Z. DAVIS.

Vapor-Burner.

No. 213,097. Patented Mar. 11, 1879.

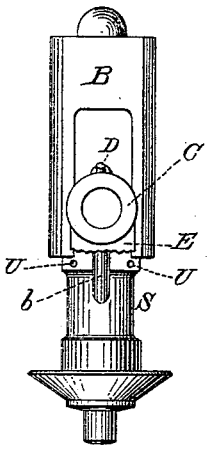


Fig. 4.

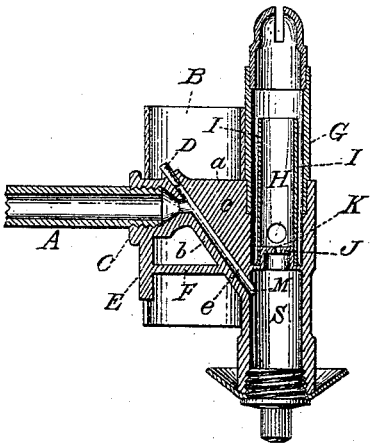


Fig. 2.

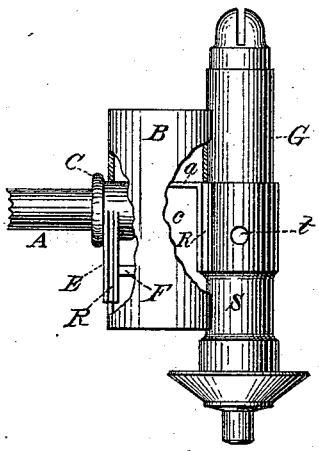


Fig. 1.

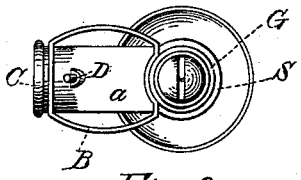
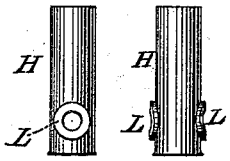


Fig. 3.



Figs. 5.

Geo. D. Saxton
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Witnesses

Zebulon Davis Inventor

UNITED STATES PATENT OFFICE.

ZEBULON DAVIS, OF CANTON, OHIO.

IMPROVEMENT IN VAPOR-BURNERS.

Specification forming part of Letters Patent No. **213,097**, dated March 11, 1879; application filed November 15, 1878.

To all whom it may concern:

Be it known that I, ZEBULON DAVIS, of Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Vapor-Burners for Street-Lamps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in vapor-burners for street-lamps; and it consists in arranging and forming the several parts of the lamp in such a manner as will admit of their being readily taken apart with a view of freeing its interior passages from the residue or sediment deposited by the oil, with which vapor-burners are liable to become clogged or choked.

There have been numerous devices used for the purpose of producing these generating or subsidiary jets, which are essential to make street-lamps of this character reliable and steady at extremely low temperatures; but heretofore these jets have been in most cases directed against some portion or portions of the lamp above and removed from the retort or conducting-tube, so that the oil or naphtha passing through it was but imperfectly volatilized by the limited amount of heat reaching the tube through the connecting parts. Again, these jets are directed downward, and fail to reach the parts intended and accomplish the ample and steady generation of the gas required, because opposed by a natural law by which all heated currents are caused to rise.

Tubes have been used in a few cases to bring down to a point below the oil-conducting tube the oxygenized gas to form subsidiary jets; but such tubes are cumbersome, and possess the objection of crooked passages, difficult to keep clean, without which the lamp will not burn.

There have been lamps made with a non-oxygenized subsidiary jet below the conducting-tube; but, because of the very diminutive orifice necessarily used when the gas to form such a jet is taken from under the pressure in the lamp, such an arrangement is neither practicable nor satisfactory, as the slightest accumulation of sediment clogs this orifice, and the flame made, being unmixed with oxygen, smokes and deposits soot.

By my arrangement of the annular chamber in the body of the lamp I deliver the oxygenized subsidiary jets below the line of the oil or naphtha-conducting tube. These jets are projected horizontally from the lamp, and, being caught by the upward current through the shield, are held in contact with the surfaces requiring the most heat, thus generating a maximum of gas with the minimum of heat, and producing an efficient and economical lamp. I accomplish this important result without complication, or the employment of intricate and crooked passages or trappy parts, that are difficult to clean, liable to derangement, and which always render the operation of this class of lamps uncertain and precarious.

It also consists in a novel form of sliding shield for protecting the subsidiary jets from wind-currents, whereby said shield is made detachable, and for the purpose of cleaning and repairing the lamp can be easily removed therefrom.

Figure 1 is a side view of my burner. Fig. 2 is a section of same. Fig. 3 is a top plan. Fig. 4 is a rear view; Fig. 5, detail views.

A represents the tube for conducting the gas-producing substance to the lamp. C is a socket formed to receive one end of this tube. *b* and *c* outline the triangular projection cast with the body of the lamp S.

Through the cylindrical rib *b* is bored the passage *e*, which communicates with the interior of the socket C and the body of the lamp at a point marked M. This cylindrical rib has fitted into its upper end the taper plug D, which plug is made removable, for the purpose of cleaning the small passage *e*, through which the volatilized oil or naphtha is conducted to the lamp. *c* has a flange, *a*, cast upon and covering it.

Pendent from the socket C there is a flat web-piece, E, that is joined to the rib *b* by the cross-piece F. The edges of the web-piece E are grooved, which, with similar grooves cut in the lamp at R, carry the shield B, which latter is cut out and formed to slide in these grooves in the manner shown. By this construction the shield may be readily slipped

on and off the lamp when desired, and the parts it covers exposed and cleaned from dirt or sediment.

The body of the lamp (marked S) is bored out from the top and bottom, and formed into two chambers, the upper one of which has inserted into its top the burner-tube G. These chambers are separated by a thin dividing-wall left standing for that purpose. The top of this dividing-wall projects above the bottom of the upper chamber in the form of a boss, J, through which is drilled the main-jet orifice K. The boss J carries the lower end of tube H, which is bored out to fit over it.

The annular space I I, formed between tube H and the wall of the upper chamber, is a passage through which is conveyed the oxygenized gas to form the subsidiary jets. For the purpose of conveniently removing sediment or dirt from this annular passage, the tube H is made detachable.

Brazed or fastened in any suitable manner on opposite sides of tube H, at a short distance from its lower end, are two circular ear-pieces, L L, that are turned to fit neatly against the inclosing-walls of the upper chamber, and when tube H is in place, with its lower end carried by the boss J, their center is a little above the top of said boss. These ear-pieces are made of such size that when drilled to coincide with holes *t t*, made through the walls of the upper chamber, as shown, and through which holes *t t* the air required to oxygenize the gas escaping at orifice K is drawn, there is left standing a ring of metal sufficient to prevent communication between the annular chamber I I and the interior of tube H. This arrangement admits of the tube H being turned partly around, so that by varying the axial coincidence of the air-holes *t t* with those through the ear-pieces the air-supply to the lamp may be variedly adjusted to the changes made necessary by the difference in temperature, quality of oil, &c. These ear-pieces also are arranged far enough above the bottom of the upper chamber to give a clearance under them for the free passage of the oxygenized gas to supply the subsidiary jets *u u*, which jets thereby are caused to issue with considerable force on each side of the rib *b*, which they are made to envelop, and, superheating the volatilized oil or gas in its passage to the lamp, they impinge against the web-piece E, which deflects their flames under the socket C. The flange *a* and cross-piece F also serve to catch and distribute the heat of the subsidiary jets, and prevent a too rapid upward current through the shield B, that would tend to carry the jets away from the surfaces requiring the most heat.

Having thus described my invention, I claim—

1. The socket C, pendent web-piece E, flange *a*, cross-piece F, cylindrical rib *b*, and movable taper plug D, combined in a vapor-burner, substantially as described.

2. The sliding shield B, made in the manner and used for the purpose substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 9th day of November, 1878.

ZEBULON DAVIS.

Witnesses:
A. McKINLEY,
H. COCK.