

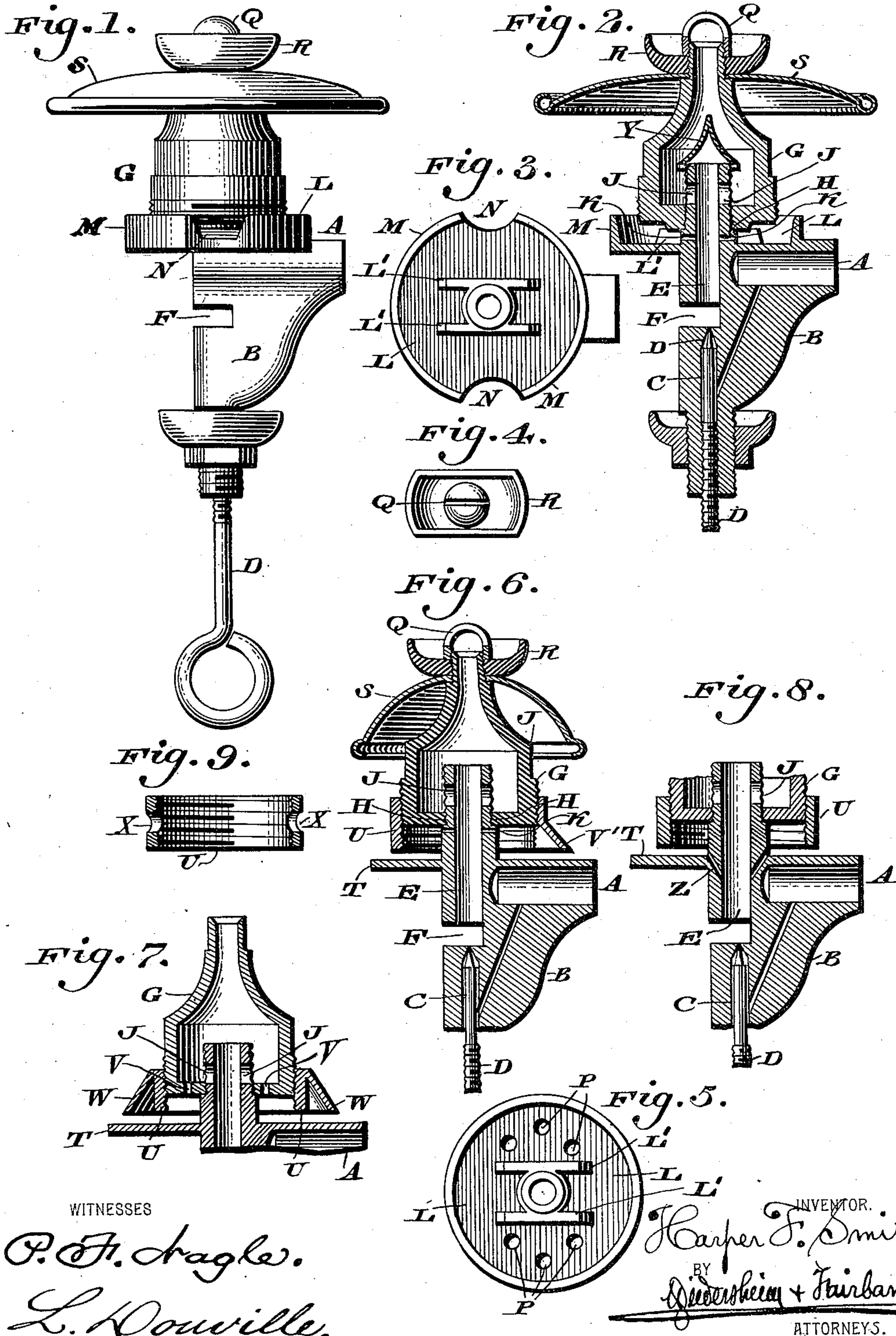
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H. F. SMITH.
VAPOR BURNER.

(Application filed July 19, 1897.)

(No Model.)



WITNESSES

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VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 610,334, dated September 6, 1898.

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To all whom it may concern:

Be it known that I, HARPER F. SMITH, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Vapor-Burners, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of improvements in a vapor-burner embodying a reservoir for the resultant vapor and novel means for effectively heating the necessary parts to effect the volatilization of the oil or hydrocarbon fluid, the parts embracing the invention being hereinafter described, and pointed out in the claims that follow the specification.

Figure 1 represents a side elevation of a vapor-burner embodying my invention. Fig. 2 represents a vertical section thereof. Figs. 3 and 4 represent top or plan views of detached portions thereof. Fig. 5 represents a top or plan view of a modification of the part shown in Fig. 3. Figs. 6, 7, and 8 represent vertical sections of other forms of my invention. Fig. 9 represents a vertical section of a detached portion.

Similar letters of reference indicate corresponding parts in the figures.

Referring to the drawings, A designates the supply-pipe of a vapor-burner, connected with which is the vapor-tube B.

C designates the valve-chamber, which is in communication with said tube B and contains the pin-valve D, above which is the gas-tube E, into which gas is admitted from the chamber C and into which air is admitted through the opening or inlet F between the said tube and chamber.

G designates a reservoir which is connected with the tube E and rises therefrom, the bottom of said reservoir abutting against the shoulder H on said tube E. In the side of the tube above the bottom of the reservoir are the outlet-ports J, which direct the gas from said tube into said reservoir. In the tube E below the bottom of the reservoir are the ports K for the escape of some of the gas from the tube E beneath said reservoir.

Surrounding the bottom of the reservoir and connected with the tube E is the sleeve L, a portion of which conjoins the upper wall of the supply-pipe A. In the sides of the rim

M are passages N for the admission of air into the sleeve L; but, if desired, said rim may be continuous, as in Fig. 5, and openings P formed in the base of said sleeve for the same purpose as said passage N.

The reservoir G is provided with the tip Q, below which is the collar R for the flame of the burner, said collar being depressed and having flattened sides in the direction parallel with the slit of said tip, so as to regulate the spread of the flame of the burner.

Below the collar R or directly below the tip when said collar is not employed is the hood S, which is of inverted dishing form and serves to prevent drafts from reaching the flame or disturbing the same.

It will be seen that the burner is primarily heated, as usual in such cases, so as to cause sufficient volatilization of the oil or hydrocarbon fluid to start the burner, which being accomplished it will be noticed that said oil or fluid enters the tube A, which is heated by the burning gas in the sleeve L, the vapor then passing through the tube B into the valve-chamber and entering the tube E, where it receives a volume of air, the resultant gas then passing through said tube E, and being directed through the ports J into the reservoir G is burned at the tip Q. Some of the gas in the tube escapes through the ports K below said reservoir and enters the sleeve L, and being ignited heats said sleeve and portions adjacent thereto, while also highly heating the reservoir G and causing a more perfect volatilization of the gas, the latter thus being highly inflammable and possessing fine illuminating qualities.

In Fig. 6 I show in lieu of the sleeve L of the previous figures the plate T on the tube E below the reservoir G and the rim U, which is interiorly screw-threaded and engages with screw-threads on the side of said reservoir G, thus retaining said rim in position and adapting it to be vertically adjustable. The portion V' of said rim which is located above the supply-pipe A extends obliquely downwardly and outwardly or is flaring or directed against said pipe A, so as to heat the same for primarily vaporizing and volatilizing the oil or fluid supplied to said pipe A.

In Fig. 7 the bottom of the reservoir G is provided with ports V, and the rim U, which

is screwed to the reservoir G, has an oblique or conical deflector W encircling said rim U, it being evident that the gas employed for heating the pipe A leaves the reservoir G and passes through the ports V into the space within the rim U, and while heating the base of the reservoir also heats the pipe A and the plate T, the flame also passing around the deflector W and reaching the side of the reservoir G, against which it impinges, thus effectively heating said reservoir.

In Figs. 6, 7, and 8 the plate T and rim U serve the purpose of sleeve L and flange M, Figs. 1 and 2; but in Fig. 7 gas is admitted into said rim U indirectly from the pipe E through the ports V in the base of the reservoir G and the ports J in the pipe E, while in the other figures the gas for the same purpose directly leaves the pipe E through the ports K, Figs. 1, 2, and 6, or the ports Z, Fig. 8, without producing different results.

In Fig. 9 I show the rim U with openings or ports X in its side for admitting air into said rim, the same uniting with the gas that enters said rim and increasing the heating qualities thereof.

In Fig. 2 there is connected with the upper end of the tube E, within the reservoir G, the cone-shaped deflector Y, the same serving to cause a convergence of the streams of gas entering the reservoir G through the ports J of the tube E.

In Fig. 3 the gas-discharge ports Z extend obliquely instead of horizontally or vertically, as in the other figures.

In Fig. 7 the conical or flaring deflector W also acts as a guard similar to the hood S for preventing drafts from reaching the flame.

By the side of the ports K are the upright plates L', which act as guards or protectors for the flame from said ports, preventing improper spreading thereof and extinguishing of the same by blasts or drafts of air.

The dishing collar R is thicker around the tip Q than at its extremity, by which provision said collar acts as a superheater of the gas which is impinged against the same.

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

1. A vapor-burner having a supply-pipe with a vapor-tube, a valve-chamber with a pin-valve, a gas-tube directly over said valve-chamber with an air-inlet at its lower end, a reservoir surrounding said gas-tube, a sleeve surrounding the base of said reservoir, and a tip on said reservoir, said gas-tube having ports in its sides leading into said reservoir and other ports leading into the space within said sleeve below said reservoir.

2. A vapor-burner having a supply-pipe with a vapor-tube, a communicating valve-

chamber with an adjustable valve therein, a gas-tube directly over the outlet of said valve-chamber and provided with an air-inlet at its lower end, a reservoir surrounding said gas-tube, and provided with a tip, a sleeve surrounding the base of said reservoir forming a chamber having a bottom adjacent said supply-pipe, and a collar below said tip, said gas-tube having ports communicating respectively with said reservoir and with the chamber within said sleeve.

3. In a vapor-burner, a vapor-tube with a supply-pipe and a valve-chamber with a valve, a gas-tube with an air-inlet at its lower end, a reservoir into which said tube discharges, and a sleeve surrounding the base of said reservoir, said gas-tube having a closed top and provided with ports below the base of said reservoir leading into the space within said sleeve.

4. A vapor-burner having a vapor-tube with an inlet-pipe and a valve-chamber with a valve, a gas-tube in communication with the outlet of said valve-chamber, a gas-reservoir surrounding and in communication with said gas-tube by ports in the sides of the latter, a sleeve surrounding the base of said reservoir and having openings in its rim, and upright plates by the side of said gas-tube.

5. A gas-generator with a gas-tube having small ports therein, a protecting plate or disk attached to and surrounding said tube, a rim attached to said plate or disk, upright plates on said plate or disk, a supply-pipe, a vapor-tube, an air-chamber and a pin-valve also attached in combination therewith.

6. In a gas-burner, a supply-pipe, a vapor-tube and a valve, a gas-tube, a reservoir, a sleeve surrounding the base of said reservoir, said gas-tube having a closed top and provided with ports below the same leading into said reservoir, whereby gas enters the latter, said sleeve being also in communication with said tube, whereby it may also receive gas from said tube.

7. A gas-burner, a gas-pipe, a reservoir surrounding the same, and having a tip above said pipe, ports in said pipe forming a communication between said reservoir and pipe, and a converging deflector closing the top of said pipe within said reservoir.

8. A gas-pipe, a reservoir surrounding the same, and in communication therewith, a sleeve around the base also in communication with said pipe, a hood on the upper part of said reservoir, a tip on the latter and a collar on said tip above said hood.

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Witnesses:

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