

No. 699,912.

Patented May 13, 1902.

C. H. DE VOLL.
HYDROCARBON LAMP.

(Application filed Sept. 20, 1901.)

(No Model.)

Fig. 1.

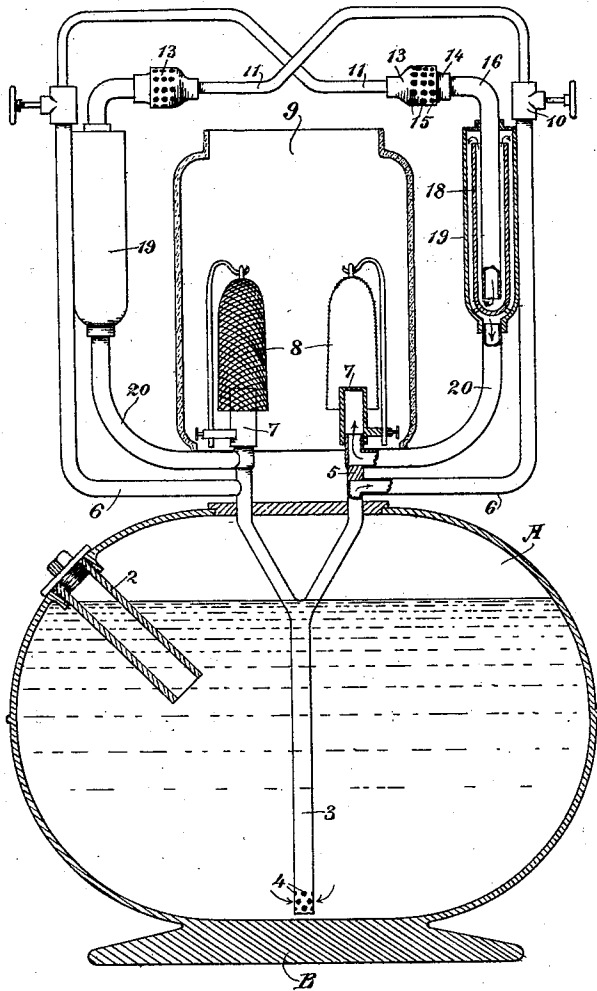


Fig. 2.

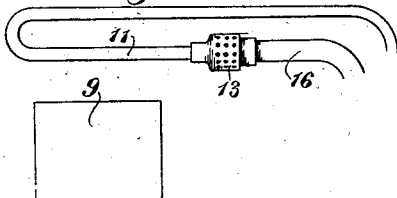
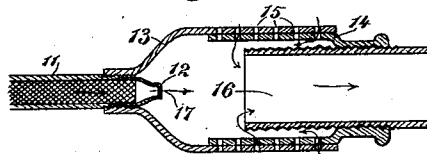


Fig. 3.



Witnesses,
J. F. Ascheck

Inventor,
 Charles H. De Voll
Dewey Strong atty.

UNITED STATES PATENT OFFICE.

CHARLES H. DE VOLL, OF OAKLAND, CALIFORNIA.

HYDROCARBON-LAMP.

SPECIFICATION forming part of Letters Patent No. 699,912, dated May 13, 1902.

Application filed September 20, 1901. Serial No. 75,712. (No model)

To all whom it may concern:

Be it known that I, CHARLES H. DE VOLL, a citizen of the United States, residing in Oakland, county of Alameda, State of California, have invented an Improvement in Hydrocarbon-Lamps; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an improvement in lamps in which a hydrocarbon liquid is contained in a reservoir, from which it is carried to a burner, with an intermediate means of vaporizing the hydrocarbon and mixing air with it, which mixture is afterward delivered to the burner.

My invention consists of the parts and the constructions and combinations of parts hereinafter described and claimed.

Figure 1 is a front view of a lamp with double burners, parts being shown in sections. Fig. 2 shows the pipe arrangement for a single burner. Fig. 3 is a detail in section of the mixer.

In the class of lamps to which my invention is applied the hydrocarbon liquid—such as gasolene, naphtha, or the like—is placed in a suitable reservoir and which also forms the lamp body and base, and from this it is led by a pipe or pipes to burners of the class known as “Welsbach” or “mantle” burners.

My invention is designed to provide an improved device for mixing air and regulating the mixture and delivering it to the burners.

As at present illustrated I have shown the lamp as having two mantles, two sets of supply pipes or passages and mixers, and a single containing lamp body or reservoir; but it will be understood that the lamps may be made single by omitting one set of these devices or without altering the character of the invention.

As shown, A is the hollow lamp body or reservoir, which may be made of any suitable shape and having a base, as at B, said device being portable.

2 is a filling pipe or nozzle, which extends into one side of the reservoir, and the interior mouth of the pipe is so located that when the surface of the liquid reaches and covers this end no further addition can be made, and the reservoir having been properly designed it will be known exactly how much

liquid has been placed in it. When thus filled, a pump may be applied to this nozzle and air forced into the reservoir above the surface of the liquid, giving a sufficient pressure to carry the liquid through the conducting-pipe 3, which extends to near the bottom of the reservoir and may have holes or openings, as at 4, through which the liquid can enter the pipe 3.

The pipe 3 extends upward, either singly or with branches, as shown, and has a closure or partition made in it, as shown at 5, and below this partition the pipe 6 leads out to one side, thence upwardly to a point above the level of the chimney-top.

The pipe 3 is extended above the partition at 5, and the upper end carries a burner, as shown at 7, and the usual mantles, as at 8, are fitted to the burner, the whole being inclosed with a chimney, as at 9, the arrangement being, as before stated, either single or double, at pleasure.

Near the upper end of the pipe 6 is a valve 10, by which the flow of liquid may be controlled. The pipe is bent at right angles and extends above the chimney 9, as shown at 11.

If a single pipe be used, this pipe is bent upon itself, as shown in Fig. 2, and this portion of the pipe is preferably filled with wire-gauze rolled into form to fit the interior of the pipe which it fills, and the pipe is afterward bent, as above described, so that this portion of the pipe standing above the lamp-chimney will be subjected to a continual heat therefrom as long as the lamp is lighted.

The air-pressure within the reservoir serves to force the liquid through the pipe at the commencement of the operation and before the parts are warm.

If there are two burners, the pipes after passing the valves 10 may cross each other, as shown in Fig. 1, each pipe discharging through the air-mixer of the burner upon the opposite side; but in a single arrangement, where the pipe returns upon itself, it discharges into the air-mixer upon the same side on which the pipe 6 passes up.

The pipe 11 has upon its end a nozzle, as shown at 12, and this nozzle is inclosed in a cap, as shown at 13, which is screwed or otherwise fitted so that the end of the nozzle

projects into it. A similar cap 14 is fitted to overlap and slide or move inside with relation to the part 13, and the two have holes or openings, as at 15, made through them. The openings in the two are made to coincide by turning the cap 14, or they may be partially or wholly closed or cut off by a further movement of the cap. The cap 14 is screwed upon the pipe 16, the end of which opens into the cap 14 and in line with the hole or jet 17, which is made in the end of the nozzle 12, so that the vapor passing through the jet-opening 17 is blown directly into the end of the pipe 16, and the holes 15 serve to admit air, which is drawn in by the force of the jet and mingled with the vapor in any proportion that may be desired, the proportion, as before stated, being regulated by turning or moving the parts 13 and 14 with relation to each other. It will be understood that the arrangement of these parts 13 and 14 and the inlet-openings may be varied without materially altering the character of the device, the object being to regulate the admission of air to mix with the passing vapor.

The pipe 16 extends downwardly into a cup 18 and to near the bottom, where it discharges. The cup 18 is suitably supported within an outer cup or chamber 19 of sufficiently larger diameter. The cup 18 is open at the top. The cup 19 is closed at the top above the cup 18, and at the bottom it is connected with a pipe 20, through which the mixed vapors are delivered into the upper part and above the partition 5 of the tube 3, and are thus delivered to the burner at 7.

The pipe 16 receiving the jet of hydrocarbon-vapor from the nozzle 12, as previously described, and air being drawn in through the holes 15 the mingled air and hydrocarbon-vapor are discharged through the pipe 16 into the bottom of the cup or receiver 18, and the curvature of the bottom of the cup is such that the mingled air and vapor are more intimately mixed and turned upwardly out of the top of 18, thence passing downwardly between the cup 18 and the outer chamber 19 they are delivered through the pipe 20, as previously described. A suitable screen and burner attachment receive these vapors, and the mantle 8 intensifies the flame, which is the result of the ignition of these vapors. The heat from the burner or burners passing out through the top of the chimney 9 impinges upon the pipe at 11 and heating it causes the liquid which is passing through the pipe to be vaporized, as previously described.

The pipe 6 passes upwardly after leaving the pipe 3 of the lamp bowl or reservoir and extends alongside the outer mixing-chamber 19, with which it lies in contact, and the heated vapor and air raise the temperature of this chamber 19, and thus impart a considerable heat to the pipe 6 where it contacts with this chamber, so that the hydrocarbon passing through the pipe will have its temperature considerably raised before it passes through

the valve at 10 and into the gauze-filled part 11, where the vaporizing is completed. This construction enables me to make a much more efficient apparatus and greatly intensifies the light which is produced thereby.

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

1. The combination in a hydrocarbon-burner of a reservoir containing liquid and air under pressure, a pipe extending to the bottom of the reservoir having openings at the lower end through which the liquid may enter, a branch leading from said pipe upwardly and across above the burner-chimney which is carried by the lamp, said pipe having a filling of wire-gauze whereby the liquid is divided and heated, a discharge-nozzle through which the vapor is delivered, a second pipe located with its end in line to receive the discharge from said nozzle, adjustable inclosing caps connecting the two pipes having openings and means by which said openings are made to coincide or be partially closed to regulate the supply of air which is admitted, a cup into which the second pipe discharges and in which the air and vapor are mixed, an exterior cup inclosing the first-named one having the pipe leading therefrom to the burner.

2. The combination in a hydrocarbon-burner of a reservoir in which liquid and air under pressure are contained, a burner and chimney carried upon said reservoir, a pipe connecting with the bottom of the reservoir having a valve through which a regulated amount of liquid is allowed to pass, said pipe extending above the burner so as to be heated thereby, and containing a body of wire-gauze, a jet-nozzle through which the vapor is discharged from said pipe, a second pipe in line with said nozzle, and means for admitting and regulating the supply of air thereto, a mixer consisting of an exterior chamber closed at the top having a pipe leading from the bottom and connecting with the burner, and an inner cup or chamber supported out of contact with the sides of the outer one, into the bottom of which the pipe receiving the vapor and air discharges whereby the mixing is effected, said inner cup being open at the top so that the mixed products must take a tortuous direction to the burner-pipe.

3. The combination in a hydrocarbon-lamp of a reservoir for liquid and air under pressure, a burner supported thereby, a mixing-chamber including concentric cups supported out of contact with each other, for mixing vapor and air, and a pipe leading from the outer cup to the burner, a pipe connecting with the reservoir through which the liquid is forced, said pipe crossing above the lamp-chimney so as to be heated thereby, and also passing in contact with the mixing-chamber so that the temperature of the liquid is elevated before it reaches the point where it is vaporized.

4. The combination in a hydrocarbon-lamp of a reservoir adapted to contain liquid, and a means for admitting a stated quantity of liquid thereto and air under pressure, a plurality of burners supported upon said reservoir having mantles and a chimney common to both, a pipe extending upwardly from the bottom of the reservoir having openings by which the liquid is admitted thereto, valve-controlled branches extending from said pipe upwardly and crossing above the burner-chimney whereby they are heated and the liquid vaporized, jets through which the vapor is discharged from each pipe, mixing-chambers including concentric cups supported out of contact with each other, pipes

adapted to receive the discharged vapor and lead it into the mixing-chambers, concentric caps one axially movable relative to the other said caps inclosing the jet-nozzles and the mouths of the receiving-pipes, and having perforations to be moved into and out of line and through which air is admitted and delivered with the vapor into the mixing-chambers, and pipes leading from the mixing-chambers to each of the burners.

In witness whereof I have hereunto set my hand.

CHARLES H. DE VOLL.

Witnesses:

S. H. NOURSE,
JESSIE C. BRODIE.