No. 625,388. Patented May 23, 1899.

# J. S. FERGUSON.

## ACETYLENE GAS GENERATOR.

(Application filed Mar. 21, 1898.)

(No Model.)

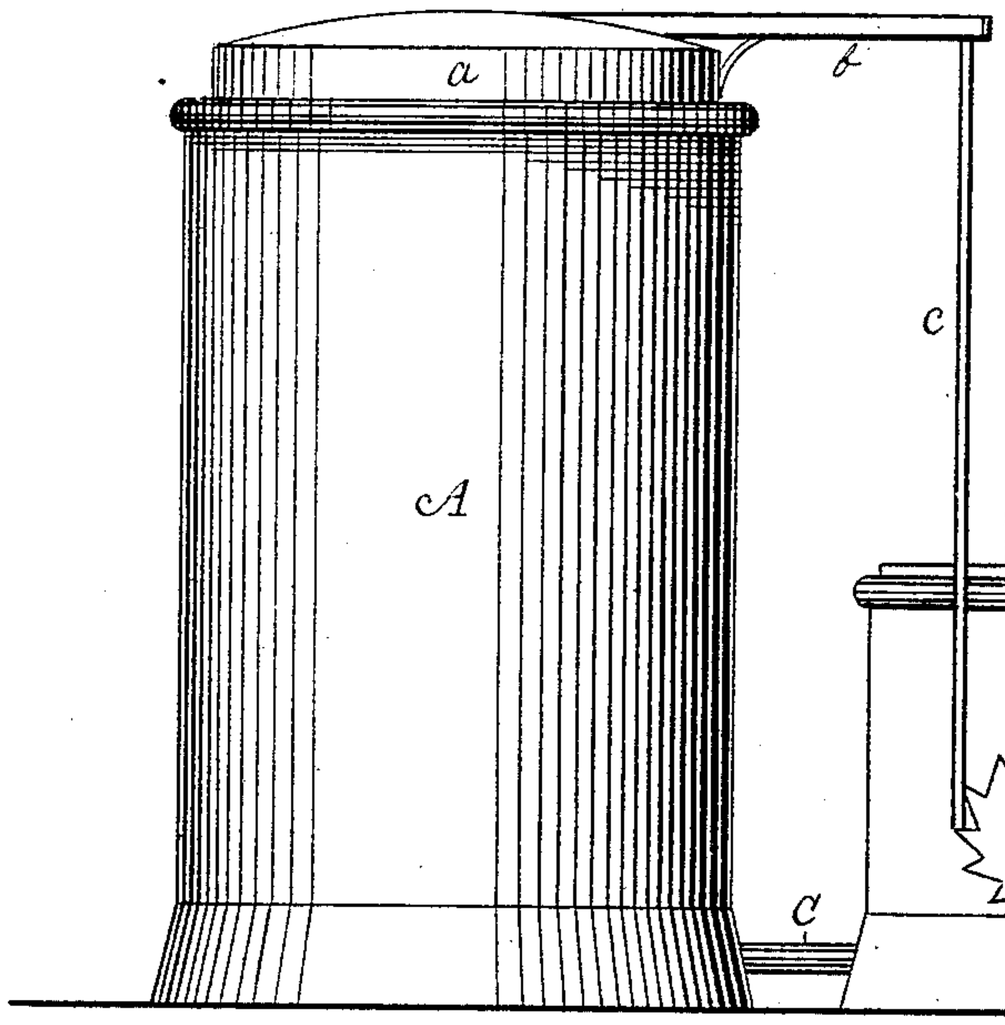


Fig. 1.

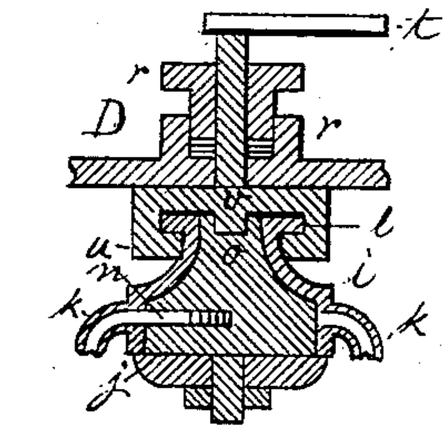


Fig. 5.

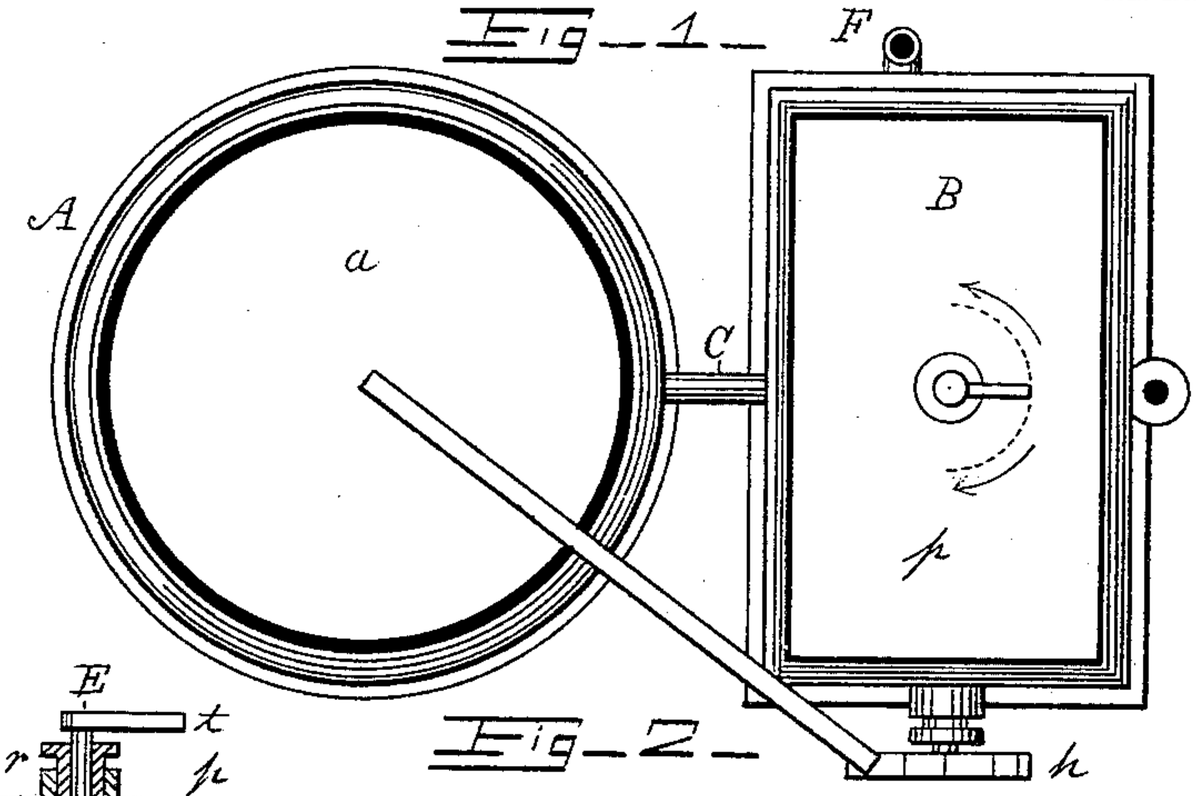


Fig. 2.

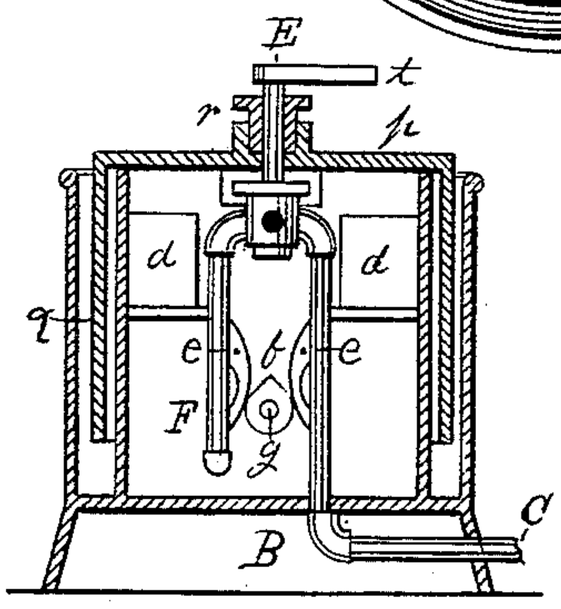


Fig. 3.

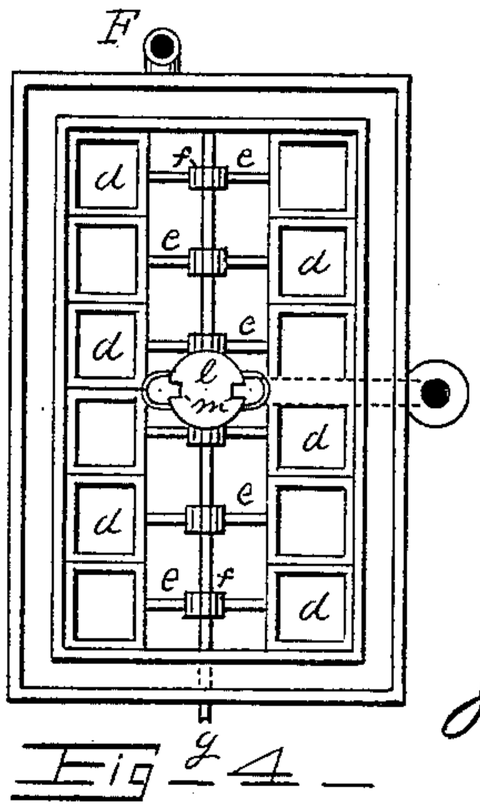


Fig. 4.

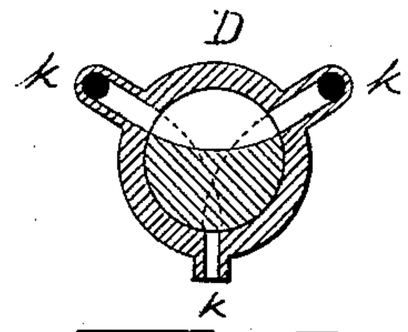


Fig. 6.

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# UNITED STATES PATENT OFFICE.

JAMES S. FERGUSON, OF MINNEAPOLIS, MINNESOTA.

## ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 625,388, dated May 23, 1899.

Application filed March 21, 1898. Serial No. 674,586. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES S. FERGUSON, a citizen of Canada, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented a certain new and useful Improvement in Gas-Generators, of which the following is a specification.

My invention relates to the production of acetylene gas; and it consists in means for closing communication between the gas-generator proper and the gas-holder, especially adapted for use in connection with the gas-generator shown and described in United States Patent No. 594,826, granted to me on the 30th day of November, 1897.

My present invention consists in providing the gas-conduit connecting the generator and gasometer with a stop-cock and providing the cover of my generator with a wrench adapted to operate the said stop-cock to the end that the said cover cannot be removed without first shutting off the said gas-conduit, nor can the said conduit be opened until after the said cover is in place, as will hereinafter appear.

In the drawings accompanying and forming a part of this specification, Figure 1 is a side elevation of a gas-generator embodying my improvement. Fig. 2 is a top view of the same. Fig. 3 is a cross-section of the generator. Fig. 4 is a top view of the generator with its cover removed. Fig. 5 is a vertical section of the stop-cock and its key, and Fig. 6 is a longitudinal section of the same.

Similar letters refer to similar parts in all the views.

The gasometer A is not unlike those commonly used, save that from the upper portion of its bell *a* extends an arm *b*, from which depends a rod *c*, the purpose of which will hereinafter be described.

The generator B is preferably parallelogrammic. It is fashioned with double walls, thereby providing for a water seal, and, like the generator shown and described in the patent above referred to, is provided with a number of chargers or magazines *d*, adapted to hold measured quantities of calcium carbid and to alternately discharge the same into the water therein. These charges *d* are supported in place and are operated by means of the latches *e*, which in turn are actuated by the cams *f*, mounted upon the shaft *g*. This shaft *g* has the ratchet-wheel *h* rigidly affixed thereto.

A gas-conduit C extends downward from the upper interior portion of the bell *a*, thence outward through the circumferential wall of the gasometer A, extends to and through the wall of the generator B, and thence upward therein, terminating in a stop-cock D. This stop-cock D consists of a cage *i* and a core *j*. The cage *i* is cylindrical and has two or more openings *k* in its circumferential wall adapted to receive pipes. The upper portion of this cage is provided with a horizontally-projecting flange *l*, having one or more keyways *m* cut therein. The core *j* consists of a cylindrical body turned to fit the cylindrical chamber of the cage *i*. It is fashioned with a recess *n*, adapted to communicate with any two of the three openings *k* and to close the third opening, and with a mortise *o*. The cover *p* of the generator B is provided with a depending wall *q*, adapted to enter the chamber between the outer and inner walls of the said generator B, where it is water-sealed. The wrench E is designed to operate the stop-cock D. It consists of a vertical stem or shaft extending through a stuffing-box *r* of the cover *p*, and of a handle or lever *t*, by means of which it is operated. Its shaft *s* is furnished with a key or keys *u*, preferably two, adapted to pass through the keyways *m* and to lock with the flange *l* of the cage *i*, and with a tenon *v*, adapted to enter the mortise *o*. A vent-pipe F is screwed into or onto the stop-cock D, extends downward therefrom, and out through the wall of the generator B. This vent-pipe F is opened by closing the gas-conduit C (through the operation of the stop-cock D) and serves to vent the generator B, so that its cover *p* may be removed, and also serves as an escape for gas from the said generator B after the conduit C is closed. Hence there is no escape or odor of gas in the room when the cover *p* of the generator B is removed. The vent-pipe F may connect with an escape or safety pipe leading or extending from the gasometer A, if deemed necessary.

The operation of my device is as follows: Having admitted water for gas-making purposes to my generator B through its supply-pipe *w*, leaving the said generator about one-

third ($\frac{1}{3}$) full, and having filled the chargers or magazines *d* with calcium carbid, I place the cover *p* thereon, letting its depending wall *q* pass in between the inner and outer walls of the generator B, the tenon *v* drop into the mortise *o*, and the keys *u* into the keyways *m* of the flange *l*. I now swing the lever or handle *t* ninety degrees (90°) in either direction, thus rotating the core *j* of the stop-cock D, thereby closing the vent-pipe F, opening the gas-conduit C and the remaining opening *k* of the said stop-cock D, and by the same operation I clamp the cover *p* to the stop-cock D by means of the keys *u* and the flange *l*. I now rotate the shaft *g* (by turning the ratchet-wheel *h*) until one of the cams *f*, mounted thereon, shall spring one of the latches *e* and letting one of the hinged chargers or magazines *d* tilt downward and precipitate its load of calcium carbid into the water below, when acetylene gas will be set free, accumulate in the generator B above the water, thence flow into the opening *k* of the stop-cock D through the gas-conduit C, (now in communication therewith,) and into the bell *a* of the gasometer B, which it raises, thereby creating for itself space proportionate to its expansive force. Then when the gas so generated shall have been consumed at the burners (not shown) the bell *a* will fall, (by gravity,) when its depending rod *c* will contact with one of the teeth of the ratchet-wheel *h*, which it will depress, thereby rotating the shaft *g*, and (through the operation of the cams *f*, mounted thereon, and the latches *e*, connected therewith) another charger will be released and another quantity of calcium carbid will be precipitated into the water, and the above-described operation will be repeated. Henceforth my device is automatic in its operation, precipitating one charge of carbid after another until all of the chargers *d* shall have been emptied. I recharge my generator by turning the lever or handle *t* ninety degrees (90°) in either direction, thereby shutting off the conduit C and opening the vent-pipe F and the opening *k* of the stop-cock D. I now remove the cover *p* and raise the chargers or magazines *d* to their proper positions, where they are automatically locked by the latches *c*, when I recharge the chargers or magazines *d*.

The advantages of this construction are, first, my generator is water-sealed, and hence there is no escape or leakage of gas therefrom; second, the cover of the generator cannot be removed until after the gas-conduit is closed, thus providing against carelessness or neglect in its manipulation; third, the gas-conduit cannot be opened until after the cover is in place and locked, and, fourth, one device serves to open and close the gas-conduit, to open and close the vent-pipe, and to secure and release the cover.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device for generating gas, the combination of a water-sealed generator in which the gas is generated; a telescope gasometer in which the gas is stored; a pipe connecting the said generator and the said gasometer through which the gas passes from one to the other; a three-way cock secured to the said gas-conduit; said three-way cock being fashioned with a flange having one or more keyways therein; and a wrench affixed in the cover of the said generator, said wrench being provided with one or more keys adapted to enter the keyway or keyways of the said three-way cock, operating to clamp the said cover thereto, and to turn the said core thereof, whereby the gas-conduit is opened or closed, substantially as shown and for the purposes specified.

2. In a device for generating gas, the combination of a water-sealed generator, wherein the gas is generated; a telescope gasometer wherein the gas is stored; a conduit connecting the said generator and gasometer, through which the gas passes from the former to the latter; a three-way cock affixed to the ingress end of the said conduit said three-way cock being located beneath the cover of, and incased by the said gasometer; a bent pipe extending from the said three-way cock outward and through the wall of the said generator, through which the gas may escape, and through which the air may enter; a wrench extending through the said cover, a portion of which is adapted to interlock with the cage, and another portion of which is adapted to interlock with the core of the said three-way cock, whereby, when it is rotated in one direction it will clamp the said cover to the said conduit and "turn on" the gas, and when rotated in an opposite direction it will "shut off" the gas, open the vent, and release the said cover from the said conduit substantially as shown, and for the purposes specified.

3. In a device for generating gas, the combination with a generator, a gasometer and a connecting-conduit, of a three-way cock incased by the said generator and affixed to the said conduit; and a wrench extending through the cover of the said generator, adapted to interlock with the cage, and to operate the core of the said three-way cock, in the manner and for the purposes specified.

4. In a device for generating gas, the combination with a generator, a gasometer, and a connecting-conduit, of a cock incased by the said generator and affixed to the said conduit, and a wrench extending through the cover of the said generator adapted to interlock with and to operate the core of the said incased cock, in the manner and for the purpose specified.

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Witnesses:
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