

No. 618,061.

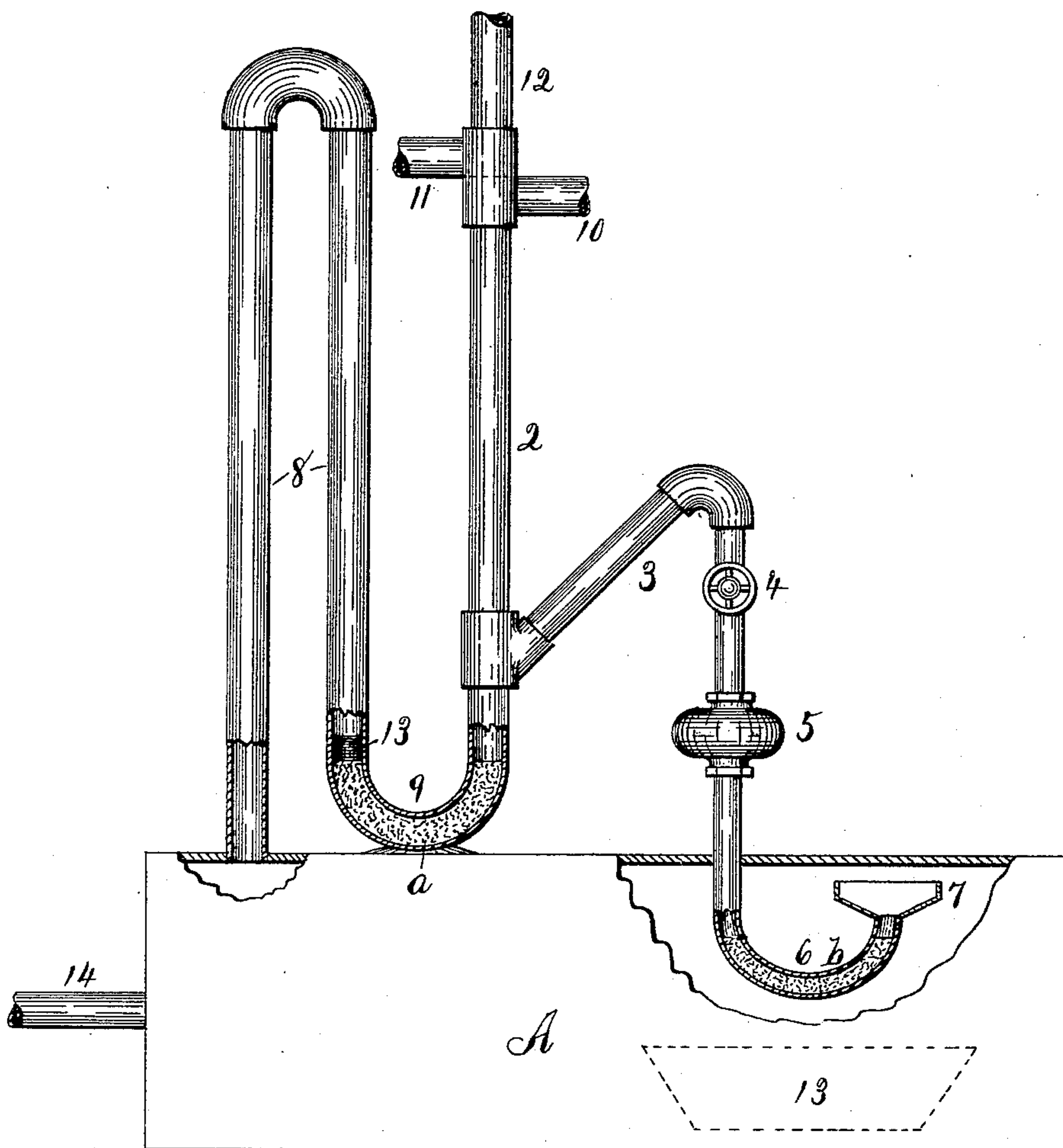
Patented Jan. 24, 1899.

I. C. CURTIS.

FEED WATER REGULATOR FOR ACETYLENE GAS GENERATORS.

(Application filed Mar. 22, 1898.)

(No Model.)



WITNESSES:

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IRA C. CURTIS, OF FULTON, NEW YORK.

FEED-WATER REGULATOR FOR ACETYLENE-GAS GENERATORS.

SPECIFICATION forming part of Letters Patent No. 618,061, dated January 24, 1899.

Application filed March 22, 1898. Serial No. 674,796. (No model.)

To all whom it may concern:

Be it known that I, IRA C. CURTIS, of Fulton, in the county of Oswego, in the State of New York, have invented new and useful Improvements in Devices for Generating Acetylene Gas, of which the following, taken in connection with the accompanying drawing, is a full, clear, and exact description.

My invention relates to processes and apparatus for the generation of combustible gas by the bringing together of two or more materials, and thereby by chemical action produce, generate, or release the gas, as by feeding water to or onto calcium carbide to produce acetylene gas, and particularly to means and appliances for automatically regulating and controlling the feed of the water to the carbide to thereby regulate the amount generated.

The object of my invention is to provide means for automatically regulating the generation of gas by automatically regulating the feed of the water to the carbide and providing means whereby the gas-pressure is opposed to the head of the feed-water, so that the feed-cut-off medium is located between and exposed to two opposing forces and in which said medium operates as a seal between them, adapted to be shifted longitudinally by the dominating force, and in which a like shiftable seal is placed in the feed-water pipe adjacent to the discharge, also exposed to the two opposing forces—water and gas—and adapted to become spread out to better permit the passage of water or as a vent to permit the automatic reduction of the surplus or dangerous gas-pressure and to automatically stop the passage of either when the forces are equalized or the gas-pressure does not rise above a predetermined point, and in which when it rises above said limit both seals will automatically operate as independent vents to relieve the surplus or dangerous pressure. One seal is introduced between the stand-pipe or water-column and a gas-column connected thereto or in the connection and the other in the feed-pipe, where it is likewise exposed to water-pressure on one side and gas-pressure on the other. It is constructed as follows, reference being had to the accompanying drawing, in which I show a vertical sectional elevation of my feed-reg-

ulator and pressure-regulator applied to a generator.

A is a suitable generator used either singly or connected to a suitable separate gasometer. Upon this a suitable water-column pipe 2 is mounted or erected and provided on one side with a branch pipe 3, having a valve 4, chamber 5, bend 6, and dish or pan 7, into which this pipe opens. A gas-pressure pipe or column 8 is connected to the interior of the generator, rises above the water-level in the water-column, and is connected to said water-column, as by a bend 9 or other suitable connection, creating therein a sealing-chamber between them to receive the sealing agent or medium *a*. The bend 6 creates another chamber to receive a like medium or seal *b*. The preferred type of agent, medium, or seal is one which has a greater density and specific gravity than water, such as mercury. The walls of these seal-chambers and of the columns, pipes, and other exposed parts are preferably of any suitable material which does not amalgamate with or is not in any manner affected by quicksilver or the sealing medium employed. Any other suitable substance, material, or liquid can be used which is of sufficient density to be impenetrable or impervious to or not affected by or will not mix or commingle with water, will be impervious to gas also, and which is movable under pressure.

An induction-pipe 10, an overflow or waste pipe 11, and a safety or vent pipe 12 are suitably connected to the pipe 2. The overflow-pipe is shown as in a different plane from the induction-pipe and leads to any suitable point, and the vent-pipe can be carried up through the roof.

A suitable vessel 13 is placed in proper position in the generator to hold the carbide.

It will be seen that when the column is filled with water its head will force the seal *a* away from the branch pipe, and it will flow into and through that, forcing the mercury (or seal *b*) up into the dish, where it spreads out, so that the water can percolate or flow around it into the dish above the seal and overflow into the carbide vessel, and thus generate gas. As the pressure of gas increases it will exert its force into the opposite end of the seal against the force of the water, gradually forcing the seal

a into position to eventually close the feed-
 pipe and shut off the water. At the same
 time it will also force the seal b out of the
 dish and into the pipe and if strong enough
 5 will force it up into the expansion-chamber 5,
 when the gas will flow through or around the
 seal and into the feed-pipe and into the col-
 umn and, bubbling through the water, will
 pass off through the vent-pipe. At the same
 10 time the gas will flow through or around the
 seal a into the vent-pipe. Thus I show two
 separate but automatically-operating vent-
 pipes, either operating separately or together
 when one is not sufficient to carry off the sur-
 15 plus or dangerous pressure. I thus provide
 the water-column and feed-pipe each with a
 flowable sealing medium of a normal density
 sufficient to prevent the inflow of water or
 the outflow of gas and with means whereby
 20 it is automatically diffused or spread out to
 permit the passage of water in one direction
 and of the gas in the opposite direction when
 the pressure rises above a fixed point.

When mercury is used, it is preferable to
 25 protect it by means of an auxiliary seal of a
 character which will not combine with it to
 prevent its corrosion or the creation of an ex-
 plosive. Such an auxiliary is shown at 13,
 which represents a quantity of oil upon the
 30 mercury to protect it from the gas. Any
 other suitable auxiliary medium can be used
 which is lighter than mercury and which will
 not act upon or be acted upon by mercury
 or gas.

35 The seal adjacent to the dish-terminal is
 always protected by the water remaining
 thereon which has not overflowed from the
 dish.

A pipe 14 connects the generator to a suit-
 40 able gasometer when the latter is used, and
 if not used then it connects to a suitable pip-
 ing system.

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

1. The combination with a generator, of a
 water-column, a gas-column connected there-
 to, and a seal in the connection between them
 upon which the water and gas exert opposing
 forces to shift said seal according to the di- 50
 rection of the dominating force.

2. The combination with a generator, of a
 water-column, a gas-column connected there-
 to, a seal in the connection between them, and
 an auxiliary protective seal between it and 55
 the gas whereby said double seal is shifted
 one way or the other according to the direc-
 tion of the superior force.

3. The combination with a generator, of a
 feed-water pipe having a dish-terminal, of a 60
 seal in said pipe adjacent to said terminal ex-
 posed to the force of the water to shift it into
 said terminal, and to that of the gas to force
 it out of it, according to whichever force is
 superior. 65

4. The combination with a generator, of a
 feed-water pipe enlarged at its terminal and
 at a point adjacent thereto, of a seal between
 said enlargements between the opposing
 forces of the water and the gas, and shiftable 70
 in one direction into the terminal to permit
 the passage of water, and in the opposite di-
 rection into the adjacent enlargement to per-
 mit the escape of surplus gas-pressure ac-
 cording to whichever exerts the dominating 75
 force.

5. The combination with a generator, of two
 pipes connected thereto and to each other,
 and a seal in the connection between said
 pipes and exposed to the opposing forces of 80
 the liquids in the respective pipes, and moved
 in one direction or the other by and in the
 direction of the greater force, as and for the
 purposes set forth.

In witness whereof I have hereunto set my 85
 hand this 16th day of March, 1898.

IRA C. CURTIS.

In presence of—

L. C. FOSTER,

C. R. DINES.