(No Model.)

L. S. CALDER.

VAPOR BURNER.

No. 421,162. Patented Feb. 11, 1890.

Fig. 1.

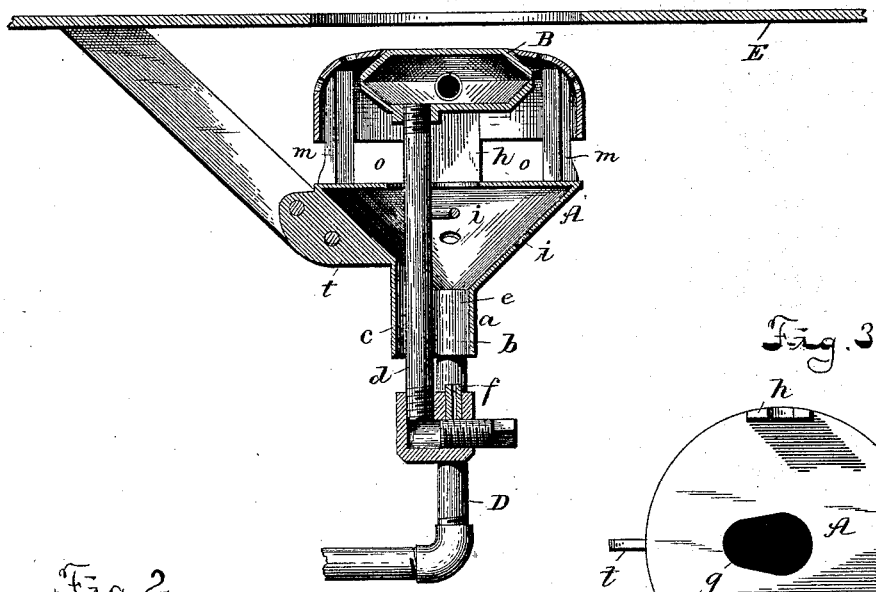


Fig. 3.

Fig. 2.

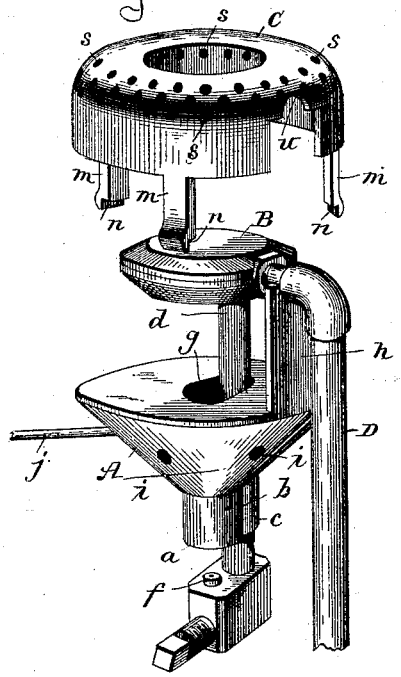
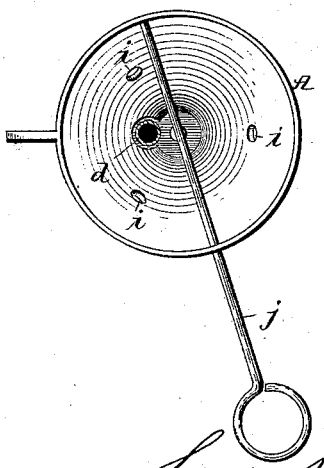


Fig. 4.



WITNESSES

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VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 421,162, dated February 11, 1890.

Application filed October 26, 1889. Serial No. 328,292. (No model.)

To all whom it may concern:

Be it known that I, LEWIS S. CALDER, a citizen of the United States, residing at Terre Haute, in the county of Vigo and State of Indiana, 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 appertains to make and use the same.

This invention relates to certain new and useful improvements in vapor-burners; and it consists, substantially, in such features of arrangement, construction, and combinations of parts as will hereinafter be more particularly described, and pointed out in the claims.

The invention has for its object to provide a vapor-burner in which oil-vapor is first generated, then superheated and conducted to a point of ignition, where it is burned with atmospheric air for the purposes of heating and cooking.

The invention has for its further object to provide a vapor-burner in which little or no condensation of the vapor takes place, and also to render the burner of economic construction, easy to manipulate, and readily repaired when out of order, substantially as will hereinafter more fully appear on reference to the accompanying drawings, wherein—

Figure 1 represents a vertical sectional elevation of a vapor-burner constructed in accordance with my invention; and Fig. 2 is a view in perspective of the several parts constituting my improved vapor-burner, the said parts being separated from each other and relatively arranged so as to enable their construction to be seen and understood. Fig. 3 is a top or plan view of the mixing-chamber, and Fig. 4 is a view of such chamber to indicate the arrangement and working of the rod which enters the same from the side.

In carrying my invention into effect I arrange a portion of the oil-supply pipe in such proximity to the side of the burner proper as that it becomes very highly heated after the vaporization has been started, and as this portion of the supply-pipe is always in direct contact with the flames issuing from the burner the same thereby becomes a generating-chamber. The said generator is fitted in the side of a superheating-chamber, into which the vapor passes and becomes superheated before passing to the jet or point of ignition.

I provide a mixing-chamber, preferably of conical form, having air-inlets and provided at its lower end with a hollow neck that is slightly contracted centrally, so as to form a guide for the passage of the pipe which leads downward from the bottom of the superheater, and also to leave an open chimney or inlet for the passage of air from beneath and at a point contiguous to the jet or flame. Surrounding the superheater and supported on top of the mixing-chamber is a perforated hood or spreader provided with legs to maintain the same slightly above the top of said mixing-chamber, so as to leave open spaces all around for the air to be spread outwardly and burned in a manner hereinafter more fully understood. Entering the mixing-chamber from one side is a rod or valve, by means of which the passage of air up through the mixing-chamber is retarded sufficiently long to enable a most thorough and complete admixture of the air and oil-vapor, thereby insuring perfect combustion of every particle of gas.

Reference being had to the several parts of the drawings by the letters marked thereon, A represents the mixing-chamber, that is preferably conical in form and having a lower neck *a*, that is slightly contracted at *b*, so as to form a guide *c* for the passage of the pipe *d*, leading from the bottom of the superheater B, and also to leave an open flue or chimney *e*, to admit air immediately over the jet-orifice *f*. This mixing-chamber is provided in its top with an opening *g*, that is approximately oval in shape, the same being in a line with both the guide *c* and the chimney *e*. Said opening is sufficiently large to leave a space all around the pipe *d*, so as to be entirely enveloped by the burning gas or vapor.

Extending upwardly from the top of the mixing-chamber A is a bracket *h*, which receives the upper portion of the generating supply-pipe D, and thus serves to support both the superheater B and the said pipe in position. The mixing-chamber is further provided with a series of openings *i*, for ad-

mitting air to the interior thereof, and entering the said chamber from one side is a small rod *j*, which passes through a plane intersecting a vertical plane taken through the opening *g*, and by means of this rod the currents of air entering the mixing-chamber from the sides and bottom will be broken or retarded to such an extent as to cause a thorough admixture of the air and gas.

C represents a hood or spreader that is formed with the legs *m*, which are recessed at *n*, so as to fit upon the upper edge of the mixing-chamber and be thereby supported above the said mixing-chamber in the manner shown in Fig. 1. This construction leaves open spaces *o*, out through which the combined air and gas will be spread in such manner as to cover a very large surface and create an intense heat. Flames will also issue through the perforations *s* in said hood, and it will be apparent what superior results can be attained through the medium of such simple apparatus and small amount of fuel. The mixing-chamber is also notched or cut out at *u*, so as to fit around the supply-pipe snugly into place.

In the drawings I have shown the side of the mixing-chamber as provided with a projection *t*, this being to enable the burner to be attached to a support—such, for instance, as in Fig. 1. In this figure I have shown the burner as arranged beneath the top or table E of an ordinary vapor-stove, this being one of the uses for which my invention is intended.

From the foregoing description it will be seen that a clean, neat, and simple form of burner is had, and it is obvious that immaterial changes could be resorted to in the general construction and arrangement of parts without departing from the invention; hence I do not wish to be understood as limiting myself to the precise details of construction and arrangement shown.

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

1. In a vapor-burner, the combination, with the conical mixing-chamber having the air-flue and guide and provided with air-inlets, of the superheater having a depending tube entering the guide and the perforated hood or spreader having the supporting-legs, said mixing-chamber being provided in its top with the oval-shaped opening, substantially as described.

2. In a vapor-burner, the conical mixing-chamber having a series of air-inlets and formed with the guide and air-flue, the same having also in its top a double or approximately-oval shaped opening, substantially as described.

3. In a vapor-burner, the combination, with the conical mixing-chamber having the air-flue and guide and provided with air-inlets, of the superheater having a depending tube entering the guide, the perforated hood or spreader having the supporting-legs, and the rod entering the mixing-chamber, substantially as and for the purpose described.

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

LEWIS S. CALDER.

Witnesses:
MARTIN HOLLINGER,
BENJAMIN F. SWAFFORD,
STEPHEN S. STARK.