

No. 15,838.

PATENTED OCT. 7, 1856.

J. F. BOYNTON.
APPARATUS FOR GENERATING CARBONIC ACID.

Fig. 1.

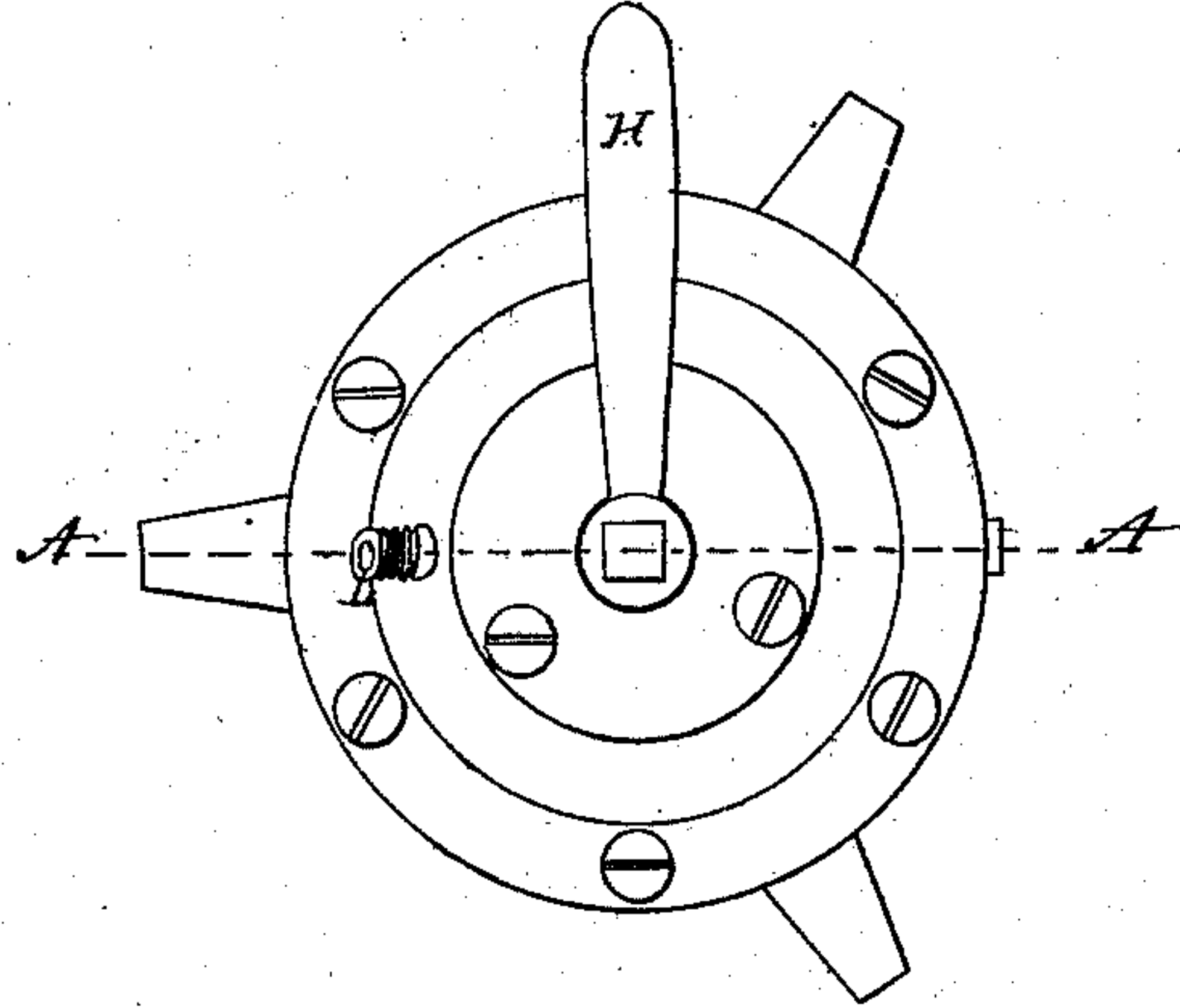


Fig. 2.

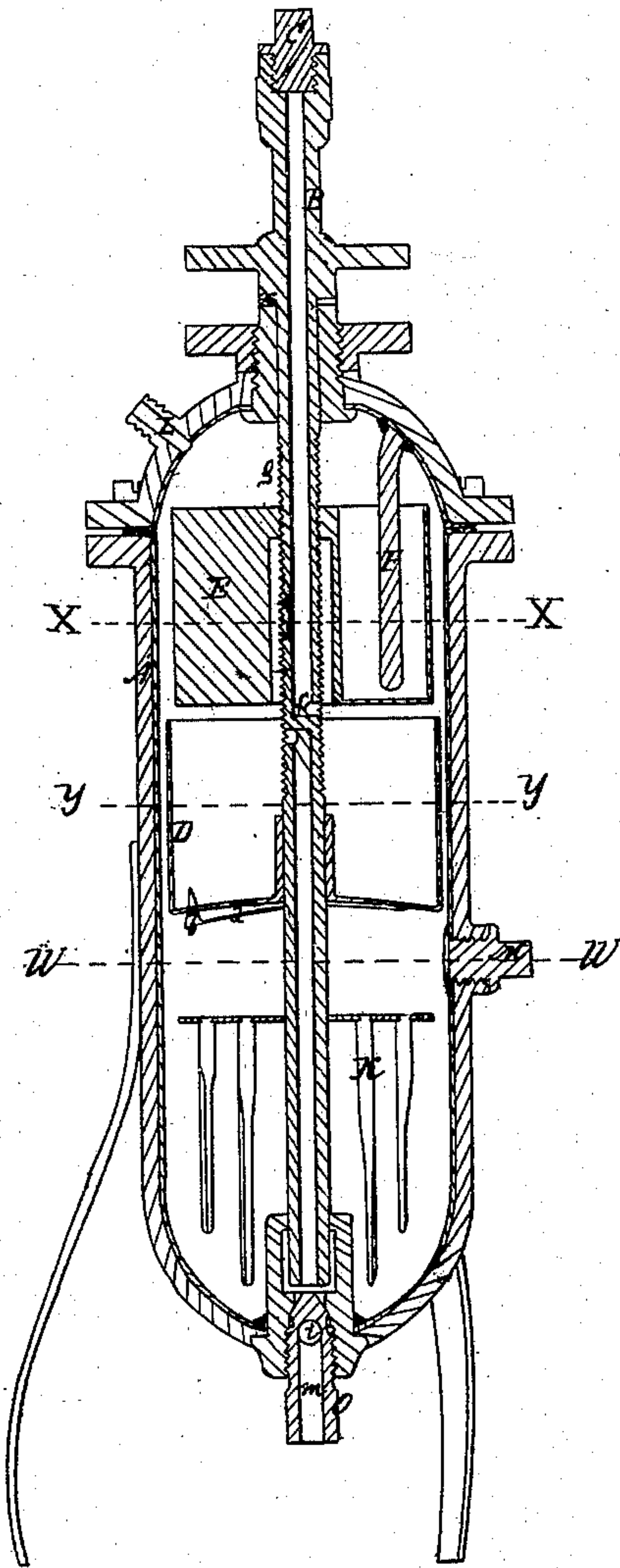


Fig. 3.

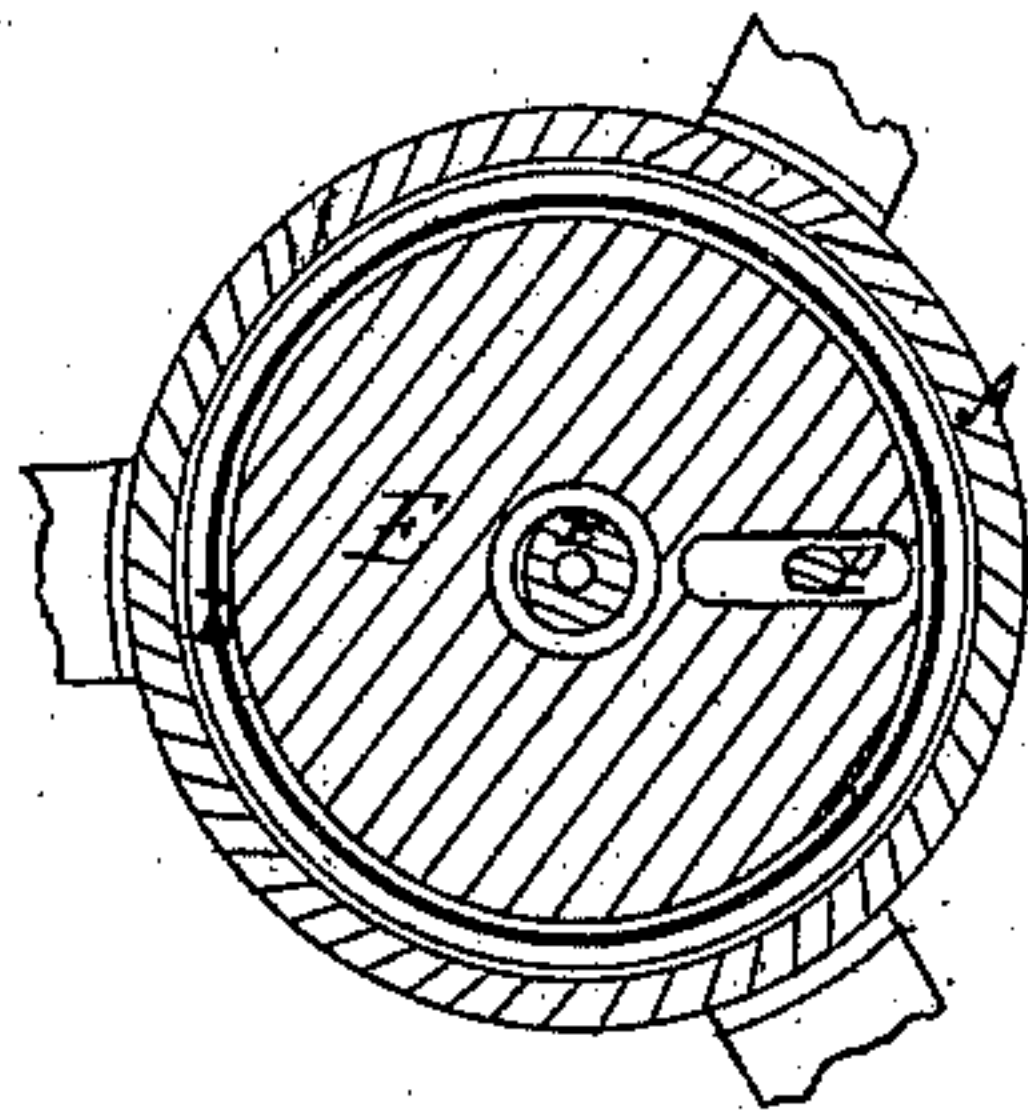


Fig. 4.

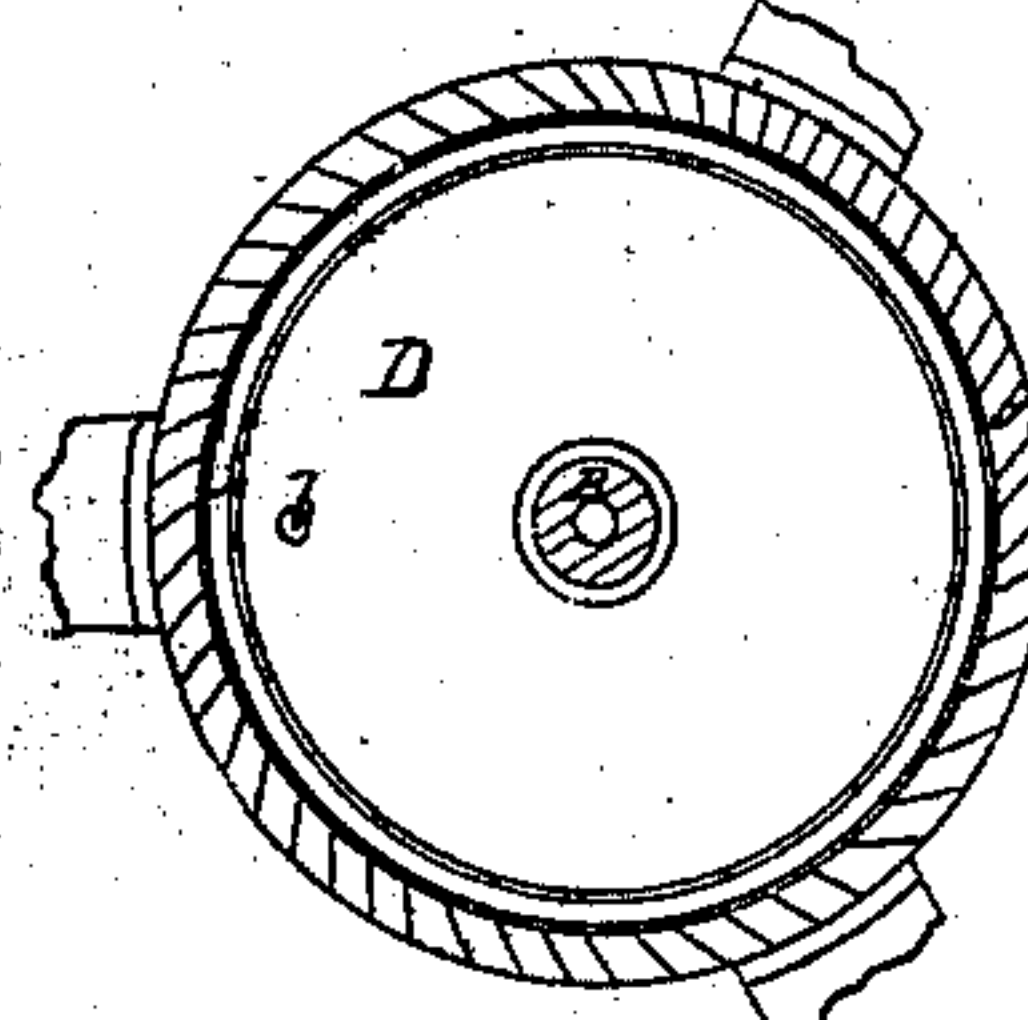
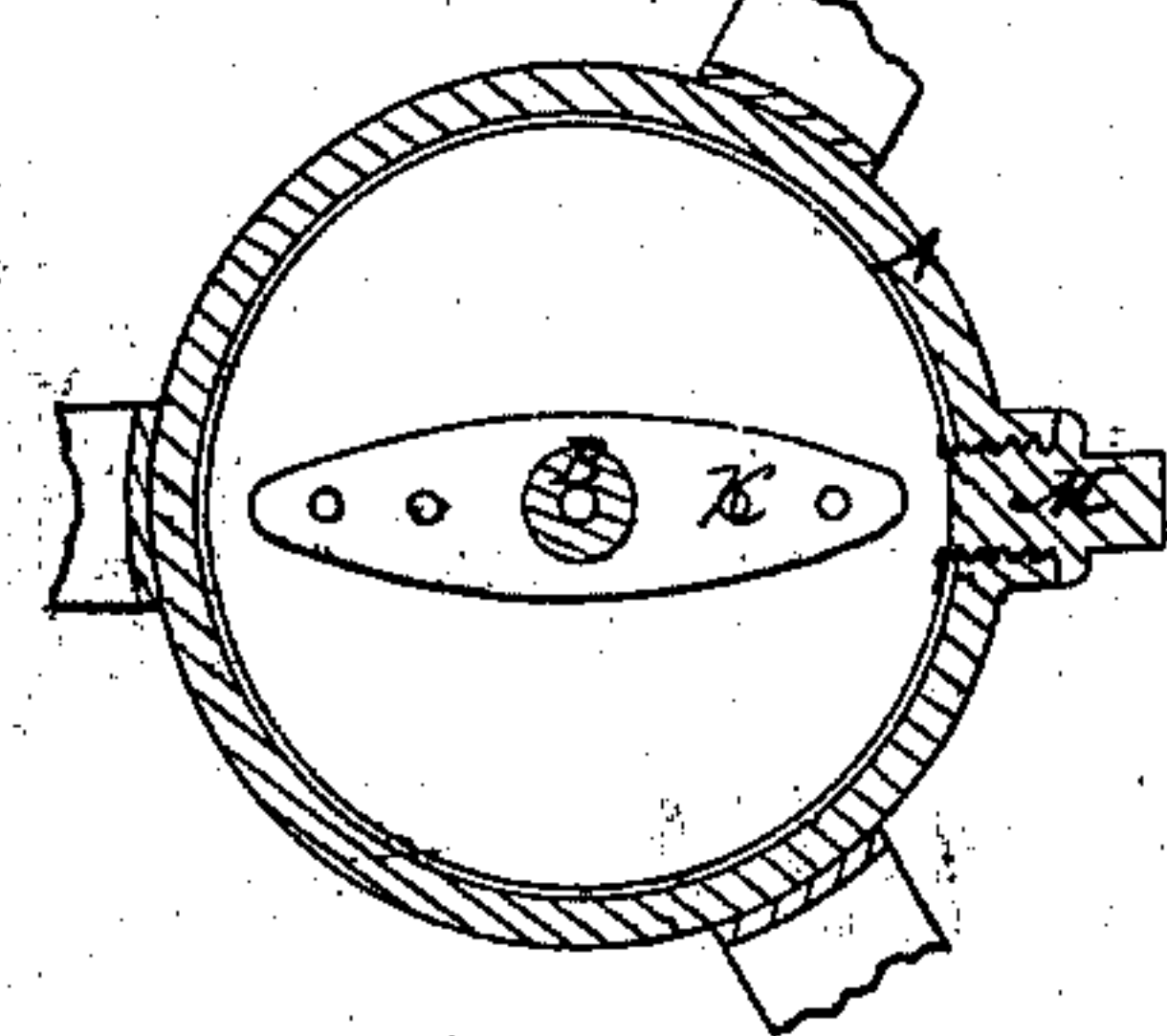


Fig. 5.



UNITED STATES PATENT OFFICE.

J. F. BOYNTON, OF SYRACUSE, NEW YORK.

SODA-FOUNTAIN.

Specification forming part of Letters Patent No. 15,838, dated October 7, 1856; Reissued July 13, 1869, No. 3,546.

To all whom it may concern:

Be it known that I, J. F. BOYNTON, of Syracuse, in the county of Onondaga and State of New York, have invented certain
5 new and useful improvements in generators for the production of carbonic-acid gas and for the purpose of charging fountains containing soda-water, mineral water, and other effervescent beverages therewith, of which
10 the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a plan of the generator; Fig.
15 2, a vertical section through the same upon the line A, A, of Fig. 1; Fig. 3, a section on the line X X, of Fig. 2; Fig. 4, a section on Y, Y, of Fig. 2; Fig. 5, a section on W, W, of Fig. 2.

20 My invention has for its object to enable me to deliver the sulfuric acid to the soda in the body of the generator in such quantities and at such intervals of time as may be required, and this I accomplish without
25 the employment of a separate vessel outside of the generator to contain the acid. Heretofore the acid has been placed within a separate vessel communicating with the generator and requiring to be made of equal
30 strength therewith, thus materially adding to its cost. In my improved apparatus, the acid is contained in a vessel within the generator, from which it is measured with great exactness and in such quantities as may be
35 required.

To enable others skilled in the art to understand my invention I will proceed to describe the manner in which I have carried it out.

40 In the accompanying drawings A, is the body of the generator, which is suitably lined with a leaden jacket as usual to protect its surface from the action of the acid. Through the center of the generator passes
45 down the hollow tube B, which performs the treble purpose of sustaining and operating the stirrer, of carrying the vessel which contains the acid, of sustaining and operating the plunger by which the acid is meas-
50 ured and delivered to the soda beneath. It is also through this tube that the machine is fed with acid. The latter being poured in at the upper end of the tube, flows from the side passage *f*, into the vessel D. The joint
55 at *x* is packed, and the extremity of the tube

is closed with the screw plug C. Its interior is lined with a metal not subject to attack from the acid. The acid receptacle D, is attached to the tube B, and is made of lead or of other material capable of resisting the
60 attack of the acid.

b, is a drip valve which is closed by the spring *d*, and is opened by pressure upon its point for a purpose which will be presently explained. The spring being made of
65 or coated with the precious metals or other noncorrosive material, so as to be indestructible by the action of the acid.

Directly above the vessel D, is the plunger E, which may be made of lead, and filled
70 with plaster or other suitable material. It is prevented from rotating by the pin F, attached to the interior of the fountain, and is connected with the tube B, by the screw *g*,
75 in such a manner that as the tube is turned by the handle H, the plunger rises and falls. As it descends into the vessel D the acid is displaced from the latter, the quantity being always proportionate to the number of
80 turns given to the handle. When the plunger reaches the bottom of the vessel it opens the valve *b*, and the acid which still remains between the vessel and the plunger escapes.

It is evident that there are other methods by means of which the acid may be allowed
85 to escape from its receptacle which will be the equivalent of the one above described. For instance the plunger as it descends may be made to open a series of valves, along the side of the vessel D, each valve permit-
90 ting a certain given quantity to escape. Or in place of moving the plunger it may be made stationary, the acid vessel being caused to rise. In such case the rod or
95 tube B, in place of being attached to the stirrer passes through it and rises and falls independently of it, and the screw is made to work in attachments outside of the generator and to rise and fall with the acid
100 vessel. These methods are obviously but modifications of the device represented in the accompanying drawings and need not be further described.

It will be seen that the acid is constantly submitted to the pressure which exists with-
105 in the generator, and I have therefore called this an isobaric or equal pressure generator.

K is the stirrer which is agitated by the motion of the tube B, and which keeps the contents of the generator in motion.

M, is the cock through which the carbonated salts and water are introduced; L, the pipe through which the gas is allowed to pass off to the fountain.

5 I will now describe the blow off cock by means of which the contents of the generator may be blown off at the close of the operation without throwing the same out too violently. An ordinary stop cock is
10 wholly inapplicable to the purpose on account of the difficulty experienced in keeping it tight after it has become slightly worn, and the screw plug now in use for the purpose is objectionable, as the
15 moment it is withdrawn whatever remains within the generator is thrown violently out by the expansion of the gas within. To remedy these objections and to produce a cock which shall remain always tight, notwithstanding any wear to which it may be subjected, at the same time that it shall
20 blow off as gradually as may be desired. This plug or cock is seen in section at *o* in Fig. 2. Its conical termination rests
25 upon a corresponding seat and closes the opening entirely. Immediately below the cover a hole *i* is drilled transversely through the plug, to meet which the passage *m*, is drilled longitudinally through the plug.
30 The plug thus constructed may be slightly loosened from its seat by which a passage is opened through the hole *i*, down through the cock.

Operation: The generator being connected with the fountain by an attachment
35 at L, the supercarbonate of soda or other suitable salt with the requisite quantity of water is introduced through the opening M. The acid is introduced through the tube B,

into the vessel D, and the parts are arranged
40 as seen in the drawings. The handle is now turned so as to cause the plunger to descend a short distance into the chamber D and a portion of the acid which is thereby
45 displaced flows over the outside of the vessel down upon the carbonate beneath. The handle may now be moved back and forth for the purpose of mixing the acid therewith, and this operation may be repeated at
50 intervals until the gas is all liberated from the carbonate beneath, at the last moment the drip valve being opened to permit the escape of the acid which still remains in the vessel. It is evident that in this manner
55 the quantity of acid thrown upon the carbonate may be graduated as required and by connecting the stirrer with the rod which actuates the plunger, whenever fresh acid is thrown down the contents of the generator are agitated and they are thereby
60 intimately mixed.

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

1. The within described arrangement of the plunger E, and vessel D, or any other
65 arrangement substantially equivalent thereto, whereby the acid may be measured and delivered to the other ingredients indeterminate quantities as set forth.

2. The spring drip valve *b*, or its equivalent whereby the vessel D, is entirely emptied of acid after a charge is worked off as
70 set forth.

JOHN F. BOYNTON.

Witnesses:

SAM. COOPER,
P. E. TESCHEMACHER.