

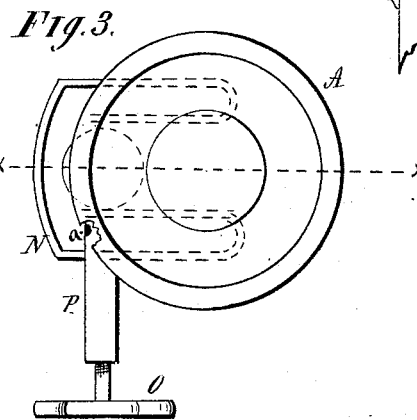
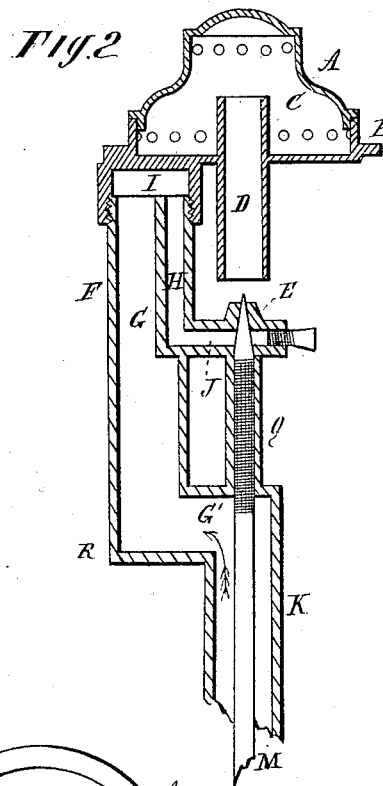
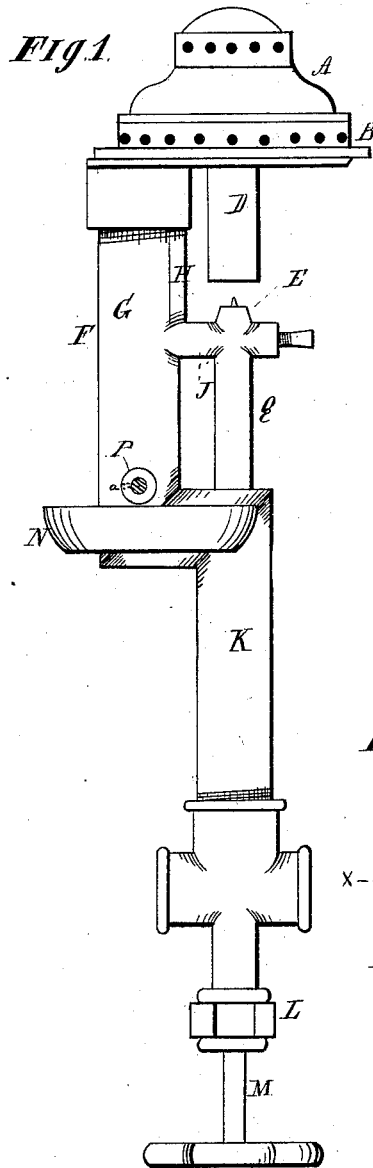
(No Model.)

F. M. CAMPBELL:

VAPOR BURNER.

No. 266,014.

Patented Oct. 17, 1882.



Witnesses.
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UNITED STATES PATENT OFFICE.

FRANK M. CAMPBELL, OF ST. LOUIS, MISSOURI.

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 266,014, dated October 17, 1882.

Application filed April 7, 1882. (No model.)

To all whom it may concern:

Be it known that I, FRANK M. CAMPBELL, of St. Louis, in the county of St. Louis and State of Missouri, have invented a certain new and Improved Vapor-Burner; and I do hereby declare that the following is a full, clear, and complete description thereof.

My invention relates to vapor-burners; and the improvement consists in the manner of constructing the same for the purpose of arresting leakage from the needle-valve mechanism, and also for so constructing the burner as to insure a large generating capacity.

That the invention may be more fully understood, reference will be had to the following specification for a more clear description. Reference will also be had to the annexed drawings, making a part of the same, in which—

Figure 1 is a side elevation; Fig. 2, a vertical transverse section in the direction of the line *xx*, Fig. 3. Fig. 3 is a top view.

Like letters of reference refer to like parts in the several views.

The foraminous dome A consists of a cap connected with the flanged base B, Figs. 1 and 2, the interior of which is the combustion-chamber C, which is provided with a tube, D, extending down to be in alignment with the needle-valve mechanism E. The said tube extends up into the chamber, as seen in Fig. 2. The combustion-chamber is screwed to and supported upon the compound pipe F, consisting of the vapor-pipe G and auxiliary gas-pipe H, which are directly under the combustion-chamber. The pipe G terminates at its upper end in the generating-chamber I, into which the gas-pipe H opens, as seen in the drawings. The pipe H opens into the needle-valve pipe J. The pipe G at its lower end is in open relation with the supply-pipe K, to the lower end of which is a connection-joint for the attachment of the oil-pipe leading to the reservoir.

L is a stuffing-box for the needle-valve stem M to prevent leakage. The drip-cup N, Figs. 1 and 3, is supplied with oil for igniting the burner through a valve-opening, *a*, in the shank-pipe P, Fig. 3, which is in open connection with the pipe G. The stem and handle for operating said valve are seen at O, Fig. 3.

The stem is threaded into and through the shank P, connected with the pipe G. In the end of the shank, and opening into the pipe G, is the valve which admits the passage of the oil through an opening, *a*, in the shank to flow into the cup for the purpose stated.

Oil for supplying the burner from the reservoir enters the pipe K through the joint-connection at the lower end, from which it passes up into the pipe G and from the pipe G to the vapor-chamber I. The oil as it ascends in the pipe G to the chamber I becomes more or less vaporized by the action of heat from the combustion-chamber C, which is imposed upon the top of the said pipe G and chamber I. The heat from the chamber and dome is quickly transferred to the oil in the pipe G, partially vaporizing it, in which condition it enters the chamber I when it is vaporized, and in this form enters the gas-pipe H, when it is again subject to the action of heat and converted into a gaseous state, which is conveyed to the chamber C through the needle-valve mechanism E and pipe D, Figs. 2 and 3. The valve-stem is threaded into and through the stem-pipe Q, as indicated in Fig. 2. The leakage usually occurs at that part of the burner when the valve-stem is threaded, owing to the constant friction and strain of the screws upon each other.

By having the stem threaded in the stem-pipe Q all leakage through the threads will pass into the pipe K, from which it will be utilized by commingling with the oil therein and being vaporized for the combustion-chamber. There will be no escape of oil around the lower part of the valve-stem, as it is to be securely packed with material to resist leakage and the chemical action of hydrocarbon oil. There is no screw or threading in the stuffing-box L to cause friction and leakage. Hence by the manner of arranging the needle-valve mechanism there is no leakage.

The reservoir-pipe may be connected at R with the pipe G and the stuffing-box L connected close under the section G' of the pipe G without changing the essential features of the invention.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In vapor-burners, the stem-pipe Q, with a needle-valve threaded therein and provided

with a stuffing-box, L, in combination with the pipes K G H and tube D, connected with a combustion-chamber, substantially as described, and for the purpose specified.

5 2. In combination with a vapor-burner, the pipes G and H and the supply-pipe K, connected with the stem-pipe Q, the latter having the needle-valve stem threaded therein in line with the tube D, said pipe K provided with a
10 stuffing-box and constructed and arranged to receive the leakage through the thread in the stem-pipe to be utilized, substantially as and in the manner set forth.

15 3. In vapor-burners, the pipe G, auxiliary pipe H, arranged in open connection with the

chamber I and combustion-chamber imposed thereon, in combination with the needle-valve mechanism and the tube D, leading into the combustion-chamber, and having the stem threaded in the stem-pipe at its upper part extending through the pipe K, and provided with a stuffing-box at L, substantially as described, and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK M. CAMPBELL.

Witnesses:

W. H. BURRIDGE,

J. H. BURRIDGE.