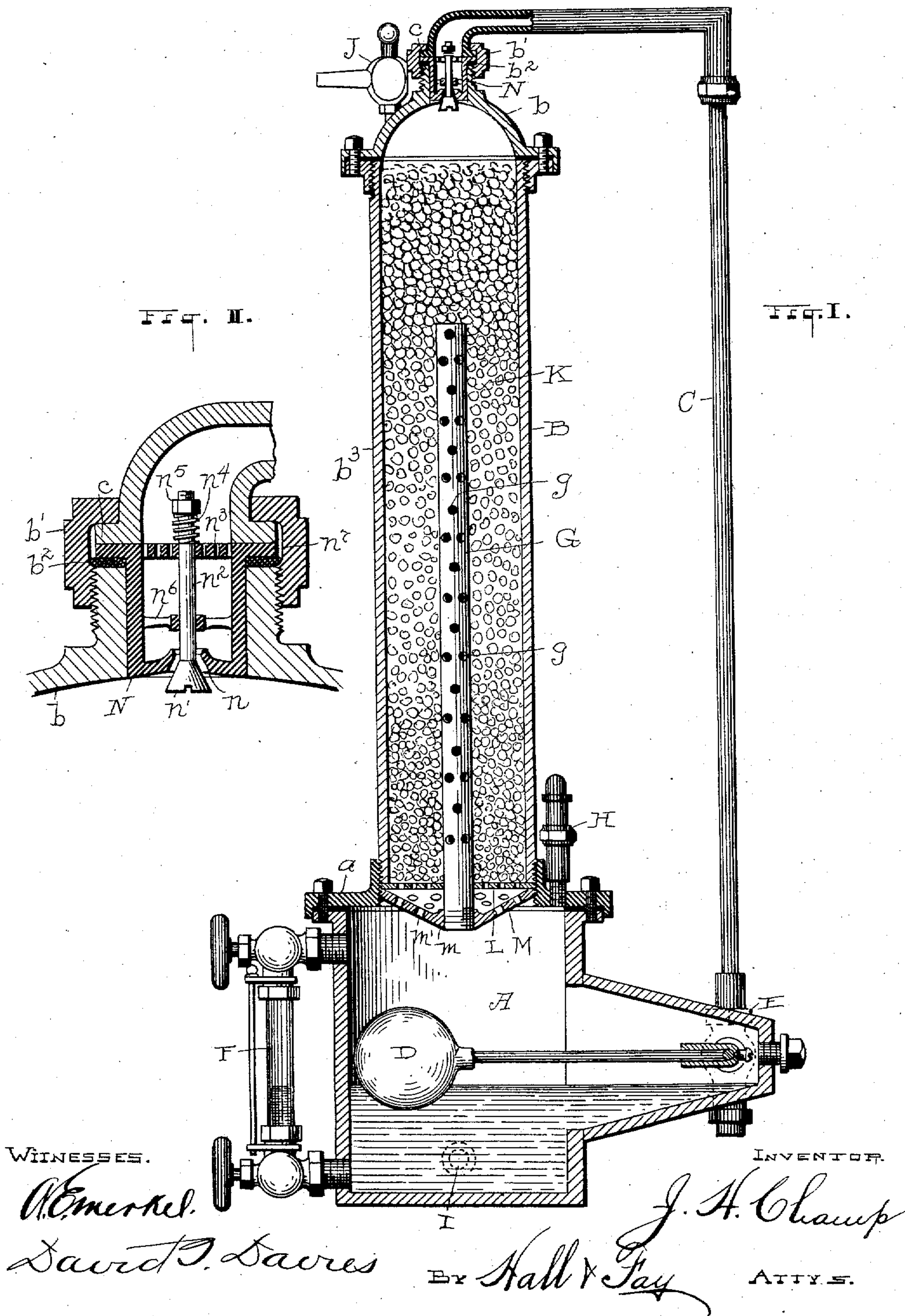


(No Model.)

J. H. CHAMP.
LIQUID CARBONATING APPARATUS.

No. 580,450.

Patented Apr. 13, 1897.



UNITED STATES PATENT OFFICE.

JOSEPH H. CHAMP, OF CLEVELAND, OHIO, ASSIGNOR TO THE BISHOP & BABCOCK COMPANY, OF SAME PLACE.

LIQUID-CARBONATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 580,450, dated April 13, 1897.

Application filed June 24, 1896. Serial No. 596,667. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. CHAMP, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Liquid-Carbonating Apparatus, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle so as to distinguish it from other inventions.

Figure 1 is a view, partly in elevation and partly in section, of my improved carbonating apparatus. Fig. 2 is a view, partly in elevation and partly in section, of the spraying device.

The apparatus consists of the reservoir-chamber A, carbonating-chamber B, the water-inlet pipe C, the valve-actuating float and lever D, the valve E, the water-gage F, the safety-valve H, and the connection I with the carbonic-acid-gas generator or reservoir.

The inverted-cone-shaped perforated plate M forms the bottom of the carbonating-chamber, its central portion being formed with a hollow boss *m*, into which is screwed or soldered the pipe G, closed at the top and open at the bottom and located centrally within the cross-section of the carbonating-chamber, such pipe having its longitudinal body formed with lateral perforations *g*, respectively at different vertical points from its bottom to its top. A perforated flat bottom plate L is inserted between the barrel *b*³ of the carbonating-chamber and the plate M, the plate and barrel being threaded into the cap *a* of the reservoir A.

The water-inlet is controlled by a valve embodying the spraying device, consisting of the chamber N, formed with a conically-shaped valve-seat *n*, a spider *n*⁶, a perforated top *n*³, formed with a flange *n*⁷, a valve *n*¹, and stem *n*², the valve *n*¹ being adapted to seat in the seat *n* and being in the form of a frustum of a cone of the same inclination as the seat. A spring *n*⁴ and nut *n*⁵ hold the valve upon its seat, the stem having play through the top and the spider and being thus held in alignment when unseated. The flange *n*⁷ extends over the top of the nipple on the cap *b*, and the union is made by the usual means of the

coupling *b*¹, the gasket *b*², and the flange *c* on the inlet-pipe. The barrel *b*³ is filled with pebbles or other similar material K in the usual manner. When the reservoir A is empty, the valve E is open, and water is permitted to rise in the pipe C, and by its pressure opens the valve *n*¹ and passes through the conical annulus thus formed in a finely-divided spray. The water falling on the pebbles percolates through the same, absorbing carbonic-acid gas which has been admitted into the apparatus through the gas-inlet I, and finally falls into the reservoir A, where it accumulates, carrying up the float D, and whence it can be drawn as required. When a certain required extreme level of carbonated water is reached, the valve E is closed by the float and lever and the flow of water is shut off.

In order that in disseminating throughout the apparatus the carbonic-acid gas may not be obliged to depend entirely upon the spaces between the pebbles for its passage, I provide the perforated pipe G, by which the gas may always find a free and ready channel through which it can quickly and easily reach all parts of the barrel. It sometimes occurs that the carbonated water accumulates above the plate M, in which case were the apparatus not provided with the pipe G the passage of the gas would be blocked and its purpose frustrated.

I claim as my invention—

1. In liquid-carbonating apparatus, the combination of a carbonating-chamber filled with pebbles or other similar material, a water-spraying device communicating with one end of such chamber, a pipe extending from the opposite end of said chamber toward said water-spraying device and communicating at said opposite end with a gas-supply, such pipe being provided with lateral perforations at different points in its length communicating with corresponding different transverse planes in the length of the carbonating-chamber, substantially as set forth.

2. In liquid-carbonating apparatus, the combination of a carbonating-chamber, a water-spraying device located at one end thereof, a gas-supply reservoir located adjacent to the opposite end of said chamber, a pipe having one end communicating with

such gas-reservoir and having its body located within said carbonating-chamber substantially parallel with the latter, such pipe-body being formed with lateral perforations at different points in its length, and packed about by pebbles or other similar material filling said carbonating-chamber, substantially as set forth.

3. In liquid-carbonating apparatus, the combination of an upright carbonating-chamber, a water-spraying device located at the upper end of such chamber, a gas-supply reservoir located adjacent to the lower end of said chamber, a pipe extending longitudinally within said carbonating-chamber toward said water-spraying device and having one end communicating with said gas-reservoir, such pipe having lateral perforations at different points of its length communicating with said carbonating-chamber, which latter is filled with pebbles or other similar material, said gas-supply reservoir having gas-feed communication with said carbonating-chamber independent of said pipe, substantially as set forth.

4. In liquid-carbonating apparatus, the combination of an upright carbonating-chamber, a water-spraying device located at the top of such chamber, a charged water-reservoir located below said chamber and having a gas-supply inlet, a pipe located longitudinally within such chamber and having its lower end communicating with said reservoir, such pipe having its longitudinal body formed with lateral perforations at different points thereof, said carbonating-chamber being filled with pebbles or other similar material packed about said pipe, substantially as set forth.

5. In liquid-carbonating apparatus, the combination of an upright carbonating-chamber filled with pebbles or other similar material, a water-spraying device located at the top of such chamber, a charged water-reservoir located below said chamber, a gas-supply inlet directly communicating with said reservoir, gas-feed communication between said charged water-reservoir and said carbonating-chamber, an upright pipe located longitudinally within said carbonating-chamber and communicating at its lower end with the upper portion of said charged water-reservoir, such pipe having its longitudinal body formed with lateral perforations at different vertical points thereof, substantially as set forth.

6. In liquid-carbonating apparatus, the combination of an upright carbonating-chamber filled with pebbles or other similar material, a water-spraying device located at the top of such chamber, a charged water-reservoir located below said chamber, a gas-supply inlet directly communicating with said reservoir, said carbonating-chamber and said charged water-reservoir being separated by perforated partition, an upright pipe located longitudinally within said carbonating-chamber and communicating at its lower end with

the upper portion of said charged water-reservoir, the longitudinal body of said pipe being formed with lateral perforations at different vertical points from its lower to its upper end, substantially as set forth.

7. In liquid-carbonating apparatus, the combination of the carbonating-chamber, the water-spraying device located at the top of such chamber, the charged water-reservoir located below said chamber and having the gas-inlet, the upright pipe located centrally within the cross-section of said chamber and extending from said reservoir to the upper portion of the carbonating-chamber, such pipe communicating at its bottom with the upper portion of said reservoir and having its longitudinal body formed with lateral perforations at different vertical points from its bottom to its top, said carbonating-chamber being provided with pebbles or other similar material packed about said pipe, substantially as set forth.

8. In liquid-carbonating apparatus, the combination of the carbonating-chamber B, the water-spraying device located at the top of such chamber, the charged water-reservoir A located below said chamber and having the gas-inlet I, the upright pipe G located centrally within the cross-section of the carbonating-chamber and extending from its lower portion to its upper portion, such pipe G being closed at its top but open at its bottom and there communicating with the upper portion of said reservoir A, while its body is formed with lateral perforations *g* respectively at different vertical points, said carbonating-chamber being filled with pebbles or other similar material packed about the length of said pipe, substantially as set forth.

9. In liquid-carbonating apparatus, the combination of a carbonating-chamber B, inverted-cone-shaped perforated bottom M having its central portion formed with hollow boss *m*, pipe G fitting in said boss, and reservoir A; said pipe G having closed top, side perforations, and its lower end communicating with said reservoir, substantially as set forth.

10. In liquid-carbonating apparatus, the combination of carbonating-chamber B having the inverted-cone-shaped perforated bottom M, and perforated flat plate L fitted between the barrel *b*³ of said chamber and said bottom, substantially as set forth.

11. In liquid-carbonating apparatus, the combination of carbonating-chamber B, having barrel *b*³, inverted-cone-shaped bottom M, flat perforated plate L inserted between said barrel and bottom, charged water-reservoir A, having cap *a* connecting with said parts, substantially as set forth.

12. In liquid-carbonating apparatus, the combination of carbonating-chamber B, water-inlet pipe C, spraying-chamber N having perforated top *n*³, valve-stem *n*² and valve *n*¹, substantially as set forth.

13. In liquid-carbonating apparatus, the

combination of carbonating-chamber B, water-inlet pipe C, spraying-chamber N having perforated top n^3 , valve-stem n^2 passing through said top, spring n^4 interposed between said top and nut n^5 , and valve n' , substantially as set forth.

14. In liquid-carbonating apparatus, the combination of carbonating-chamber B, water-inlet pipe C, spraying-chamber N provided with perforated top n^3 having flange n^7 , valve-stem n^2 passing through and held in alignment by said top and spider n^6 , spiral spring n^4 fitted on the valve-stem between said top and nut n^5 , and valve n' , substantially as set forth.

15. In liquid-carbonating apparatus, the combination of carbonating-chamber B, water-inlet pipe C having flange c , spraying-chamber N having flange n^7 , coupling b' , perforated top n^3 , spider n^6 , valve n' , valve-stem n^2 , nut n^5 and spring n^4 , substantially as set forth.

In testimony that I claim the foregoing to be my invention I have hereunto set my hand this 18th day of June, A. D. 1896.

JOSEPH H. CHAMP.

Witnesses:

A. E. MERKEL,
DAVID T. DAVIES.