Z. DAVIS.

VAPOR-BURNER.

No. 182,176. Patented Sept. 12, 1876.

Fig. 1.

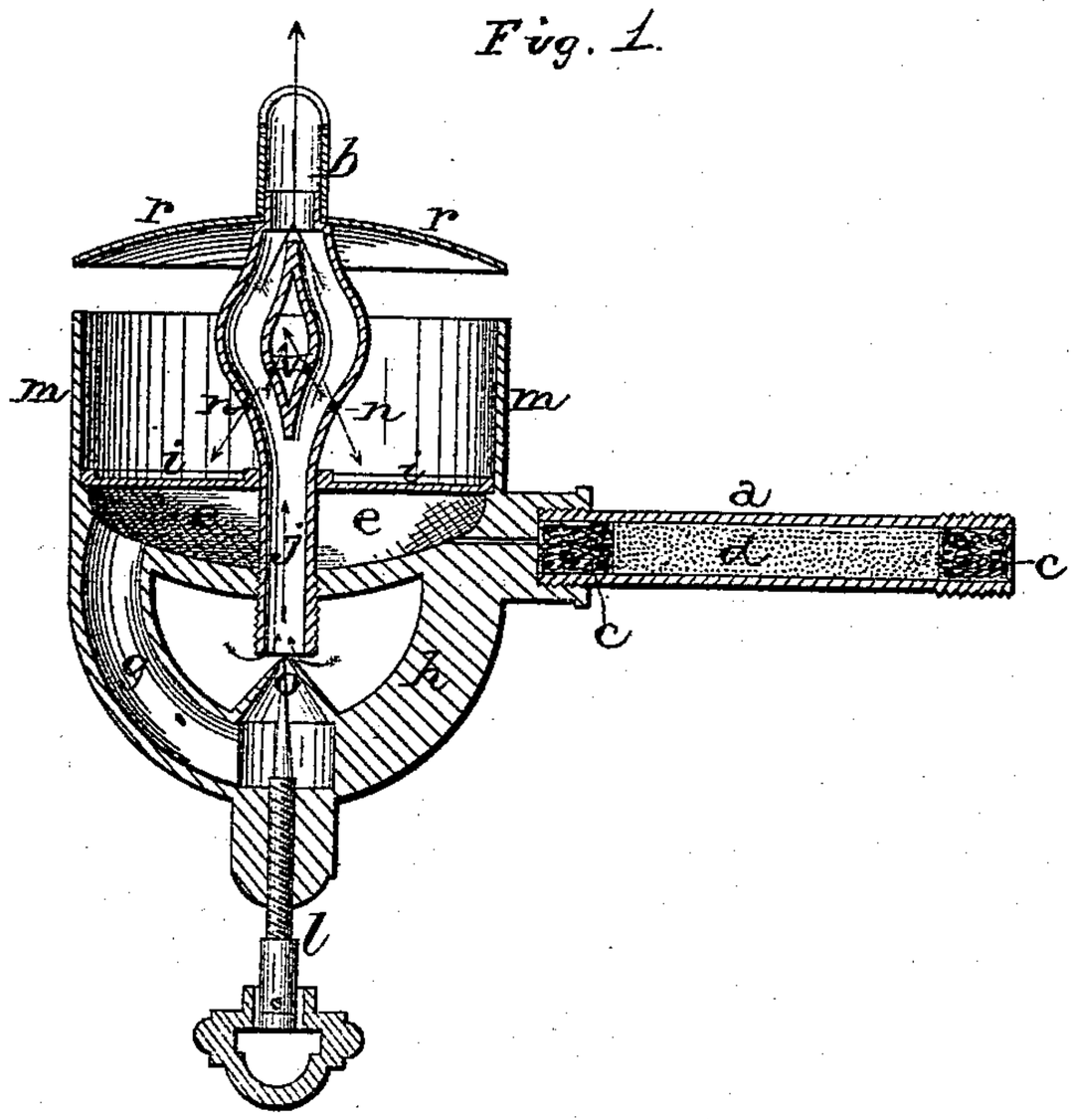
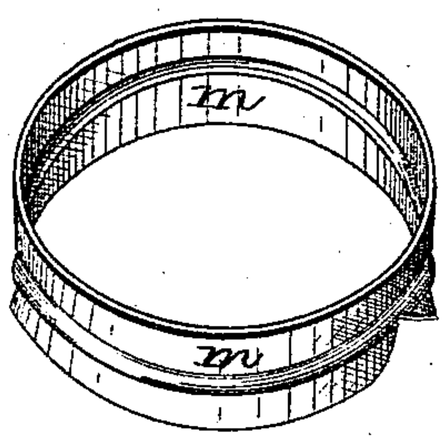


Fig. 2.



WITNESSES=

J. Wm. Garner,

F. M. Burnham.

INVENTOR=

Z. Davis

per

F. A. Lehmann, Atty.

UNITED STATES PATENT OFFICE.

ZEBULON DAVIS, OF CANTON, OHIO, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO WILLIAM B. BLAKE, OF SAME PLACE.

IMPROVEMENT IN VAPOR-BURNERS.

Specification forming part of Letters Patent No. **182,176,** dated September 12, 1876; application filed September 1, 1876.

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 packing the conducting-tube, through which the oil or gasoline passes to the burner, with mineral wool and sand, for the purpose of minutely atomizing the oil and reducing it to vapor before it reaches the superheating-chamber. It further consists in placing the superheating-chamber on a line with the conducting-tube, so that the heat from the chamber will extend to the tube and convert the oil into vapor before it reaches the chamber. It also consists in the peculiar construction of the superheating-chamber, and the manner of heating it. It also consists in the arrangement and combination of parts that will be more fully described hereinafter.

Figure 1 is a horizontal section of my invention. Fig. 2 is a detail view of the same.

a represents the conducting-tube, which conveys the oil, gasoline, or other gas-producing substance to the burner, which tube is provided with a suitable cock at any convenient point to control the flow to the burner. At any desired place in this tube, between the said cock and burner, are placed two packings of mineral wool, *c*, and in between these two packings *c* is placed a filling of sand, *d*. The mineral wool not only serves to hold the sand in position, but, being very fine, and almost indestructible by heat, it helps to subdivide the burning fluid into very minute particles, and thus assist in reducing the fluid to vapor. I use sand in preference to every other substance, because it packs more closely, and thus reduces the fluid to finer atoms in its passage through it than can be done by any other material, and the finer the atoms the more perfect is the vaporization of the fluid. Shot has been used for this purpose heretofore, but they are not only too coarse, but they constantly choke up with the deposit from the fluid, and especially in cold weather. Sand being of a vitreous nature, and being packed much more closely together, does not allow the formation of this deposit to near such an extent, while it is much cheaper than shot, and can always be procured in any locality without expense or trouble. Placed directly on a line with this tube *a* is the superheating-chamber *e*, either of the form here shown, or any other that may be preferred, and which is cast with the tube *g* and solid arm *h*. Into the top of this chamber is inserted a thin sheet-metal top, *i*, which is much thinner than the walls of the chamber, so as to let the heat penetrate it much more readily. The tube *g* conveys the vapor from the chamber to the point *o*, where it escapes up the burner-tube *j*, drawing the air in with it. The arm *h* serves to convey the heat down to the point of escape, where the regulating-screw *l* passes up through, so as to prevent any condensation of the vapor after it leaves the chamber. The burner-tube passes up through the chamber *e*, and just above its top is made to branch out, as shown, so as to form two tubes, which are again united in one at their top. Through the outer side of each of these two tubes is made a small downwardly-projecting opening, *n*, through which issues a jet of flame against the top of the thin sheet-metal cover *i*, so as to not only superheat the vapor after it has passed into the chamber, but to heat the chamber itself, so that the heat will be conducted out into the conducting-tube *a*, and other parts. From the inner side of each tube is made a similar small opening, *v*, through which issue jets of flame to heat the tube *j*, and thus keep the vapor superheated until it reaches the burner-tip *b*.

In order to prevent these smaller flames from being troublesome to the eyes, a shield, *m*, which may be either cast as a part of the chamber or made detachable therefrom, is placed around them, and a short distance above the top of this vertical shield is placed another one, *r*, at about right angles thereto

Having thus described my invention, I claim—

1. A packing of mineral wool, *c*, in the tube *a* of a gasoline-burner, as a means of holding the sand in position and subdividing the burning fluid into atoms, substantially as set forth.

2. The combination of a packing of mineral wool, *c*, and a packing, *d*, of sand in the tube *a* of a gasoline-burner, whereby the burning fluid is minutely divided into atoms in its passage through them, substantially as described.

3. The chamber *e*, having the shield *m* cast as a part thereof, substantially as described.

4. The tube *j*, divided, at or near its center, into two branches, and having the holes *v* on its inner sides, so that jets of flame will heat the tube *j*, substantially as set forth.

5. The combination of the chamber *e*, having a sheet-iron top, *i*, tube *g*, burner-tube *j*, having the openings *n v* and tube *a*, substantially as shown.

In testimony that I claim the foregoing I have hereunto set my hand this 1st day of September, 1876.

ZEBULON DAVIS.

Witnesses:
R. M. BARR,
F. A. LEHMANN.