O. ZWIETUSCH.

Carbonic-Acid Gas-Generator.

No. 161,728. Patented April 6, 1875.

FIG. I.

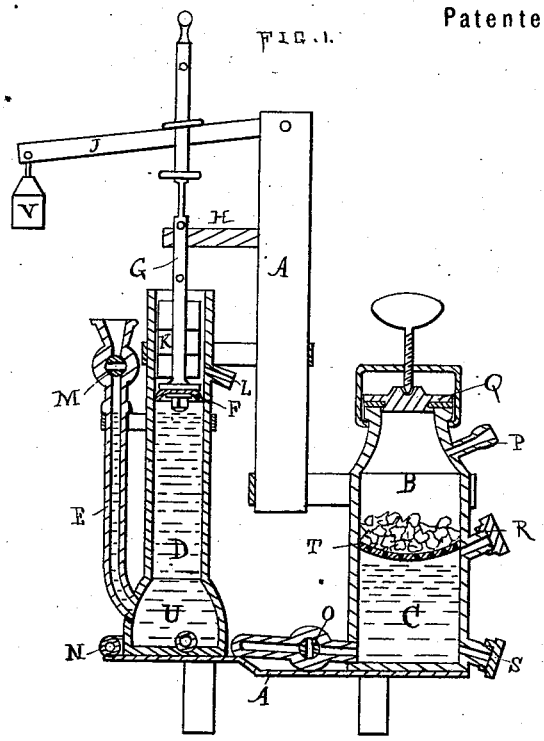
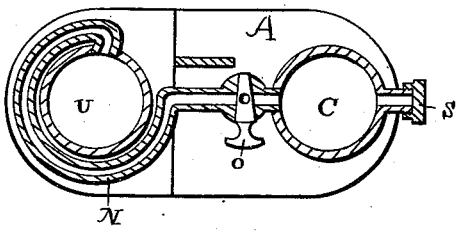


FIG. II.



WITNESSES.

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UNITED STATES PATENT OFFICE.

OTTO ZWIETUSCH, OF MILWAUKEE, WISCONSIN.

IMPROVEMENT IN CARBONIC-ACID-GAS GENERATORS.

Specification forming part of Letters Patent No. **161,728**, dated April 6, 1875; application filed January 14, 1875.

To all whom it may concern:

Be it known that I, OTTO ZWIETUSCH, of Milwaukee, Wisconsin, have invented a new and useful Improvement in Carbonic-Acid-Gas Generators; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a vertical section, and Fig. 2 a horizontal section.

My invention relates to that class of generators used for the production of carbonic-acid gas for soda and other mineral waters; and it consists in the several combinations of devices hereinafter described and claimed.

The object of my invention is to manufacture carbonic-acid gas under a self-regulating pressure, from fifteen to twenty pounds per square inch, to preserve beer, &c., from spoiling by atmospheric air, and at the same time force it up from the cellar to the draft-place, one or more stories high. I press the acid up through the alkalies by hydraulic pressure, and a piston and weights, regulating the pressure at the same time by attaching more or less weights.

A represents a frame; B, an alkali-chamber; C, an acid-chamber; D, cylinder for piston; E and M, pipe and cock for filling water; F, piston; G, piston-rod, with holes; H, guide for piston-rod G; J, lever for raising piston. It may also be weighted, to secure a higher pressure, if desired. K, weights on piston; L, overflow-pipe; N, coil of pipe, which is used to connect the generator with the water-reservoir U.

It is of advantage to have a large coil, as this prevents, in a great measure, the mixing of the acid with the water in cylinder D, as it requires a longer time to reach it. It also prevents the acid from reaching the piston.

O represents a cock, on the connection between the water-reservoir and the acid-chamber. Q shows an inlet and cover for alkali-chamber B; P, an outlet with valve, for the escape of gas to the washer. R is an inlet to the acid-chamber; S, an outlet from the acid-chamber; T, a perforated bottom between B and C; U, water-reservoir; and V, an attachable weight on lever J.

To put the apparatus in operation, first fill the chamber B with soda or marble chips through the opening Q, the cock O being closed; then fill acid into chamber C through the opening R, not quite up to the perforated bottom T; close the openings Q and R; lift the piston F, and brace it by putting pins through holes in rod G over guide H or lever J; lift piston up to overflow-pipe L, and fill cylinder D with water, by pouring through the cock M and pipe E up to overflow-pipe L; close cock M, and put the necessary weights K on piston-rod G; or, if greater pressure is necessary, weights can be hung on lever J; take out blocking-pin from rod G over guide H; open the cock O. The weight on piston will press the water, and the water the acid, through the perforated bottom T in chamber B C, whereby the marble comes in contact with the acid, and gas is generated. The pressure which is thereby obtained presses downward the acid in chamber C, which raises the water in cylinder D, and with it the piston F, whereby the generation of more gas is prohibited. If gas be now drawn off through P, the acid will again be pressed upward, and, again coming in contact with the alkali, again gas is generated, which presses the acid below the perforated bottom T, as stated before.

In this way it works automatically, and any desired pressure may be given, as long as there is any strength in the material used. If a greater pressure than the weights are set for accumulates, or too much liquid is in the apparatus, then the piston will rise over flow-pipe L, and, the quantity being too much in it, will flow off, thereby preventing explosions or other irregularities, and in this way acts as, or does the same duty as, a safety-valve.

To discharge the apparatus, close cock O, open outlet S, letting the acid run off; open cock O, allowing the water to run into chamber C, when it will rinse the same out; or, when contents of chamber C are discharged, close S and allow the water, now mixed with acid, to flow into C, and use it as a part for new filling; by so doing all the strength will be gained which the acid contains, which cannot be done by apparatus whose pressure is produced by placing acid in a higher or lower position.

Coil N may either be used with or without

cock O, as a water-reserve, instead of U, and the longer the coil is, the more it will prevent the acid from mixing with the water in the piston-cylinder.

Where there is a greater demand for gas this apparatus can be built double—that is, two or more generators may be supplied with one cylinder and piston, so that when one gives out the other will be ready for use.

Where water-works with satisfactory pressure are at hand, they can be used with advantage as a substitute for the weights. By operating with this means cylinder D must be covered, and cock M placed on the upper end of the pipe E, so as to allow the pressure to escape in order to stop the apparatus. Overflow-pipe L is connected with a cock to the hydrant, and pressure in the generator is obtained according to the pressure of the water from the works. By working the apparatus with water-power, the cylinder D can be put in a horizontal position.

What I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a carbonic-acid-gas generator, a water receiver or cylinder, suitably connected with said generator, whereby the generation of the gas is controlled by the alternate action of the gas pressure and hydrostatic column, substantially as described.

2. In combination with a receiver, D, the piston F, rod G, and weighted pivoted lever J, all arranged to operate substantially as set forth.

3. In combination with a gas-generator and cylinder D, the piston F, and overflow-pipe L, substantially as and for the purpose described.

4. The cylinder D, filling-pipe E, cock *o*, and pipe N, in combination with the acid-chamber C, substantially as and for the purpose set forth.

5. The cylinder D and coil-pipe N, in combination with a carbonic-acid-gas generator, substantially as and for the purpose set forth.

6. The piston-rod G, guide H, lever J, weights K and V, all in combination with the piston F, cylinder D, and frame A, substantially as and for the purpose set forth.

OTTO ZWIETUSCH.

Witnesses:
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