

P. & F. Hinkel,

Gas Generator,

N^o 47,205.

Patented Apr. 11, 1865.

Fig. 2.

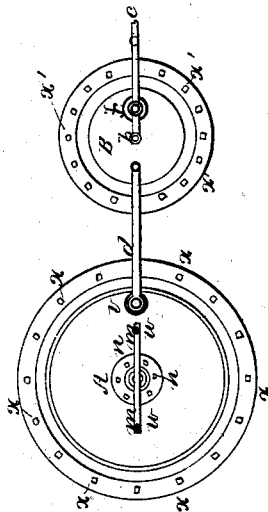
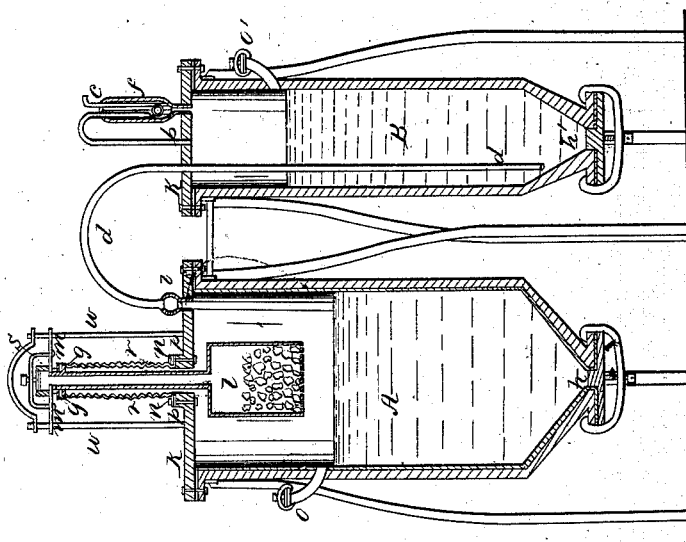


Fig. 1.



Witnesses;

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UNITED STATES PATENT OFFICE.

PETER HINKEL AND FREDERICK HINKEL, OF NEW YORK, N. Y.

IMPROVED APPARATUS FOR GENERATING CARBONIC-ACID GAS.

Specification forming part of Letters Patent No. 47,205, dated April 11, 1865.

To all whom it may concern:

Be it known that we, PETER HINKEL and FREDERICK HINKEL, both in the city, county, and State of New York, have invented a new and improved apparatus for generating carbonic-acid and other gases, to be adopted for mode of preserving beer, preparing of mineral waters, &c.; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

To enable others familiar with gas-generating to make and use our invention, we will proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure I represents a vertical section, and Fig. II a plan view, of our apparatus.

A and B are vertical cylindrical vessels, conically formed on their bottom and held in an iron frame or any other suitable bearing. On the sides of both, about three-fourths of their height, are the filling-orifices *o* and *o'*, and on the bottoms the outlet-openings *h* and *h'*, all having suitable stopings fitted to them, as may be seen in the accompanying drawings, A being the gas-generator and B the washing-vessel or purifier. The interior of both is connected by means of the pipe *a*, which leads from the top of A to the bottom of B. A, the gas-generator, is lined in the interior with lead, so as to resist muriatic or sulphuric acid. The long-necked jar *l*, or the receiving-vessel for the marble or the resp. carbonate, is made of the same metal, with many holes on the bottom, so as to allow the muriatic acid, &c., to go through. The cover K of the generator A has in its center an opening of about two and one-half inches diameter, through which the neck of the jar *l* may pass easily up and downward. The neck of this jar bears on its top end the flanges *g* and *g'*, (the latter being fitted movable over the first,) and the hollow screw *s*, having a stopping, as may be seen in the accompanying drawings, and a sliding bar, *m*, attached to it. By this arrangement and by means of the flange *p* and screws *n* of the center-piece of cover K an air-tight connection of the rubber hose *r*, between the cover K and the neck of jar *l*, can easily be formed. The

cover K bears two strong wires, *w w*, which both are connected with the already-named sliding bar *m*, attached to screw *s*, which are intended to allow a regular up-and-downward movement of the jar *l*.

In order to prevent a ball-like up-blowing of the rubber hose *r*, we cover the same with cloth or leather, and that it by the downward moving may fold easier and better together, we prepare it in a folded shape.

It is evident that any other air-tight flexible material may be suitable under circumstances. The pipe *a* has over cover K of vessel A a valve, V, by which a streaming over of the water in vessel B to vessel A will be prevented.

The cover K' of vessel B bears, besides the connection-pipe *a*, the pipe *b* and the flask *f*, with the outlet-pipe *c*. The pipe *b* leads almost to the bottom of the flask *f*. By this and by means of the float and valve of flask *f* all overflowed water of vessel B will be led back to the same.

The screws *x* and *x'* of vessels A and B will serve to fasten the covers K and K', properly underlaid with rubber or lead packing, &c., air-tight, to A and B.

To operate with this our improved apparatus, it is only necessary to fill the vessel A with a mixture of about one part acid (muriatic acid) and one part of water, and the vessel B with pure water, by means of the orifices *g* and *g'*, and stoppe the same. Then the leaden jar *l*, by opening the stopping of the hollow screw *s*, is filled with pieces of marble or another priceable carbonate, and brought by stopping the hollow screw again in a working condition. The moment the acid comes in contact with the marble the latter is decomposed and carbonic-acid gas is disengaged, which, as it gradually fills the jar *l*, raises the same until it is out of the acid liquid. The consequence of this is that the liberation of the gas immediately ceases. On turning the cock *c* of the flask *f* the gas is permitted to escape from the generator A in the pipe *a* and upward through the water in vessel B, &c., on which way it is deprived of all impurities. As the gas escapes the bellows-formed rubber hose *r* folds again, and thus the jar *l*, attached to it, must sink with it; the acid again enters the jar and attacks the marble as before, the generation of

the gas being continued as long as it is permitted to escape out of vessel B.

When it is necessary that the gas should be subjected to a greater pressure than that occasioned by the weight of the jar *l* with the requisite quantity of marble it contains, the additional pressure may be obtained by affixing the rubber hose *r* and the cover K of the generator with a spring, &c.

It will thus be seen that not only any amount of gas can be liberated without loss which causes from the manufacture of a greater quantity of gas than is desirable to use, but that it may be subjected to any amount of continuous pressure desirable, however so small the quantity of gas may be.

It will also be seen that, although we have described our improved apparatus as applied to the manufacture of carbonic-acid gas, it may be used in a like manner for generating other gases, by substituting other materials for the muriatic acid and marble—as, for instance, hydrofluoric acid or sulphurated hydrogen gas, or sulphurous acid or hydrogen gas may be generated by the apparatus. It should be

understood, however, that the lining of the generator and the material of which the jar *l* is made or composed must be varied to suit the materials from which the gases are generated, and, of course, in such cases the washing-vessel or purifier B must be lined in the interior with the corresponding material.

Having thus described fully our invention, we claim for us as new and desire to secure by Letters Patent—

1. The long-necked jar *l*, hose *r*, or their equivalents, and the air-tight connection between them and the cover of a gas-generator, A, as described, or its equivalent.

2. The sliding bar *m*, the wires *ww*, or their equivalents, and the connection of them with jar *l*, hose *r*, and cover K, in the manner fully described, or its equivalent, and for the purpose set forth.

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Witnesses:

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