No. 793,830. PATENTED JULY 4, 1905.

J. H. EICHLER & J. BECKER.

ACETYLENE GAS GENERATOR.

APPLICATION FILED JULY 26, 1904.

Fig. 1.

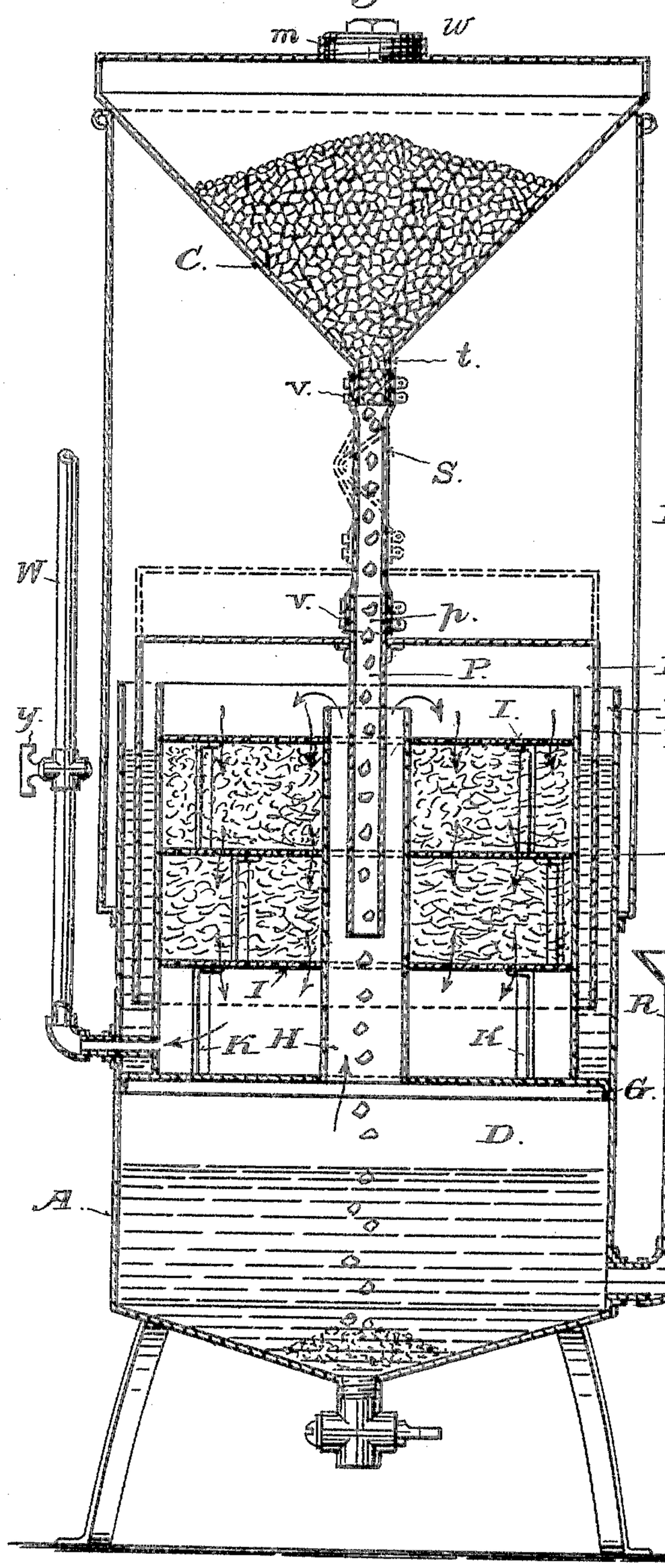


Fig. 2.

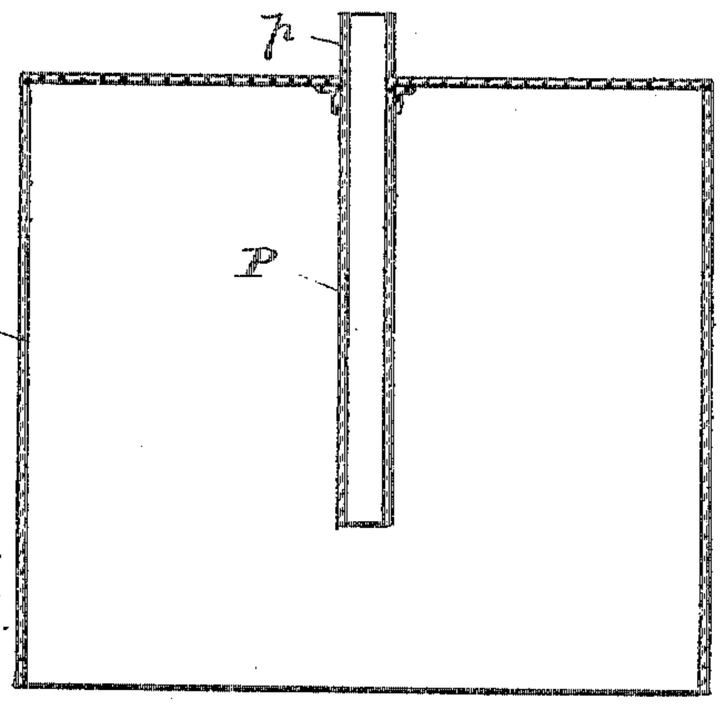


Fig. 3.

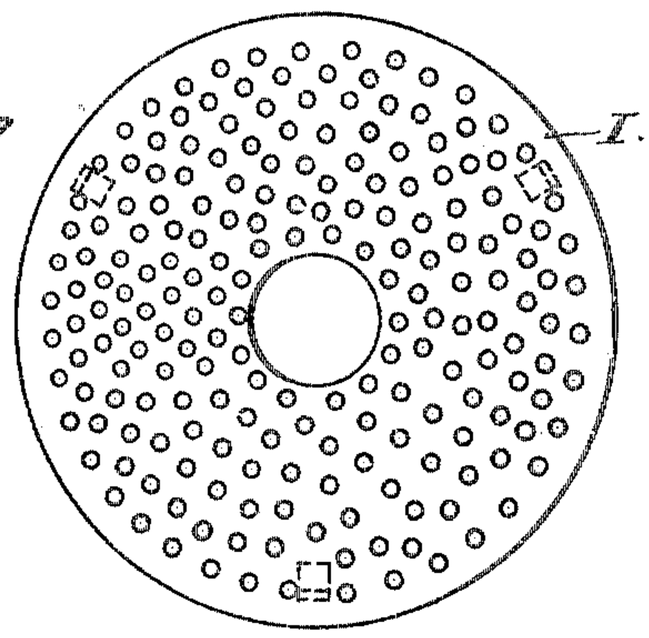
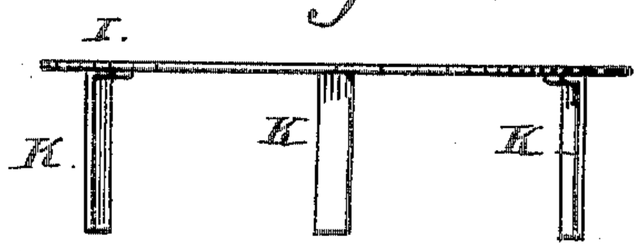


Fig. 4.



Witnesses.
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UNITED STATES PATENT OFFICE.

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

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 793,830, dated July 4, 1905.

Application filed July 26, 1904. Serial No. 218,182.

To all whom it may concern:

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

This invention relates to apparatus for generating gas for illuminating purposes from calcium carbid, commonly known as "acetylene-gas machines;" and the invention has for its object chiefly the production of a machine or apparatus for family use and in situations where a self-regulating and safe machine of simple construction is required.

In this machine the gas is generated only in such quantity as the consumption calls for, and the production is regulated automatically by the rapidity with which the gas is drawn off for use. The machine is therefore self-regulating in this respect and the usual storage-tank is dispensed with. This feature removes the great and principal source of danger which is connected with all machines that generate the gas in quantities to be distributed for use from a tank or gasometer. The substance from which the gas is made is fed to the machine in varying quantities as called for by the quantity of gas to be supplied, and the feed is regulated directly and automatically by the consumption of the gas. Provision is also made for cleaning and drying the generated gas directly in the machine between the generating-chamber and the distributing space or chamber from which the gas is drawn off for use.

The nature of our said invention and the manner in which we proceed to construct, apply, and carry out the same are described at length in the following description and afterward pointed out in the claims at the end of this specification, reference beng had to the drawings forming part thereof.

In the said drawings, Figure 1 is an elevation in longitudinal section of a gas-machine embodying these implements. Fig. 2 is a sectional view of the bell or inverted cylinder that confines the gas. Fig. 3 is a plan of one of the perforated disks of the purifying device, and Fig. 4 is a side elevation of Fig. 3.

The principal parts of the machine comprise the shell or body A, the bell or inverted cylinder B, and the holder C for the calcium carbid.

The body A contains the generating chamber or compartment D and the annular space E, in which the end of the inverted gas-holding cylinder B is closed by the confined body of water E′. The space E for this water seal is divided from the generating-chamber D and the space above it within the inverted cylinder by a standing wall F, concentric with the surrounding stationary shell or body and by a horizontal partition G, of which the inner cylinder F may be a fixed or permanent part. In the center of the horizontal partition a standing tube H rises from an opening in the partition, and its open top end stands on a level with the top of the inner wall F, or nearly so. This standing tube being open at both ends forms a passage for the generated gas from the generating-chamber upward through the horizontal partition to the confined space under the movable cylinder B, and through this central opening the calcium carbid is fed from the holder C above. The space between the standing tube H and the surrounding wall F is utilized for a gas cleaning and drying compartment, for which purpose it is filled with some suitable substance or material confined between perforated disks I, that are supported one upon another at intervals apart by legs K on the under side of each disk. The substance used for this purpose is generally composed of or contains chlorate of lime.

The calcium-carbid holder C is a separate vessel of cylindrical shape, with a sloping bottom and an outlet in the center of the bottom. It is supported above the gas-receiving compartment by means of legs or standards secured to the body of the machine, sufficient room being afforded under the holder for the cylinder B to rise and fall under variations in the quantity of gas confined in the space beneath.

The supply of calcium carbid to the gener-

ating-chamber is varied in quantity, according to the rapidity with which the generated gas is drawn off for use, and is controlled directly by the rising and falling motions of the inverted cylinder by the following simple and effective means: In the center of the closed top of the movable cylinder B an opening is surrounded by a rim *p*, from which a tube P extends downwardly into the stationary standing tube H, and from the neck *p* a flexible tube S, extending upward, connects with the outlet in the bottom of the carbid-holder C. This tube is connected to the standing rim *p* and to a neck *t*, surrounding the outlet in the bottom of the holder, by slip-joints and clamping-rings V. It is made of a length of rubber tubing or other similar flexible material that will allow the tube to bend and collapse at some point between the two ends, and thus entirely close or reduce the size of the passage through the tube by the upward movement of the cylinder B and in degree according to the extent of such upward movement. For this purpose the tube S should be of proper length to hang perpendicularly down and maintain a passage through it of full area, while the cylinder B remains in its lowest position, and from that position the cylinder, rising under the pressure of the accumulating gas, reduces the size of the outlet-passage from the bottom of the holder by contracting or bending the flexible walls of the passage. This has the effect to reduce or cut off the supply of calcium carbid in proportion to the rising movement of the cylinder B and also to cut off the same as often as the cylinder is elevated by the accumulating gas to a given point.

The holder C is filled through an aperture *w* in the top, closed by a screw-cap, and this being the only opening in the holder excepting the outlet in the bottom, that is connected directly with the confined space under the cylinder B, the danger arising from the escape of gas from the holder or from the confined space below it is entirely removed.

Provision is made for replenishing the generating-chamber with water by an inlet-tube R, entering the side of the shell near the bottom of this chamber and extending perpendicularly upward on the side.

The generated gas is drawn off through a pipe W, coupled to an outlet in the side of the shell A at a point above the horizontal partition G, so that the gas is caused to pass through the cleaning and drying material before it can find an exit at the outlet. A cock *y* is provided in the pipe W for regulating the outflow of gas.

What we claim is—

1. In an acetylene-gas machine, a generating-chamber; a gas-receiving chamber communicating therewith and comprising a compartment having a water seal and an inverted closed-top cylinder vertically movable in the water seal, and a tubular passage through the gas-chamber opening into the generating-chamber; a stationary calcium-carbid holder above the gas-chamber having an outlet-aperture in the bottom; and a flexible tube connecting the said holder with an aperture in the top of the inverted cylinder and adapted by the rising motion of said cylinder to be bent out of a straight line.

2. In an acetylene-gas machine, a stationary receptacle for calcium carbid having an outlet-aperture in the bottom; in combination with a generating-chamber beneath said receptacle, a float situated above said chamber movable toward and from the outlet-opening in the carbid-receptacle and having its lower end immersed in and closed by a water seal and provided with an aperture in the top for passage of the particles of the carbid, and a flexible tube connected to the outlet-aperture of the carbid-receptacle and to the opening in the float, the said tube being adapted by its flexure under the rising and falling motions of the float to furnish a conducting-passage of varying cross-sectional area.

3. In an acetylene-gas machine, a gas-generating chamber, a float having an aperture in its top portion arranged above the gas-generating chamber and having a water seal, a tube or passage for conducting the gas from the generating-chamber to the space inclosed by the float, a stationary carbid-holder located above the float having an aperture at the bottom thereof, and a tube extending from the carbid-holder through the aperture in the float and below the top of the conducting-tube, a portion of the tube between the float and carbid-holder being flexible, whereby as the float rises and falls the discharge of the carbid is automatically regulated, substantially as set forth.

4. In an acetylene-gas machine, a generating-chamber, a gas-receiving chamber having a movable float and a water seal therefor situated above the generating-chamber and a passage for introducing the calcium carbid into the generating-chamber through the gas-receiving chamber, in combination with a calcium-carbid receptacle having an outlet-aperture in the bottom, and a flexible tube connected to the outlet in the said receptacle and to the inlet end of the passage through the gas-receiving chamber said tube being adapted under the rising and falling motion of the float to depart from or to return to a normally perpendicular position.

5. In an acetylene-gas machine, a generating-chamber, a gas-receiving chamber comprising an inverted cylinder having a water seal, a stationary carbid-holder located above the gas-receiving chamber, and means for controlling the supply of the carbid from the holder to the generating-chamber comprising a substantially perpendicular flexible

tube for conducting the carbid to the generating-chamber, whereby as the inverted cylinder rises and falls the cross-sectional area of the said tube is varied to regulate the flow of carbid from the carbid-holder, substantially as set forth.

6. In an acetylene-gas generator, the combination of a stationary carbid-holder, a gas-generating chamber into which the carbid is delivered, and means for controlling the supply of the carbid from the holder to the generating-chamber comprising a conduit for the carbid arranged between the holder and the generating-chamber having a flexible portion, one end of the flexible portion of the conduit being movable in a direction toward the end connected with the stationary carbid-holder whereby, on being moved, the conduit is flexed and its cross-sectional area contracted to stop the flow of carbid, the movable part of the conduit being controlled by the amount of gas generated, substantially as set forth.

In testimony whereof we have signed our names in the presence of two subscribing witnesses.

JOHN H. EICHLER.
JULIUS BECKER.

Witnesses:
EDWARD E. OSBORN,
M. REGNER.