(No Model.)

J. A. MARSH.

Vapor Burner.

No. 237,298. **Patented Feb. 1, 1881.**

Fig. 1.

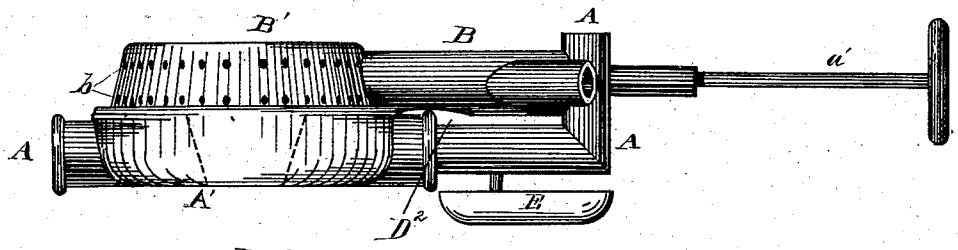


Fig. 2.

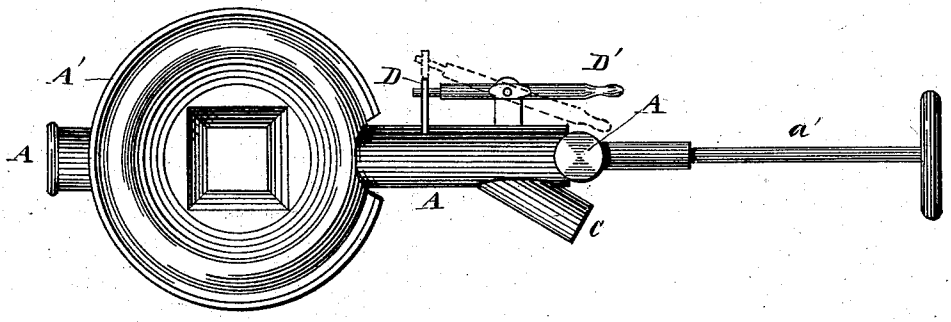


Fig. 3.

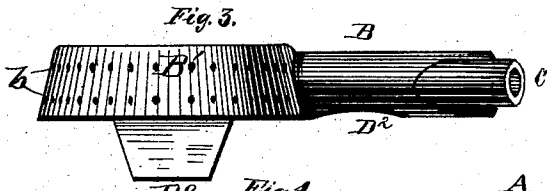
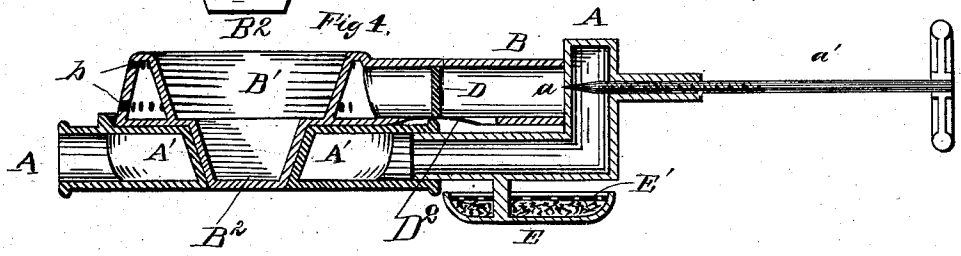


Fig. 4.



WITNESSES

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JAMES A. MARSH, OF CLEVELAND, OHIO.

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 237,298, dated February 1, 1881.

Application filed September 1, 1880. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. MARSH, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Vapor-Burners; 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.

In the drawings, Figure 1 is a view, in side elevation, of a vapor-burner constructed according to my invention. Fig. 2 is a plan view of the device shown in Fig. 1, with the perforated burning-chamber removed. Fig. 3 is a view, in side elevation, of the perforated burning-chamber. Fig. 4 is a view, in longitudinal vertical section, of the device shown in Fig. 1.

A is the feed-pipe, through which is supplied the gasoline or other fluid to be vaporized. A′ is an enlarged annular chamber, which is in effect a part of the feed-pipe A. The enlarged annular chamber A′ is constructed to accommodate and contain the perforated combustion-tap B′ in the manner indicated in Figs. 1 and 4 of the drawings. The feed-pipe A is turned upward after it passes the annular chamber A′, and in its upturned portion is perforated, as represented at *a*, Fig. 4. This perforation is opened or closed by a needle-valve, *a′*, as shown. By means of the perforation *a* communication is established between the feed-pipe A and the perforated burning-chamber B′ through the tube B, which joins the upturned portion of the feed-pipe A and the burning-chamber B′.

It will be observed that the burning-chamber B′ is perforated with apertures in close proximity to the upper edge of the annular chamber A′, which annular chamber, as will hereinafter appear, is the vaporizing-chamber of my burner. The flames, as they escape from the lower series of perforations, *b*, (see Figs. 1 and 4,) will impinge sufficiently upon the upper edge or rim of the vaporizing-chamber A′ to heat the same for its vaporizing purposes. This constitutes one of the leading features of my invention, and by this construction, whereby the flames from the burning-chamber B′ are made to perform the vaporizing function, I do away, as already stated, with the necessity of an independent vaporizing flame during the use of the burner.

If it is desired to supply a draft of air upon both the inner and the outer surfaces of the annular burning-chamber B′, a ventilating opening may be made through the floor B^2 of said chamber, which will permit the air to pass up in that direction and produce the effect of the Argand lamp. The principal function, however, to be performed by the stem or projection which extends centrally from and below the commingling-chamber is to perfect vaporization by its heat, because during the operation of the burner this stem or projection becomes intensely heated, and therefore, being brought into close contact with the vapor in the commingling-chamber, and also with the walls of the vaporizing-chamber, its function, as just above specified, is clearly apparent.

C is an inlet, which may be in the shape of a tube or opening of any description, into which air passes during the operation of burning to supply a sufficient amount of oxygen in the commingling-chamber B′.

D is a valve placed in the connecting-tube B. This valve may be of any suitable construction, such as shown in the drawings, or otherwise, and its office is to shut off the supply of vapor from the burning-chamber B′, and to extinguish its light when the burner is not in use. If this valve D is closed during the operation of the burner the vapor generated will escape through the opening D^2 in the pipe B, and will impinge directly down upon the feed-pipe A, and will thus maintain vaporization, and the vapor escaping through the perforation *a* will continue the flame at the opening D^2, and thus vaporization without using the burner B′ can be continued indefinitely. By this provision the burner B′ can be again relit without the necessity of revaporizing the contained fluid in the feed-pipe A.

E is the drip-cup, into which gasoline will escape if the aperture *a* be opened by the needle-valve *a′*. This drip-cup is designed for the same purpose that drip-cups ordinarily are in vapor-burners—that is, to act as a prime vaporizer in starting the burner. It is filled with

gasoline, is lighted, and heats the contained gasoline in the feed-pipe A to the vaporizing-point in the usual manner in vapor-burners.

I fill the cup E with asbestus, mineral wool, coarse sand, or any porous or granular non-combustible substance. This asbestus, or its equivalent, may be covered with a foraminated plate. By this means the contained gasoline in the drip-cup E will be made to burn slowly and steadily, without the dangerous flashing up that has heretofore been usual, and with better effect in heating the gasoline in the feed-pipe A to its vaporizing degree.

I have herein described the commingling-chamber as "annular" or ring-shaped. Instead of being strictly annular, however, it may be square, octangular, or otherwise shaped without any departure from my invention, and in using the term "annular" in the specification and claims of this patent I wish this explanation to be noted.

What I claim is—

1. In a vapor-burner, an annular commingling-chamber having a central downwardly-projecting heater-extension, in combination with a vaporizing-chamber arranged around said heater, substantially as and for the purposes shown.

2. In a vapor-burner, a drip-cup, E, containing asbestus, mineral wool, coarse sand, or equivalent porous non-combustible substance, in combination with a non-combustible foraminated covering, substantially as and for the purposes shown.

3. The combination of the combined feed-pipe and vaporizing-chamber A, valve D, perforations *a*, needle-valve *a'*, and inlet C, substantially as and for the purposes shown.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES A. MARSH.

Witnesses:
JNO. CROWELL, Jr.,
ALBERT E. LYNCH.