

C. J. EAMES.

Apparatus for Burning Hydrocarbons.

No. 148,042.

Patented March 3, 1874.

Fig. 1.

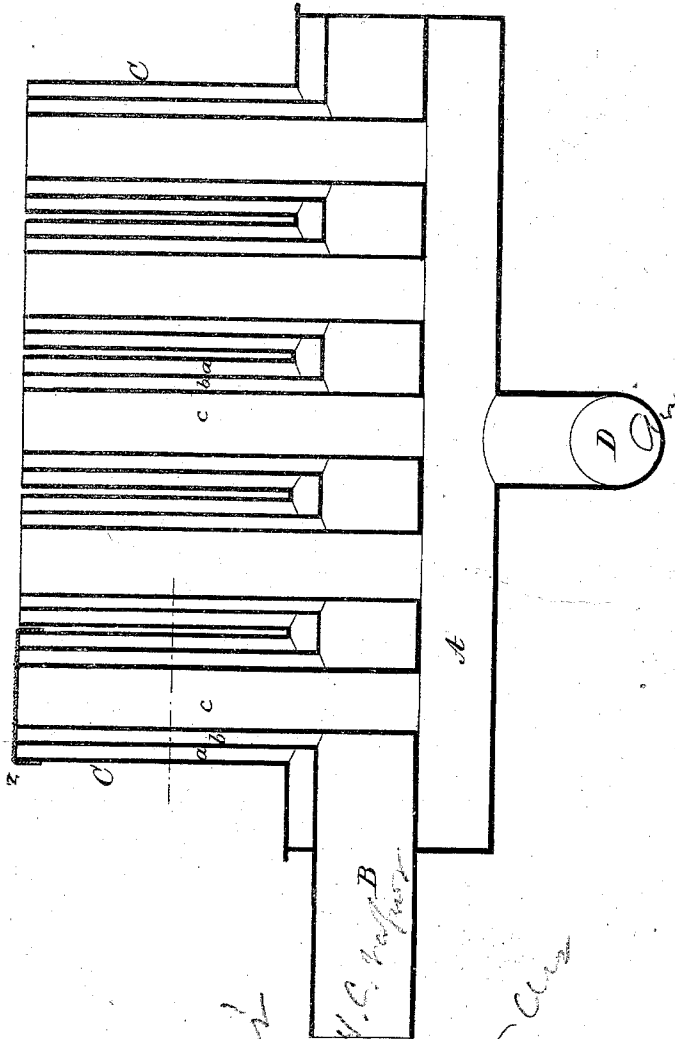
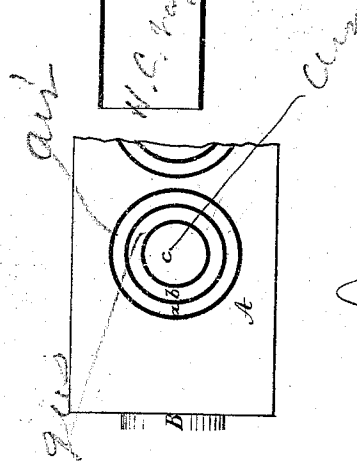


Fig. 2.



Witnesses:

J. C. Brecht,
Wm. Anderson.

Inventor:

Charles Eames

UNITED STATES PATENT OFFICE.

CHARLES J. EAMES, OF NEW YORK, N. Y.

IMPROVEMENT IN APPARATUS FOR BURNING HYDROCARBONS.

Specification forming part of Letters Patent No. **148,042**, dated March 3, 1874; application filed February 13, 1874.

To all whom it may concern:

Be it known that I, CHARLES J. EAMES, of New York city, New York, have invented a Hydrocarbon-Burner, of which the following is a specification:

The nature of my invention consists in the construction of a series or cluster of burners on the principle of the "argand-burner," with or without a wire-gauze covering their points of ignition, and with the hydrocarbon vapor fed in from a common source by means of a pipe, and an air-chamber provided with an inlet-pipe to supply the air consumed by the burners, for the purpose of making a simple, cheap, and efficient hydrocarbon-vapor burner to generate heat for the various kinds of furnaces, &c., as will more fully hereinafter be set forth.

To enable others skilled in the art to make and use my invention, I now proceed to give a more specific description of its construction and operation.

In the drawings, Figure 1 is a vertical longitudinal section of my invention, and Fig. 2 is a detail plan view of the same.

A is the air-chamber, which is preferably made of cast-iron. Its length varies from several inches to several feet, in conformity with the size and number of burners C it is to supply with air. Its cross-section is square, and, like the length, conforms to the necessities of the burners. B is the vapor pipe or chamber, which is, from preference, generally made of iron pipe, and its length and size varying with the demands of the burners C, which it is to supply with hydrocarbon vapor. C, the burners, are made of three short tubes, *a b c*, placed one within the other, in about the relation shown in Fig. 2, by a plan view. The sectional view, Fig. 1, shows that the outside air-tube *a* is the widest and shortest, and is secured in an opening (which is circular) in the top plate of chamber A; that the vapor-tube *b* is within and somewhat longer than tube *a*, and is secured in an opening in the top of the chamber B; and that the inside air-tube *c* is within tube *b*, and long enough to reach from the top of the other tubes when secured in position to the bottom of chamber B, through

which it completely passes, and is suitably fastened in bottom of chamber B in free communication with the air-chamber A. It will be seen from this that these tubes *a, b*, and *c* are arranged upon the well-known principle of the argand-burner. When the outside air-tube *a* is two inches in diameter, the vapor-tube *b* ought to be an inch and a half in diameter, and the inside air-tube *c* half an inch; but these relative proportions may be more or less varied, as well as their actual size. The burners C are covered with wire-gauze at their points of ignition, as shown at *z* in Fig. 1, when it is considered desirable to diffuse the flame of the burners over the surface they are to heat, and which is very near to them. When the surface the burners are to heat is some distance from the tops of the burners, the wire-gauze may be dispensed with.

The number of burners C may be as great as desirable, and when it is necessary to have a large number of them, I prefer to construct several air-chambers, A, side by side, with a corresponding increase in the number of vapor-pipes B and burners C, thus forming a cluster of burners by a series of rows, each row containing a series of burners. In this instance my chambers A may intercommunicate and be cast in one whole, and pipe B in the chamber A be supplied by one pipe. Both the air and the vapor are regulated by valves, which can be readily adjusted so as to supply the proper proportion of air and vapor to effect a perfect combustion, the cock regulating the supply of air being in the inlet-pipe D, and the one regulating the supply of vapor in that part of the pipe B outside of the chamber A.

When the invention has been constructed as described, the air is admitted through inlet-pipe D to the air-chamber A, which it fills, and thence passes up and out of the tubes *a* and *c*. The hydrocarbon vapor is admitted into the pipe B, and flows up and out of the tube *b*, when it is ignited by any suitable means, and burns in combination with the streams of air that are flowing from the tops of the tubes *a* and *c* of the burners C.

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

1. The combination of the air-chamber connecting with a central pipe and an annular pipe, with a vapor or gas chamber connecting with an annular pipe placed between the two air-pipes, as and for the purpose set forth.

2. A series of burners, each having a gas-pipe surrounding and surrounded by an air-pipe, so as to form a hydrocarbon-burner, as set forth.

3. The combination and arrangement of the

air-chamber A surrounded by a gas-chamber, B, with the pipes *a b c*.

In testimony that I claim the foregoing I have hereunto set my hand this 13th day of February, 1874.

CHARLES J. EAMES.

Witnesses:

V. C. CLAYTON,
A. MOORE.