J. S. KELLOGG.
Vapor-Burner.

No. 213,114 Patented Mar. 11, 1879.

Fig. 1.

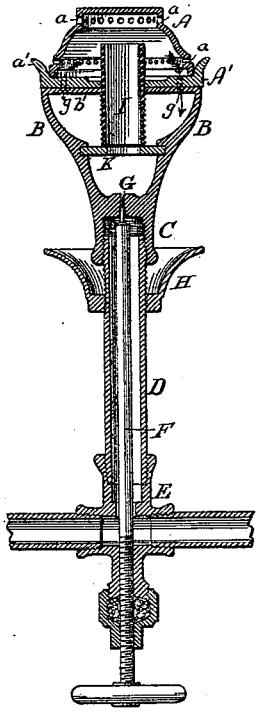


Fig. 2.

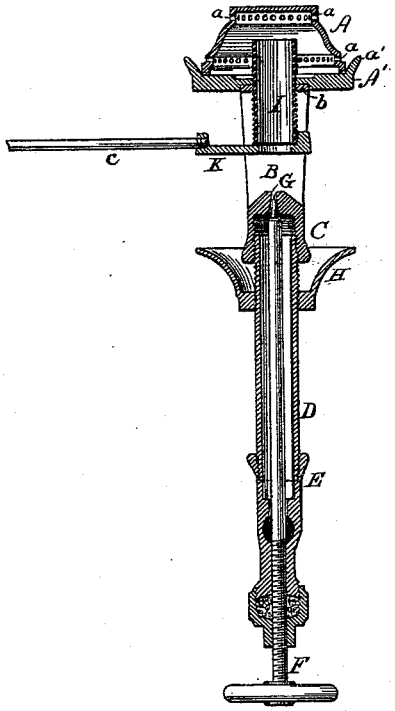
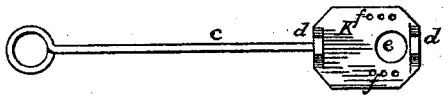


Fig. 3.



Witnesses:
C. Clarence Poole
R. N. Dyer.

Inventor:
James S. Kellogg,
by Geo. W. Dyer & Co
Attys.

UNITED STATES PATENT OFFICE.

JAMES S. KELLOGG, OF CLEVELAND, OHIO.

IMPROVEMENT IN VAPOR-BURNERS.

Specification forming part of Letters Patent No. **213,114**, dated March 11, 1879; application filed October 8, 1878.

To all whom it may concern:

Be it known that I, JAMES S. KELLOGG, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and Improved Vapor-Burner; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object I have in view is to produce a vapor-burner for heating purposes which will heat and expand the vapor more completely than heretofore, thus making a saving in the quantity of gasoline or naphtha necessary to be used, and which can be easily and conveniently regulated, and will at the same time be simple and cheap in construction; and my invention therein consists in providing a vapor-burner with a slide placed intermediate between the jet and the burner, so that the supply of vapor can be instantly cut off from the burner; in the combination of the jet and cap-burner with the concentrating-tube and the cut-off slide; in the peculiar construction of the cut-off slide, and in the means for limiting the movement of such slide and for holding it in place; in providing the cap-burner with one or more holes through its bottom plate on each side and inside of the arms which support the burner, to heat such arms, and to heat the concentrating-tube placed opposite the curves of the arms, all as fully hereinafter explained.

In the drawings, Figure 1 is a central vertical section of the device through the arms which support the cap-burner. Fig. 2 is a vertical section at right angles to Fig. 1; and Fig. 3 is a top view of the cut-off slide.

Like letters denote corresponding parts.

A is the cap of the burner proper, having a row of burning-openings, *a*, near its top, and another row close to its lower edge. This cap rests on the circular bottom plate, A′, of the burner, having its edge *a′* turned up above the lower openings, *a*, so as to be heated by the combustion at those openings, this heat being conducted through the arms B, which support the bottom plate, to the retort or heating-chamber, just below and around the jet. The arms B are connected by a plate, *b*, at their upper ends, which sits into a groove on the under side of the plate A′.

The arms B are cast in one piece with the plate *b*, and with a retort or heating-chamber, C, at their lower ends, which chamber has an open bottom and is internally screw-threaded to connect with the pipe D. This pipe D screws into a T-coupling, E, which is connected with the other burners of the heating apparatus, or by one pipe with the oil-supply. The screw-rod F, having a hand-wheel, works vertically through a stuffing-box in the T-coupling, extends up into the heating-chamber C, and has its upper end pointed to form a needle-valve, which works in the small vertical jet-opening G through the top of the chamber C, and centrally between the arms B. A cup, H, is turned onto the screw-threaded upper end of the pipe D, just below the retort C, and catches the drip from the jet. It also serves to heat the retort to start the burner after the parts have become cool by lighting the oil contained by it.

Through the center of the plate A′ and the connecting-plate *b* is screwed a concentrating-pipe, I. This pipe extends from a point in the chamber of the burner proper above the lower line of openings, *a*, down between the arms B, its lower open end terminating at a point about half the distance from the plate *b* to the jet.

The jet of vapor is concentrated by the pipe I and thrown against the solid top of the cap A, which is highly heated, before reaching the burning-openings. At the lower end of the pipe I is a horizontal cut-off slide, K, which works in grooves in the arms B. This slide is moved back and forth across the mouth of the pipe I by a rod, *c*, and it has two lugs, *d*, which strike against the pipe, limiting the movement of the slide and preventing it from being drawn from its place between the arms.

The slide K has a hole, *e*, of about the size of the bore of the pipe I, by sliding which under the pipe the passage from the jet to the burner proper will be opened; and it has small holes *f*, to facilitate the ignition of the vapor.

One or more holes, *g*, (shown in dotted lines in Fig. 1,) are made through the plate A′ and the plate *b*, close to the arms B, and through these holes jets of vapor are thrown, when the burner is in operation, against the curved inner sides of the arms B, and there ignited, to

heat such arms, and through them the retort, such flames, by the curve of the arms, being also deflected against the pipe I, to further expand the vapor.

The operation of my device is apparent from the foregoing description.

The supply of vapor to the burner proper can be instantly shut off by moving the slide K, and by regulating the needle-valve the jet opening can be nearly closed, and a very small flame be retained at this opening, which will keep the retort hot, ready for use, with the consumption of a smaller quantity of oil than possible with vapor-burners heretofore.

What I claim as my invention is—

1. In a vapor-burner, a slide placed between the jet and the burner proper, adapted to entirely cut off the supply of vapor to said burner, substantially as described and shown.

2. The combination, with the jet G and the burner A A′, of the concentrating-tube and the cut-off slide, substantially as described and shown.

3. In a vapor-burner, the combination, with the screw-threaded concentrating-tube I, of the cut-off slide K, moving across the lower end of such tube, and provided with lugs *d*, to limit its movement, substantially as described and shown.

4. In a vapor-burner, the cut-off slide K, having hole *e*, perforations *f*, lugs *d*, and handle *c*, constructed and arranged substantially as described and shown.

5. The combination, with the cap-burner A A′ and supporting-arms B, of the jet-holes *g* through the bottom plate of the burner, and the tube I, arranged opposite the curves of the arms, substantially as and for the purpose set forth.

This specification signed and witnessed this 14th day of September, 1878.

JAMES S. KELLOGG.

Witnesses:
GEO. C. TRACY,
L. W. SEELY.