E. F. REED.
Vapor-Burner.

No. 205,505. Patented July 2, 1878.

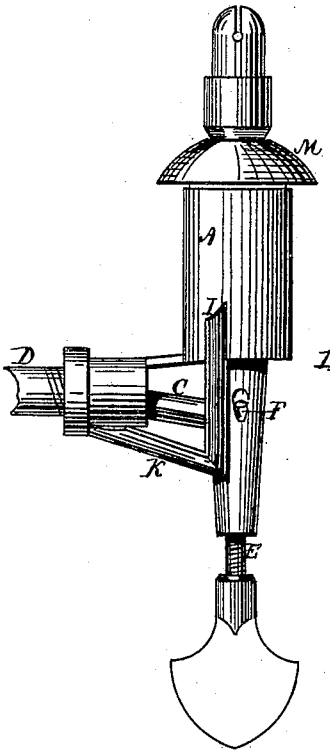

Fig. 1.

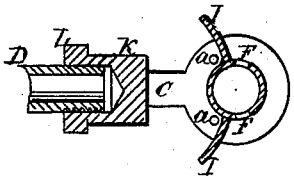

Fig. 3.

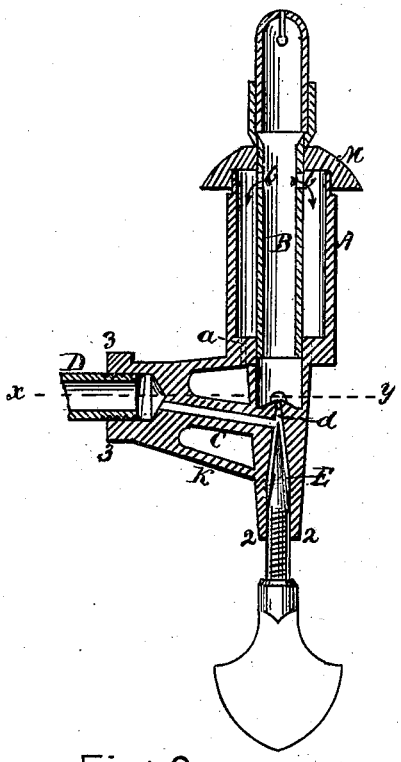

Fig. 2.

WITNESSES
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EDWARD F. REED, OF CHELSEA, MASSACHUSETTS.

IMPROVEMENT IN VAPOR-BURNERS.

Specification forming part of Letters Patent No. **205,505**, dated July 2, 1878; application filed April 6, 1877.

To all whom it may concern:

Be it known that I, EDWARD F. REED, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Vapor-Burners, of which the following is a specification:

My invention relates to that class of vapor-burners in which the naphtha or fluid is vaporized previously to its entering the body of the burner by means of a jet or jets of flame arising from the vapor produced by the burner itself, and acting upon the supply-tube at or near its connection with the burner.

The invention consists in a means for causing the jets of flame which vaporize the naphtha to pass downward and impinge upon the supply-tube in such a manner as to act upon its entire surface at the point of contact, and thus impart to the tube, which is very much reduced in size at this point, a very great degree of heat.

The invention also consists in the employment of a shield or guard on each side of the burner, for the purpose of preventing the jets of flame used in vaporizing the fluid from entering or interfering with the apertures through which the air passes to the burner to mix with the vapor.

Referring to the drawings, Figure 1 represents an elevation of a burner embodying my invention. Fig. 2 is a vertical section of the same, and Fig. 3 is a transverse section on the line *x y* of Fig. 2.

A represents the outer shell or casing, which incloses the tube B, the space between the two constituting a vapor-chamber. M is a cap, which is snugly fitted on or screwed to the top of the casing A, and is firmly secured to the tube B. The tube B extends downward to the bottom of the casing A, and fits in the same over the point of entrance of the vapor.

In the upper part of the tube B, just below the cap M, are two holes, *b b*, as shown in Fig. 2, through which the vapor passes into the vapor-chamber. At the bottom of the vapor-chamber are two small passages, *a a*, extending through to the open space above the tube C. The portion C of the supply-pipe, instead of being of the same size as the pipe D, to which it is connected, is very much reduced in size, in order to allow the flame, which passes in jets from the passages *a a*, to have greater effect in heating the naphtha, and thus facilitate the process of vaporization. The jets of flame pass down upon and at each side of the tube C, so as to have the effect of completely surrounding it. The passage in the tube C enters the conical opening *d* just below its apex, as shown. In the opening *d* is fitted the pointed screw-rod E, which regulates the flow of vapor to the burner, the pointed end serving to force out any obstructions in the apex of the opening *d*.

F, Fig. 1, is a hole through which the atmospheric air enters into the burner to mingle with the vapor, there being one on each side of the burner. On each side of the lower portion of the burner, just in rear of the openings F, is a shield or wing, I, consisting of a thin piece of metal, and forming a part of the burner. The object of these wings or shields is to prevent the jets of flame at the passages *a a* from entering or interfering with the air-openings F, and thus prevent the flickering and unsteady flame of the burner—a difficulty which would be liable to occur if the wings or shields were not provided.

K represents a metal plate arranged below the pipe C, and extending from the supply-tube D to the bottom of the wings I, as shown in Fig. 1. It is designed to hold the alcohol or fluid, which is first ignited to start the vaporizing process, and also to reflect the flame against the tube C.

The parts comprising the casing A down to the figures 2 2 and to the figures 3 3 may all be cast whole in one piece.

By making the tube B and its connected cap M detachable from the casing A, they may be readily removed for the purpose of cleaning out the chamber A when necessary.

What I claim as my invention is—

1. In a vapor-burner, the combination of the central conducting-tube B, provided with gas-orifices *b b*, the casing A, entirely surrounding said central tube, and having gas-orifices *a a* in its lowermost portion, and the conducting-tube C, the orifices *a a* being located above the conducting-tube, for the purpose of causing a jet of gas or flame to impinge thereon, substantially as shown and described.

2. In a vapor-burner provided with an air-inlet, F, the combination, with the exterior conducting-tube C, of the plate K and wings or guards I I, arranged substantially as shown and described, so as to confine the flame from the initiatory supply of fluid to one side of said air-inlet, in order to obviate flickering of the illuminating-flame, as set forth.

3. In a vapor-burner having a lateral supply-tube, C, the combination, with said tube, of a plate or holder, K, arranged directly thereunder, and adapted to direct the heat from the initiatory supply of fuel solely upon said supply-tube, for the objects named.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

EDWARD F. REED.

Witnesses:
J. H. ADAMS,
J. E. MANNING.