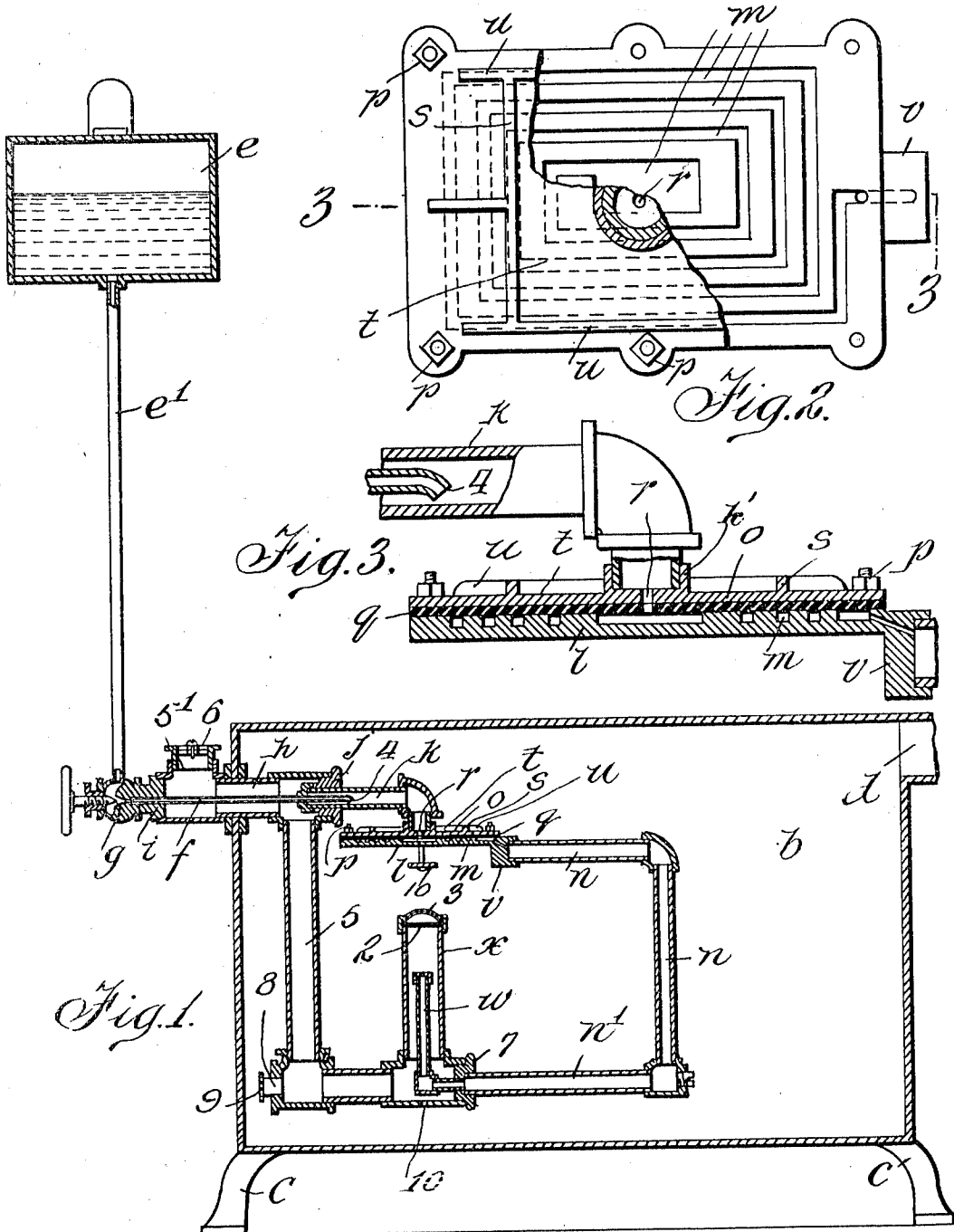


G. L. HOGAN.
OIL BURNER.

APPLICATION FILED SEPT. 28, 1912.

Patented May 13, 1913.

1,061,290.



WITNESSES

Robert L. Batcher
Wm. J. F. Smith

INVENTOR

GEORGE L. HOGAN

BY ATTORNEY

Wm. J. F. Smith

UNITED STATES PATENT OFFICE.

GEORGE LEWIS HOGAN, OF MONTREAL, QUEBEC, CANADA, ASSIGNOR OF ONE-HALF TO
ARTHUR BAILEY, OF SEATTLE, WASHINGTON.

OIL-BURNER.

1,061,290.

Specification of Letters Patent.

Patented May 13, 1913.

Application filed September 28, 1912. Serial No. 722,961.

To all whom it may concern:

Be it known that I, GEORGE LEWIS HOGAN, a citizen of the United States, residing at 56 Sherbrooke street west, Montreal, Province of Quebec, Canada, have invented certain new and useful Improvements in Oil-Burners; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to improvements in oil burners wherein the oil is converted into vapor which is consumed to promote heat for heating or cooking purposes.

Certain of the objects of my invention are to provide means for first converting the oil into vapor and then into gas and to finally draw a supply of air from the exterior of the combustion chamber of the burner and mix the same with the gas prior to the ignition of the latter; and also to provide an immediate regulation of the oil supply by controlling such supply at the outlet of the pipe to the vaporizing apparatus.

Further objects and advantages will be hereinafter described and particularly pointed out in the claims.

For full comprehension, however, of my invention reference must be had to the accompanying drawings forming a part of this specification, in which like reference characters indicate the same parts and wherein:

Figure 1 is a vertical sectional view of my improved burner; Fig. 2 is a plan view of the gas chamber with the upper portion partly broken away; and Fig. 3 is a section taken on line 3—3 Fig. 2 and including the vaporizing chamber.

Broadly speaking my improved oil burner comprises an oil supply pipe which is in communication with a gas chamber, while intermediate of the supply pipe and gas chamber is located a vaporizing chamber. The gas chamber communicates with a burner which receives a supply of air and is constructed so as to present a mixing chamber wherein the gas or vapor and air is first mingled and then passes to the point where it is ignited.

Referring now to the drawings, *b* indicates a casing or combustion chamber which is preferably supported on legs *c* and has an outlet *d* while *e* indicates an oil reservoir which is suitably supported adjacent to and preferably above the casing and communicates with the oil converting and burning apparatus by a pipe or tubing *e'*. The present apparatus may be used with or without the casing *b*.

The oil supply pipe *f* is connected to the pipe *e'* by a needle valve *g* and extends from outside the casing, in a preferably horizontal line to a point within the latter, terminating in an outlet lying at an angle to the pipe and preferably formed as a downwardly curved drip outlet *h* and being inclosed by a pipe or chamber *k* and supported within the latter by plugs *i* and *j* at the ends of the same. The oil supply pipe is preferably of small bore and terminates within a pipe or chamber *k* extending from and supported by the plug *j* and constituting the vaporizing chamber.

The chamber *k* is coupled or otherwise connected to a gas forming chamber having a tortuous passage formed therein. The gas chamber may be of any desired form but I prefer to construct it in two rectangular parts bolted or otherwise fastened together. The bottom portion *l* has formed therein a passage *m* which communicates at one end with the chamber *k* and extends in a tortuous path therefrom to a pipe *n* leading to the burner. The top portion *o* comprises a cover for the portion *l* to which it is secured by bolts *p* while a sheet *q* of asbestos or like insulating material is interposed between the two portions. The top portion is directly connected to the chamber *k* through the medium of an annular flange *k'* and has a vent *r* therein leading from the latter to the passage *m* while a series of ribs *s* upon the top of the upper portion form a pan *t* for spirits which are adapted to be ignited to initially heat and so vaporize the oil in the chamber *k* from which it passes to the passage *m*. The chamber *k* as clearly seen in Fig. 1, extends over the pan, being connected to the gas chamber

preferably near the middle thereof. Ribs *u* reinforce the sides of the pan *t* and prevent warping of the latter when heated.

The burner is preferably located below the gas chamber so that the latter will be exposed to the flame from the burner which will heat the latter producing vapor or gas in the passage *m*. The pipe *n* may be connected to the gas chamber through the medium of a coupling *v* integral with the latter. The pipe *n* extends to the burner which includes a vertically disposed tip *w*.

Instead of mixing the gas or vapor coming from the tip *w* with the more or less gas laden air inside the casing I have formed a chamber *x* inclosing the tip and supplied with air from the exterior of the casing. The chamber *x* is protected at the top, at which point the ignition of the gas takes place, by one or more but preferably two screens 2 and 3, one a disk and the other either a curved or deflected screen which prevent back flashing. The lower end of the chamber *x* is in communication with the exterior of the casing by means of a conduit 5 which includes the chamber *h* and passes through the casing at the same point as the pipe *f* and held preferably by lock nuts and is provided with an air inlet 5' outside the casing. The supply of air to the conduit is regulated by a damper 6. The conduit is also provided with an auxiliary air vent 8 which communicates with the interior of the casing and is protected by a heavy screen or perforated plate 9 to prevent back flashing although this vent is only necessary when conditions will not permit the use of the full capacity of the inlet 5' as for instance, when the burner is located in a confined space, and there is not sufficient space to apply as large a damper fitting as is shown in the drawings.

The pipe *n* is preferably constructed to present a straight portion *n'* adjacent to the tip *w* and is provided with a plug 7 which may be removed and the pipe cleaned or an extra burner coupled to pipe *n*. A vent 10 is located in the bottom of chamber *x* to carry off any oil that may collect in the latter.

Gas or vapor is generated in proportion to the flow of oil and when a sufficient quantity is obtained the flow is stopped by closing the needle valve until such time as the pressure of the vapor is depleted by its consumption at the tip *w*. The disadvantage of this is that when the needle valve is closed the oil remaining in the inner portion of the pipe *f* will still feed notwithstanding the back pressure and to overcome this and to provide a control immediately the gas pressure rises and falls, I have formed the end of the pipe *f* with the downwardly curved or bent end 4 or the equivalent thereof which

will deflect the path of the oil out of the line of the pipe at a point adjacent to the outlet, always catching the drain of the oil supply and keeping the outlet end of the pipe filled, in which condition the oil at the outlet 4 will as the pressure rises be influenced and directly controlled by the back pressure and so prevent the feeding of the oil after the gas has reached a certain pressure. In like manner when more oil is required the feed will be immediate.

The operation of my improved oil burner is as follows: Spirits such as alcohol is put into the pan *t* and ignited to primarily heat the chamber *h* and the oil supply is started, the oil being vaporized in the heated chamber. The vapor and possibly some oil then passes through the gas chamber, pipe *n*, *n'* and tip *w* when mingling with the air in chamber *x* it passes out through the screens 2 and 3 and is ignited, the flame resulting therefrom playing upon the gas chamber heating the same and so converting a portion of the vapor passing through the tortuous passage *m* into gas which passes through pipe *n*, *n'* to the tip and in like manner as the preliminary feed of vapor, mingles with the air in the chamber *x* and is consumed at 3. The heat derived from the burning alcohol is merely temporary as the flame 3 continues the heating of such chamber when the alcohol has been consumed. If the heat from the burner becomes too intense a plate or screen 10 may be interposed between the burner and gas chamber. By providing the chamber *x* wherein air from the exterior of the casing is mixed with the gas or vapor prior to the ignition of the latter, a blue or "Bunsen" flame is produced which is capable of generating an intense heat.

What I claim is as follows:

1. In an oil burner, the combination with a combustion chamber and an oil inlet, of a vaporizing chamber, an oil supply passage leading from the oil inlet to the vaporizing chamber, a tip, a gas chamber located intermediate of and in communication with the vaporizing chamber and the said tip, a chamber within the combustion chamber and inclosing the tip, and a conduit leading from the exterior of the combustion chamber to the said inclosing chamber.
2. In an oil burner, the combination with an oil supply reservoir, of a vaporizing chamber, an oil supply passage leading from the oil reservoir to the vaporizing chamber, a gas chamber in communication with the vaporizing chamber and located beneath the same, a pan formed upon the top of the gas chamber, ribs reinforcing the sides of the pan, and a tip in communication with the gas chamber and situated below the latter.
3. In an oil burning apparatus, a gas

chamber including a top portion having a
vent therethrough and a bottom portion
bolted to the top portion, the upper surface
of the top portion having a series of ribs
5 thereon forming a pan and an annular
flange encircling the said vent, and the bot-
tom portion having a tortuous path formed
therein and leading from the said vent.

In testimony whereof, I have signed my
name to this specification, in the presence of 10
two subscribing witnesses.

GEORGE LEWIS HOGAN.

Witnesses:

STANLEY C. KING,
FRED J. GEARY.