

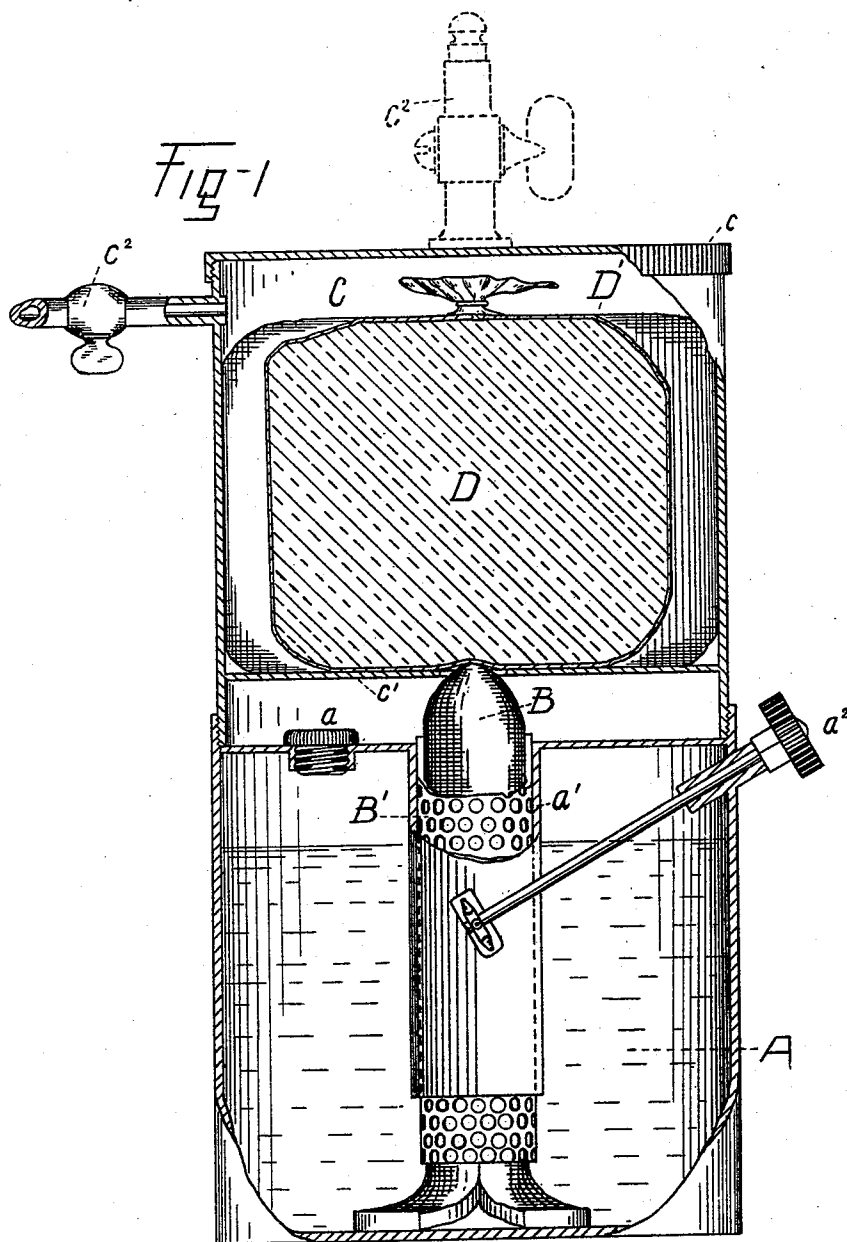
(No Model.)

3 Sheets—Sheet 1.

F. RHIND.
GAS GENERATING LAMP.

No. 583,582.

Patented June 1, 1897.



WITNESSES:

Jas. R. Cox
Edward F. Sanders

Frank Rhind INVENTOR

BY *Josh. Cooper*
ATTORNEY.

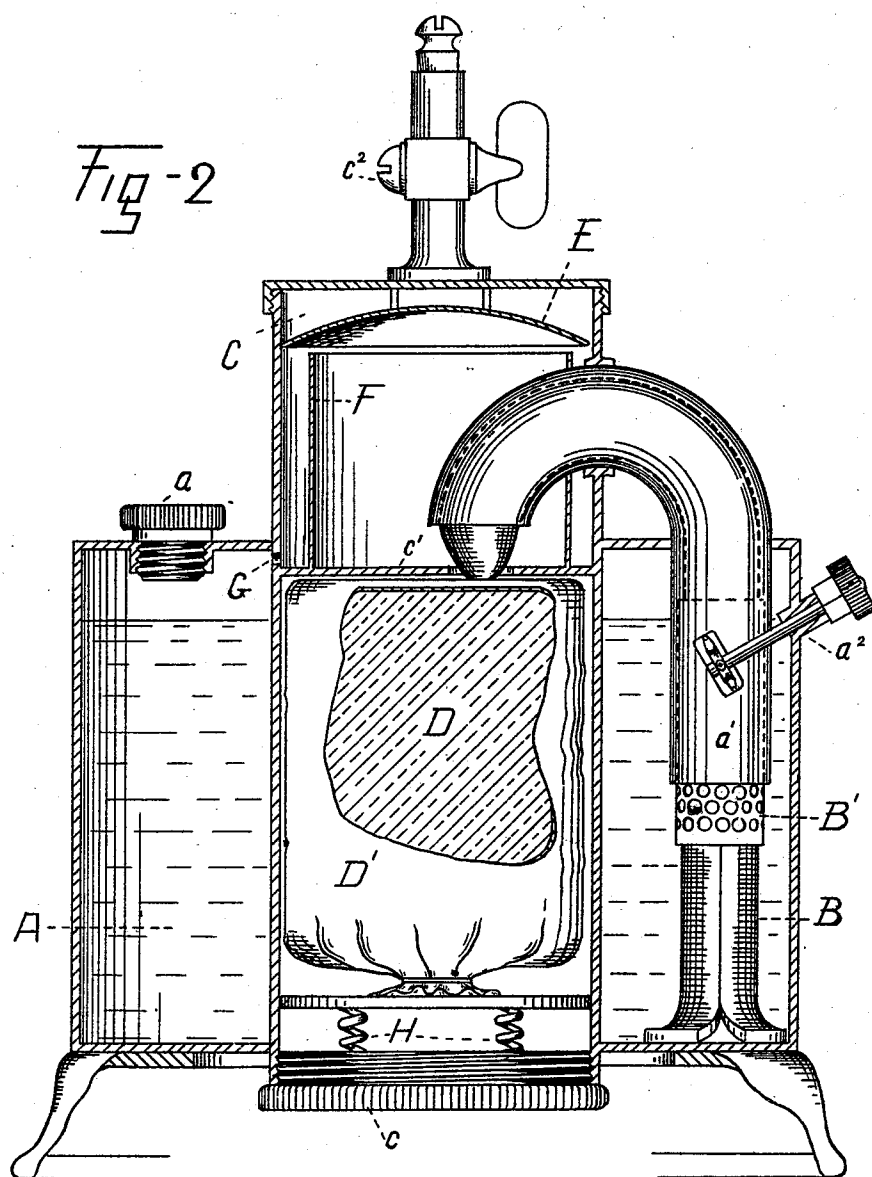
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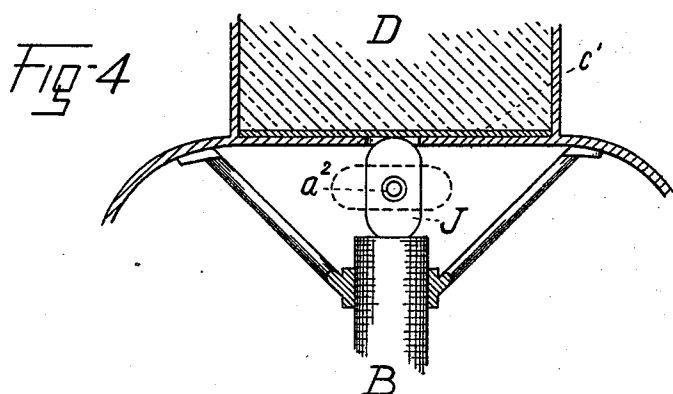
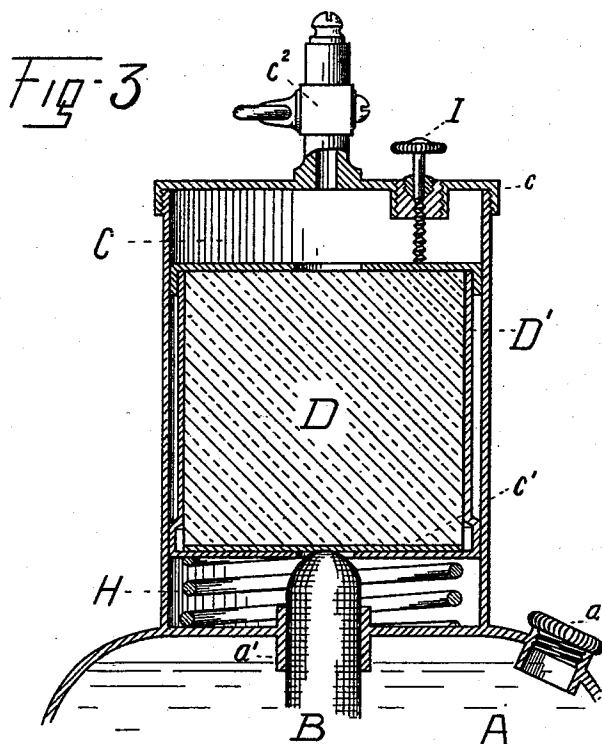
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Edward F Sanders

Frank Rhind
INVENTOR

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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.

GAS-GENERATING LAMP.

SPECIFICATION forming part of Letters Patent No. 583,582, dated June 1, 1897.

Application filed February 27, 1897. Serial No. 625,389. (No model.)

To all whom it may concern:

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

My invention refers to that class of lamps which are provided with generators in which by chemical reaction between a solid, as calcium carbide, 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.

In the accompanying drawings, Figures 1, 2, and 3 represent, partly in elevation and partly in vertical section, different forms of my device. Fig. 4 shows a further modification of a portion of my device.

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

A designates a liquid chamber or fount provided with filler-opening *a*, wick-tube *a'*, and wick-adjuster *a²*; B, a wick; B', a wick-sleeve; C, a solid-containing chamber provided with closure *c*, diaphragm *c'*, and outlet *c²*; D, a mass of calcium carbide or the like; D', a container therefor; E, a dome; F, a partition; G, a conduit; H, a spring; I, an adjusting-screw; J, an auxiliary wick.

In the example of my invention illustrated in Fig. 1 of the drawings the fount A is of cylindric form, has an ordinary screw-stoppered filler-opening *a*, and a central wick-tube *a'*. A wick-adjuster *a²*, consisting of an ordinary pinion or star, shaft, and exterior thumb-wheel or button, acts to raise and lower a wick-sleeve B', surrounding and carrying a wick B. As shown, the wick is cylindric and pointed at its upper end. Tightly screwed into the upper end of the fount A is a second cylindric chamber C, the cover *c* of which screws on, so as to make a gas-tight joint. The lower end of the chamber C is closed by a diaphragm *c'*, having a central aperture. An outlet *c²* may be a conducting-

tube, preferably provided with a cock, as shown, or a gas-burner, as shown in dotted lines. A mass of calcium carbide or other gas-evolving solid D, inclosed in a bag D', occupies the chamber C.

An inspection of the drawings will readily show the operation of the device. The chambers A and C being separated, the fount A is filled with water through the filler-opening *a*. By removing the cover *c* a bag D' of carbide D is inserted in the chamber C, so that it rests on the diaphragm *c'*. The parts are then assembled, as shown in the drawings, the wick B is raised so as to be in contact with the bottom of the bag D', and by capillarity water is carried to the carbide D. Acetylene gas is immediately evolved and should be consumed at once, either at a burner or burners (not shown) on the outlet-tube *c²* or at the tip in the burner *c²*, (shown in dotted lines.) The amount of water brought to the carbide, and the consequent volume of gas produced, may be very accurately regulated by the wick-adjuster *a²*, the wick B being preferably coned at its upper end for this purpose. It is found in practice that the amorphous lime formed at the bottom of the bag D' has sufficient capillarity to carry the water to the remaining carbide till all is exhausted with no substantial increase of resistance, certainly none that cannot be overcome by slightly raising the wick B. It will also be seen that the turning down of the wick B, so as to be out of contact with the bag D', acts almost instantaneously to stop the generation of the gas.

In Fig. 2 of the drawings I have shown a form of lamp particularly adapted to table use. In this construction the fount A is of annular form and surrounds the carbide-chamber C. This chamber C has a closure *c* at its lower end, by removing which the bag D' of carbide D is inserted. A plate connected with the closure *c* by springs H acts to force the carbide D up against the diaphragm *c'*. The wick-tube *a'* is bent to a semicircular or "gooseneck" form at its upper end, passes through the side of the upper part of the chamber C, and terminates above the aperture in the diaphragm *c'*. Within the upper part of the chamber C is suspended a plate or dome E, of somewhat less diameter than that

of the chamber, but of greater diameter than that of an annular wall or partition F, which extends upward from the diaphragm c' . A conduit G (shown as an aperture in the wall of the chamber C) leads into the fount A. As in the former construction, it will be seen that the contact of the wick with the carbid mass D and the consequent volume of gas evolved may be varied or discontinued by the wick-adjuster a^2 . Expansion of the mass in the bag D' is provided for by the plate supported by springs H. The gas as evolved rises through the aperture in the diaphragm c' , carrying with it a certain amount of moisture. Where the gas is to be burned close to the generator, as in the burner c^2 , this vapor in the gas is turned to steam and may cause an annoying sputtering of the flame. I have therefore placed below the outlet c^2 the dome or umbrella E, on the lower side of which the moisture condenses and from the outer edge of which it drips into the annular space or trap between the wall F and the shell of the chamber C. From this space it is returned through the conduit G to the fount A. Except for this trap and conduit the water of condensation might pass through the aperture in the diaphragm c' onto the carbid D and cause a sudden increase of pressure and disturbance of the flame.

Fig. 3 of the drawings shows another form of my device somewhat similar to that shown in Fig. 1. In this construction, however, the wick B is non-adjustable, the sleeve B' and wick-adjuster a^2 being omitted. As shown, a cake of carbid D is held in a containing-cylinder D', moving freely in the chamber C. An adjusting-screw I passes through the top of the chamber C and acts against the spring H to vertically adjust the carbid D, and hence to increase or diminish its contact with the wick B. It is of course clear that the action of the lamp will not be changed by this modification.

Fig. 4 shows a wick B permanently at a distance from the mass D. Between the mass D and the wick B is an auxiliary wick J, which may be of felt or like material and is shown as oval or lozenge shaped in cross-section. This may be mounted on a shaft a^2 , so that it can be rotated to the position shown, in which it connects the wick B with the mass D and acts as a continuation of the wick B. As shown in dotted lines, it may be rotated to break the contact, or in a median position between those shown the contact may be varied, as desired.

I have shown several methods of increasing, diminishing, or discontinuing the capillary action of the wick to indicate that I do not wish to be limited in the application of my invention to any particular arrangement of parts or mode of construction.

It will be noted that my invention relates only to means for regulating and cutting off the production of gas by a voluntary manual action. It does not include any device in

which an alteration in the rate of gas production is automatically caused by a variation of pressure in a gas-container. It is found in the manufacture of portable lamps having small generators that no mechanism can be commercially produced that is nearly so sensitive to pressure variation as is the flame itself.

I have also indicated that my invention may be used wherever it is desired to feed by contact any substance capable of being carried by capillary action to a relatively solid consumable substance.

By the term "wick," wherever used in the specification or claims, I wish to be understood as including any suitable article or material capable of capillary action.

By the phrase "contact of the wick and a consumable mass," or like phrase, wherever used, it is obvious that I include the mediate contact of the wick and the mass through the bag D' of Figs. 1 and 2, or any similar textile or otherwise porous material.

What I claim as my 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 and means substantially as described for manually bringing said mass and said wick into and out of contact with each other.
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 and means substantially as described for manually making, varying and breaking the contact of said wick and said mass.
3. In a lamp or other gas-generating apparatus in combination, a liquid-containing chamber, means for retaining in position a consumable mass, a wick, and means substantially as described for manually moving said wick into and out of contact with said mass.
4. In a lamp or other gas-generating apparatus in combination, a liquid-containing chamber, a solid-containing chamber 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 for manually adjusting said second chamber and said wick relatively to each other, substantially as described.
5. In a lamp or other gas-generating apparatus in combination, a liquid-containing chamber, a solid-containing chamber adjacent thereto, an aperture in said second chamber, a wick in said first chamber having its free end at or near said aperture and means for manually adjusting said wick to or from said aperture, substantially as described.

FRANK RHIND.

Witnesses:

GEO. L. COOPER,
JAS. R. COE.