

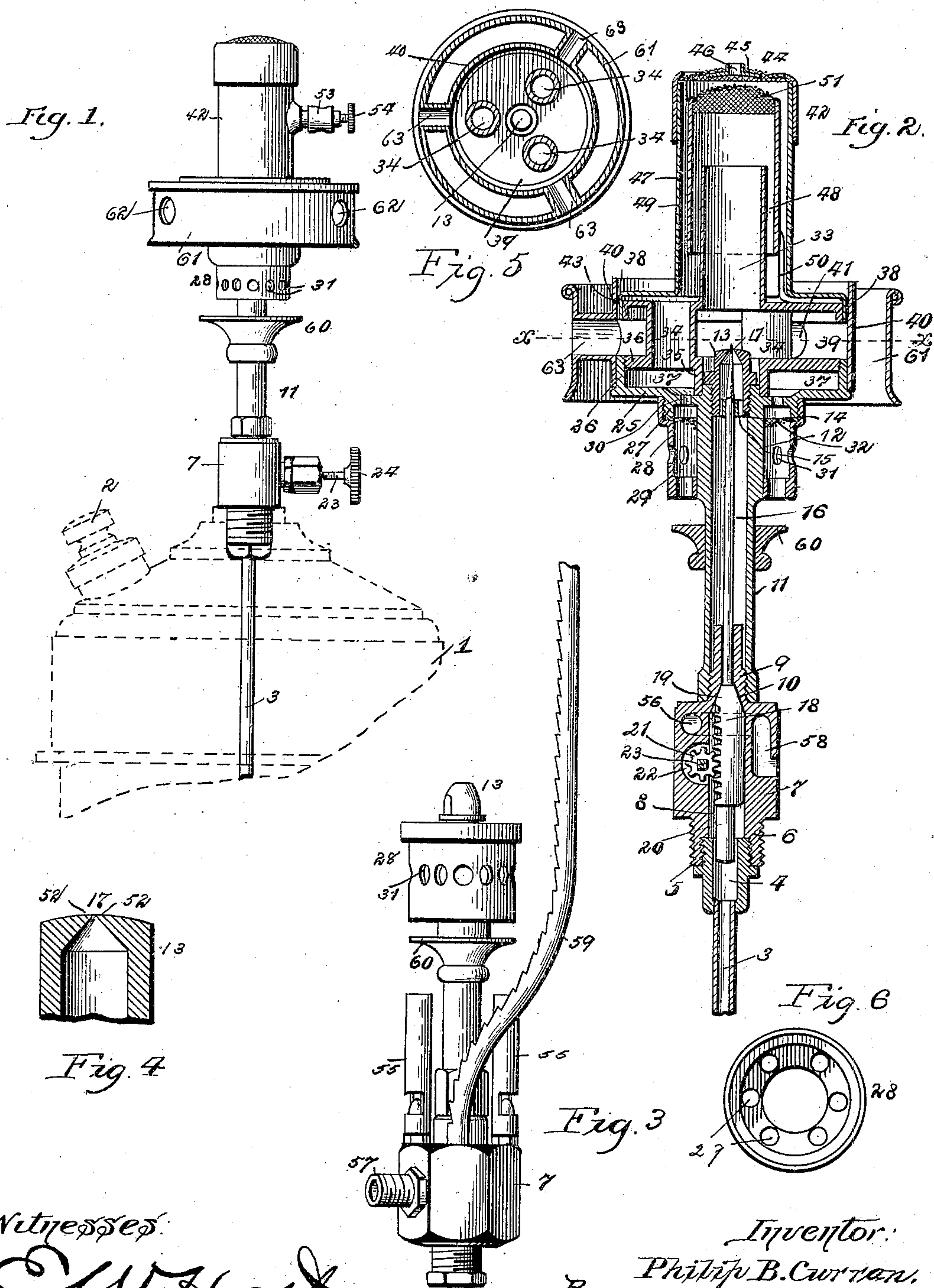
No. 705,044.

Patented July 22, 1902.

P. B. CURRAN.
HYDROCARBON INCANDESCENT LAMP.

(Application filed July 23, 1900.)

(No Model.)



Witnesses:

C. W. Hall
Jac. H. Richmond

Inventor:
Philip B. Curran.
By *Augustus B. Stoughton*
Atty.

UNITED STATES PATENT OFFICE.

PHILIP B. CURRAN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
KITSON HYDROCARBON HEATING AND INCANDESCENT LIGHTING
COMPANY, A CORPORATION OF WEST VIRGINIA.

HYDROCARBON INCANDESCENT LAMP.

SPECIFICATION forming part of Letters Patent No. 705,044, dated July 22, 1902.

Application filed July 23, 1900. Serial No. 24,519. (No model.)

To all whom it may concern:

Be it known that I, PHILIP B. CURRAN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Hydrocarbon Incandescent Lamp, of which the following is a specification.

The invention relates to lamps using kerosene under pressure as fuel. The chief objection to this type of lamp is that heretofore it was unreliable, required almost constant attention, and was not capable of satisfactory regulation.

The object of the present invention is to provide a simple, reliable, and efficient lamp for producing light by incandescence from the use of comparatively little kerosene or other heavy oil and of which the candle-power may be accurately regulated as required and which is economical in respect to the combustion of oil.

The invention consists in the improved hydrocarbon-burner and in the novel construction, combination, and arrangement of the parts thereof, as will be presently hereinafter set forth, and defined in the claims hereto appended.

The nature, characteristic features, and scope of the invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is an elevation of a hydrocarbon-burner constructed in accordance with my invention, showing the general arrangement of same applied to a portable tank or reservoir, the latter being shown partly broken away and dotted, it being obvious that it is equally adapted to be attached to a main or other source of fuel-supply. Fig. 2 is a central vertical section of the burner, drawn to a larger scale. Fig. 3 is an elevational view of the vaporizer, showing a preferred embodiment of means for preheating; and Fig. 4 is a sectional detail of the jet. Fig. 5 is a sectional view taken on line *x x* of Fig. 2, drawn to a reduced scale; and Fig. 6 is a detail showing a plan view of the auxiliary heater with the wire-gauze removed.

Referring to the drawings and to the numerals of reference marked thereon, 1 designates, as an example of a means of fuel-supply, a tank or reservoir of any appropriate construction and design, provided near its top with a plug 2 and having a central threaded opening, through which is passed a pipe 3, performing the function of a supply-pipe to the burner. Said pipe has its upper end somewhat enlarged to form a cup or valve-seat 4, the walls of which are threaded, as at 5, to be received into the neck 6 of a block or coupling 7, the said neck portion being exteriorly threaded to screw into the central opening of the tank, as clearly shown in Fig. 1. The coupling 7 has a central bore or passage 8, which is restricted at its upper end by a threaded yoke or extension 9, whose lower inner walls are inclined, as at 10. A tube 11 extends vertically upward from said extension and has its upper walls of increased thickness, as at 12, to constitute a vaporizer. The tube 11 is interiorly threaded to receive a jet 13, having a base 14, served with orifices 15 and with a central aperture constituting a guide for the needle 16, the point of which protrudes through the jet-orifice 17. The needle 16 is supported by a rack 18, whose upper portion is tapered to conform to the seat 10, so as to constitute a valve 19 for the vaporizing-tube 11. The lower portion of the rack 18 is formed as a stem 20, which extends into the cup or valve-seat 4 and performs the function of a valve for the supply-pipe.

The rack 18 is operated by a pinion 21, mounted to rotate in a cavity 22 in the coupling 7 and actuated by a stem 23, having milled head 24.

The enlarged upper portion of the vaporizing-tube 11 has an annular shoulder 25, provided with an upturned peripheral flange 26. The under side of said shoulder is provided with a threaded annulus or ring 27, which carries a depending crown 28, alined with the thickened portion of the vaporizing-tube. The crown 28 is penetrated by a series of vertically-disposed passages or channels 29 and by a series of lateral openings 31, the channels 29 continuing through the shoulder 25, as at 30. Each of said passages or chan-

nels 29 is provided near its top with a gauze 32, so that said channels constitute a crown or cluster of Bunsen burners forming the auxiliary heater.

5 The air-chamber 39 is constituted of a series of diversely-arranged passages, channels, or galleries and embodies a central tubular member 33, alined with the jet and constituting the mixing-tube and having its base
10 extended and shaped to provide a series of independent passages 34. Portions of its base extend down, as at 35, and surround the jet. Other portions, as at 36, engage the flange 26, which may be threaded for the purpose and form a lower annular passage 37,
15 communicating with the auxiliary heater and constituting a reservoir for supplying fuel thereto. The upper section of the base has an outwardly and downwardly turned flange
20 38, constituting the upper wall of a passage 39, whose outer wall is formed by a ring 40, having a series of apertures 41, as shown, for supplying oxygen to the jet. The ring 40 is inclosed in an outer ferrule or ring 61, having apertures 62 connecting with apertures
25 41 by means of channels 63.

The burner-tube 42 has its base extended, as at 43, to embrace the flange 38 and is provided at its top with a gauze cap 44, having
30 a metal disk 45, provided with a central aperture 46, which is highly important in imparting a cone shape to the flame. Said tube 42 has an inner-lying tube 47, extending down over the mixing-tube 33, forming annular
35 spaces 48 49. The inner-lying tube 47 is sustained in this position in any suitable manner—in the present instance by the standards 50, Fig. 2—and has the gauze top 51. It will be apparent that the inner-lying tube 47 func-
40 tionates a baffle-plate in dividing the vaporous fuel issuing from the nozzle and turns a current of same toward the cluster of Bunsen burners 29.

As seen in the detail Fig. 4, those portions
45 of the jet subjacent the orifice are inclined or diverge at the orifice, so that the latter is formed with sharp edges 52, and the vaporized fuel issuing therefrom will be sprayed in the form of an inverted cone, which readily com-
50 mingles with the oxygen in the mixing-chamber. 53 is a mantle-support secured to one side of the tube 42 and served with a clamping-screw 53.

Referring now to Fig. 3, same shows the
55 vaporizer provided with a means for supplying an initial source of heat. The means may consist of two or more Bunsen burners 55, attached in any suitable manner to the coupling 7 and communicating with an annular gas-space 56, with which said coupling
60 will be provided. A threaded nipple 57 provides a suitable inlet for the gas and communicates with said annular space by a passage 58. 59 is a pilot seated in the coupling
65 7 and having communication with the gas-space 56 and serving to ignite the burners 55 and the mantle. 60 is a baffle-plate termi-

nating the thickened portion 12 of the vaporizing-tube and arranged intermediate the preheaters 55 and the auxiliary heater 29. 70

The operation of the device is very simple. The valve 19, closing the vaporizing-tube, is lowered from its seat and heat applied to said tube from any source—in the present instance through the medium of Bunsen burn- 75
ers 55. The hot kerosene rising in the vaporizing-tube passes through the zone of the auxiliary heater, where it is converted into vapor, which, as aforesaid, escapes from the knife-edged orifice 17 in the form of an in- 80
verted cone and is discharged across the air-chamber into the inner neck or mixing-tube. The baffle-tube 47 now divides the combustible mixture as it issues from the mixing-tube 33, and portions of it will pass through the 85
gauze top 51 and through the burner-cap, as usual, and another current will be deflected back through the annular space 48, where it will be divided, part of it returning to the burner through the annular space 49, while 90
the remainder passes into the reservoir 37 and from thence feeds the cluster of Bunsen burners 29, which are ignited by the preheater. Thus it will be seen that the reser- 95
voir 37 constitutes a reserve fuel-supply, from which the burner can be supplied in a contingency where the main supply is suddenly interrupted from any cause. The lowering of valve 19 will operate to withdraw the point of the needle 16 from the jet-orifice and per- 100
mit the discharge of the gaseous fuel.

It will be obvious to those skilled in the art to which the invention appertains that modifications may be made in detail without departing from the spirit thereof. Hence I do 105
not limit myself to the precise construction and arrangement of parts hereinabove described and illustrated in the accompanying drawings; but,

Having thus described the nature and ob- 110
jects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a vaporizer having a jet and a peripherally-flanged member 25, a mixing-chamber arranged above said flanged 115
member, the base of such chamber being secured to the flange and defining a separate chamber or reservoir 37, means for supplying air to the mixing-chamber, a burner-tube, and an inner-lying tube having its end partially 120
closed to constitute a baffle for deflecting a portion of the gaseous fuel toward the reservoir, means providing a communication from the reservoir to the interior of the burner-tube, as described, and an auxiliary heater 125
arranged below and communicating with the reservoir.

2. The combination of a vaporizer having a jet and a peripherally-flanged member 25, a mixing-chamber arranged above said flanged 130
member the base of such chamber being secured to the flange and defining a separate chamber or reservoir 37, air-tubes for supplying air to the mixing-chamber, a burner-

5 tube, and an inner-lying tube having its end partially closed to constitute a baffle for deflecting a portion of the gaseous fuel toward the reservoir, a plurality of tubes 34 penetrating the mixing-chamber and designed to convey the deflected fuel to the reservoir, and an auxiliary heater arranged below and communicating with said reservoir, substantially as described.

10 3. The combination of a hydrocarbon-liquid-fuel-supply pipe and a vaporizing-tube, of a coupling connecting the two, said coupling arranged for attachment to the ordinary gas-

supply pipe and having a gas-space with suitable inlet and outlets, two or more Bunsen 15 burners and a pilot-lighter connecting with the outlets and whereof the former are arranged to heat the vaporizing-tube, an auxiliary heater for the vaporizing-tube, and a baffle-plate interposed between said burn- 20 ers and auxiliary heater, substantially as described.

PHILIP B. CURRAN.

Witnesses:

A. B. STOUGHTON,
FRANKLIN T. KALAS.