

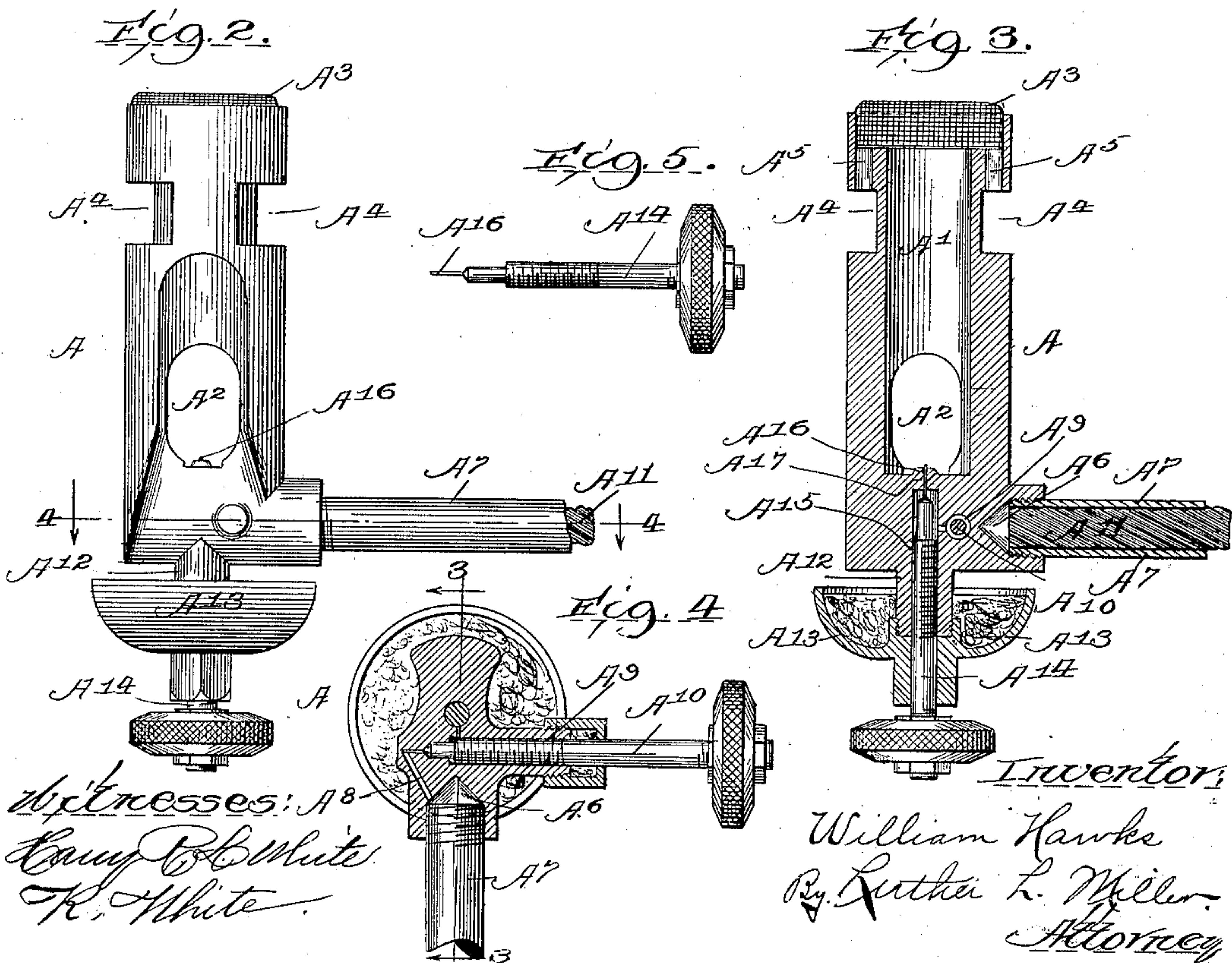
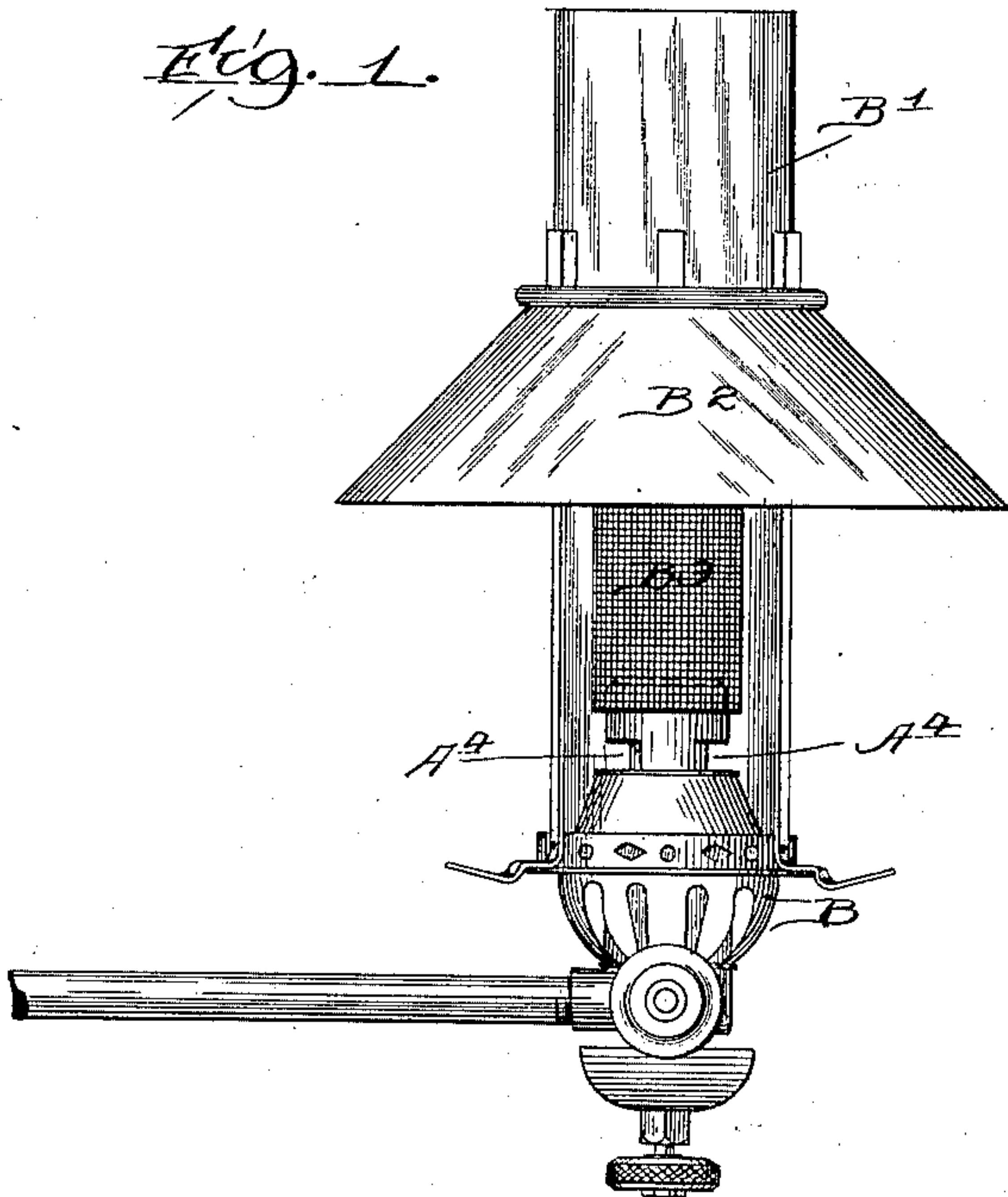
No. 656,889.

Patented Aug. 28, 1900.

W. HAWKS.
HYDROCARBON LAMP.

(Application filed Mar. 22, 1900.)

(No Model.)



UNITED STATES PATENT OFFICE.

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HYDROCARBON-LAMP.

SPECIFICATION forming part of Letters Patent No. 656,889, dated August 28, 1900.

Application filed March 22, 1900. Serial No. 9,724. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HAWKS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hydrocarbon-Lamps, of which the following is a specification.

This invention relates to those lamps that generate the gas which they consume by the heat of the lamp-body. In such lamps it is common to provide the lamp-body with a series of small intercommunicating ducts, forming a portion of the passage-way from the hydrocarbon-reservoir to the escape-valve, within which ducts the gas is generated. These ducts are of small diameter and easily become clogged. They usually are formed by drilling into the lamp-body, and therefore are expensive to make.

The object of this invention is the production of a lamp wherein the series of intercommunicating ducts is dispensed with and which contains other and further improvements more fully specified hereinafter.

In the accompanying drawings, Figure 1 is a side elevation of a lamp embodying the features of my invention. Fig. 2 is a side elevation of the lamp-body. Fig. 3 is a vertical central section on dotted line 3 3 of Fig. 4 through said lamp-body. Fig. 4 is a horizontal section on dotted line 4 4 of Fig. 2. Fig. 5 is a side elevation of the needle-valve stem.

Like letters of reference indicate corresponding parts throughout the several views.

In the construction of this lamp I provide a lamp-body A, preferably of copper on account of its heat-conducting properties. This lamp-body is cylindrical in its general outline and is provided in its interior with a mixing-chamber A' and an air-induction opening A², extending transversely through the middle portion of said lamp-body and communicating with the mixing-chamber A', at the lower end of the latter.

A³ is a screen of wire-gauze or other suitable material for closing the upper end of the mixing-chamber. Two channels A⁴ are formed in opposite sides of the lamp-body A in a direction transverse to its axis, but not deep enough to communicate directly with the mixing-chamber A'. A duct A⁵ extends

downward from the upper part of said mixing-chamber through the upper side of each of the channels A⁴ and provides a means for projecting a heating-flame against the lower side of said channels when the lamp is in operation. An opening A⁶ near the lower end of the lamp-body communicates with the hydrocarbon-supply pipe A⁷, and this opening is continued by the duct A⁸, communicating with the opening A⁹ for the supply-valve A¹⁰, by means of which the supply of gas or oil is regulated. This supply-valve has the stuffing-box usual in such valves to prevent the hydrocarbon from leaking about the valve-stem. A filter A¹¹, composed of copper wires twisted in cable form, is inserted in the supply-pipe A⁷ near its point of attachment to the lamp-body A, and the heat of the lamp-body being communicated to the copper wire of this filter causes it to generate gas from the hydrocarbon.

At the lower end of the lamp-body is a downwardly-extending projection A¹², screw-threaded externally and internally, and a generating-cup A¹³, containing an absorbent fireproof substance, as mineral wool, is turned upon said external screw-threads. This generating-cup is intended to receive alcohol for generating gas when first lighting the lamp. A needle-valve stem A¹⁴, screw-threaded to correspond with the internal threading of the downwardly-extending projection A¹², lies within the axial opening A¹⁵ of said projection, and this opening A¹⁵ communicates with the opening A⁸, whereby the generated gas is conducted to the discharge-orifice A¹⁷, to be later described. The forward end of the needle-valve stem A¹⁴ is adapted to seat itself in the end of the axial opening A¹⁵, and the needle-point A¹⁶ of said stem extends through a small opening A¹⁷, communicating between the axial opening A¹⁵ and the mixing-chamber A'. The needle-point A¹⁶ of this valve-stem A¹⁴ is of uniform diameter and is composed of a piece of steel wire fixed in the forward end of the valve-stem A¹⁴. The discharge-orifice A¹⁷ forms the means of directing the generated gas into the mixing-chamber A', from whence it is driven upward through the screen A³ into the mantle of the lamp and there consumed.

B is the gallery, of usual construction, surrounding the lamp-body for supporting the chimney B', the shade B², and the mantle B³.

In operation, hydrocarbon is provided for the supply-pipe A⁷, the liquid passing through the filter A¹¹, through the duct A⁸, and is stopped by the supply-valve A¹⁰. A quantity of alcohol is poured upon the mineral wool in the generating-cup A¹³ and said alcohol ignited. The heat of the burning alcohol generates gas in the duct A⁸, and when the supply-valve A¹⁰ is opened and the needle-valve stem A¹⁴ turned backward to withdraw the forward end of said stem from its seat in the axial opening A¹⁵ and to remove the needle-point A¹⁶ from the discharge-orifice A¹⁷ gas under pressure issues from said orifice and mixes with air in the mixing-chamber A'. The force of the jet is sufficient to drive the combustible mixture upward through the wire screen A³ into the mantle B³, where said mixture is ignited. The ducts A⁵ direct a flame downward in the channels A⁴ on each side of the lamp-body and heat said body sufficiently to generate gas in the duct A⁸ and in the supply-pipe A⁷.

The lamp-body is made of copper on account of the superior heat-conducting properties of this metal.

The needle-valve point A¹⁶ at the end of the valve-stem A¹⁴ is made of uniform diameter, so that its passage through the discharge-orifice A¹⁷ shall not enlarge that opening, being merely to free it from any substance which may find its way into said opening.

I claim as my invention—

1. A lamp-body for hydrocarbon-burners, composed of an integral piece of metal of hollow, cylindrical form, having a closed lower end and an open upper end, openings on opposite sides of the lamp-body for admitting air to the interior thereof, two transverse grooves in the walls of said body portion on

opposite sides thereof, and an opening in the upper side wall of each of said grooves, communicating between the interior of said body portion and said groove; a stem at the closed lower end of said cylinder, which stem has a longitudinal opening internally screw-threaded to receive the needle-valve stem; the body portion also having an opening threaded to receive the hydrocarbon-supply pipe, an opening for receiving the supply-valve, and ducts extending from the supply-pipe opening to the supply-valve opening and from the latter to the needle-valve opening.

2. In a hydrocarbon-lamp, a lamp-body composed of an integral piece of metal of hollow, cylindrical form, having a closed lower end and an open upper end, openings on opposite sides of the lamp-body for admitting air to the interior thereof, two transverse grooves in the walls of said body portion on opposite sides thereof, and an opening in the upper side wall of each of said grooves, communicating between the interior of said body portion and said groove; a stem at the closed lower end of said cylinder, which stem has a longitudinal opening internally screw-threaded to receive the needle-valve stem; the body portion also having an opening threaded to receive the hydrocarbon-supply pipe, an opening for receiving the supply-valve, and ducts extending from the supply-pipe opening to the supply-valve opening and from the latter to the needle-valve opening: in combination with a needle-valve having a screw-threaded stem, a closure-face, and a needle-point of uniform diameter extending from said closure-face; a hydrocarbon-supply pipe; and a supply-valve.

WILLIAM HAWKS.

Witnesses:

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