

WILLIAM H. SMITH & LOUIS FISCHER.

Vapor-Burner.

No. 126,420.

Patented May 7, 1872.

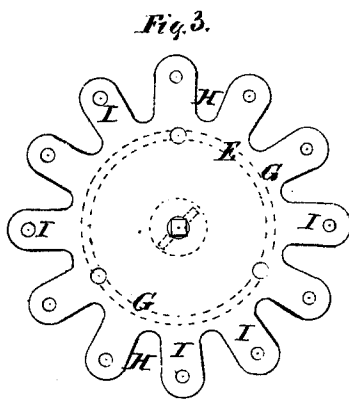
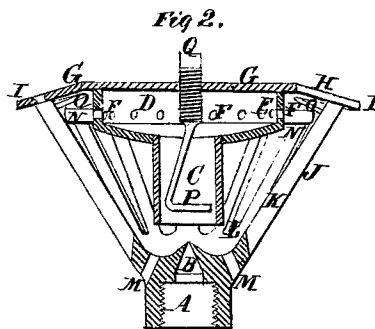
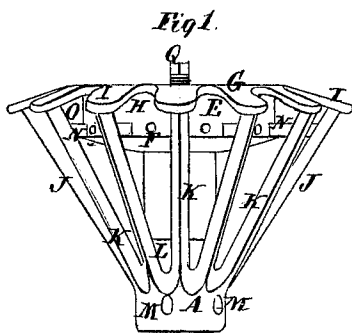
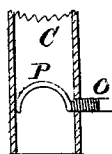


Fig 4.



Witnesses
L. Ruisinger.
H. Boekler.

Inventor.
W. Smith.
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UNITED STATES PATENT OFFICE.

WILLARD H. SMITH AND LOUIS FISCHER, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN VAPOR-BURNERS.

Specification forming part of Letters Patent No. 126,420, dated May 7, 1872.

SPECIFICATION.

Be it known that we, WILLARD H. SMITH and LOUIS FISCHER, both of the city of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Vapor-Burners for streets and open air, of which the following is a specification, reference being had to the accompanying drawing and letters of reference marked thereon.

Nature and Object of the Invention.

This invention relates to circular vapor-burners, which have a series of radial jets, and are used more particularly for streets or in open air; and it consists, first, in providing the burner with a series of guard-bars, or a perforated shell with certain air-passages around the entrance of its air-mixing tube, and between and around its jets, by means of which the proper currents to the mixing-tube and around and to the jets are assisted and encouraged and are protected from wind or side currents disturbing its successful operation in open air; and it consists, secondly, in providing the mixing-chamber with a regulating and dividing and deflecting screw or wire, the position of which can be changed in manner to be capable of being set to always meet and strike about centrally the central part or main current of the vapor in the mixing-tube, and thereby cause the effective mixture of the vapor with the air in every burner with facility.

In the annexed drawing, Figure 1 represents a side elevation of the burner constructed according to our improvements; Fig. 2, a vertical central section; Fig. 3, a top view of the same; Fig. 4, a modification of the regulating wire.

Similar letters of reference indicate corresponding parts in the several figures.

General Description.

A represents the socket, in which is formed the valve-seat B, through which the vapor of the oil passes into the mixing-tube C; and the mixing-tube C terminates in the mixing-chamber D above it, which is of the usual circular form, and has through its rim E a series of jet-holes, F F, and its top is covered by means of a large overlapping plate, G, which has over each jet-hole a space, H, cut out on its outer

part to allow the flame of the jet to pass through between its so-formed projecting lips I I left remaining of said plate G. A great heating surface is obtained by means of said lips I I, and the flame is sufficiently encouraged by excess of heat of the burner so as not to be carried away by the wind, and allowing the burner to be cooled. And the said lips I are combined with the socket A by means of an exterior shell, J, which is perforated or slotted in front of each jet-hole to permit also the flame of the jet to pass through. The shape of these perforations and of the portions K solidly remaining between them may be varied. We prefer, however, to shape said portions K prong or bar-like shaped, as shown, and terminate said perforations immediately below the bottom end of the mixing-tube C, and in any way above the valve-seat B, so that the air-supply space L, between the seat B and bottom end of the tube C, through which the vapor passes from the valve, is guarded and protected against wind, and that the stream of vapor may not be blown outside of the mixing-tube, by means of which the flames of the burner may at once be extinguished, which frequently occurs with the ordinary burners. By means of the outer shell and its bars the current of the wind is so cut up and deflected that the current of the vapor is not interfered with from the wind. In order to supply said vapor current with currents of air passing in proper direction, we employ separate passages M M, equally distributed around the socket A, and which are drilled to meet centrally in the mixing-tube with the vapor current. The general outside form of the shell J is that of an inverted cone to deflect horizontal side currents of air and change their direction to move up or down, inclined or angular, wherever meeting with the solid portions K of said shell. N N are studs, which are formed on the rim E centrally between its jet-holes. They project radially and nearly meet with the inner part of the solid portions K, but do not extend sufficiently upward to meet with the plate G or lips I and leave a space or groove, O, between them to permit a current of air to pass around the rim E between the jet-holes and plate G, which groove serves to supply the flames with air, and also to make communication between them and

ignite such flames that may have been extinguished by the wind. By means of the portions K, the studs N, and lips I, the flames of the jets are very effectively protected from being extinguished by wind, and are still supplied with currents of air in advantageous direction to encourage combustion. Now, in order to provide the burner with a dividing and deflecting screw or wire, which can be adjusted to always meet the main current of the vapor in the mixing-tube about centrally, and thereby cause the effective mixture of the vapor with the air and prevent the flame from smoking and partly consuming the vapors, we employ the bent wire P, which forms part or is attached to the arbor or screw Q, and is bent in right angular direction with the arbor crank-like, or in any manner so as to change its position when turned on its arbor with and to bisect the area of the mixing-tube more or less centrally, and being capable of being set to meet and divide the main current of the vapor wherever passing through said area. The burner shown in Figs. 1, 2, and 3 has the arbor arranged vertically, and its wire P is bent horizontally across the tube C. By means of the screw-thread on its arbor the wire P can be raised or lowered suitably to meet the vapor current at, before, or after meeting the air-currents, and can be turned and adjusted to meet the main vapor-current passing more or less centrally in the mixing-tube, so that said vapor current can be effectively divided and caused to mingle successfully with the air-currents. Instead of arranging said arbor vertically, it may be arranged inclined or entirely horizontally, as shown in Fig. 4. In such case the wire P is bent in both directions—partly in one partly in the other direction—or may be curved from one to the other, as shown, so that by turning the same the similar effect above mentioned to be capable of by adjustment upon the vapor current is obtained. By these means the difficulty of mingling the vapor with the air successfully, which is common

in burners of this kind, is effectually avoided. By means of the passages M M the vapor-current is considerably protected from being misdirected to pass sidewise, and any waste oil, collecting by condensation or otherwise around the top of the valve-seat B, can pass off through said passages M M.

Claims.

We claim as our invention—

1. The projecting lips I I, when arranged between and above the jet-holes F F, for protecting the flames and for increasing the heat of the burner, substantially as herein mentioned.

2. The adjustable wire P, combined with the mixing-tube C, when provided with a bend capable of being adjusted with the mixing-tube of the burner, so as to strike the main current of the vapor, substantially as herein shown and set forth.

3. The perforated shell J, with portions K on the sides of the flames, in combination with the lips I I and socket A, and jet-holes F F, substantially as and for the purpose herein described.

4. The arrangement of the chamber D, the jet-holes F F, and studs N N with the plate G and groove O, substantially as and for the purpose mentioned.

5. The arrangement of the socket A and mixing-tube C with the space L, the passages M M, and perforations and solid portions of the shell J, plate G, and lips I, substantially as and for the purpose to protect the vapor-current and the flames, and to direct air-currents into the mixing-chamber C.

In witness whereof we hereunto set our hands this 6th day of December, A. D. 1871.

W. H. SMITH.
L. FISCHER.

Witnesses:

L. RUISINGER,
R. BOEKLEN.