C. E. SMITH.

Vapor Burner.

No. 108,528. Patented Oct. 18, 1870.

Fig. 1

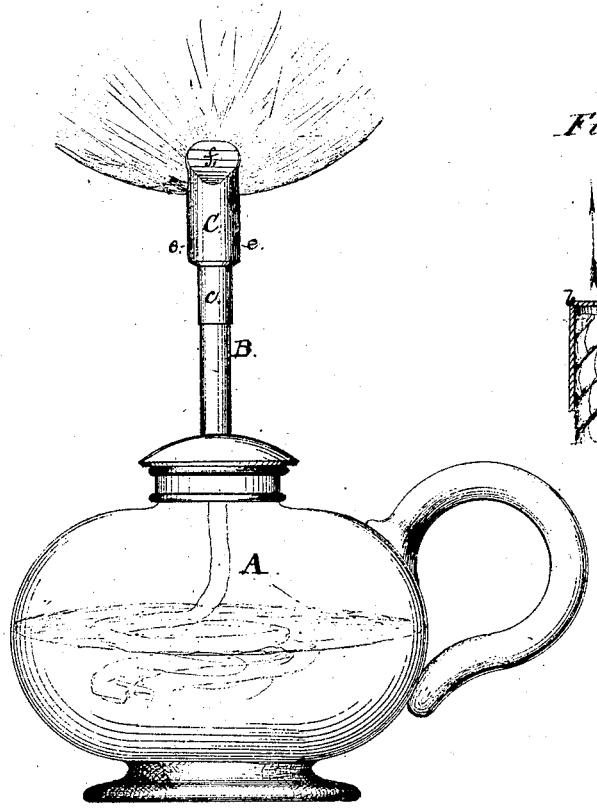


Fig. 2

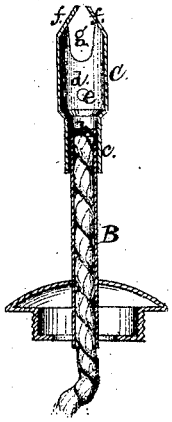
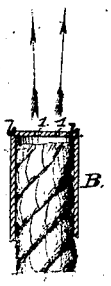


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES E. SMITH, OF COLUMBUS, OHIO.

IMPROVEMENT IN VAPOR-BURNERS.

Specification forming part of Letters Patent No. **108,528**, dated October 18, 1870.

To all whom it may concern:

Be it known that I, CHARLES E. SMITH, of Columbus, in the county of Franklin and State of Ohio, have invented certain Improvements in Vapor-Burners; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

My improvements relate to vapor-burners in which the oil or fluid is contained in a vessel or chamber, or in any ordinary house-lamp, below the burner; and it consists in peculiarities of construction of the wick-tube and of the tip which surmounts such tube.

Figure 1 is a view of my invention applied to a glass lamp, the wick in place and lamp burning; Fig. 2, a vertical section of the burner-tube and its tip, and also of the screw-cap of a lamp affixed to the tube; Fig. 3, an enlarged view of the top of the wick-tube, showing the orifices for emission of the gas.

A is a glass or metal vessel of any ordinary construction, such as is used for common oil-lamps.

B is a wick-tube adapted to be screwed or fastened to the vessel in any well-known manner; but instead of being open at top to allow the wick to pass through, as in old styles of lamps in which the wick is ignited, the top is closed, as seen at *b*, so that the wick is confined therein, and is never designed to be set on fire. In the top of this tube are made two very minute orifices, 1 1, for the emission of the vapor generated from the fluid. These openings are at their upper or oulet side almost invisible, and they are preferably made slightly divergent, so that the streams of gas discharged therefrom shall slightly diverge, from each other. Instead of two, one opening may be employed, or several.

C is the tip, the lower part, *c*, of which is tubular, and of a diameter sufficient to go snugly over the top of the wick-tube, so that it will hold its position and yet allow of being readily removed for the purpose of cleaning, if need be, the several parts, or for any other purpose, a proper stop or ridge within the tip-tube preventing the wick-tube from entering too far within the tip-tube. The portion of the tip marked *d*, and which is above the orifices 1 1, is made of somewhat larger diameter than its lower portion and provided, as seen at *e e*, with air or oxygen holes for the admission of atmospheric air from without, to supply oxygen to commingle with gas as the latter is generated and discharged from the orifices 1 1.

The part *d* is provided, as seen at *f f*, with two converging walls, which are planes inclined at equal angles—say about forty-five degrees—to the sides of the tube, of which sides they form a continuous part; but these parts *f f* do not meet, a narrow straight space being left between them for the illuminating-flame. A space, *g*, is cut away on opposite sides of the tip, as seen. This space is made wide, to give free outward passage to the flame. The vapor emitted from the opening or openings 1 strikes or comes in contact with the inner faces of the inclined flat sides *f f* of the tip, and while all that is needed to feed the central portion of the flame is free to rise in a thin sheet through the narrow space or slit at the top, yet the bulk of the vapor, by reason of its striking against the inner inclined surfaces, is arrested and prevented from passing out at this top slit, and is deflected by such inclines, and seeks vent elsewhere. The larger volume so seeking vent is forced out laterally, and needs larger outlets at the side than the thin sheet required at the top; and to compel these side outlets to deliver properly at their lowest parts, and thus produce the bat-wing flame required, these outlets are made of gradually-increasing width from the top slit downward, thus securing a greater lateral exit at the bottom of the outlet. This, so far as I am aware, is the only instance in which this desirable and popular bat-wing flame has ever been produced in a self-generating vapor-burner.

The adaptation of my peculiar burner and tip combined to an ordinary hand-lamp renders it especially valuable for household purposes, as yielding a brilliant flame, and at the same time having the fluid all beneath the flame, as in ordinary oil-lamps, thus conducing to safety and preventing all possibility of overflow or dangers arising therefrom.

It will be understood that that portion of the wick not confined within the tube remains within the body of the reservoir or lamp immersed in the fluid, and that the fluid is raised into the tube by capillary attraction.

I claim—

1. A vapor-burner tip constructed with two

inclined sides nearly meeting in a straight line at the top, and diverging downward from each other on their inner faces, and having lateral outlets converging upward, as shown at *f f g*, all as and for the purpose set forth.

2. In combination with a burner constructed as stated in the preceding claim, a wick-tube the upper end of which is incased within the burner and is closed at its top, with the exception of a minute outlet or outlets therein, as and for the purpose described.

CHAS. E. SMITH.

Witnesses:
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JOHN J. HALSTED.