

(No Model.)

E. J. SCHAUER.
INCANDESCENT BURNER.

No. 558,461.

Patented Apr. 14, 1896.

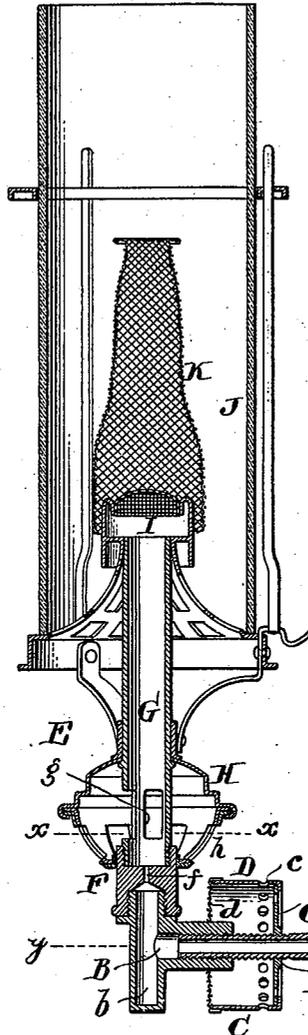


FIG. 1.

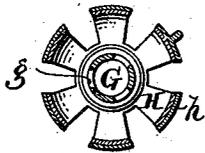


FIG. 3.

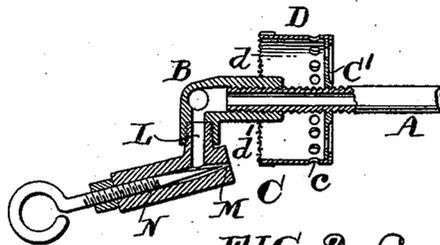


FIG. 2.

Witnesses.

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UNITED STATES PATENT OFFICE.

EDWARD J. SCHAUER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE PENNSYLVANIA GLOBE GAS LIGHT COMPANY, OF PENNSYLVANIA.

INCANDESCENT BURNER.

SPECIFICATION forming part of Letters Patent No. 558,461, dated April 14, 1896.

Application filed November 6, 1895. Serial No. 568,077. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. SCHAUER, of the city of Chicago and county of Cook, in the State of Illinois, have invented an Improvement in Incandescent Burners, of which the following is a specification.

My invention has reference to incandescent burners for hydrocarbon oils; and it consists of certain improvements, all of which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

The object of my invention is to provide a construction of hydrocarbon incandescent burner which shall insure the immediate burning of the vapors generated, thereby avoiding the liability of the burner clogging and the danger of blowing back into the gasolene supply.

My object is further to avoid the deposition of carbon from the vapor and abnormal burning of the flame at the base by overheating, and finally to reduce the height and improve and simplify the general construction of the class of burner heretofore in use upon the market.

My invention will be better understood by reference to the accompanying drawings, in which—

Figure 1 is a vertical section of my improved incandescent hydrocarbon-burner. Fig. 2 is a transverse section of same on line *yy*, and Fig. 3 is a transverse section on line *xx*.

A is a pipe leading from any suitable source of gasolene to the burner and is provided with a valve A', adapted to control the supply of oil to the said burner. The end of the pipe A is screw-threaded, as at D', and upon this is screwed the disk C' of the vaporizer. The periphery of this disk supports the cylinder D, having apertures *c*, and the mouth of said cylinder is closed by a head *d* of wire-gauze. At one side of the gauze cover or head *d* is an aperture *d'*, through which a jet-flame burner M is thrown to heat the parts A C' D with the object of converting the liquid hydrocarbon in pipe A into a vapor. To the

end of the pipe A is screwed an angle casting B, open at the top and upon which is screwed the burner proper, E.

It will be seen that the chamber C, formed by the parts C' D *d*, may be adjusted to or from the burner M to vary the heating effect with a given flame. The chamber C is made annular, so that the flame when it strikes the disk C' is caused to circulate around the central pipe A, and thus inclose it in a highly-heated envelop of products of combustion, thereby requiring only a small heating-surface for the hydrocarbon fluid. The products in the heated state escape through the gauze cap and keep the base of the burner hot without excessive heating, and thereby prevents condensation. In the casting B the vertical passage-way is preferably extended somewhat below the lateral entrance into it from the pipe A, so as to form a pocket *b*, which may receive any solid substance that might tend to clog the orifice of the burner proper and the auxiliary burner M. The auxiliary generator-burner M is arranged on a level with the pipe A and set obliquely thereto, so as to direct the flame toward it and within the combustion-chamber formed by the parts C' D. The burner M connects with the casting B by a flue L, preferably substantially on a level with the pipe A and above the pocket *b*. Upon the top of the casting B is screwed a cap F, having a small vapor-outlet *f*, opening directly in the vertical tube G of the burner proper. This tube G is screwed into the top of the cap F and is formed near the bottom with lateral air-openings *g*.

Surrounding the tube G at the lower part is the air-chamber H, having a slide-valve *h* to control the air supply to the vapor prior to its being burned. Upon the top of the burner-tube G is placed the burner I, over which is hung the mantle K, preferably formed of a porous or reticulated refractory filament adapted to readily become incandescent. It is immaterial what the specific ingredients of this mantle may be. Surrounding the mantle is the chimney J.

It will be seen from the foregoing descrip-

tion that the hydrocarbon oil is subjected to the action of heat, and when vaporized is delivered directly to the burner without requiring it to pass through circuitous passages and valves, thus avoiding the defects hereinbefore specified. Just as soon as the vapor is formed it is delivered into the burner-tube G and mixed with air, forming a highly-combustible gas, which is ultimately burned at the burner I with more air and emits a flame devoid of smoke and excellently adapted for rendering the mantle incandescent.

It will be observed that the generator is placed at one side of the burner structure E, and while reducing the height of the structure insures the flame from the auxiliary burner M being directed away from the burner E, a feature of the utmost importance, as it is highly advantageous not to permit overheating of the burner, because of the danger of producing combustion at the base of the burner instead of at its top. In this structure the generator for vaporizing the hydrocarbon is to one side, and hence the rising of heated products can never overheat the burner proper, and at the same time the generator is kept very close to the delivery part of the burner, so as to avoid the danger of condensation and excessive cooling. Again, it is evident that by the disposition of the generator shown it may be highly heated to insure rapid vaporization without danger to a too prolonged heating of the vapor. The extent of the heat in the generator may be regulated by the valve N of the burner M, and the adjustment of the parts C' D upon the pipe A to or from the burner.

While I prefer the construction shown, I do not confine myself to the minor details of construction thereof, as they may be modified in various ways without departing from my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In an incandescent burner, the combination of the main burner having a mantle or body of incandescing refractory material, a casting at the base having an angular flue or passage-way closed to the atmosphere, a pipe leading from a source of liquid hydrocarbon and opening into the angular flue below the burner, a generator-chamber encircling and supported by the said pipe, and an auxiliary burner opening from the angular flue or passage-way and adapted to convey hydrocarbon vapor unmixed with air from the angular flue or passage-way and direct a flame of hydrocarbon vapor into the generator-chamber, whereby the hydrocarbon liquid is vaporized and instantly delivered to the burner and excessive heat to the main burner avoided.

2. In an incandescent burner, the combination of the main burner having a mantle or body of incandescing refractory material, a casting at the base having an angular flue or

passage-way closed to the atmosphere, a horizontal pipe leading from a source of liquid hydrocarbon and opening into the angular flue below the burner, a generator-chamber encircling and supported by the said pipe and adjustable to or from the auxiliary burner, and an auxiliary burner opening from the angular flue or passage-way and adapted to direct a flame of hydrocarbon vapor into the generator-chamber, whereby the hydrocarbon liquid is vaporized and instantly delivered to the burner and excessive heat to the main burner avoided.

3. In an incandescent burner, the combination of the main burner having a mantle or body of incandescing refractory material, a casting at the base having an angular flue or passage-way closed to the atmosphere, a pipe leading from a source of liquid hydrocarbon and opening into the angular flue below the burner, a generator-chamber encircling and supported by the said pipe, and an auxiliary burner opening from the angular flue or passage-way and arranged at an angle to the pipe so as to be adapted to direct a flame of hydrocarbon vapor into the generator-chamber and upon the liquid-pipe, whereby the hydrocarbon liquid is vaporized and instantly delivered to the burner and excessive heat to the main burner avoided.

4. In a hydrocarbon-burner, the combination of the pipe A, a casting B having an angular passage-way opening from the end of the pipe A and extending upward and terminating in a contracted discharge-orifice, a generator-chamber C supported upon the pipe A and consisting of a disk C' annular case D and gauze cap or cover *d*, the auxiliary burner opening from the casting B and adapted to direct its flame into the chamber C, and a main burner arranged above the contracted opening of the angular passage-way.

5. In a hydrocarbon-burner, the combination of the pipe A screw-threaded on its end, a valve in said pipe, a casting B having an angular passage-way opening from the end of the pipe A and extending upward and terminating in a contracted discharge-orifice, a generator-chamber C supported upon the screw-threaded end of pipe A so as to be adjustable and consisting of a disk C' annular case D and gauze cap or cover *d*, the auxiliary burner opening from the casting B and adapted to direct its flame into the chamber C, and a main burner arranged above the contracted opening of the angular passage-way.

6. In an incandescent burner, the combination of a right-angled passage-way the horizontal part leading from a source of liquid hydrocarbon and the vertical part directed upward, a main burner arranged above the vertical part of the angular passage-way for receiving and burning the hydrocarbon vapor, a generator-chamber inclosing a portion of the horizontal part of the angular passage-

way to one side of the upright portion thereof
and main burner, an auxiliary burner open-
ing from the right-angled passage-way for de-
livering a flame of hydrocarbon vapor into
5 the generator-chamber, and an incandescing
body of refractory material above the main
burner, whereby the liquid hydrocarbon is
vaporized and then instantly burned in the

presence of the refractory material and ex-
cessive heating of the main burner avoided. 10
In testimony of which invention I hereunto
set my hand.

EDWARD J. SCHAUER.

Witnesses:

E. W. DAKIN,
W. S. GREAR.