

F. M. Ruschhaupt,

Gas Generator.

No. 42,447.

Patented Apr. 19. 1864.

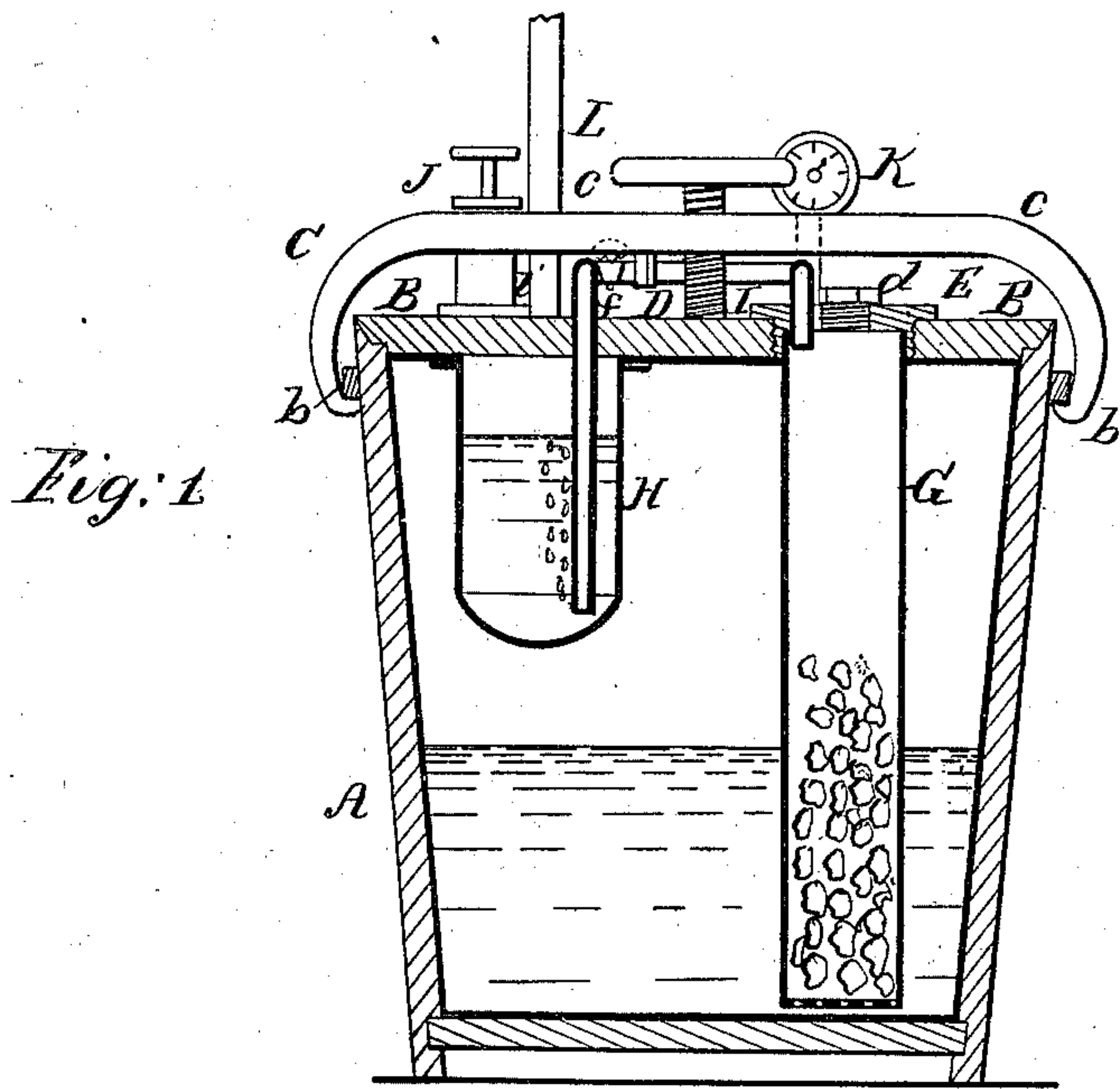
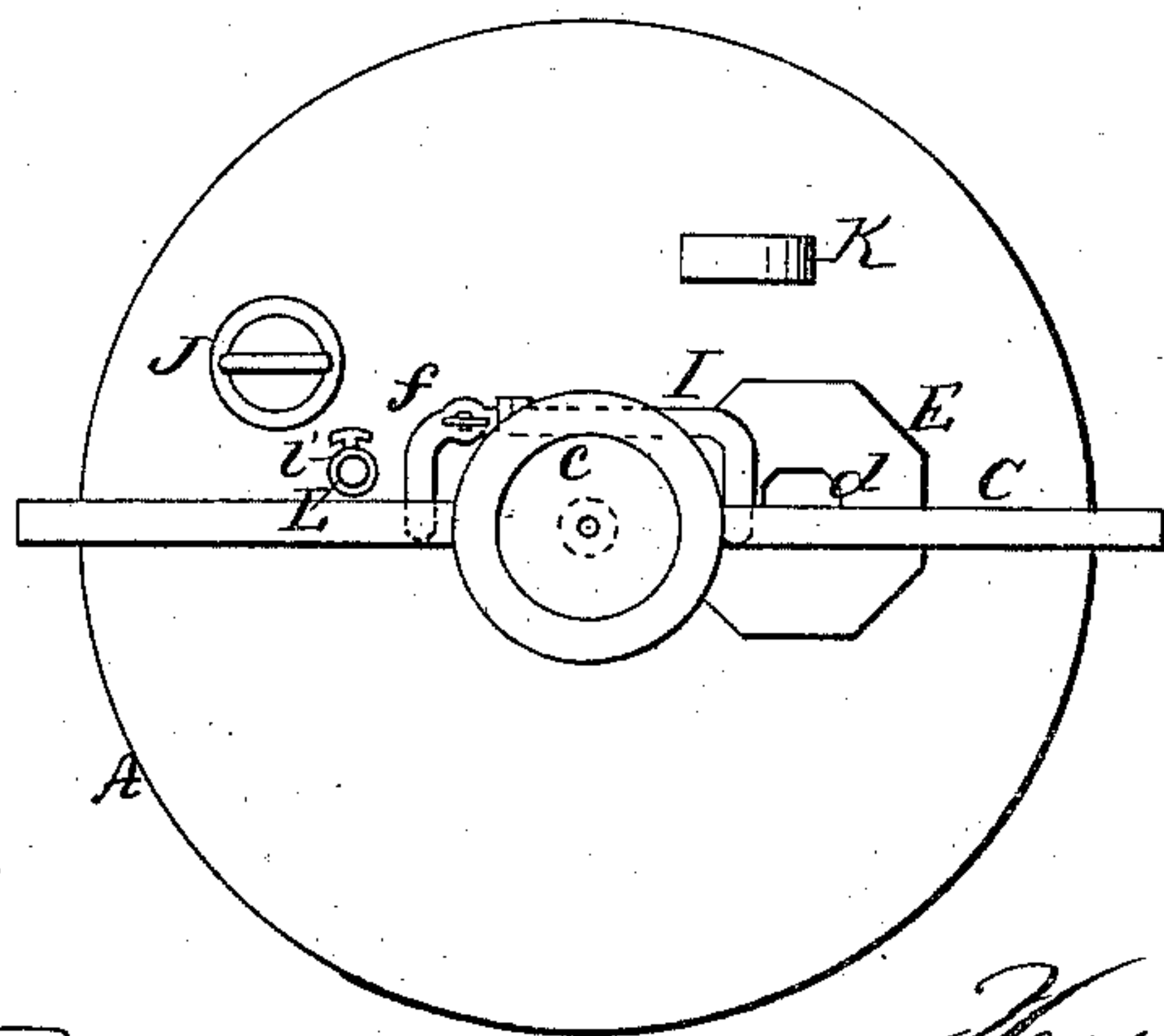


Fig: 2.



Witnesses;

Charles O. Foster

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UNITED STATES PATENT OFFICE.

FREDERICK M. RUSCHHAUPT, OF PHILADELPHIA, PA., ASSIGNOR TO
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IMPROVED APPARATUS FOR GENERATING CARBONIC-ACID AND OTHER GASES.

Specification forming part of Letters Patent No. **42,447**, dated April 19, 1864; antedated
April 9, 1864.

To all whom it may concern:

Be it known that I, F. M. RUSCHHAUPT, of Philadelphia, Pennsylvania, have invented certain Apparatus for Generating Gases; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings and to the letters of reference marked thereon.

My invention consists of a cheap and simple apparatus, fully described hereinafter, for generating carbonic-acid gas and other gases.

In order to enable others familiar with gas-generating apparatus to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a sectional elevation of my apparatus for generating gases; Fig. 2, a plan view of the same.

A is a vessel, of wood or other suitable material, lined on the interior with lead, and having a cover, B, also lined with lead and beveled at the edge, as represented in the drawings, so as to fit the beveled upper edge of the vessel. Across the top of the vessel A extends a yoke, C, the ends of which are hooked or curved in such a manner as to bear against the under sides of projections *b* at the sides of the vessel, and through the center of this yoke passes a vertical screw, D, having on its upper end a suitable hand-wheel, *c*, and bearing with its lower end on the center of the cover B. To the under side of a cap or plate, E, which screws into an opening in the cover B, is permanently attached a leaden cylinder, G, perforated at the base and extending nearly to the bottom of the vessel A, and into this cap E screws a suitable nut, *d*. A reservoir, H, of lead, is secured to the under side of the cover B, a pipe, I, communicating with the interior of the cylinder G, passing through the cover and projecting nearly to the bottom of the reservoir, a stop-cock or valve, *f*, serving to close this communication when necessary. An air-pump, J, is secured to the cover B and is so arranged as to impart pressure to the interior of the vessel A, a gage, K, being also screwed to the cover, so as to indicate the pressure within the vessel. Through the

cover B passes a tube, L, into the reservoir H, the said tube being provided with a suitable valve or cock, *i*.

In using the above-described apparatus for generating carbonic-acid gas the cover B is in the first instance removed and the vessel A partially filled with diluted hydrochloric acid, when the cover is replaced, care being taken to introduce a packing of india-rubber or other suitable material between the edge of the cover and the vessel. The yoke C is then placed in its proper position and the screw D turned until the cover is forced so firmly into its place that the joint round its edge shall be perfectly air tight. The cylinder G is then filled to about one-half its depth with chips of marble, and the reservoir H partially filled with water, the valve or cock *f* being turned so as to prevent any communication between the cylinder G and the reservoir H. The instant the acid comes in contact with the marble the latter is decomposed and carbonic-acid gas is disengaged, which, as it gradually fills the cylinder, expels the acid through the perforations at the bottom until no more acid is left in the cylinder to act on the marble, when the liberation of the gas immediately ceases. On turning the valve or cock *f* the gas is permitted to escape from the cylinders G and enter the reservoir H, from which it passes into the pipe L, first passing upward through the water in the reservoir, which deprives it of all impurities. As the gas escapes the acid again enters the cylinder and attacks the marble as before, the generation of the gas being continued so long as it is permitted to escape from the cylinder. When it is necessary that the gas should be subjected to a greater pressure than that occasioned by the weight of the acid outside the cylinder G, the additional pressure is obtained by forcing air into the vessel above the acid by means of the air-pump J, the gage K indicating the amount of pressure within the vessel. It will thus be seen that not only is all waste avoided which arises from the manufacture of a greater quantity of gas than it is desirable to use, but that it may be subjected to any amount of continuous pressure desirable, however small the quantity of gas may be. It will also be seen that although I have described the apparatus

as applied to the manufacture of carbonic-acid gas, it may be used in like manner for generating other gases by substituting other materials for the hydrochloride acid and marble—as, for instance, hydrofluoric acid—or sulphureted hydrogen gas, or sulphurous acid, or hydrogen gas may be generated by the apparatus. It should be understood, however, that the lining of the vessel and cover and the material of which the cylinder G and reservoir H are composed must be varied to suit the materials from which the gases are generated.

I claim as my invention and desire to secure by Letters Patent—

The vessel A, with its air-pump or other device for imparting pressure to the interior of the vessel, the cylinder G, and reservoir H, or their equivalents, and the system of pipes and cock, or their equivalents, the whole being constructed substantially as and for the purpose herein set forth.

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

F. M. RUSCHHAUPT.

Witnesses:

CHARLES E. FOSTER,
JOHN WHITE.