

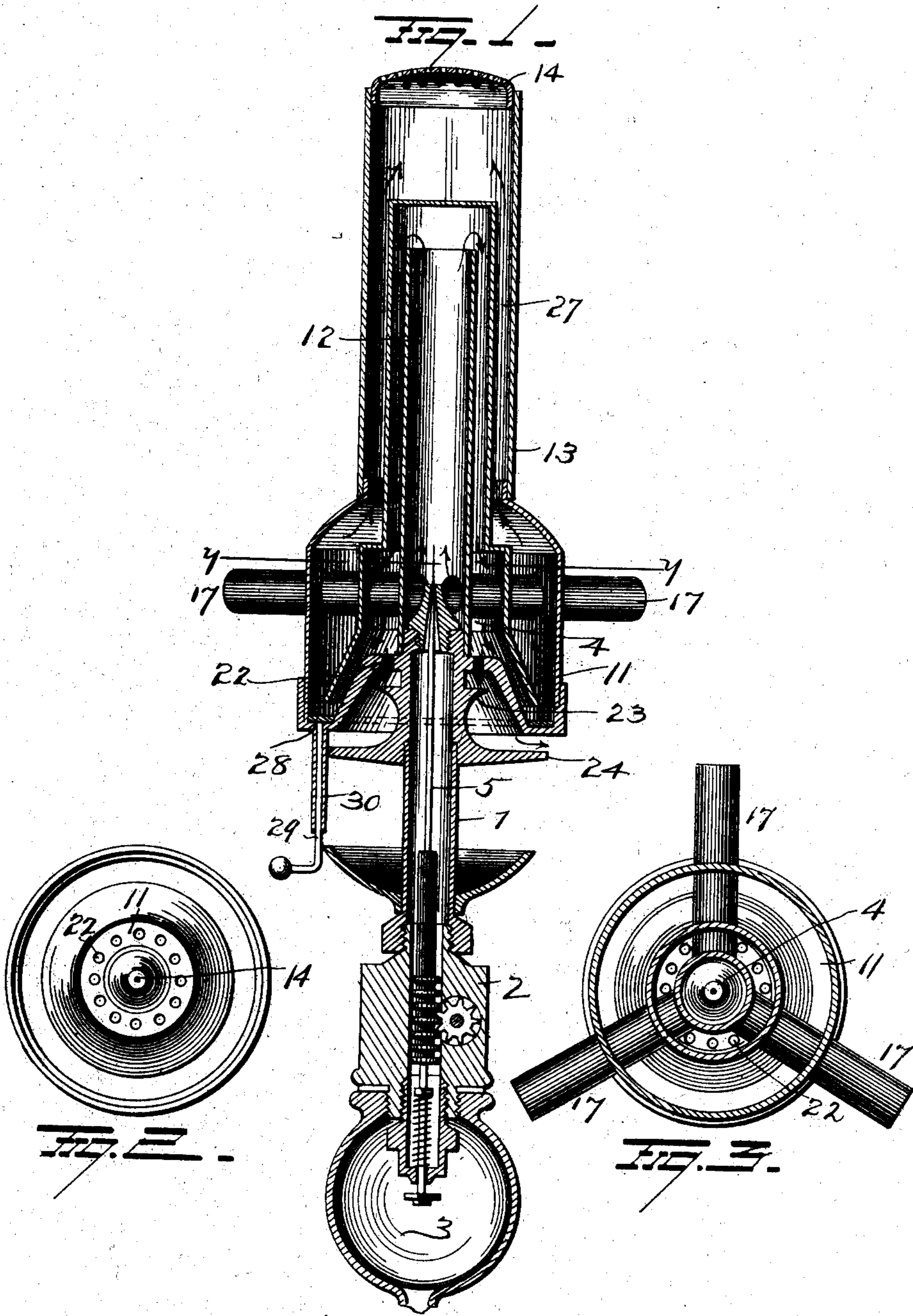
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Patented Aug. 5, 1902.

G. WASHINGTON.
HYDROCARBON INCANDESCENT LAMP.

(Application filed July 24, 1901.)

(No Model.)



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HYDROCARBON INCANDESCENT LAMP.

SPECIFICATION forming part of Letters Patent No. 706,504, dated August 5, 1902.

Original application filed November 8, 1898, Serial No. 695,875. Renewed January 22, 1901. Serial No. 44,301. Divided and this application filed July 24, 1901. Serial No. 69,605. (No model.)

To all whom it may concern:

Be it known that I, GEORGE WASHINGTON, of New Brighton, in the county of Richmond and State of New York, have invented certain
5 new and useful Improvements in Hydrocarbon Incandescent Lamps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it apper-
10 tains to make and use the same.

My invention relates to an improvement in hydrocarbon incandescent lamps, and is a division of my application No. 695,875, filed November 8, 1898, renewed January 22, 1901;
15 and it consists in the parts and combinations of parts, as will be more fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in longitudinal section of my lamp.
20 Fig. 2 is a top plan view of the base of same, and Fig. 3 is a view on the line *y y* of Fig. 1.

1 represents a vaporizing-tube provided at its lower end with a removable plug 2, having a central longitudinal opening for the passage
25 of the needle-valve and is connected to the oil-cup 3. The upper end of the vaporizing-tube carries or is directly below the jet-nozzle 4, which latter has a tapering bore through which the needle-valve 5 passes. The upper
30 end of the vaporizing-tube is secured to the base 11, which latter acts as a heat-accumulating body for heating the vaporizing-tube.

Secured to the base 11, which, together with the tube 13, forms an outer casing with the
35 burner tube or cap at the upper end, is the upwardly-projecting mixing-tube 12, into which the vapor is discharged, and surrounding the mixing-tube 12 is the intermediate tube 27, closed at a point above the mixing-
40 tube. The intermediate tube 27 is surrounded by the burner-tube 13, having the perforated burner-cap 14.

Passing through the sides of the burner and intermediate tube 27 and discharging into the
45 mixing-tube 12 are the air-inlet pipes 17.

The vapor as it issues from the vapor-escape nozzle 4 draws in air through the air-inlet pipes 17, and the air and vapor thus brought together are commingled and pass upwardly
50 within the mixing-tube and pass into the in-

termediate tube or casing 27, and as the latter is closed at its upper end by a diaphragm and is supported with its lower end above the base 11 the mixed air and vapor pass downwardly between the casing or tube 27 and
55 the mixing-tube 12 and then under the lower edge of the former into the outer or burner tube 13 and is burned under a mantle.

Part of the mixed air and vapor in its downward passage between the mixing and inter-
60 mediate tubes escapes through the jet-orifices 22 in the base 11 of the casing and is burned in direct contact with the base 11, the flames from the several jets or auxiliary heater impinging against the flanges 23 and 24, and
65 thus quickly heating the base and maintaining it and the vaporizing-tube connected therewith at such a temperature as to quickly vaporize the oil within the vaporizing-tube.

In this device the jet-orifices 22 for the va-
70 por-generating flame are in a plane above the lower end of the intermediate tube or casing. Hence it will be seen that a portion of the mixed air and vapor always escapes through
75 said jet-orifices irrespective of the pressure within the commingling-tube. In order, however, to limit or regulate the passage of the air and vapor to the burner, I have provided the ring-valve 28. This valve rests on the
80 base 11 or within the lower end of the burner-tube and is provided with a depending stem 29, which passes through the sleeve 30, carried by the base. By lifting the stem it will be seen that the passage between the tube or
85 casing 27 and the burner-tube 13 can be cut off more or less, thus permitting me to confine, if necessary or desired, approximately all the vapor within the casing 27, sufficient, however, escaping around the intermediate
90 tube or casing to maintain a small or pilot flame at the burner.

The vaporization of the oil may be started by heating the generating-tube 1 in any manner; but I prefer to provide the latter with a
95 starting-cup designed to contain sufficient alcohol or oil for the initial heating of the generating or vaporizing tube. After the vapor begins to form, part of it, as before explained, passes down to the vapor-escape orifices 22 in the base 11 and is ignited by a torch
100

or by the flame from the starting-cup and in a few seconds heats the base 11 to a temperature sufficient to vaporize the oil therein.

The tendency of the mixed air and vapor is to rise; but when the lamp or heater is burning at its full or approximately full capacity there is a sufficient pressure within the mixing-tube and under the burner-cap to force a portion of the combined air and vapor into the space between the mixing and intermediate tubes and down to the jet-orifices 22 in the base.

With this lamp, while the light may be wholly extinguished by cutting off completely the supply of vapor to the mixing-tube, I prefer to have the vapor-valve 5 so constructed and arranged that the closure thereof will not completely check the flow of vapor, but will permit sufficient to pass to maintain the vapor-generating flames against the base 11 and a pilot or small flame at the top, the flames being wholly extinguished by cutting off the supply of oil to the vaporizing-tube.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A vapor-burner comprising an outer casing having a burner-tube arranged at its upper end, a mixing-tube within said casing, an intermediate tube within the casing and surrounding said mixing-tube, and a diaphragm in said intermediate tube above the open upper end of the mixing-tube, a vaporizer penetrating the bottom of the casing and arranged to discharge vapor into the mixing-tube, air-inlet tubes penetrating the sides of the casing and arranged to discharge air into said mixing-tube, and a vapor-jet burner connected to the base of said casing and arranged to heat said vaporizer, substantially as described.

2. A vapor-burner comprising an outer casing carrying a burner, a mixing or commin-

gling tube within said casing, an intermediate tube closed at its top and open at its bottom and surrounding said vaporizing-tube, a vaporizer arranged to discharge vapor into the mixing-tube, air-inlet tubes discharging into said mixing-tube, and a vapor-jet burner connected to the base of said casing and arranged to heat said vaporizer, substantially as described.

3. A vapor-burner comprising an outer tube or casing carrying a burner, a mixing or commingling tube within said casing, an intermediate tube closed at its top and open at its bottom, a vaporizer arranged to discharge vapor into the mixing or commingling tube, air-pipes leading to the mixing or commingling tube, a valve for controlling the flow of mixed air and vapor from the intermediate tube to the outer tube or casing and an auxiliary burner adjacent to the vaporizing-tube for heating the latter.

4. In a lamp of the class described, the combination with a vaporizer, of a burner provided with tubes disposed one within another to form three communicating passages connected to cause the vapor to pass through the intermediate passage in the opposite direction from that in which it passes through the other two passages, and an air-supply tube extended across two of the said passages and communicating with the innermost tube above the vapor-outlet of said vaporizer to supply the vapor issuing from the vaporizer with air, substantially as and for the purpose specified.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

GEORGE WASHINGTON.

Witnesses:

GEO. F. DOWNING,
W. CLARENCE DUVALL.