

No. 765,071.

PATENTED JULY 12, 1904.

J. H. EICHLER & J. BECKER.
ACETYLENE GAS GENERATOR.

APPLICATION FILED JULY 27, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

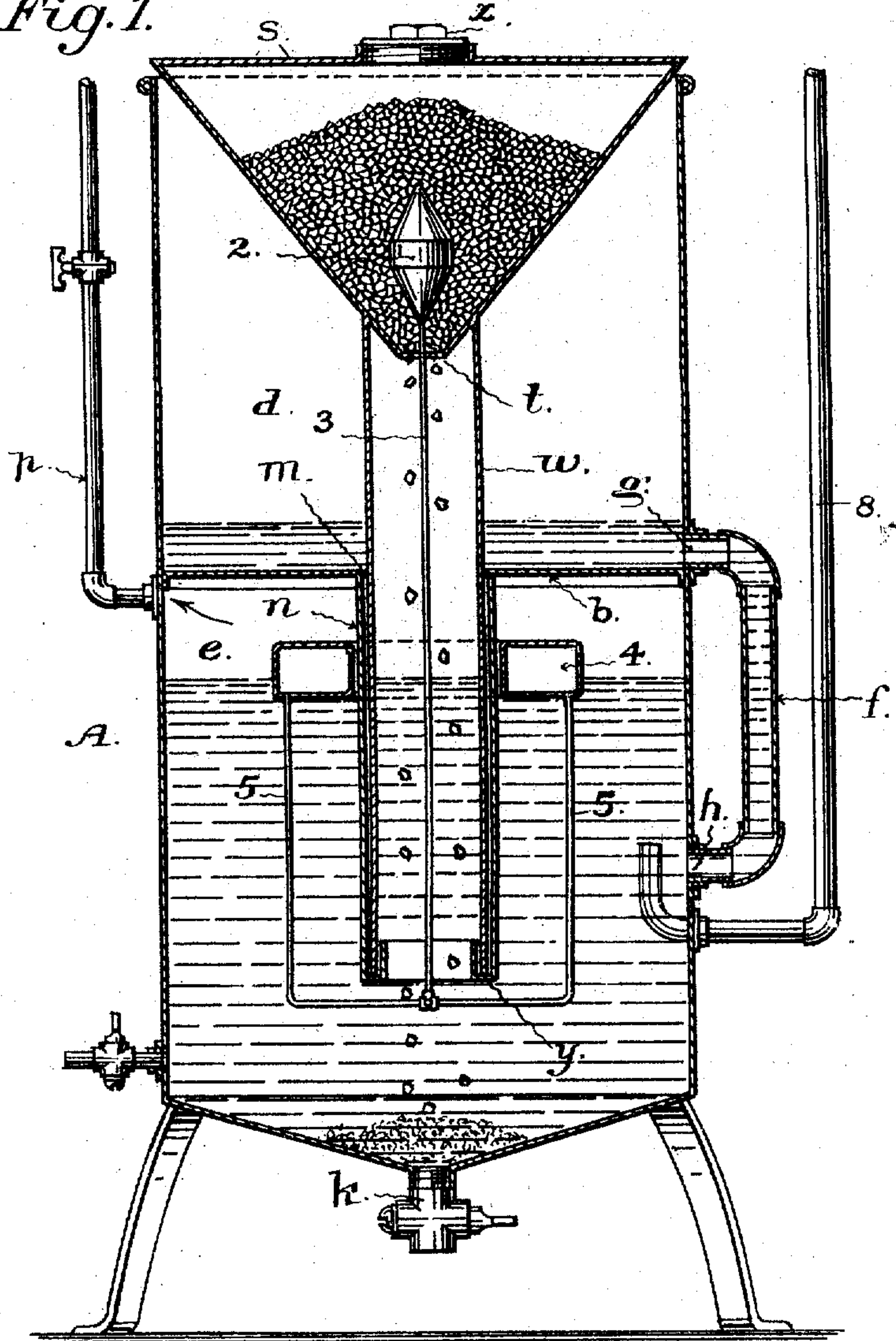
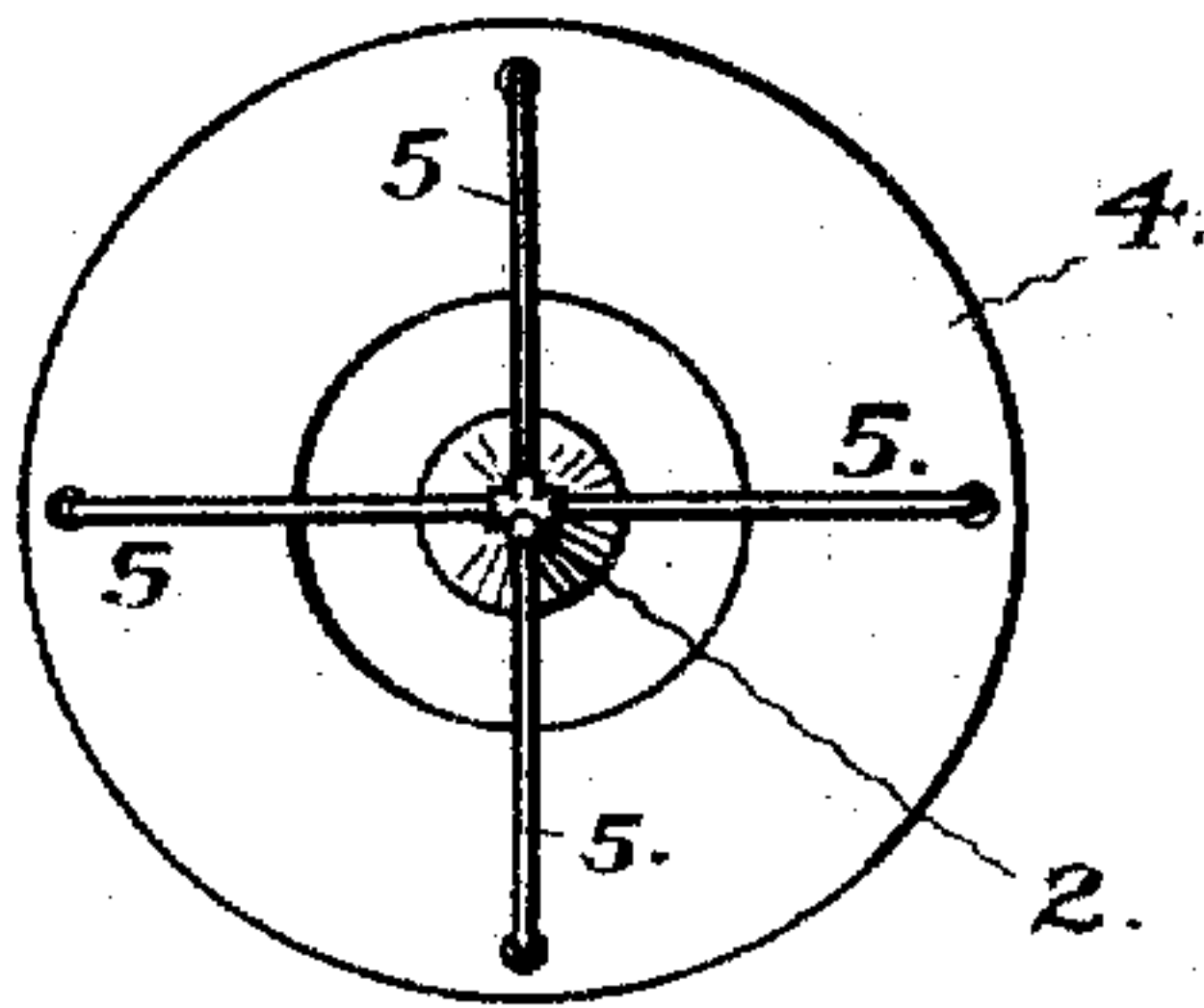


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

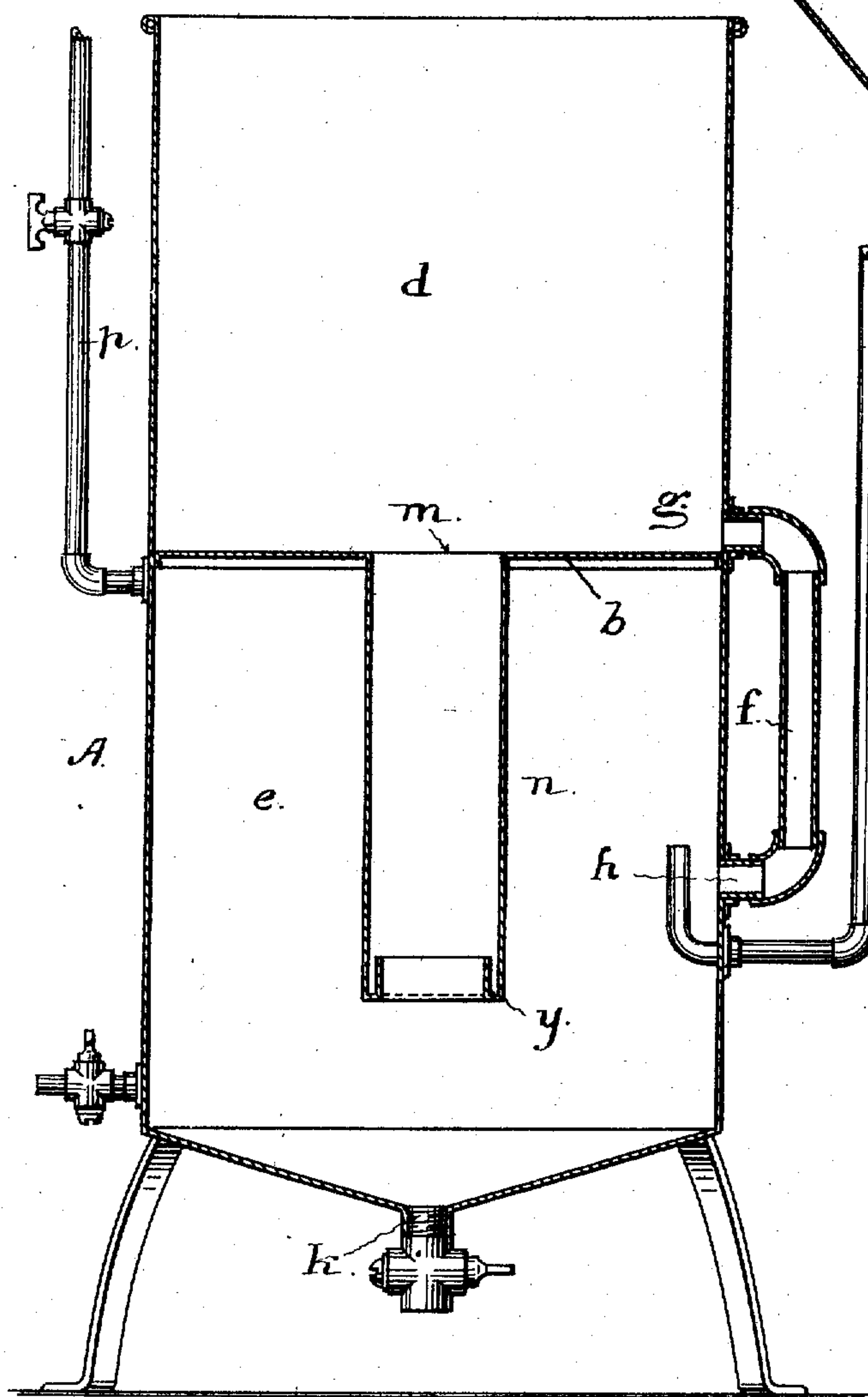
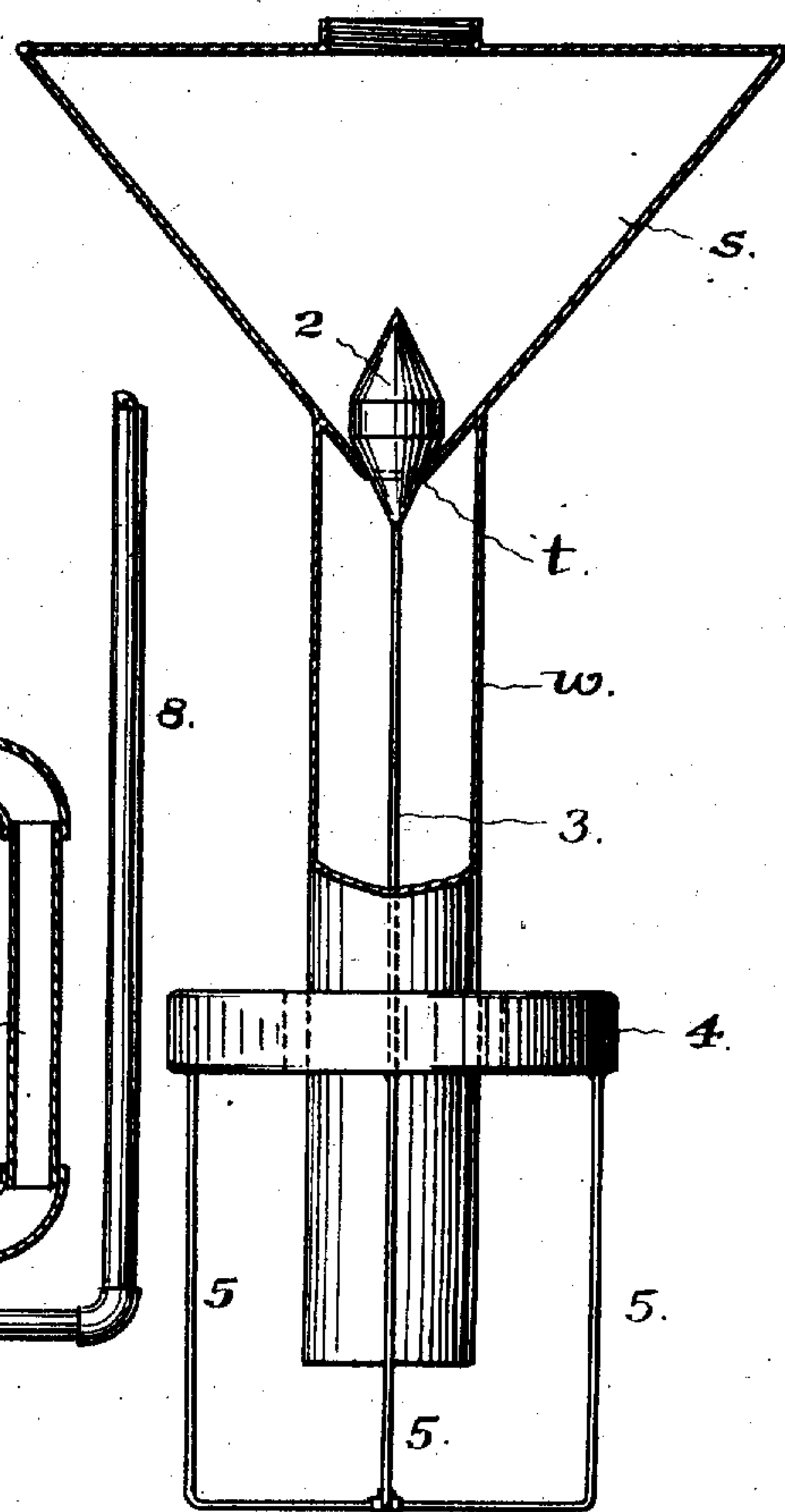


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN HENRY EICHLER AND JULIUS BECKER, OF SAN FRANCISCO,
CALIFORNIA.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 765,071, dated July 12, 1904.

Application filed July 27, 1903. Serial No. 167,067. (No model.)

To all whom it may concern:

Be it known that we, JOHN HENRY EICHLER, a citizen of the United States, and JULIUS BECKER, a subject of the Emperor of Germany, both residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Acetylene-Gas Generators, of which the following is a specification.

Our invention relates to apparatus for generating illuminating-gas from calcium carbide and other similar substances; and it has for its object chiefly to eliminate or reduce in a large degree the element of danger in the use of machines or apparatus of this character and to render them more or nearly automatic or self-regulating in their operation.

In our present machine the production of gas is governed by the consumption, and the quantity generated always bears a certain proportion to the quantity drawn off for immediate consumption, so that no considerable quantity of gas is allowed to accumulate in the apparatus and no gasometer or storage-chamber is used. The quantity of the gas-producing substance fed or introduced to the generating-chamber is governed and regulated by novel mechanism controlled directly by the variations taking place in the body of generated gas in the compartment from which the gas is carried away to the burners, the calcium carbide fed to the generating-chamber being increased or reduced automatically through the variations in the consumption of gas, and the supply of the gas-producing substance being cut off whenever the quantity of gas generated exceeds the quantity being consumed and as often as the gas begins to accumulate in the compartment from which it is drawn for use.

To such end and object chiefly our invention consists in certain novel parts and combination of parts, as hereinafter described, and pointed out in the claims at the end of this specification, the accompanying drawings, forming part thereof, being referred to by figures and letters.

Figure 1 represents a vertical sectional view of a machine or apparatus embodying the novel features of our invention. Fig. 2 is an inverted plan of the float that controls the feed-regulating valve of the calcium-carbide chamber. Fig. 3 is a view of the stationary body or shell, and Fig. 4 a view of the receptacle for the calcium carbide.

The body A of the machine being made, preferably, of cylindrical form is divided by a horizontal partition b into an upper compartment d and a lower compartment e, the lower one constituting a gas-holding chamber and the upper one serving for a reservoir or receptacle from which the lower compartment is supplied with water. A tube f on the outside connects the aperture g in the side of the water-reservoir with an aperture h, situated in the side of the gas-holding compartment, the latter aperture being always covered by the water to prevent the escape of gas into the upper compartment. An opening m in the center of the floor of the upper compartment is surrounded by a cylindrical extension n of the same dimensions diametrically as the opening and of proper length to extend below the level of the water, is closed at the lower end, and always sealed by the water standing in the lower compartment. These parts form the shell or body of the apparatus, to which the usual pipe p is coupled for carrying away the generated gas for use, and an outlet k is provided for drawing off the water when it is desired to clear the compartment.

The receptacle for the calcium carbide is a separate vessel fitting in the top of the water-reservoir d, from which it is readily lifted for clearing out or recharging, and consisting of the receptacle s of conical shape, with an outlet-aperture t in the end of its funnel-shaped bottom, and a tubular conductor w, extending downward from the outlet. This tube or cylindrical portion of the carbide-holder fits inside the cylindrical casing that extends downward from the horizontal partition b into the generating-chamber, and the lower end of the tube makes a close joint with

a cup-shaped flange *y* on the end of the casing when the holder rests on the top rim of the body A. An opening in the top of the holder closed by a screw-cap *x* is provided for introducing the carbid, and a valve 2 inside controls the outlet-aperture through which the particles are discharged into the tube. The valve is of cylindrical shape, with conical ends, and is connected with a float 4 in the generating-chamber by a spindle 3 and a hanger or bracket formed of angularly-bent rods 5, attached to the float. Being connected with the float in this manner, the valve responds to the movements of the float as the latter rises and falls under the variations in the water-level, and by its movements up and down in the contracted lower part of the calcium-carbid holder, as well as by virtue of its form, the valve reduces or increases the area of the outlet and also keeps the particles in motion sufficiently to prevent them from packing or choking in the lower end of the receptacle. The float is best formed of a hollow air-tight ring surrounding the stationary casing. The valve-spindle extending down through the tubular extension of the calcium-carbid holder is fastened to the hangers 5 at their crossing-point in the center. This construction connects the valve centrally with the float to secure its perpendicular movement in the outlet-aperture. As thus constructed and combined the valve rises and falls in the lower part of the conical holder simultaneously with the movements of the float, contracting the outlet-passage *t* as the water-level in the generating-chamber is lowered by the accumulating gas in the space above the water and enlarging it as the water rises under a reduction in the gaseous pressure. As the pressure increases in the space above the water into which the gas rises as fast as it is generated in the bottom of the chamber, the water displaced by the pressure rises in the reservoir above through the connecting-passage, and as the pressure is again reduced the displaced water flows back into the generating-chamber, raising the water-level therein and the float with it. The changes of the pressure taking place in the gas-holding space, due to variations in the consumption of the gas, thus act directly on the valve and control the flow of the calcium carbid accordingly. When the gas is generated faster than it is drawn off for use and the quantity accumulating reaches the desired limit, the float drops sufficiently to bring the valve to a seat and cut off the supply of the material. This action of the valve can be regulated by varying the length of the spindle 3, connecting the valve with the float. Additional security against accumulation of the gas in excessive quantities in the generating-chamber is provided by carrying an

escape-pipe 8 from an aperture in the side of the chamber to the atmosphere outside. This escape-outlet, being situated below the working level of the body in the chamber, is sealed under ordinary conditions, but is uncovered whenever the water-level is depressed by the confined gas to a point where it will uncover the outlet.

From the foregoing it will be seen that the production of gas in our apparatus is limited and controlled by the consumption of the gas, that the calcium carbid is fed to the generating-chamber in varying quantities which are regulated automatically by the consumption of the gas, and that the communication between the calcium-carbid receptacle and the generating-chamber is cut off whenever the gas is generated faster than it is carried off for use, and a greater quantity is accumulated in the chamber than is required to secure a steady flow to the burners. The construction also dispenses with connecting-pipes between the calcium-carbid holder and the generating-chamber and gas-holding space, thereby avoiding joints and couplings that are liable to break.

Having thus fully described our invention, what we claim as new therein, and desire to secure by Letters Patent, is—

1. In an acetylene-gas generator, a generating-chamber containing a water seal, a water-reservoir above the said chamber separated therefrom by a horizontal partition, a pipe connecting the generating-chamber with the water-reservoir, said partition having an aperture and a tubular casing extending downward from the aperture into the generating-chamber; in combination with a carbid vessel comprising a receptacle having sloping walls and an outlet-aperture in the bottom, and a tube extending downwardly from the outlet through the horizontal partition and into the casing beneath, a valve controlling the outlet, and a float in the generating-chamber connected with the valve.

2. In an acetylene-gas generator, the combination of a generating-chamber containing a water seal, a water-reservoir situated above said chamber, a water-duct leading from the lower part of the water-reservoir into the generating-chamber below the working level of the water therein, a carbid-receptacle having an outlet-aperture and a valve controlling said aperture, a conducting-tube leading from the outlet into the water seal in the generating-chamber, a float in said chamber and means connecting the valve with the float.

3. In an acetylene-gas generator, the combination with a stationary generating-chamber containing a water seal and having an aperture in the top and a surrounding casing extending therefrom into the water seal; of a removable carbid-holder having a conical

bottom and a tubular extension therefrom fitting into the casing of the generating-chamber, a valve controlling the opening in the bottom of the holder a float in the generating-
5 chamber and means rigidly connecting the valve with the float.

In testimony whereof we have signed our

names in the presence of two subscribing witnesses.

JOHN HENRY EICHLER.
JULIUS BECKER.

Witnesses:

M. REGNER,
E. E. OSBORN.