

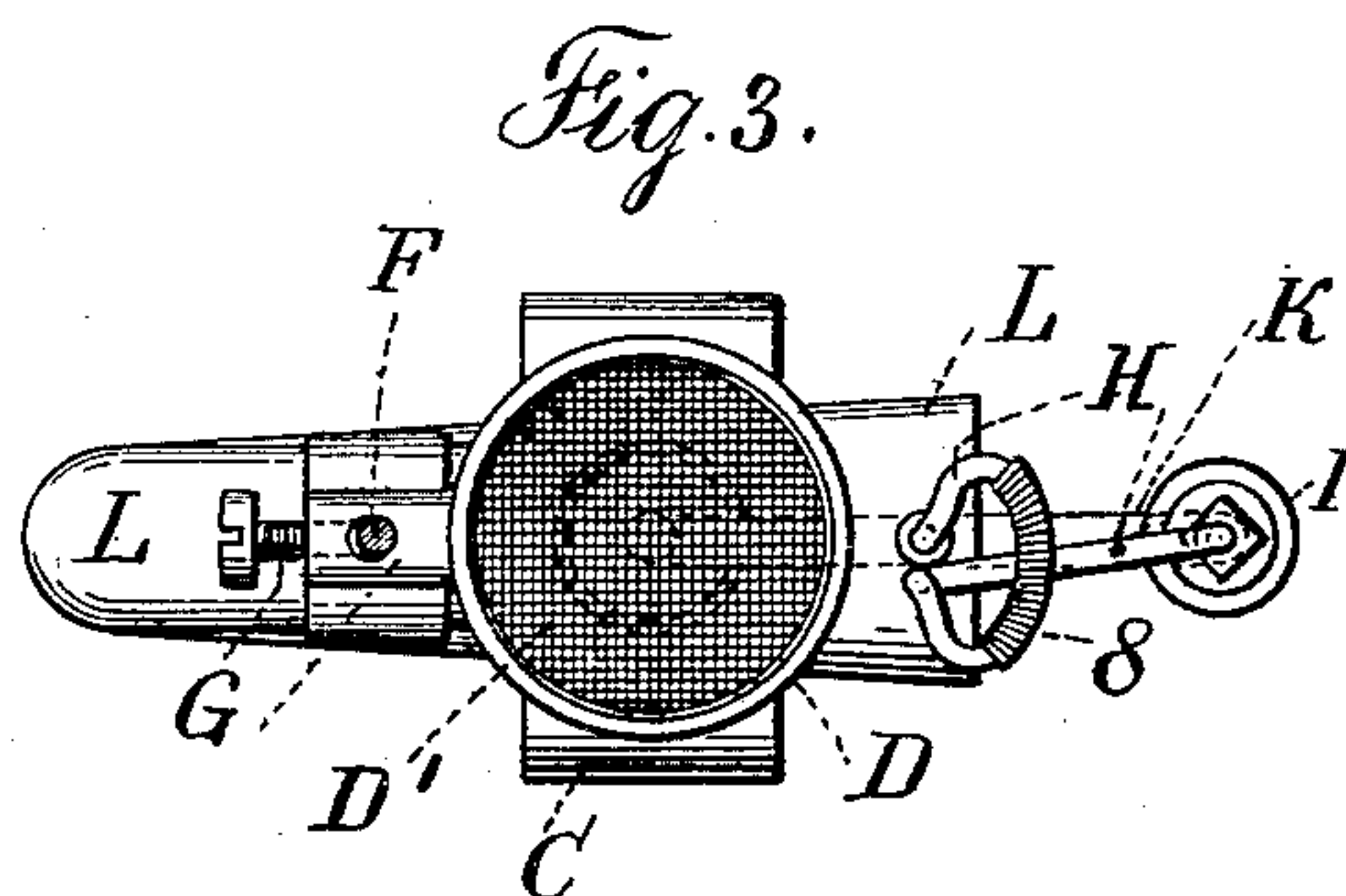
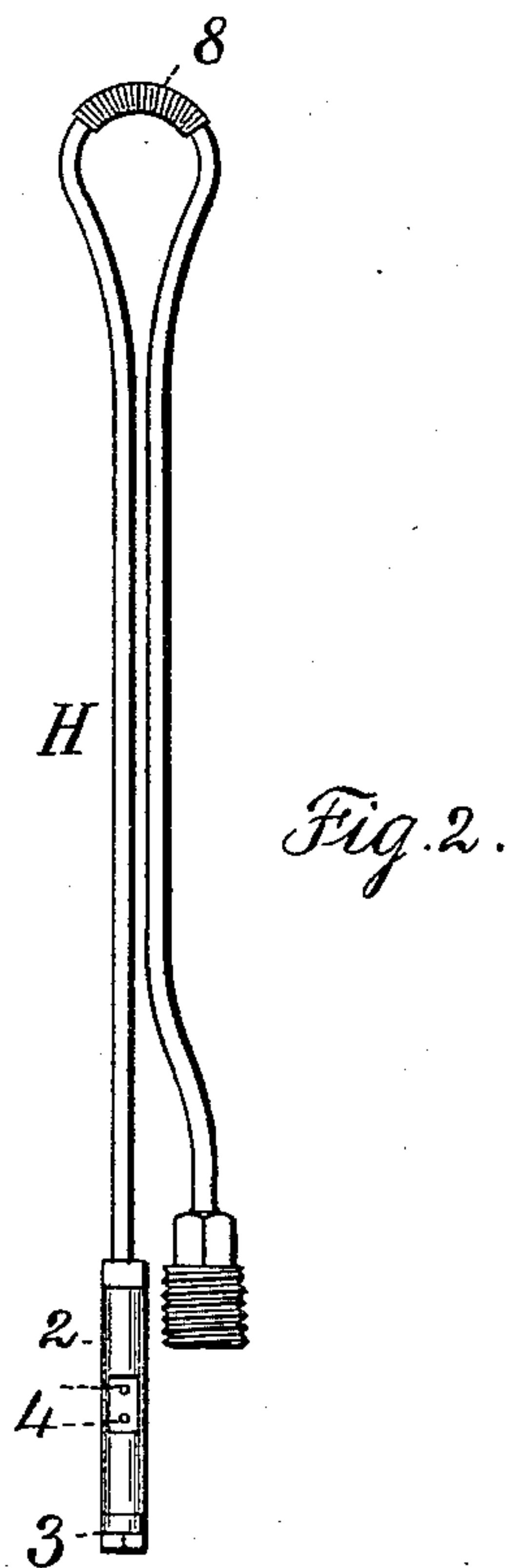
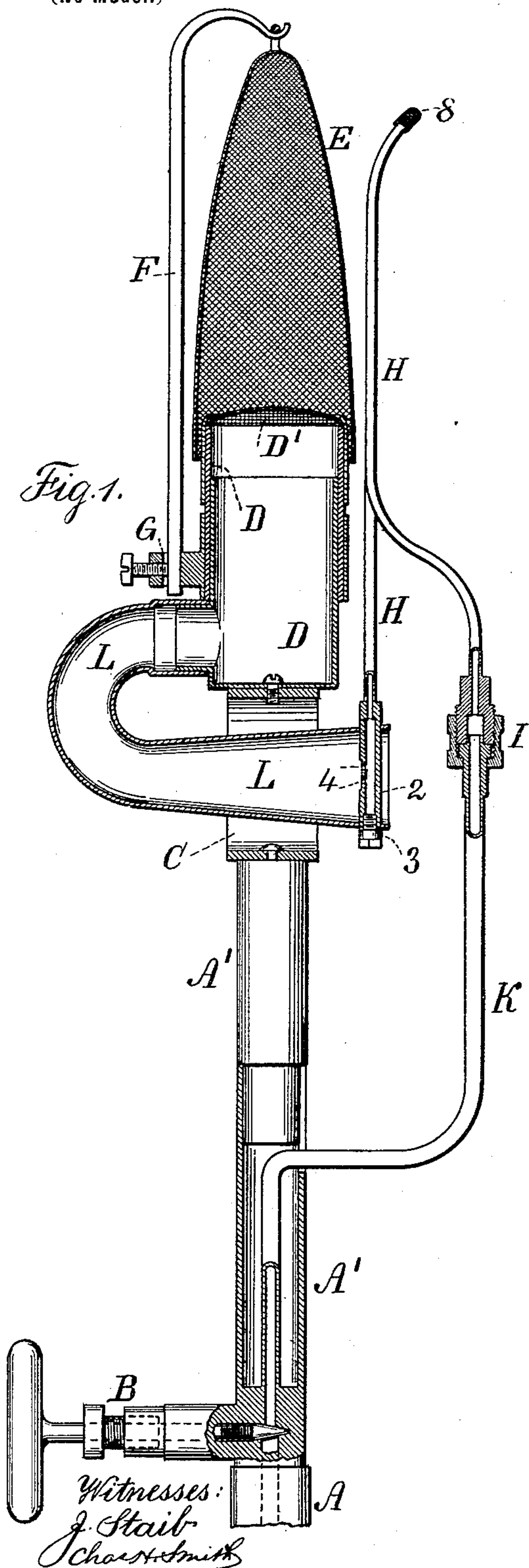
No. 632,866.

Patented Sept. 12, 1899.

C. C. BRUCKNER.
PETROLEUM INCANDESCENT LAMP.

(Application filed Aug. 22, 1898.)

(No Model.)



Inventor:
Charles C. Bruckner.
per L. W. Ferrell & Son
Atty.

UNITED STATES PATENT OFFICE.

CHARLES C. BRUCKNER, OF NEW YORK, N. Y.

PETROLEUM INCANDESCENT LAMP.

SPECIFICATION forming part of Letters Patent No. 632,866, dated September 12, 1899.

Application filed August 22, 1898. Serial No. 689,217. (No model.)

To all whom it may concern:

Be it known that I, CHARLES C. BRUCKNER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented an Improvement in Petroleum Incandescent Lamps, of which the following is a specification.

This improvement is especially intended for lamps burning petroleum and in which atmosphere under compression is employed for forcing the hydrocarbon liquid from the reservoir up to the burner. It, however, may be made use of in any lamp in which hydrocarbon liquid is vaporized and burned with a non-luminous flame for giving the necessary heat to a mantle that becomes incandescent.

There are numerous instances in which the liquid has passed through a tube or generator that is exposed to heat and the vapor has issued in such a manner as to draw in with it atmospheric air and commingle therewith in passing up to the base of the Bunsen burner, over and around which the mantle is suspended. I have found that in many instances the generating or vaporizing chamber has caused an objectionable shadow, and the volatilization of the hydrocarbon liquid has also frequently left behind a tarry residuum that has obstructed the generator. In my present improvement the hydrocarbon liquid passes through a comparatively small tube, passing up from below and then descending, so that the liquid is vaporized, and the vapor as it issues draws into the lamp the atmospheric air and commingles therewith and passes up to the Bunsen flame.

I make the delivery end of the generator, where the vapors issue, larger than the vaporizing-tube and perforate the same for the issuing vapors, thereby allowing any carbonaceous material to be blown by the action of the vapors to the larger end of the generator, where the same will not obstruct the perforations through which the vapors issue, and I bend the tubular generator in such a manner that the flame will act uniformly, or nearly so, over its entire length in order that the risk of carbonizing the liquid may be reduced to a minimum, and I also surround the tubular generator, at the bend thereof, with a helix of fine wire or similar material, so that the action of the heat of the Bunsen

flame, which ordinarily would be the greatest at this place, is lessened and the temperature substantially unified throughout the tubular generator, and I find that by the use of a small tubular generator the lamp may be easily started by the application of a match, taper, or similar source of heat to the generator, so that the temperature may be raised sufficiently for vaporizing the petroleum or other liquid hydrocarbon and causing the same to issue and commingle with the atmosphere and then pass up to the Bunsen burner, where the vapors are ignited.

In the drawings, Figure 1 represents the improved lamp without any reservoir. Fig. 2 is an elevation of the vaporizer or generator, and Fig. 3 is a plan view.

The liquid hydrocarbon may be supplied from a reservoir in any suitable manner. I prefer to make use of a reservoir connected with a pipe A, the reservoir being below the same and having connected a pump by which atmosphere under pressure may be forced into the reservoir to cause the liquid to rise in the pipe A; but this feature, being well known, need not be further described, and the present improvement may be availed of in lamps or burners in which the reservoir for the liquid hydrocarbon is at a higher elevation than the burner.

The supply of the liquid hydrocarbon is regulated by any suitable cock or valve. I have represented a tapering or needle valve with a screw-stem by which such supply is regulated, and above this valve is a standard A', at the upper end of which is the burner.

I prefer to employ a ring C between the upper end of the standard A' and the base of the burner, which burner-base D is hollow and preferably provided with a piece of wire-netting at D', through which the hydrocarbon vapors and atmosphere issue and burn as a Bunsen flame, and the mantle E, which may be of any desired character, is suspended by the rod F, that is received at its lower end into the clamp G, or any other suitable means may be made use of for suspending the mantle.

The vaporizer or generator H is formed of a small tube passing up and bent and then passing down, and one end is connected by a coupling with the pipe K, which is the sup-

ply-pipe for the liquid hydrocarbon, connected with the pipe A above the valve B, so that a regulated supply of liquid passes by the pipe K and coupling I into the generator while the lamp is burning, and below the hollow base D is a mixing-chamber L, preferably in the form of a bent tube larger at one end than the other and extending horizontally through the ring C and returning and entering the hollow base D at one side thereof, and the generator, where it descends or returns, passes across the end of this mixing-chamber, preferably through holes at the top and bottom of the tube forming such mixing-chamber, and it is advantageous to enlarge the generating-chamber at or near the end thereof. I have shown the tube 2 as larger than the pipe forming the generator H, and this tube 2 is brazed or otherwise fastened to the end of the generator-tube H and has a removable screw-plug 3 at its lower end, by the removal of which any obstruction or carbonaceous material may be removed from the generator, and by unscrewing the coupling I the generator may be taken away for cleaning or repairs or another generator may be substituted.

In the enlarged tubular end 2 of the generator are discharge-orifices 4, which I prefer to make by filing the side of the tube 2, so that the tube at this place is thinner, and then perforating the tube with two orifices 4, so that the vapor as it is generated in the portion H will descend and pass out of the orifices 4 with sufficient speed to draw the air in with it for mixing within the chamber L as the vapors and atmosphere proceed through such mixing-chamber into the burner-base.

It will be observed that the generator, being composed of a comparatively small tube, extends up closely adjacent to the flame that heats the mantle, and hence is constantly exposed to the temperature necessary for vaporizing the petroleum or other liquid hydrocarbon; but in consequence of the tube that forms the generator being bent at the upper part between the ascending and the descending portions of the generator this part crossing the flame will be exposed to a greater temperature than the vertical portions of the generator, and to avoid this contingency I bend the pipe of the generator outwardly, so that the crossing portion of the tube is farther away from the source of heat than the vertical portions of such generator, and hence the action of the heat upon the generator is more equalized throughout its length, and I also, when necessary, surround this portion of the generator with a helix 8, of iron wire or similar material, that lessens the action of the heat at this particular part of the generator and also lessens the tendency to oxidize or injure the filamentary tubular generator.

It will be apparent that if the burner-base and the mantle are to be removed in light-

ing the lamp the hollow burner-base can be made of one tube within the other, the outer tube being removable and carrying the mantle-support and mantle, and that these parts can be easily replaced without risk of injury to the mantle, and the light may be obtained with or without a chimney surrounding the mantle, as chimney-holders for chimneys in mantle-lamps are well known.

In consequence of the larger tubes at the ends of the small generator-tube being parallel or nearly so such generator-tube can be easily moved in either direction for inserting the end that has a delivery-jet into its position in relation to the mixing-chamber and for bringing the parts of the coupling properly together for coupling or the reverse movement in uncoupling.

I claim as my invention—

1. The combination with a Bunsen burner and a mantle supported above the same and a mixing-chamber adjacent to the hollow base, of a small generator-tube passing up and down and exposed to the heat of the flame with a larger metallic tube attached at each end of such tubular generator, such enlarged ends being substantially parallel and one of them having a hole forming a jet-opening, and the other receiving a coupling connection to the tube supplying the liquid hydrocarbon, substantially as set forth.

2. The combination with a Bunsen burner and a mantle supported above the same and a mixing-chamber adjacent to the hollow base, of a small generator-tube passing up and down and exposed to the heat of the flame with a larger metallic tube attached at each end of such tubular generator, one of the enlarged ends passing through holes and across the mixing-chamber and having a hole forming a jet-opening and the other enlarged end having a coupling connection to the supply-pipe, substantially as set forth.

3. The combination in an incandescing lamp with the generator and mixing-chamber, of an enlarged tubular end to the generator and a removable screw-plug for cleaning purposes, the enlarged end having a flattened side and small holes for the issuing gas to pass into the mixing-chamber, there being openings in the mixing-chamber for allowing the ingress of air, substantially as set forth.

4. In an incandescing lamp having a burner for non-luminous gas and a suspended mantle, a generating-tube, and a pipe connected to one end thereof for supplying liquid hydrocarbon, such generator-tube passing upward and bent and returning downward and having a jet-opening and a mixing-chamber into which the jet of hydrocarbon vapor passes and draws in with it the atmospheric air, the upper part of the generator, where the tube is bent, being farther from the mantle than the lower portions of such generating-chamber to approximately equalize the action of

the heat on the generating-chamber, substantially as set forth.

5 In an incandescing lamp for burning liquid hydrocarbon, a generator formed of a small tube passing up and bent and passing down again, there being a helix of wire around the bend to lessen the action of the heat at such bend and aid in unifying the action of

the heat throughout the generator, substantially as set forth.

Signed by me this 19th day of August, 1898.

CHARLES C. BRUCKNER.

Witnesses:

GEO. T. PINCKNEY,
S. T. HAVILAND.

10