

(No Model.)

G. BOTSFORD.

HYDROCARBON OIL VAPORIZER AND BURNER.

No. 470,138.

Patented Mar. 1, 1892.

Fig. 1

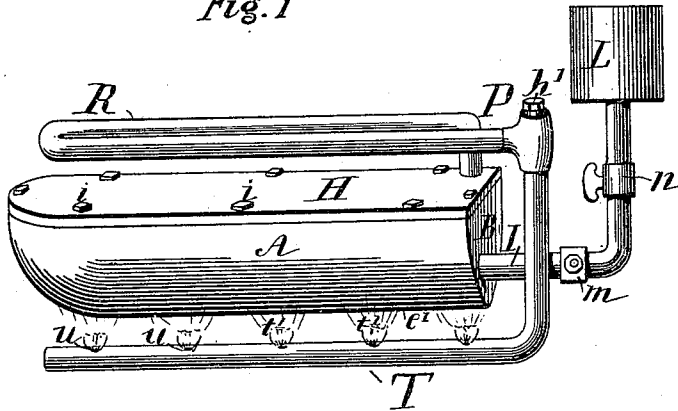


Fig. 2

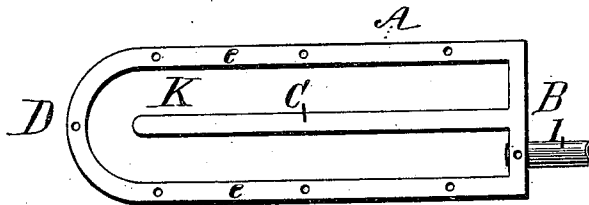
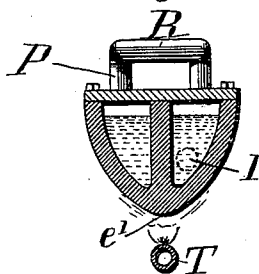


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE BOTSFORD, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO EDWIN J. TOOF, OF SAME PLACE.

HYDROCARBON-OIL VAPORIZER AND BURNER.

SPECIFICATION forming part of Letters Patent No. 470,138, dated March 1, 1892.

Application filed June 24, 1891. Serial No. 397,393. (No model.)

To all whom it may concern:

Be it known that I, GEORGE BOTSFORD, a citizen of the United States, residing at New Haven, in the town and county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Hydrocarbon-Oil Vaporizers and Burners, of which the following is a specification.

My invention relates to hydrocarbon-oil vaporizers and burners, and is an improvement on an invention for which Letters Patent of the United States No. 431,332 were granted to me July 1, 1890.

The object of the invention is to provide an increased and more efficient heating-surface in the vaporizing-retort and to insure more perfect superheating and purification of the vapor, while at the same time simplifying the apparatus and rendering it more compact and reducing the cost of its manufacture.

The improvement consists in the novel construction of the retort and arrangement of the superheating-coil, as hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a perspective view of my improved vaporizer and burner, and Fig. 2 is a plan view of the vaporizing-retort with the cover removed to show the interior. Fig. 3 is a vertical cross-section through the retort, showing an end view of the superheating-coil.

Referring to the drawings, A designates the vaporizing-retort, which is of trough shape, having its lower or outer surface of semicircular or other suitable form in cross-section, the preferable shape being that of the inverted pointed arch shown in Fig. 3. From its square end B a longitudinal partition C is extended centrally along the deepest part of the retort nearly to its opposite rounded end D, leaving a space between the end of the partition and the wall of the end D corresponding to the space between the partition and either of the sides *e* of the retort. This construction provides a U-shaped chamber or passage K for containing the oil to be vaporized. A flat cover H is secured upon the retort by suitable cap-screws *i*, which are screwed into the sides *e* and hold the cover tightly in

contact with said sides and the central partition C. Into the end of the retort is screwed a pipe I, opening into one end of the U-shaped chamber K and communicating with the tank or reservoir L for containing the oil-supply. Suitable check-valve *m* for preventing the oil from blowing back out of the retort and a stop-cock *n* for regulating the flow of oil to the retort are provided in said pipe I. A vapor-pipe P is screwed into the cover H, opening into the U-shaped chamber at the end opposite from that at which the oil enters. The said pipe is bent over and conducted horizontally above the cover, parallel therewith, to the other end of the retort, and back in a return-bend R, which therefore is located immediately over the U-shaped chamber and in the most advantageous position for receiving the heat that escapes through the cover from the interior of the retort. From the end of the return-bend the pipe is conducted downward, and a horizontal branch T is arranged lengthwise centrally under the retort, parallel therewith, and provided with perforations *u* in its upper side for the escape of the vapor in the flame-jets *t'*, adapted to heat the retort and vaporize the oil contained therein.

In operation, the retort being nearly filled with oil flowing from the tank L, it is first heated in any suitable manner, and as the oil becomes vaporized the vapor escapes through the pipe R and is superheated and purified therein, and thence escaping through the perforations *u* may be ignited and burned in flame-jets *i*, thus heating the retort and boiling the oil therein and continuously vaporizing it. If desired, the pipe may be tapped at plug *h'* to take off vapor for any purpose other than heating the retort. To clear the retort-chamber of the carbon deposit that always collects therein, the cover H may be readily removed, the arrangement of the pipes providing free access to the cap-screws *i*. The flame-jets *t'* are projected upon the ridge or lowest point *e'* of the retort, thereby being divided and directed upward along the convex inclined surfaces thereof, whereby the maximum heating effect is obtained.

The construction of the device renders it highly efficient and very light, compact, cheap,

simple, and adapted to be easily taken apart for cleaning.

I claim as my invention—

5 The combination of the trough-shaped retort having the removable cover and the inclined heating-surfaces on its lower side and provided with a central lengthwise partition forming a U-shaped chamber therein, the supply-pipe opening into one end of said U-
10 shaped chamber and adapted for connection with a supply-tank, and the superheating-pipe P, connected to said cover, communicating

with the opposite end of the U-shaped chamber, and arranged in a return-bend above the cover, parallel therewith, corresponding to and 15 immediately over said chamber, and terminating in a straight section arranged longitudinally and centrally beneath the retort and having the perforations *u*, for the purpose specified.

GEORGE BOTSFORD.

Witnesses:

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