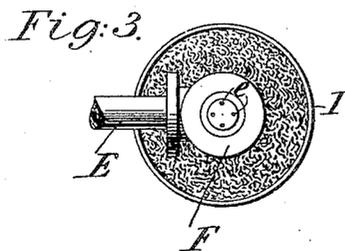
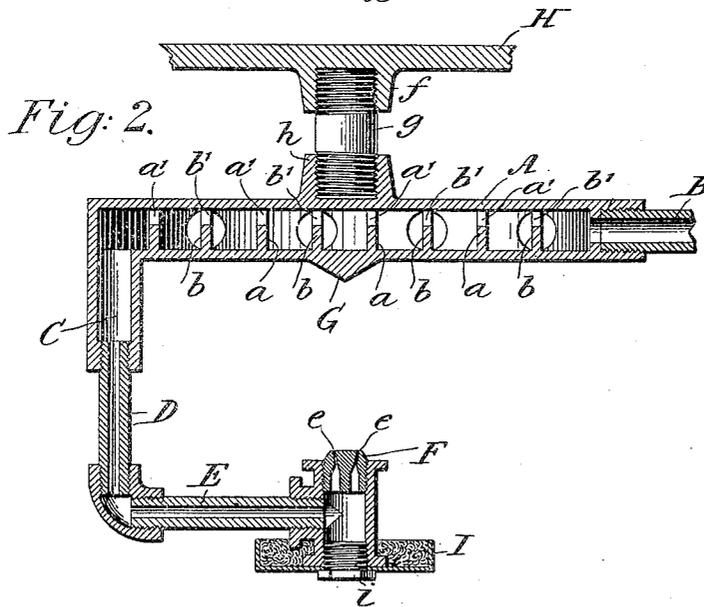
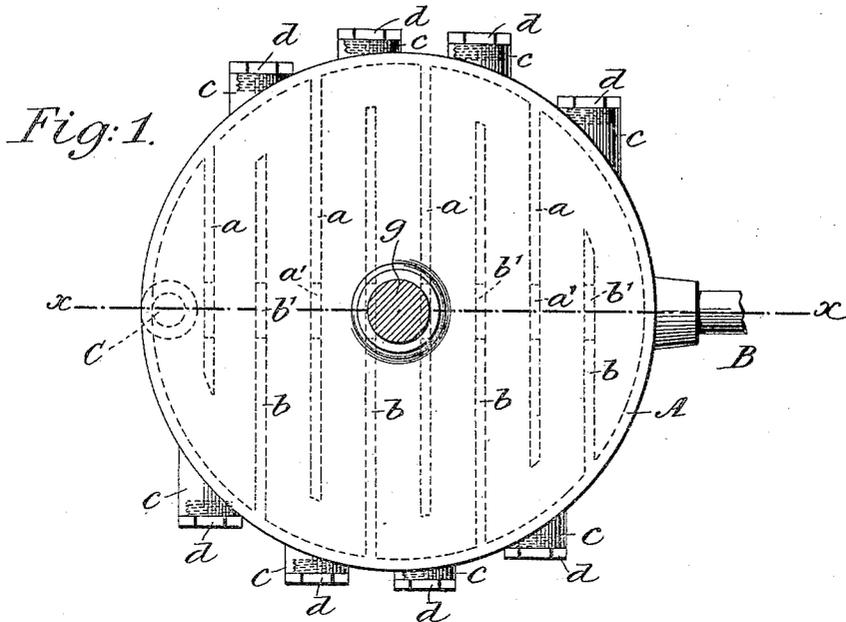


M. G. LEWIS.
LIQUID FUEL HEATER BURNER.

(Application filed May 6, 1901.)

(No Model.)



WITNESSES:
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MORTIMER G. LEWIS, OF NEW YORK, N. Y.

LIQUID-FUEL-HEATER BURNER.

SPECIFICATION forming part of Letters Patent No. 690,071, dated December 31, 1901.

Application filed May 6, 1901. Serial No. 58,888. (No model.)

To all whom it may concern:

Be it known that I, MORTIMER G. LEWIS, a citizen of the United States, residing at New York city, in the county and State of New York, have invented certain new and useful Improvements in Liquid-Fuel-Heater Burners, of which the following, taken in connection with the accompanying drawings and the letters of reference marked thereon, is a full, clear, and exact specification.

My invention has relation to that general class of heater-burners in which the liquid fuel is delivered to the burner under more or less pressure and therein converted into gas or vapor which issues from the burner-orifices and mingling with the atmosphere is consumed for the production of heat, the flame keeping the vaporizing-chamber always heated, and thus insuring a constant supply of vapor or gas so long as the burner is in operation.

My improvements are chiefly designed for use in connection with boilers on boats; but obviously they may be used in any other situation as well.

The objects of my invention are to provide or produce a simple, cheap, and efficient burner of the class indicated wherein the vaporizing-chamber is provided with a series of internal baffle-plates which compel the incoming liquid to traverse the bottom of the vaporizing-chamber several times before it is possible for it to find any outlet to the burner-orifices, the said baffle-plates or partitions being provided each with a small opening at the top to permit the ready flow of gas or vapor to the burner-orifice at all times, to supply the bottom of the said vaporizing-chamber with a deflector or director for the impinging flame, so as to distribute the latter most advantageously upon the lower surface of the chamber, and to supply the improved burner with a simple and efficient means for connecting it with the bottom of a boiler or other object desired to be heated, in such manner that the heater will always maintain a certain fixed relation with respect to the boiler or object to be heated and so that the burner may be easily detached whenever desired or necessary.

To accomplish the foregoing objects, my improvements involve certain new and useful

arrangements or combinations of parts and peculiarities of construction, all of which will be herein first fully described and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan or top view of my improved burner, the supporting or sustaining piece being shown in section. Fig. 2 is a vertical section and elevation on a plane through line *xx* of Fig. 1, showing a fragment of the bottom of a boiler or other object to be heated, with the burner secured thereto in accordance with one portion of my invention. Fig. 3 is a plan view showing the jet-orifices of the burner and the drip-cup beneath.

In all the figures like letters of reference, wherever they occur, indicate corresponding parts.

The vaporizing-chamber is preferably made of cast-iron; but it might be made of other metal, and to secure the most satisfactory results the top and bottom and the interior partitions are preferably cast together—that is to say, they are preferably cast in one piece.

A is the vaporizing-chamber, in substantially circular form.

B is the inlet-pipe for liquid fuel, which fuel is delivered to the interior of the vaporizing-chamber under suitable pressure, and C is the outlet for the gas or vapor. This outlet C is connected with the burner by suitable piping, as D and E, or otherwise, as may be preferred, the jet-orifices being located under the center of the vaporizing-chamber and at a suitable distance therefrom.

Within the chamber A are a number of partitions *a a*, &c., and *b b*, &c., extending across the line between the inlet and outlet, the partitions terminating alternately near to the vertical walls of the chamber, so as to compel any liquid which would otherwise traverse the chamber directly to flow by a circuitous route back and forth across the bottom of the chamber before it can reach the outlet. Each of the partitions are notched, as at *a'* and *b'*, about on a line between the inlet and outlet and at the upper part, these notches or openings forming a channel for passage of gas to the burner-orifices. Without these or without this passage-way for the escape of gas or vapor, under some circum-

stances, oil being admitted to the vaporizing-chamber, the tendency of the gas therein would be to drive the oil ahead of it down to the burner, which is objectionable and disadvantageous, causing the flame to smoke and to become very unsteady and uncertain.

As before indicated, the burner is intended for use in boats and for heating boilers in other movable situations, such as on carriages, &c. On these it is found that as the burner is moved or rocked the flame is rendered unsteady and uncertain, owing to the admission of oil to the burner before it is perfectly vaporized. The partitions prevent any sudden flow of oil to the burner, and they being provided with small gas-passages, as explained, at no time entirely obstruct the flow of gas to the burner. When the burner rocks, the gas being in the upper part of the vaporizing-chamber prevents the oil from entirely closing the gas-passages in the partitions.

In order to cast the vaporizing-chamber in the manner preferred, it is supplied with a number of exterior hollow bosses *c c*, &c. Through these the interior of the casting is cleaned, so that it may be ready for use, and the several bosses are securely closed by removable screw-plugs, as *d d*, &c. The bosses project a little from the sides of the vaporizing-chamber and afford as many points for receiving the effect of the flame, so that they add to the capability of the structure for receiving heat and conducting it to the liquid fuel within. Whenever the chamber A becomes clogged, as it sometimes does, the plugs *d d* are easily removed and the interior easily reached by a suitable cleaning tool or scraper by which the detrimental matter is removed.

The gas-jet orifices *ee* are located in a plug F, which is threaded into or otherwise removably mounted in its support on the end of the gas-delivery pipe, and these orifices are inclined outwardly, as indicated, and located around the axis of the plug F. They may be three, four, or more in number, their effect being to divide and spread the issuing gas or vapor before it strikes the bottom of the vaporizing-chamber, and thus affording a better and more complete mixture with the atmosphere before burning than can be afforded by the usual single jet.

On the bottom of the vaporizing-chamber A and directly over the plug F is a conical deflector or director G. This is preferably cast with chamber A and operates to spread the flame evenly or equally over the bottom of chamber A, so that its contents are equally heated, and it also operates to facilitate the heating of the bottom of the chamber.

The burner so far described may of course be mounted in connection with the object to be heated in any desirable way. I prefer, however, to connect it solidly with the object, as indicated.

H represents a fragment of the bottom of a boiler, for instance. On this is a socket *f*, either formed with it or otherwise applied, the same being threaded to receive the sustaining or coupling piece *g* in the form of a short section of bolt or pipe.

In the center of the top of chamber A is a socket *h*, calculated to receive the lower end of coupling-piece *g*. A convenient way of making the union of all these parts is by right and left hand screw-threads; but other means may be adopted. The coupling-piece *g* holds the burner rigidly with respect to the bottom H, so that any movement of the one will be followed by a corresponding movement of the other, and this is important, especially in boilers mounted on boats or carriages.

I is a drip-cup used in the initial lighting of the burner. It is connected with the burner-tip socket by a threaded bolt *i* or otherwise, as may be preferred.

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

1. In a burner of the character herein set forth, the vaporizing-chamber supplied with a number of interior partitions extending across the line between the inlet and outlet and terminating alternately near the opposite portions of the chamber, each of said partitions having a notch or depression at top to form an open passage for gas or vapor, the parts being combined and arranged substantially as and for the purposes set forth.

2. In combination with the vaporizing-chamber having inlet and outlet openings in opposite ends and alternating internal partitions each notched in its upper portion and said notches lying in a straight line extending from the inlet to the outlet openings, and the burner located below said chamber, a conical deflector formed integrally with the bottom of the chamber and arranged to deflect the flame, substantially as shown and described.

3. In a burner of the character herein set forth, the combination with the vaporizing-chamber having inlet and outlet openings in opposite ends and alternating internal partitions each notched in its upper portion and said notches lying in a straight line extending from the inlet to the outlet openings, a conical deflector formed integrally with the bottom of the chamber, the burner-plug supplied with inclined jet-orifices to spread the gas or vapor, and means substantially as described for securing the vaporizing-chamber to the bottom of the object to be heated, for the purposes specified.

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

MORTIMER G. LEWIS.

Witnesses:

C. SEDGWICK,
WORTH OSGOOD.