

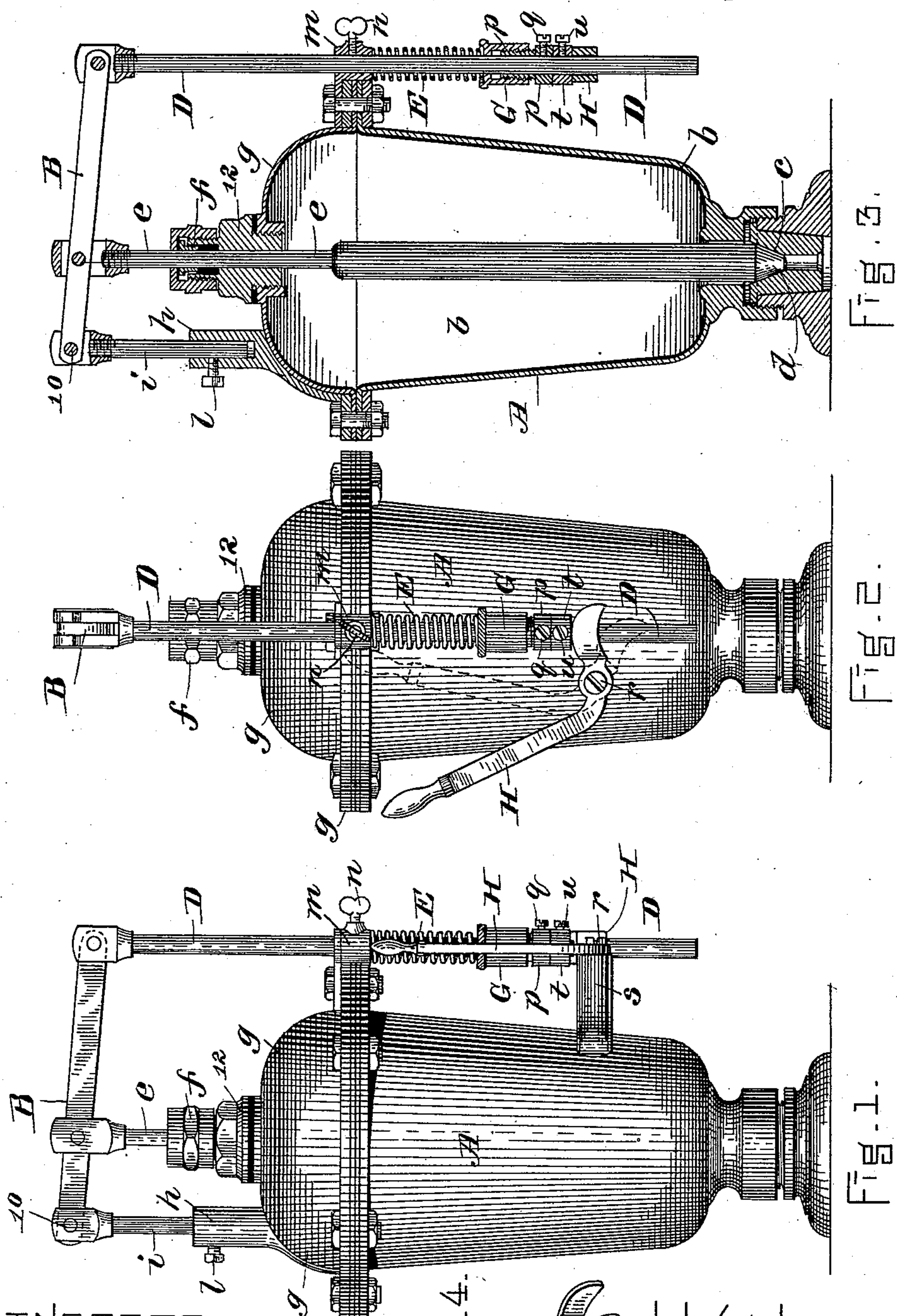
(No Model.)

F. J. JOHNSTON.

VALVE MECHANISM FOR CARBONIC ACID GAS GENERATORS.

No. 450,076.

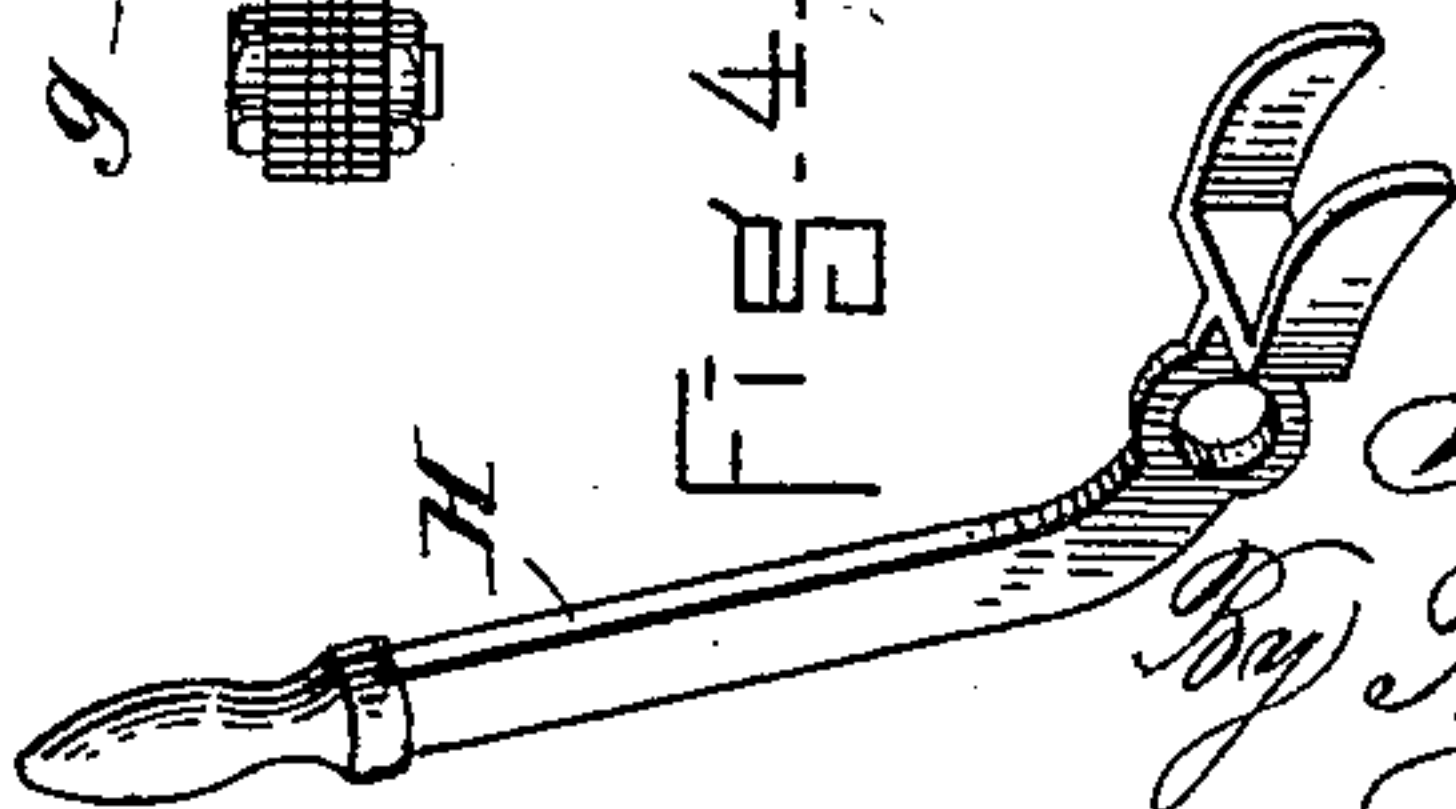
Patented Apr. 7, 1891.



WITNESSES.

Henry Marsh.
Harry H. Allen.

FIG. 4.



INVENTOR.

Frederic J. Johnston
By J. C. Teschemacher
Atty.

UNITED STATES PATENT OFFICE.

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MEDFORD, MASSACHUSETTS.

VALVE MECHANISM FOR CARBONIC-ACID-GAS GENERATORS.

SPECIFICATION forming part of Letters Patent No. 450,076, dated April 7, 1891.

Application filed December 16, 1890. Serial No. 374,888. (No model.)

To all whom it may concern:

Be it known that I, FREDERIC J. JOHNSTON, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Valve Mechanism for Carbonic-Acid-Gas Generators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a front elevation of the acid-chamber of a carbonic-acid-gas generator having my improved valve mechanism applied thereto. Fig. 2 is a side elevation of the same. Fig. 3 is a central vertical section of the same. Fig. 4 is a view of the valve-operating hand-lever detached.

My invention relates to carbonic-acid-gas generators, and has for its object to improve the construction of the valve mechanism of the acid chamber or receptacle, whereby the valve may be more conveniently operated and controlled than heretofore and the operating mechanism more readily adjusted to suit the requirements of the case.

To this end my invention consists in certain novel combinations of parts and details of construction, as hereinafter more particularly set forth, and specifically pointed out in the claims.

In the said drawings, A represents the acid chamber or receptacle of a carbonic-acid-gas generator, the interior of which is provided, as usual, with a lead lining *b*.

At the bottom of the chamber A is a leaden valve-seat *c*, to which is fitted the leaden valve *d*, the upper end of the vertical stem or spindle *e* of which passes through a stuffing-box *f* in a screw-plug 12, inserted at the center of the cover *g* of the acid-chamber.

To the upper slotted end of the valve-stem *e* is pivoted a horizontal lever B, the shorter arm of which is fulcrumed at 10 in the upper forked end of a sliding rod *i*, made vertically adjustable within a tubular support *h* and adapted to be clamped, when adjusted at the desired height, by means of a set-screw *l*. By this construction as the valve becomes worn the height of the fulcrum 10 can be varied to enable the lever to be kept in a horizontal or nearly horizontal position, where it will

operate to the best advantage on the valve-stem.

To the outer end of the lever B is pivoted the upper end of a vertical rod D, which slides through a guide *m*, secured to and projecting from the flange of the cover *g*, said guide being provided with a thumb-screw *n*, by means of which the rod D can be clamped in any desired position to hold the valve open or shut. Beneath the guide *m* the rod D is encircled by a stiff spiral spring E, the upper end of which bears against the guide *m*, while the lower end fits into a socket formed in the top of a nut G, which is screwed over the upper threaded portion of a collar or sleeve *p*, adjustably secured upon the rod D by means of a set-screw *q*, so that by varying the height of the collar *p* on the rod the tension of the spring E can be regulated to cause it to draw down the rod D with more or less force, and thus through the lever B and stem *e* normally hold the valve *d* tightly down upon its seat, as required. After the collar *p* has been adjusted upon the rod D, as desired, the tension of the spring E can be further regulated independently of the collar *p* by adjusting the nut G thereupon, thus compensating for the wear of the parts or the weakening of the spring. The rod D is raised against the influence of the spring E to open the acid-valve *d* by means of a hand-lever H, fulcrumed at *r* upon a horizontal stud *s*, projecting from the side of the receptacle A, the lower end of said lever, which is bifurcated so as to embrace the rod D, being brought up against a collar *t*, made adjustable upon the rod D by a set-screw *u*, and in this manner the rod D and the valve connected therewith can be easily raised and the flow of the acid regulated, as desired. The lever H, not being positively connected with the rod D, can be readily thrown back when not in use into the position seen in dotted lines in Fig. 2, when it will be out of the way, and if moved by any unauthorized person will not be likely to open the valve, as might occur if it were directly and positively connected with the valve mechanism. The lower collar *t* may be dispensed with, if desired, and the forked end of the lever H brought to bear directly upon the collar *p*, connected with the nut G, but in such

case the tension of the spring E would have to be regulated mainly by screwing the nut G up or down upon the collar *p*, as it would not answer to move the latter out of a proper position to be acted upon by the hand-lever. I therefore prefer to employ an independent collar *t* for the hand-lever to act upon, as this construction enables the upper collar to be raised as the spring wears or becomes weaker from constant use without interfering with the operation of the hand-lever upon the rod D.

By the employment of the set-screw *n* I am enabled to clamp the acid-valve tightly down upon its seat in case repairs become necessary, or if the spring E should become accidentally deranged or broken, and this set-screw can also be used to clamp the rod D after being raised by the hand-lever H to hold the valve open for the purpose of allowing the acid to run continuously, as is often desirable, thus avoiding the necessity of keeping the hand on the lever H.

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

1. In a carbonic-acid-gas generator, the combination, with the acid-chamber, the valve, and its vertically-sliding valve-stem extending up through the top of the acid-chamber, of the lever B, fulcrumed at 10 and pivoted to the valve-stem, the vertical rod D, pivoted to said lever and sliding through a guide, a spring encircling the rod and adapted to normally close the valve, the collar *p* on the rod D, the nut G, adjustable vertically on the threaded portion of said collar, and the hand-lever H, adapted to raise the rod D and open the valve, substantially as set forth.

2. In a carbonic-acid-gas generator, the combination, with the acid-chamber, the valve, and its vertically-sliding valve-stem extending up through the top of the chamber, of the lever B, pivoted to the valve-stem and fulcrumed at 10, the vertical rod D, pivoted to said lever and sliding through a guide, said rod having an adjustable collar *p* and a nut G, vertically adjustable thereon, the spring E, encircling the rod between the guide and the nut G and adapted to normally close the valve, the set-screw *n*, adapted to clamp the rod and hold the valve open or closed, and the hand-lever H, adapted to raise the rod and open the valve against the influence of the spring, substantially as set forth.

3. In a carbonic-acid-gas generator, the combination, with the acid-chamber, the valve, and its vertically-sliding valve-stem, of the lever B, pivoted to the valve-stem and having its fulcrum vertically adjustable, as described, the rod D, pivoted to the lever and sliding through the guide *m*, the latter provided with a set-screw *n* for clamping said rod, the spring E, collar *p*, with its vertically-adjustable nut G, the independent collar *t*, and the bifurcated hand-lever H, acting on the collar *t* to raise the rod D and open the valve, said lever being disconnected from the rod and adapted to be thrown back out of the way when not in use, substantially as set forth.

Witness my hand this 13th day of December, A. D. 1890.

FREDERIC J. JOHNSTON.

In presence of—

P. E. TESCHEMACHER,
HARRY W. AIKEN.