(No Model.) 2 Sheets—Sheet 1.

F. RHIND.

ACETYLENE GAS GENERATING LAMP.

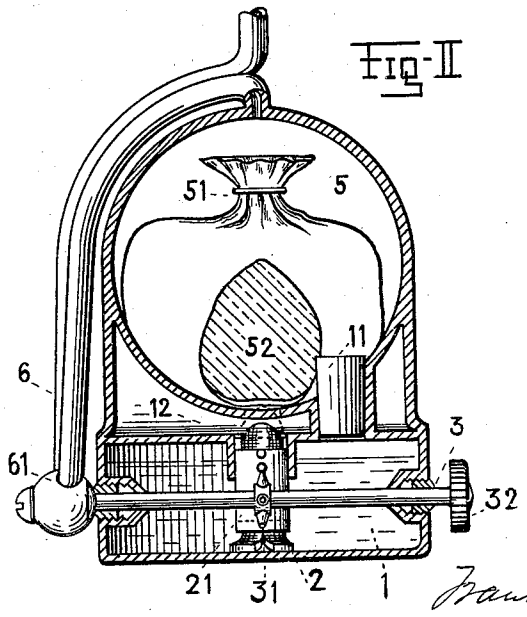
No. 589,098. Patented Aug. 31, 1897.

Fig IV



Fig I

Fig II



WITNESSES:

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C. R. Ayres

Frank Rhind

INVENTOR

BY Geo. H. Cooper

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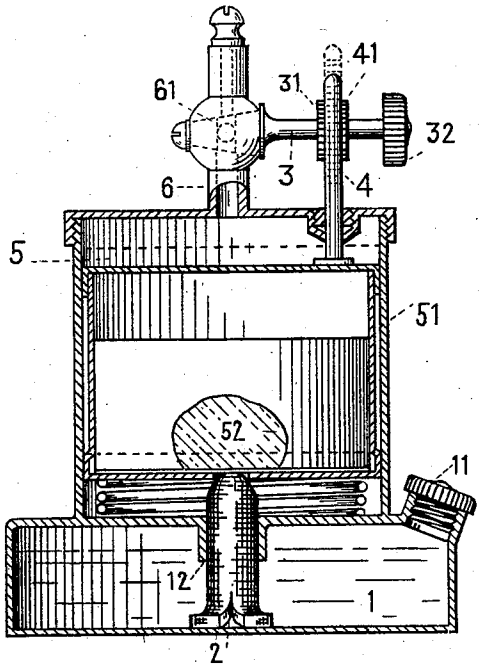
(No Model.) 2 Sheets—Sheet 2.

F. RHIND.

ACETYLENE GAS GENERATING LAMP.

No. 589,098. Patented Aug. 31, 1897.

Fig. III



WITNESSES:

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UNITED STATES PATENT OFFICE.

FRANK RHIND, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR OF ONE-HALF TO THE BRIDGEPORT BRASS COMPANY, OF SAME PLACE.

ACETYLENE-GAS-GENERATING LAMP.

SPECIFICATION forming part of Letters Patent No. 589,098, dated August 31, 1897.

Application filed March 26, 1897. Serial No. 629,461. (No model.)

To all whom it may concern:

Be it known that I, FRANK RHIND, a citizen of the United States, residing at Bridgeport, Connecticut, have invented a new and useful Improvement in Lamps, of which the following is a specification.

My invention relates to that class of generators in which by chemical reaction between a solid, as calcium carbid, and a liquid, as water, an illuminating-gas, as a hydrocarbon, is evolved. It particularly refers to portable lamps, in which it is impracticable to provide a generator adapted to withstand great pressure or a gas-holder of large capacity, for which reasons it is desirable that the generation of gas should not greatly exceed the consumption and that such generation should be under the control of the operator.

My present invention is designed to automatically adapt the generation of gas to its consumption and to prevent the evolution of gas when the lamp is not in use.

In the accompanying drawings, Figures I, II, and III represent, partly in elevation and partly in vertical section, various forms of my device. Fig. IV is an elevation of a portion of the device shown in Fig. I at a right angle with the view there given.

The same numerals refer to like parts in the several views.

1 designates a liquid chamber or fount provided with filler-opening 11 and wick-tube 12; 2, a wick; 21, a wick-sleeve; 3, an adjusting-shaft provided with pinion 31 and button 32; 4, a rod formed with rack 41; 5, a solid-containing chamber; 51, a holder; 52, a mass of calcium carbid or the like; 6, a gas-tube provided with cock 61.

In the example of my invention shown in Figs. I and IV of the drawings the liquid chamber or fount 1 is a flattened vertical cylinder. It is provided with a filler-opening 11 closed by an ordinary screw-cap. It has a centrally-placed wick-tube 12 and a packed opening through which a rod 4 passes. The inner bent end of the rod 4 is secured to a wick-sleeve 21, which carries a wick 2. At the upper end of the rod 4 is cut a rack 41. (Clearly shown in Fig. IV.) A suitable guide supports the upper end of the rod 4 and an adjusting-shaft 3, which has a pinion 31, meshing with the rack 41, and a button or thumb wheel 32 at its free end. Above the fount 1 is a solid-containing chamber 5, shown as a horizontal cylinder. It is adapted to contain a mass 52 of consumable substance, as calcium carbid, in a holder 51, shown as a bag. Through an aperture in the bottom of the chamber 5 the tip of the wick 2 may rise into contact with the holder 51. From the top of the chamber 5 rises a gas-emission tube 6, fitted with an ordinary plug-cock 61, the stem of which is a continuation of the shaft 3.

The operation of my device will be readily understood from an inspection of the drawings. It will be seen that when the parts are in the position shown the liquid in the fount 1 is being carried by the wick 2 to the solid mass 52 in the holder 51. The gas evolved passes from the chamber 5 through the emission-tube 6, the cock 61 being open. As shown, a tip is provided at the free end of the tube 6 at which the gas may be lighted. When it is desired to extinguish the flame, the cock 61 is closed by means of the shaft 3 and button 32. In doing this, however, the wick is necessarily lowered out of contact with the holder 51 by means of the pinion 31 on the shaft 3 and the rack 41 on the rod 4, to which the wick-sleeve 21 is attached. Thus any considerable pressure in the chamber 5 is prevented, as its emission-orifice cannot be wholly or partly closed unless the supply of liquid is at the same moment cut off or reduced.

In Fig. II of the drawings the chambers 1 and 5 are shown as occupying the same relative positions as in Fig. I, the filler-opening 11 being within the chamber 5. The rod 4 is here omitted, the shaft 3 passing through the fount 1 and its pinion 31 acting directly on the wick-sleeve 21. The gas-tube 6 is brought down to the side of the fount 1 and reverted to a convenient position, as for applying a burner-tip. (Not shown.) The end of the shaft 3 passes out of the fount 1 and, as before, carries the plug of the cock 61. It is obvious that the operation of the device has not been materially changed by this alteration of parts. The motion of raising the wick to its

operative position and of opening the gas-cock, as well as the reverse operations in each case, are synchronous.

In Fig. III of the drawings I have shown the wick as stationary and the holder 51 as a cylinder capable of longitudinal motion in the chamber 5. A spring tending to raise the holder 51 may be provided, if desired. The rod 4 is secured to the holder 51, passes out through a stuffing-box in the top of the chamber 5, and, as in Fig. I, has at its upper end a rack 41, engaging with a pinion 31 on the adjusting-shaft 3. It is clear that when the solid 52 is forced into contact with the wick 2 the cock 61 will be opened and, conversely, that the cock 61 cannot be closed without also raising the holder 51 and contained solid 52, so as to modify or cut off the production of the gas.

I have shown several of the various forms in which my device may be constructed to indicate the scope of my invention which I conceive to be the providing in a lamp or gas-generating apparatus of the type specified of means for making the voluntary operations of causing, governing, and stopping the generation of gas necessarily simultaneous with those of opening, regulating, and closing the gas-emission orifice.

I have already filed in the United States Patent Office an application for patent, which application has been serially numbered 625,389, showing various methods of regulating the flow of a liquid through a wick to a solid in contact therewith, so as to control the evolution of a gas by the resulting chemical union. I do not therefore claim as of my present invention any such device except in connection with means for controlling the gas emission.

What I claim as my present invention, and desire to secure by Letters Patent of the United States, is as follows:

1. In a lamp or other gas-generating apparatus in combination, a liquid-containing chamber, means for retaining in position a consumable mass, a wick, a gas-emission orifice and means for simultaneously regulating the flow of liquid through said wick and the flow of gas from said orifice, said means being also adapted to break the contact of said wick and said mass, substantially as described.

2. In a lamp or other gas-generating apparatus in combination, a liquid-containing chamber, means for retaining in position a consumable mass, a wick, a gas-emission orifice and means for simultaneously regulating the contact of said wick with said mass and the flow of gas through said orifice, said means being also adapted to move said wick out of contact with said mass, substantially as described.

3. In a lamp or other gas-generating apparatus in combination, a liquid-containing chamber, a solid-containing chamber adapted to contain a consumable mass and adjacent thereto, an aperture in said second chamber, a wick in said first chamber having its free end normally at or near said aperture and means substantially as described for simultaneously regulating the flow of liquid through said wick to said mass and the flow of gas from said orifice, said means being also adapted to break the contact between said wick and said mass.

4. In a lamp or other gas-generating apparatus in combination, a liquid-containing chamber, a wick, a solid-containing chamber, a gas-emission tube, a cock in said tube, a pinion on the stem of said cock and means substantially as described whereby the opening or closing of said cock operates through said pinion to regulate the flow of liquid through said wick, said means being also adapted to break the contact between said wick and said mass.

5. In a lamp in combination, a liquid-containing chamber, a wick, a solid-containing chamber, a gas-emission tube, a cock in said tube, a pinion on the stem of said cock, a rod provided with a rack engaging with said pinion and means substantially as described, connected with said rod to regulate the flow of liquid through said wick, said means being also adapted to break the contact between said wick and said mass.

6. In a lamp in combination, a liquid-containing chamber, a wick-sleeve adapted to carry a wick, a rod on said wick-sleeve and extending out of said chamber, a solid-containing chamber, a gas-emission tube leading from said chamber, a cock in said tube, a pinion on the stem of said cock engaging with a rack on said rod whereby the rotation of said stem operates to open and close said cock and to raise and lower said wick-sleeve, so as to make and break contact between a wick in said sleeve and a consumable mass in said solid-containing chamber, substantially as described.

FRANK RHIND.

Witnesses:
GEO. L. COOPER,
ISAAC L. FERRIS.