No. 829,604. PATENTED AUG. 28, 1906.

C. J. PUFFER.

HYDROCARBON VAPOR BURNER.

APPLICATION FILED NOV. 13, 1899.

2 SHEETS—SHEET 1.

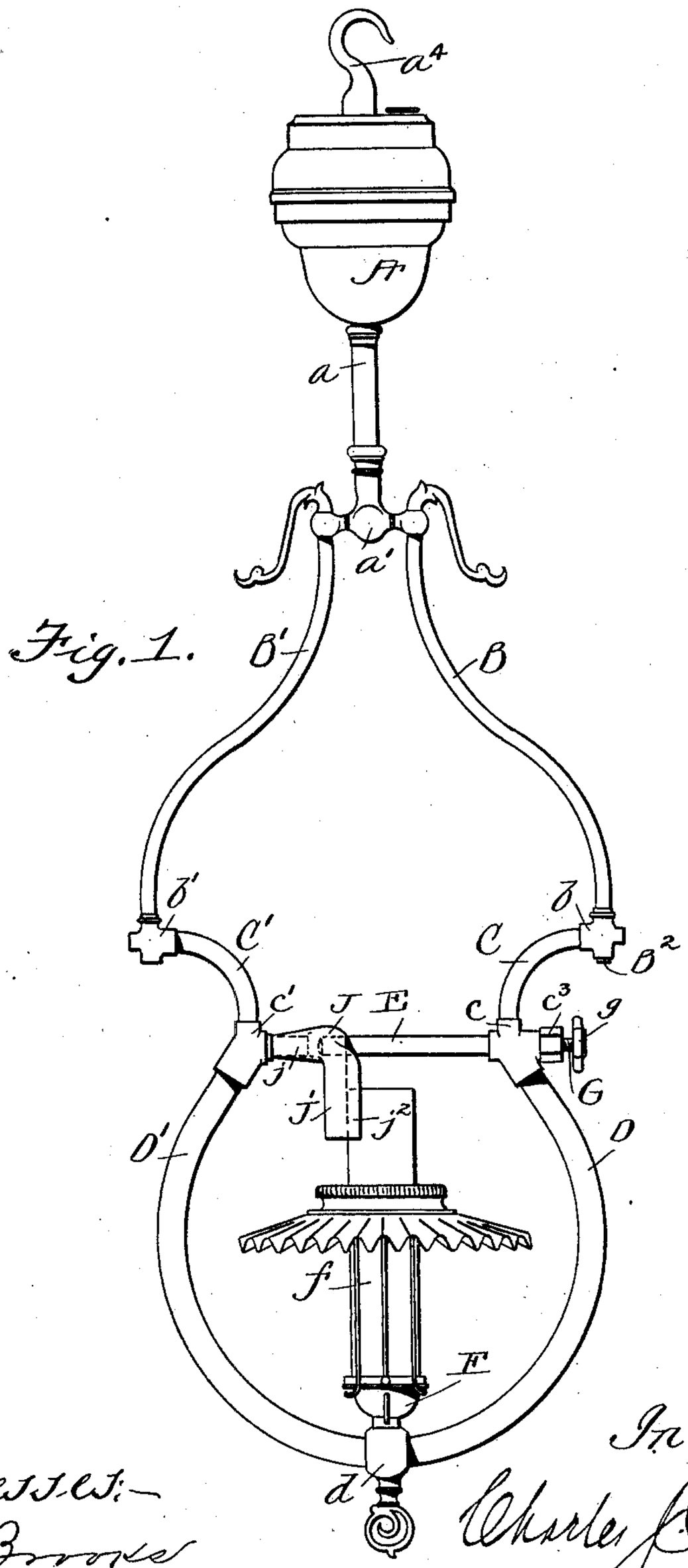

Fig. 1.

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2 SHEETS—SHEET 2.

FIG. 3.

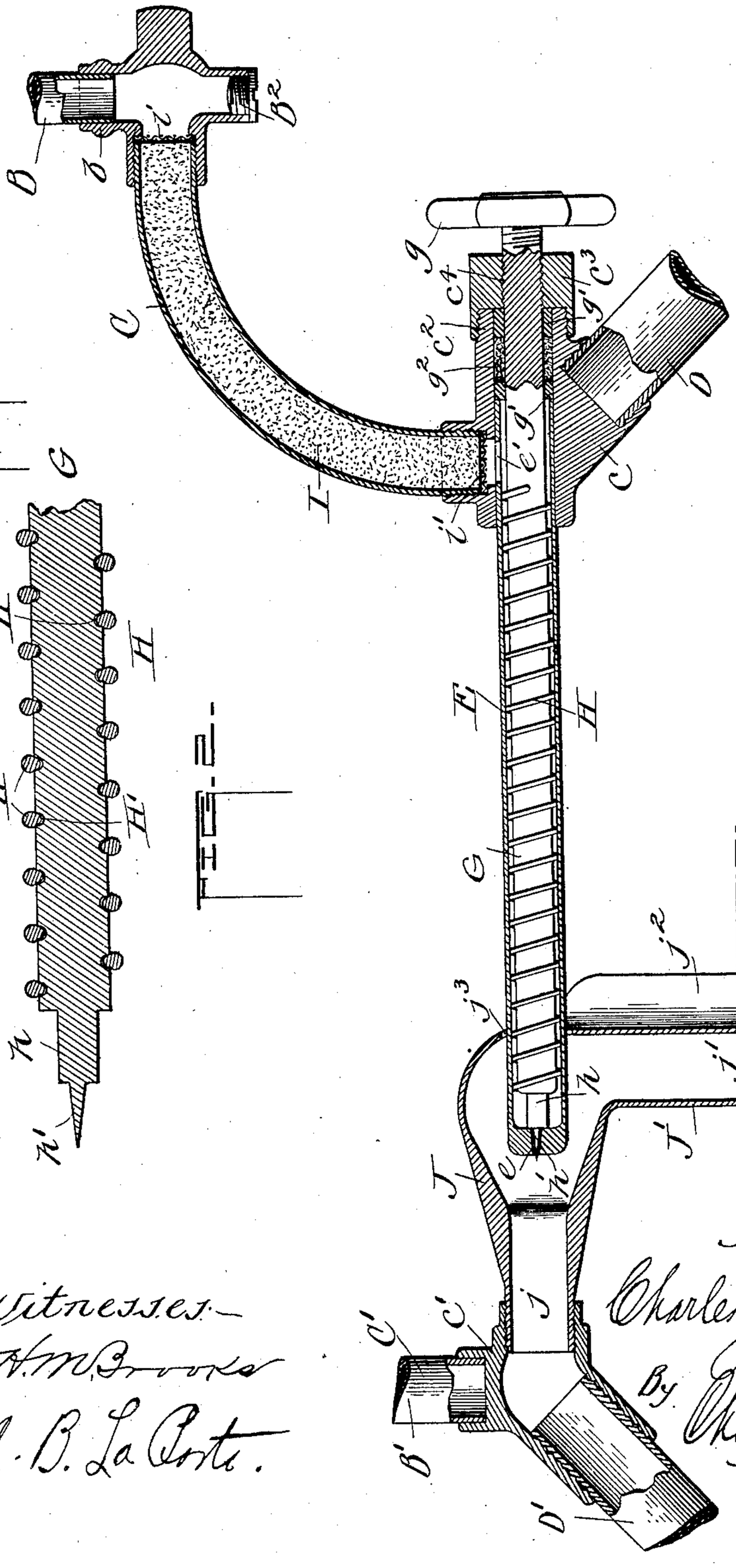

FIG. 2.

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UNITED STATES PATENT OFFICE.

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HYDROCARBON-VAPOR BURNER.

No. 829,604. Specification of Letters Patent. Patented Aug. 28, 1906.

Application filed November 13, 1899. Serial No. 736,900.

To all whom it may concern:

Be it known that I, CHARLES J. PUFFER, a citizen of the United States, residing at 913 State street, Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Hydrocarbon-Vapor Burners; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has reference to a new and improved construction in a hydrocarbon apparatus and fixture and has several new and novel features combined therewith, making it well adapted for the purpose designed.

More particularly, my invention relates to that class of gas-generating gas-fixtures in which there is provided a supply-tank supported by a fixture and through which the liquid hydrocarbon is permitted to pass, and being generated in a suitable generator is mixed with a quantity of air and delivered to an ignition-tube leading to the burner.

My invention consists, essentially, in the provision and general arrangement of a supply-tank and conduit leading therefrom, a vaporizing-tube having a substantially continuous internal bore of the same diameter and provided with a minute discharge-opening at its delivery end, of a detachably and adjustably helical valve-stem operating in said tube and means externally carried by said tube for regulating the valve-stem, a needle-point integral with said valve-stem and engaging the discharge-opening in the tube, a burner, a mixing-chamber leading thereto and of the means whereby hot air is admitted to the mixing-chamber simultaneously with the vapor from the vaporizing-tube and of a chamber interposed between the conduit from the supply-tank and the generator-tube, and of certain other features of novelty hereinafter described, and pointed out in the appended claims.

That my invention may be more fully understood, reference is had to the accompanying drawings, in which—

Figure 1 illustrates in elevation my improved gas-fixture. Fig. 2 shows in cross-section the generating-chamber, valve, and component parts; and Fig. 3 is a detached enlarged sectional view of a part of the needle-point-valve stem and its surrounding helical ring.

In the drawings like letters of reference indicate the several corresponding parts of the figures.

A refers to a supply tank or vessel, and a^4 a hook whereby the same may be attached to a wall or ceiling hook or other support. A supply pipe or conduit a is attached thereto and depends therefrom, at its lower end is connected with the T-coupling a'. Connected with and depending from the coupling a' are shown suitable pipes B B', which are suitably connected with the couplings b b'. C C' are pipes leading out from the couplings b' b' and are connected with the couplings c c', which have attached thereto the pipes D D', leading to the coupling d at a common base of the fixture.

E is a vaporizing-tube or generating-chamber which is supported by said fixture and especially by connection with the coupling c. (Clearly shown in Fig. 2.) The tube is of suitable length and is provided with a substantially continuous internal bore of the same diameter throughout and has a minute discharge-opening e at its outer or delivery end. The generator is purposed to be carried in close proximity to a burner, adapted to be heated by the same, and in this instance is carried across and above the burner F, which has a suitable chimney f, as shown.

G is a needle-point-valve stem carried within the generator E and is provided with the hand-wheel g, externally carried by the fixture for adjusting the valve-stem. The valve-stem is adjustably and detachably carried within the generator and is purposed to regulate the flow of the liquid therein and the discharge of vapor therefrom. The coupling c has a reduced rear extension c^2 suitably screw-threaded on its exterior surface, and c^3 is a nut adapted to engage said screw-threaded portion of the coupling and is provided with a centrally-located screw-threaded portion c^4, forming an internally-carried nut, which is engaged by a screw-threaded portion of the valve-stem G, which passes therethrough and by which it is made possible to regulate the same. I provide a suitable packing at the rear of the chamber E and intermediate the end of the same and the nut c^3 to insure a complete joint and prevent leaking. The same consists of the rings g' g', carried around the valve-stem, or, in other words, the valve-stem passes therethrough—

and suitable packing, as at g^2, carried between the rings, as shown. From a point where the liquid is admitted to the vaporizing-tube to a suitable point at the outer end of the same is provided a helically-arranged conduit in which the liquid will pass and be generated, in this form passing through the minute opening in the generator. I accomplish this by the provision of a helical ring H, carried around and held intact with the valve in a suitable manner, the outer face of which engages with the inner face or wall of the generating-chamber. Such ring is preferably carried in a helical groove H′, which is formed in the valve-stem, or the valve may be bored to such a diameter as to fit snugly the wall of the generator and a groove formed in the same. At the outer end of the valve-stem is provided the reduced extension h, which has the needle-point extension h', matching with and engaging the minute discharge-opening e in the vaporizing-tube.

Intermediate the supply-conduit or pipe B is shown the tube or chamber C, which is designed to act as a restricting-chamber, being filled with suitable packing I, such as sand or the like, through which the liquid passes, passing first through the fine gauze material i at its receiving end and out through the coarser gauze material i' at its discharge end, when the same passes through the opening e' of the vaporizing-tube.

b indicates a coupling for connecting the conduit B with the restricting-chamber C and serves as a reservoir or basin for any extraneous matter contained in the liquid passing from the conduit B to the chamber C, and the same is provided with a plug or valve B^2 for the purpose of cleaning the reservoir b, when desired.

J is a mixer of a novel construction, into which the forward end of the vaporizing tube or generator extends when the vapor discharging therefrom is purposed to be mixed with air previously heated and form a gas which passes through the pipe or mixing-tube D′ and thence to the burner. The mixer J has an extended neck j, screwed into the coupling c', leading to the tube D′, and is also provided with the depending portion J′, provided with the passage j' and the flange j^2, which is carried in close proximity to the chimney, as shown, and j^3 is a chambered portion into which the vaporizing-tube extends. The air is permitted to pass up through the passage j' and through the opening j^3, which may be made of sufficient width to permit of the same passing therethrough. The air passing through the passage j' is heated to a suitable degree and is mixed with the vapor discharged from the tube and forming a gas is admitted to the tube or pipe D′. This form of mixer may be varied in detail to some extent and the depending portion left off, if desired, but is found to be very useful and practical for out-door use.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a hydrocarbon-lamp, in combination, a needle-valve casing having a generating-tube provided with a discharge-orifice, a peripherally-grooved needle-valve stem fitting said tube snugly and being provided with a helical ring seated in the groove and forming a channel for the passage of the hydrocarbon within said tube, said stem being provided with a needle-point adapted to engage and close the orifice in the tube, and a mixing-chamber having an opening in the wall thereof to receive the end of the needle-valve tube, substantially as specified.

2. In a hydrocarbon-lamp, in combination, a generating-tube having a minute discharge-orifice, a needle-valve stem fitting said tube snugly and being provided with a helical ring to form a channel for the passage of hydrocarbon within said tube, the said stem having a needle-point adapted to close the opening in the tube, a mixing-chamber having an opening in the wall thereof to receive the end of the generating-tube, a coupling receiving the opposite end of said tube, and through which the needle-valve stem extends, a nut mounted on said coupling and being in threaded engagement with the valve-stem, and heating means located adjacent the mixer and disposed below the generator-tube for heating the air which mixes with the hydrocarbon.

3. In a hydrocarbon-lamp, the combination of a generator-tube mounted within a coupling and having an opening within the chamber of said coupling communicating with an oil supply, and having a discharge-orifice at its opposite end, a needle-valve stem mounted in said tube and movable longitudinally therein, and having a needle-point to close the discharge-orifice in said tube, a helical ring surrounding the valve-stem within the generator-tube and forming a channel through which the hydrocarbon must pass from the point of supply to the discharge-orifice, a mixing-chamber into which the end of the generator-tube extends, and having a vertically-disposed air-inlet, and a discharge-port alined with the mixing-tube, a flange carried by the wall of said mixing-chamber, and a burner disposed adjacent the mixing-chamber and having a chimney engaging said flange, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES J. PUFFER.

Witnesses:
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CHAS. W. LA PORTE.