(No Model.)

H. BRYANT.

ACETYLENE GAS MACHINE.

No. 595,668. Patented Dec. 14, 1897.

Fig. 1.

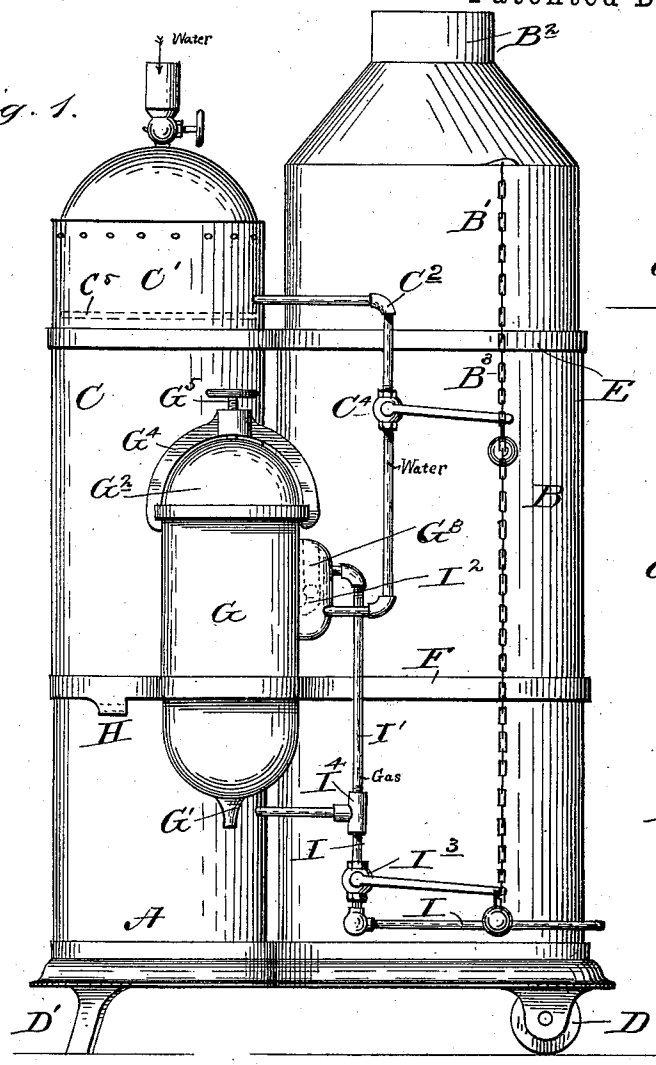


Fig. 3.

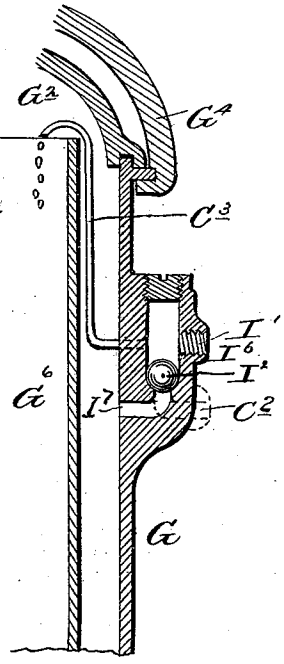


Fig. 2.

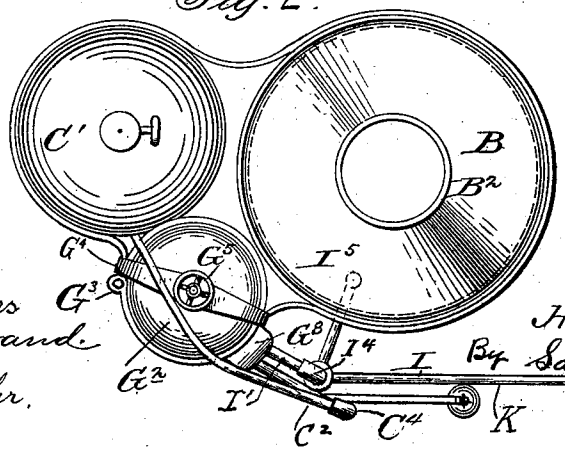
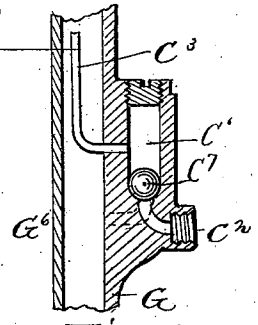


Fig. 4.



Witnesses
F. L. Ourand.
George J. Moser.

Inventor.
Henry Bryant.
By Saml. J. Wallace,
Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HENRY BRYANT, OF ARANSAS PASS, TEXAS.

ACETYLENE-GAS MACHINE.

SPECIFICATION forming part of Letters Patent No. 595,668, dated December 14, 1897.

Application filed November 4, 1896. Serial No. 611,041. (No model.)

To all whom it may concern:

Be it known that I, HENRY BRYANT, a citizen of the United States, residing at Aransas Pass, in the county of Patricio and State of Texas, have invented a new and useful Improvement in Gas-Machines, which is made and used substantially as set forth hereinafter, and as shown in the accompanying drawings, in which—

Figure 1 is a front elevation of the improved gas-machine. Fig. 2 is a plan view of the same. Fig. 3 is a detail section showing parts of the generator and the gas-outlet in full lines, and dotted lines showing how the water-inlet differs therefrom. Fig. 4 is a detail section showing water-inlet in full lines.

This invention consists in an improved apparatus for producing acetylene or an illuminating-gas from carbid of calcium and water or suitable materials and storing and feeding the gas to distributing-pipes for use at a nearly uniform pressure, notwithstanding the irregularities of production, by automatic regulation of production and control and in various details in the same.

The apparatus, as shown, has a base or support A, of cast metal, on which are set two gas-holding tanks B and C, securely held thereon. This base-frame has a shaft mounted in it at one end bearing wheels D, adapted to act both as supports in standing and to facilitate movement when needed, and at the other end bears two legs D′ as supports and two handholds H for use in movement. The tanks B and C are also held together by a band E at the top and a band F between, also arranged to hold the gas-generator G in the angle between the tanks.

The tank B is of a telescopic form, with a base for water or a fluid and a top B′, sliding freely up and down therein, to receive and feed the gas. The top has a holder B^2 for weights to give and regulate pressure on the gas, while the generator acts and is charged intermittently.

The generator G is held by a band F and pipes I, connecting it with tanks B and C. It is made, of cast metal or otherwise, as a vertical cylinder rounded at the ends. It is provided with an outlet and valve G′ below for use in washing it out and a removable top G^2. The top turns on a vertical hinge G^3 to open and bears a spanner-clamp G^4 to engage the generator-rim. This clamp holds the top firmly in place by a set-screw G^5, pressing down on it by turning. The generator has a removable shell G^6, to hold the carbid and water for making the gas, for facility in charging and discharging.

The tank C is made like a hot-water tank, or of any suitable form, to withstand pressure. It has a diaphragm C^5 near the top to separate a water-chamber C′, and a funnel or pipe for inlet of water, and a pipe C^2 for feeding water from the chamber into the generator G to form gas. The pipe C^2 has a valve C^4 with a lever to operate it, loaded with a weight to draw down to automatically turn on water to form gas. This lever is attached by a chain or rod B^3 to the top B′ of the tank, so that when the top is raised by an excess of gas it will raise the lever and close the valve to shut off the inlet of water and the formation of gas until the gas is used. To make automatic regulation, the feed-pipe C^2 connects with a cavity C^6 in the generator, opening upward, having a ball or check valve C^7 arranged to let the water flow in when its head in the pipe is enough to overcome the pressure of the gas, but so that when there is no water or when the gas-pressure is too great it will automatically close the valve, cut off the water and formation of gas, and prevent the escape of gas from overpressure. This arrangement of inlet is as illustrated in Fig. 3, except that the passages I^6 and I^7 are omitted, and the passages C^2 and C^3 (partly shown in dotted lines) are substituted for them.

The service-pipe I connects from tank C and by branches from generator G and tank B with the burners beyond point K by branches as may be needed. It connects with the generator by branch I′, which also has a ball I^2 or other check-valve and outlet I^6 and I^7 to prevent the gas from escaping when recharging.

The pipe I has a quick-acting valve I^8 between the generator and the connections of tank B, and this valve has a lever for working it, by which it is connected by a chain or rod B^3 with the edge of the tank-top B′, so that when that rises to a certain level it will lift the lever and close the valve to shut off the gas from tank B to prevent overpressure

in the tank and through the burner-pipes. The passages in valves I^3 and C^4 are made with narrow slotways through the two portions of a turn-valve or of other suitable form, so as to be quick-acting, or to open and shut off by very short movements when required.

The tank B is made of two shells concentric, with a water-space between for the top B′ to slide in.

The pipe I has a branch I^5, projecting into tank B and rising therein above the highest level of the water, so the gas can pass in and out freely.

A quantity of suitable carbid is placed in the shell G^6 and replaced in the generator and the lid closed tightly by screw G^5. Water is fed into chamber C′. The water then passes by pipes C^2 and C^3, by lifting a valve, into the shell G^6 in the generator G through an annular space onto the carbid, so as to produce gas. The gas passes out of the generator by passage I^7 by lifting valve I^2, and on into branch I′ and then into and along pipe I to the several burners in use. If the gas generates faster than it is used, the pressure increases until it lifts the top B′ and until the top lifts the chain B^3. This turns the lever of valve C^4, so as to cut off the water to stop the formation of gas. This chain also turns the lever of valve I^3, so as to cut off the gas from tank B and the burner-pipes, so as to prevent too high pressure therein. If there should be an excess of water in the generator, or if by any chance the pipe should leak into it, then the excess of gas formed would go into the tank C, which is made strong enough to hold the gas at any pressure within the capacity of one charge of carbid to form and hold it without increasing the pressure at the burners when the gas is used out until the top B′ lowers and opens valves C^4 and I^3 by chain B^3. This lets gas out of tank C and generates more gas until the top B′ rises, so as to lift the chain and cut the gas off again. When all is working well, the gas will be at nearly a uniform pressure through all the parts, and the generation will go on nearly as the gas is used; but to insure this and avoid all accidents the apparatus is made with the several parts for automatic control and with an expanding tank for gas at a regular pressure for use and with a pressure-tank for storing any excesses and feeding back as required.

Various modifications may be made.

I claim—

1. In combination a generator adapted to form gas from a carbid and water, and provided with a service-pipe, with two tanks, connecting with such generator and pipe, one adapted to expand and contract to accommodate variations between the generation and use of the gas, at a pressure near that intended for the service-pipe, and the other adapted to receive and feed the excesses of gas at varying pressures, and with four valves, two turn-valves with means for operating them from excess of gas in the charging-tank, adapted one to control the admission of gas to such tank and the other of water to the generator, and two check-valves adapted to prevent outlet of gas from the generator by the water-passage, and from the gas-holder to the generator, substantially as set forth.

2. A generator constructed to form gas from a carbid and water, having a removable cell to facilitate charging and discharging, a removable cap having a stirrup and screw-holder, and two passages in the wall of the generator each provided with a ball or check valve adapted to allow the passage of water inward by one, and of gas outward by the other, while preventing the escape of gas by reverse passage, in combination with an expansible and a non-expansible gas-tank and service-pipes connecting the generator and the tanks, and provided with automatically-controlled valves, substantially as set forth.

HENRY BRYANT.

Witnesses:
GEO. W. MANKIN,
L. L. JOHNSON.