

No. 768,352.

PATENTED AUG. 23, 1904.

P. ULMANN.
HYDROCARBON BURNER.
APPLICATION FILED SEPT. 28, 1901.

NO MODEL.

Fig. 1.

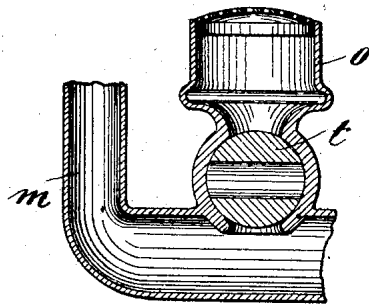
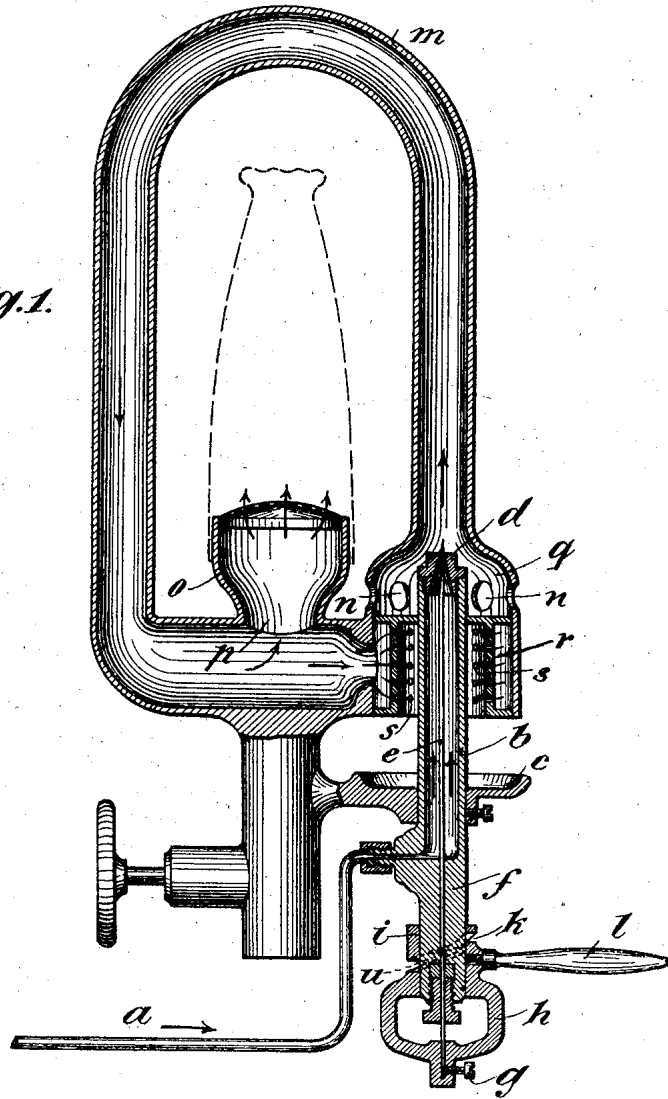


Fig. 2.

Witnesses:

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UNITED STATES PATENT OFFICE.

PHILIPP ULMANN, OF ZURICH, SWITZERLAND.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 768,352, dated August 23, 1904.

Application filed September 28, 1901. Serial No. 76,941. (No model.)

To all whom it may concern:

Be it known that I, PHILIPP ULMANN, a citizen of the Republic of Switzerland, residing at Zurich, in Switzerland, have invented new and useful Improvements in Hydrocarbon-Burners, of which the following is a specification.

The present invention has reference to hydrocarbon-burners, and relates more especially to burners in which a liquid hydrocarbon is vaporized and burned; and its object is to provide a burner of this kind in which the initial vaporization of the hydrocarbon is effected by means of an auxiliary open flame until constant vaporization is established, when the auxiliary flame extinguishes and the generated vapors are used in part to sustain constant vaporization.

In order to make my invention more readily understood, I have illustrated it on the accompanying sheet of drawings, in which—

Figure 1 represents a burner according to my invention in vertical section. Fig. 2 shows a sectional elevation of a modified detail.

Referring to the drawings, *a* is the feed or supply pipe for the liquid hydrocarbon, opening into the vaporizing-tube *b*, the lower part of which is surrounded by a dished disk *c*. The upper end of this tube is closed by a nozzle *d*, provided with a central opening of relatively small diameter. Within the vaporizing-tube is centrally arranged a regulating-needle *e*, gas-tightly extending through the cylindrical extension-piece *f* and secured in the stirrup-shaped member *h* by means of the set-screw *g*. The upper end of the member *h* runs out into a sleeve *i*, provided with a spiral slot *k*, extending about half-way around, in which is guided the pin *u*, secured upon the extension-piece *f*. By means of the handle *l* the member *h* can be oscillated the length of the spiral slot *k*, whereby the regulating-needle is lifted or lowered and the nozzle-opening is correspondingly partly or totally closed.

The upper part of the vaporizing-tube *b* is surrounded by the bell-shaped extension *q* of a trebly-bent tube *m*. The extension *q*, which is closed by the bottom ring *w*, is provided

with air-inlets *n*. The tube *m* is bent across the main burner-head *o* and communicates with the latter by the port *p*. Below the bottom *u* is arranged an annular chamber *r* at some distance from and concentrically with the vaporizing-tube. The inner wall of this chamber *r* is provided with a plurality of fine openings *s*. By means of the port *v* the discharge end of the bent tube *m* communicates with the annular chamber *r*. I may also see fit to interpose a valve *t* between the burner-head *o* and the discharge end of the tube *m*, as shown is Fig. 2.

The mode of working of the described apparatus is the following: By turning the handle *l* the regulating-needle *e* is lowered within the nozzle *d*, permitting liquid hydrocarbon to enter through tube *a* into the vaporizing-tube *b* from a supply source. (Not shown in the drawings.) Into the dished disk *c* alcohol or coal-oil is poured and ignited, with the effect that the vaporizing-tube is heated and part of the inclosed hydrocarbon is vaporized. This gas issues from the nozzle *d* into the tube *m* and entrains atmospheric air through the openings *n*. Air and vapors mix within the tube *m*, and the largest part of the mixture passes through the port *p* into the burner-head *o*, where it is ignited in any suitable manner. The rest passes through the port *v* into the chamber *r* and escapes thereout through the openings *s*, when it is ignited by the auxiliary flame burning in the dish *c*. The flame of the main burner superheats the mixture of vapors and air passing through the tube *m*, so that the mixture enters the burner-head in a highly-inflammable state. The constant vaporization is sustained after the auxiliary flame has gone out by the flames issuing from the fine openings *s* in chamber *r*. By turning the handle *l* back again more or less the flame of the main burner can be regulated, and by wholly closing the nozzle-opening by means of the needle further vaporization is suspended and the lamp extinguished.

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

1. A hydrocarbon-burner comprising a vapor-feed tube having substantially the form of an inverted U, a horizontal tubular extension

from the end of one of the tube-legs, a burner on said extension, a mixing-chamber at the end of the other tube-leg, a heating-chamber below the mixing-chamber, a vaporizing-tube
 5 extending through said heating-chamber into the mixing-chamber and means for supplying vapor to said heating-chamber from the vapor-feed tube, substantially as set forth.

2. A hydrocarbon-burner comprising a vapor-feed tube having substantially the form of an inverted **U**, a horizontal tubular extension from the end of one of the tube-legs, a burner on said extension, a mixing-chamber at the end of the other tube-leg, a vaporizing-tube
 15 extending into said chamber, a vapor-burner surrounding said vaporizing-tube below the mixing-chamber said burner in communication with the horizontal extension of the vapor-feed tube, for the purpose set forth.

3. A hydrocarbon-burner comprising a vapor-feed tube having substantially the form of an inverted **U**, a horizontal tubular extension from the end of one of the legs of said tube, a burner on said extension about midway between the legs of the tube, a mixing-chamber
 25 at the end of the other leg, a vaporizing-tube extending into the mixing-chamber, a vapor-burner surrounding said tube below said chamber, said burner in communication with the aforesaid horizontal extension, for the purpose set forth.

4. A hydrocarbon-burner comprising a vapor-feed tube having the form of an inverted **U**, an enlarged horizontal extension provided
 35 with a burner at the end of one of the legs of said tube, a mixing-chamber at the end of the other tube-leg, and a heating-chamber below said mixing-chamber and in communication with the aforesaid horizontal extension; in
 40 combination with a vaporizing-tube extending

through the heating-chamber into the mixing-chamber and a tubular burner in said heating-chamber concentric with the vaporizing-tube, substantially as set forth.

5. A hydrocarbon-burner comprising a vapor-feed tube in the form of an inverted **U**
 45 having an enlarged horizontal extension at the end of one of its legs and enlarged vertical extension at the end of the other leg, the last-named extension provided in its upper part
 50 with air-ports, and below the latter with a combustion-chamber in communication with the aforesaid horizontal extension; in combination with a vaporizing-tube extending
 55 through said combustion-chamber into the upper part of said vertical extension, a vapor-jet nozzle at the upper end of said vaporizing-tube, and means to supply liquid fuel to the
 latter, for the purpose set forth.

6. A hydrocarbon-burner comprising a vapor-feed tube substantially of the form of an inverted **U** having at one end a horizontal burner extension and at the other end a mixing-chamber, a support for said tube and a
 60 dish for liquid fuel projecting from said support; in combination with a vaporizing-tube
 65 extending through said dish into the mixing-chamber, a heater for said vaporizing-tube between the dish and mixing-chamber and means for supplying vapor from the vapor-
 70 feed tube to said heater, for the purpose set forth.

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

PHILIPP ULMANN.

Witnesses:

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 A. LIEBERKNECHT.