

A. H. WATKINS.
VAPOR-BURNER.

No. 171,891.

Patented Jan. 4, 1876.

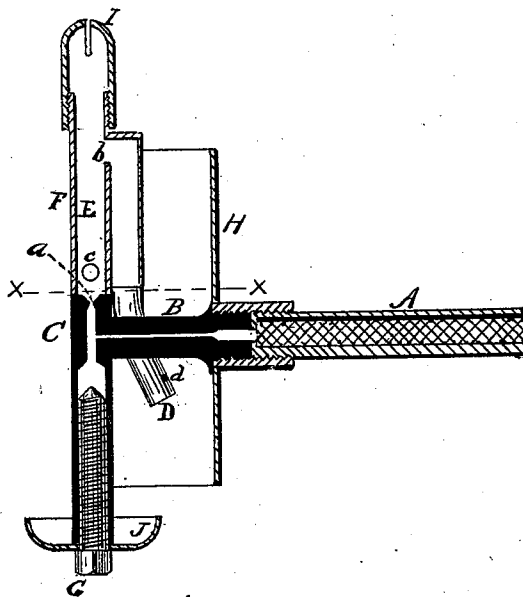


Fig. 1

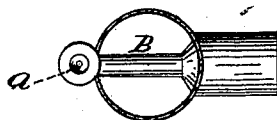


Fig. 2

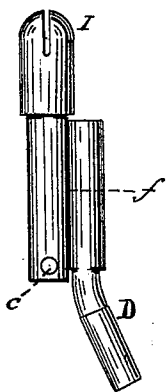


Fig. 3.

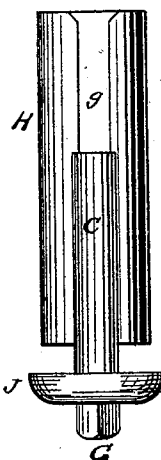


Fig. 5.

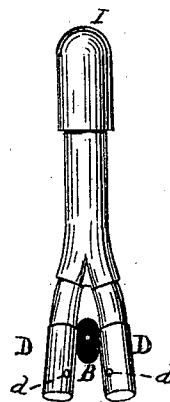


Fig. 4.

WITNESSES
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UNITED STATES PATENT OFFICE

ALBERT H. WATKINS, OF WELLESLEY, MASSACHUSETTS.

IMPROVEMENT IN VAPOR-BURNERS.

Specification forming part of Letters Patent No. **171,891**, dated January 4, 1876; application filed December 9, 1875.

To all whom it may concern:

Be it known that I, ALBERT H. WATKINS, of the village of Wellesley, in the county of Norfolk and State of Massachusetts, have invented a new and valuable Improvement in Vapor-Burners; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This improvement consists in a novel construction of the burner for imparting heat from supplementary flames to the naphtha feed-tube, in order to generate gas from the naphtha as it passes from the feed-tube to the air-mixing chamber of the burner, as herein-after described.

In the accompanying illustration, Figure 1 represents a vertical section of a vapor-burner embodying my improvement. Fig. 2 is a transverse section on line *xx*, with the tube E and its immediately-connecting parts removed, a top view of the tube B, &c., being included. Figs. 3, 4, and 5 are detached views, shown in elevation.

Similar letters of reference indicate corresponding parts.

A represents the naphtha feed-tube, packed in the ordinary manner. B is a tube leading from the feed-tube A to the burner-tube C, entering the burner-tube C just below the needle-hole *a*, with which it communicates; and G is a regulating screw or plug, all constructed as usual in vapor-burners, and therefore needing no more particular description herein.

D D are two tubes, communicating, by means of a common aperture, *b*, with the gas or mixing chamber E of the tube F, at a point above the air-inlet *c*. These tubes D D extend down to points below the tube B, spreading apart, so as to straddle the said tube B, and also coming into contact with it. Each tube D is provided with a jet-hole, *d*, for the escape of gas to be burned as supplementary jets or flames of the burner. The straddling tubes D D are surrounded by a tubular shield, H, open at top and bottom for the protection of the supplementary jets or flames from the wind; but in case they are extinguished by the wind or from other cause the upward draft through the shield H causes them to re-ignite from the illuminating flame at the burner-tip I. The shield also serves to give an extra supply of oxygen to the jets,

thereby increasing their heating-power. The supplementary flames from the jet-holes *d* play under and upon the extension-tube B of the feed-tube A, and also upon the shield H, and thus the naphtha is heated and gas generated, and as it, with air, proceeds to the burner-tip I to be burned as an illuminating-flame it is kept heated to a suitable degree for a perfect generation of gas for complete combustion and flame at the burner-tip I.

It will readily be seen that the straddling tubes D D are a most important element as a means for producing this perfect result without further explanation.

The tube E, provided with the straddling tubes, is separate from the burner-tube C, and is adapted, by means of the groove *f*, to be easily attached and detached by simply sliding it in and out of the opening *g* in the shield H.

The regulating-screw G, as shown in the drawings, is without a needle-point to enter the aperture *a*; but, if desired, it may be provided with a needle-point for that purpose.

In order to operate my invention it is necessary to have the reservoir holding the naphtha or other liquid hydrocarbon elevated about a foot above the burner, and connected by means of a pipe and stop-cock. (Not shown in the drawing, as nothing new is claimed thereupon.) The burner is then heated by means of alcohol being burned in the cup J. When the burner becomes heated, the stop-cock is opened, and the liquid is changed into gas in its passage to the burner-tip, while a portion of the gas enters the straddling tubes through the aperture *b*, and is burned in jets at *d*, directly under the feed-tube B.

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

1. In combination with the tube B, through which the vapor passes to the burner-tube C, the straddling tubes D D, communicating, by means of a common aperture, with the mixing-chamber E, and providing double supplementary jets, constructed and arranged substantially as and for the purpose set forth.

2. The combination of the shield H, burner-tube C, and gas-chamber E, provided with the straddling tubes D D, substantially as and for the purpose hereinbefore specified.

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