June 16, 1942. J. MICELI ET AL 2,286,497

POT TYPE VAPORIZING OIL BURNER

Filed Sept. 21, 1938 3 Sheets-Sheet 1

Fig. 1.

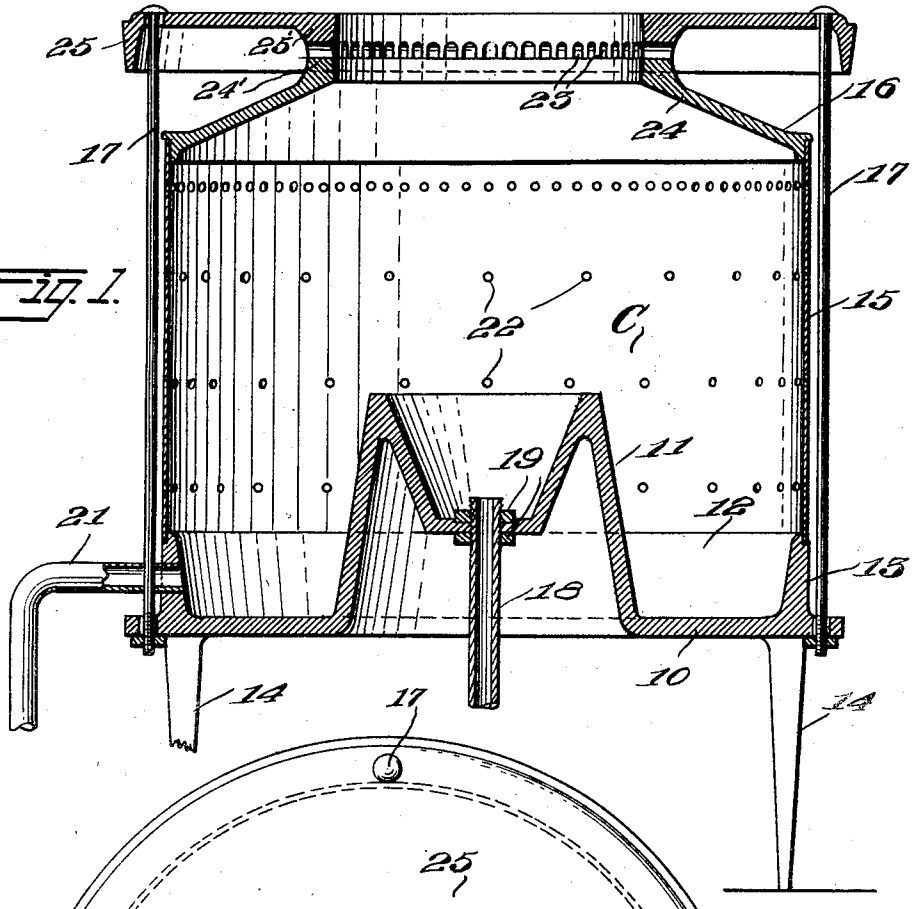
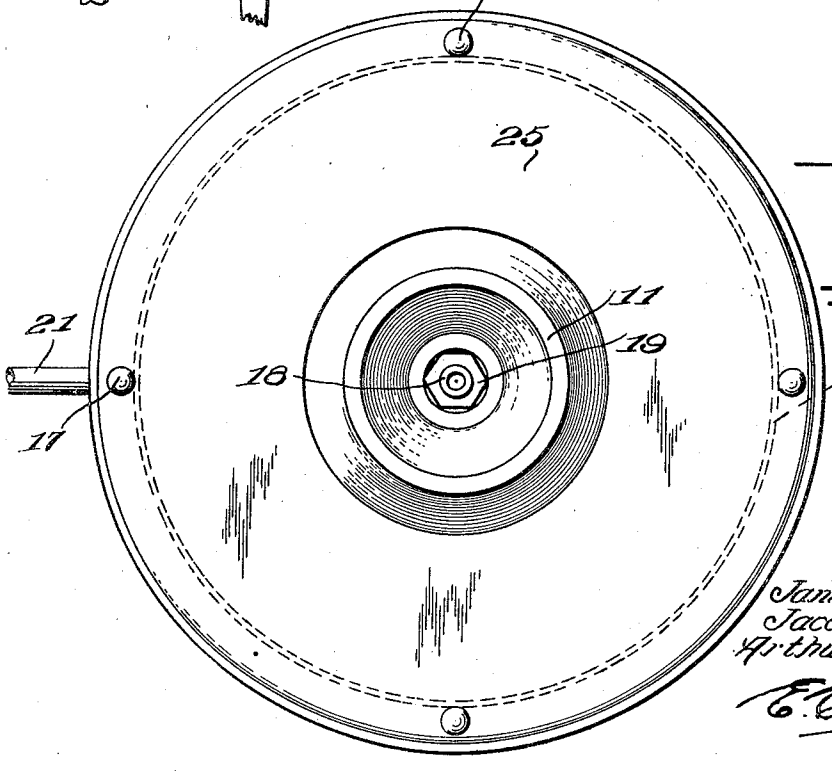


Fig. 2.



Inventors
James Miceli
Jacob Teller
Arthur P. Schulz
E. E. Wearn
Attorney

June 16, 1942. J. MICELI ET AL 2,286,497

POT TYPE VAPORIZING OIL BURNER

Filed Sept. 21, 1938 3 Sheets-Sheet 2

Fig. 3.

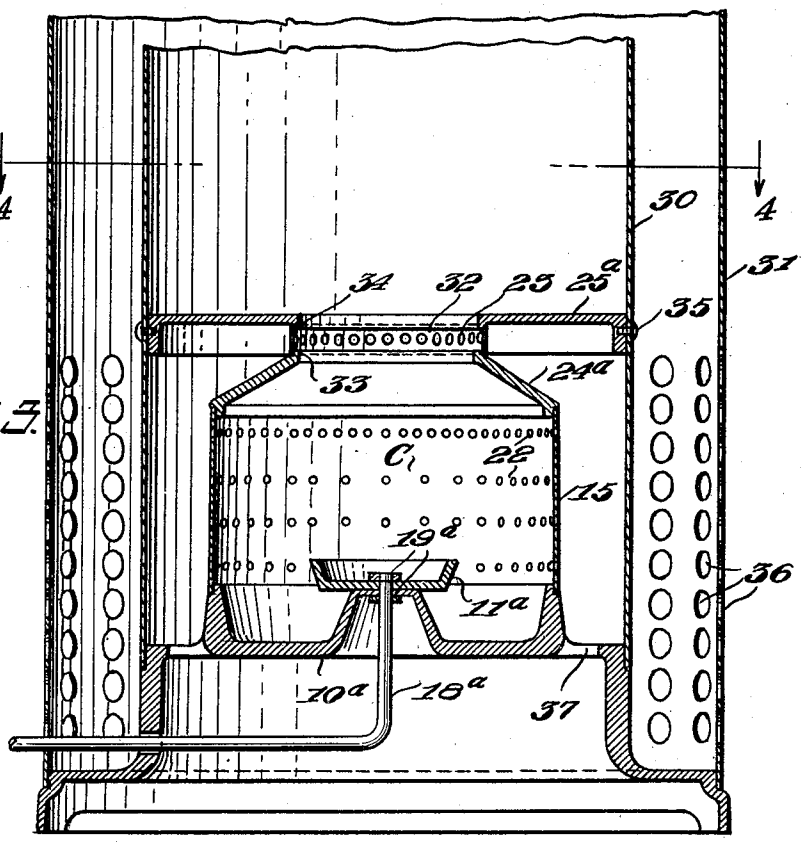
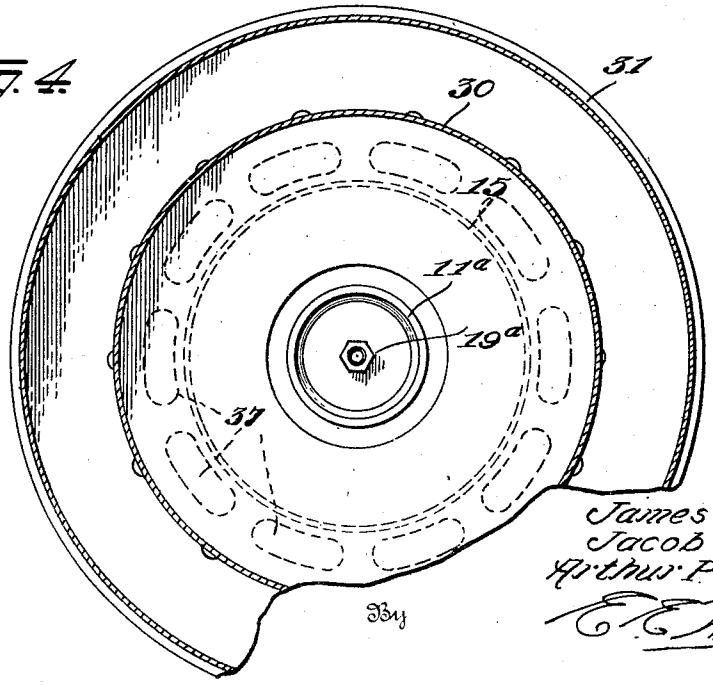


Fig. 4.



Inventors
James Miceli
Jacob Teller
Arthur P Schultz
By
Attorney

June 16, 1942. J. MICELI ET AL 2,286,497

POT TYPE VAPORIZING OIL BURNER

Filed Sept. 21, 1938 3 Sheets-Sheet 3

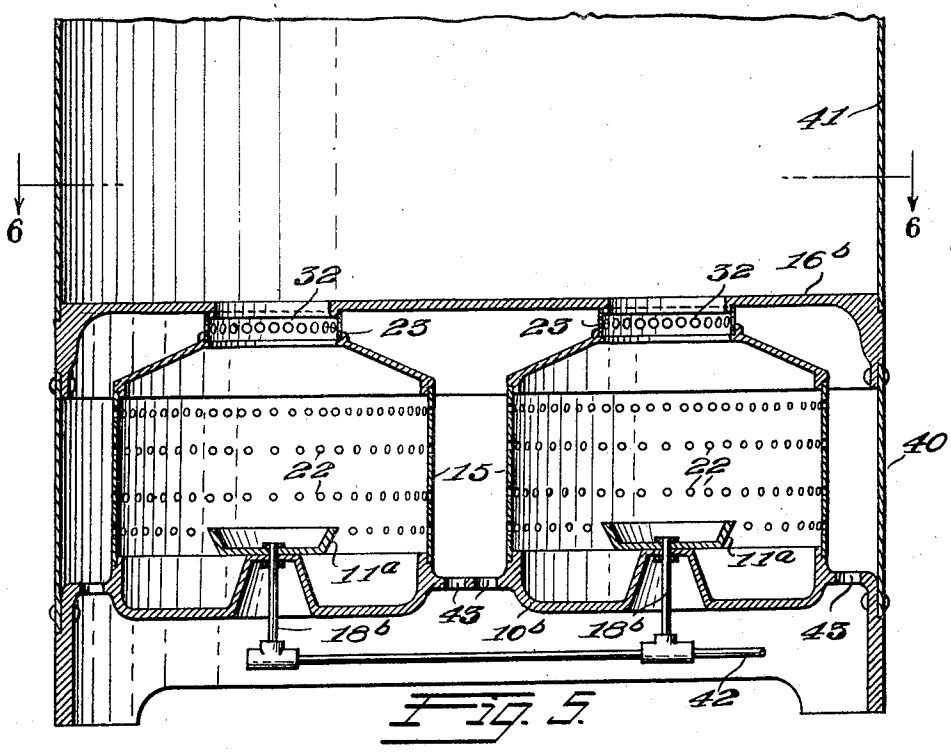


Fig. 5.

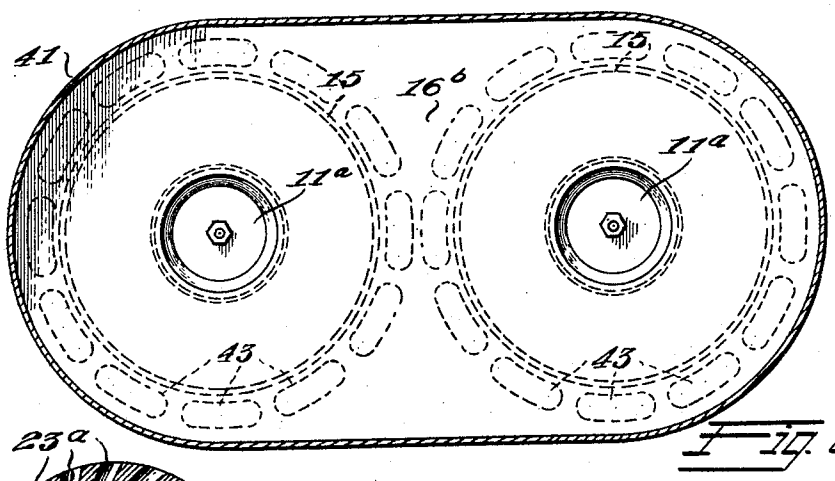


Fig. 6.

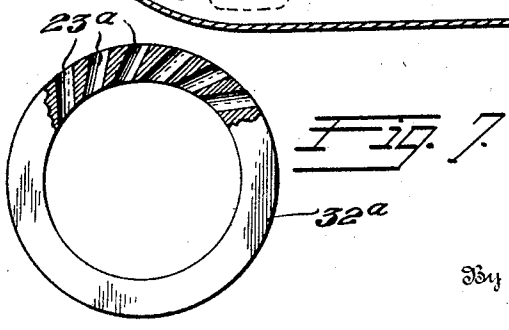


Fig. 7.

By

Inventors
James Miceli
Jacob Teller
Arthur P. Schulz
E. E. Wear
Attorney

Patented June 16, 1942 2,286,497

UNITED STATES PATENT OFFICE

2,286,497

POT TYPE VAPORIZING OIL BURNER

James Miceli and Jacob Teller, Chicago, and Arthur P. Schulz, Hinsdale, Ill., assignors to G. & J. Teller, Chicago, Ill., a partnership composed of Grace Teller and Jacob Teller

Application September 21, 1938, Serial No. 231,076

4 Claims. (Cl. 158—91)

This invention relates to combustion apparatus.

More specifically, the invention relates to an oil burner of the vaporizing pot-type.

A primary object of the invention is the provision of a simple, low cost oil burning unit having no moving parts and embodying cooperating oil and air supply means for most efficient heating irrespective of the height of flame within the unit.

A further object of the invention is the provision of an oil burning unit including a chamber having an oil receiving and heat radiating base member and air supply apertures in the wall of the chamber above the base member for efficient burning of oil which becomes vaporized upon reaching the base member.

A still further object of the invention is the provision of an oil burning unit including a chamber having an oil receiving base member and air admitting apertures in the wall of the chamber above the base members, the apertures being more closely spaced and of greater diameter adjacent the top of the chamber for efficient air supply commensurate with the height of flame within the chamber.

For a more complete understanding of the nature and objects of the invention, reference will now be had to the following detailed description, taken in connection with the accompanying drawings, wherein—

Fig. 1 is a diametrical vertical sectional view of an oil burning unit, constructed in accordance with a preferred embodiment of the invention.

Fig. 2 is a top plan view of the construction illustrated in Fig. 1.

Fig. 3 is a view similar to Fig. 4 disclosing a modified construction.

Fig. 4 is a horizontal section in a plane substantially as represented by the line 4—4 in Fig. 3.

Fig. 5 is a view similar to Fig. 1 disclosing a still further modification.

Fig. 6 is a horizontal section in a plane substantially as represented by the line 6—6 in Fig. 5.

Fig. 7 is a view partially in top plan and partially in horizontal section of a modified form of secondary air supply collar.

Referring to the drawings by reference characters, and wherein like characters designate like parts, and referring first to Figs. 1 and 2, 10 designates a metal base member or bottom which may be cast iron or any other suitable metal and which includes a central raised cup 11 and a concentrically disposed annular oil receiving trough 12 defined by the cup and a vertical flange 13 on the outer edge of the bottom.

The bottom member 10 is preferably supported by legs 14 of any desired height and form.

Supported on the upper edge of the flange 13 is the lower end of a metallic drum 15 which drum at its upper end supports a top casting or flame plate member 16 and the drum 15 is firmly bound between the bottom member 10 and top member 16 by means of tie bolts 17.

The cup 11 is centrally apertured in its bottom for the reception of the end of an oil supply conduit 18 which is maintained in oil-tight engagement with the cup by means of nuts 19 threaded on the conduit 18 and engaging opposite sides of the bottom of the cup 11.

An overflow conduit 21 communicates with the trough 12 intermediate the top and bottom thereof.

The bottom member 10, drum 15, and top member 16 jointly provide an oil burning chamber C and in order to provide an efficient combustible mixture air holes or apertures are provided in the wall of the chamber C.

The drum 15 is preferably provided with relatively small holes 22 which, as indicated, are more closely arranged adjacent the upper end thereof for admitting the necessary greater volume of air as the height of the flame increases.

When the flame reaches a point adjacent the top of the chamber C larger holes or apertures are necessary for most efficient combustion and accordingly, the top member 16 is provided with a circular series of relatively large air holes or apertures 23.

In accordance with the preferred embodiment of the invention the apertures 23 are provided by U-shaped notches in one of two superposed rings 24 and 25 the former of which is of dome form and which jointly provide the top member 16.

The rings 24 and 25 are provided with cooperating upwardly and downwardly projecting flanges 24' and 25', the latter of which is provided with the U-shaped notches which, in conjunction with the former provide the apertures 23.

In the operation of the preferred form of the invention above described, oil or other liquid hydrocarbon fuel is admitted through the conduit 18 to the bottom of the cup 11.

When a metering valve is used in connection with the burner to regulate the flow of oil in the well known manner, the oil will fill the cup and

flow down the outer inclined side thereof, and into the trough 12.

Upon ignition of the oil, heat will be generated directly above the cup, primary mixing air entering the chamber C through the small apertures 22. The heat thus generated by the flame causes an increased rate of evaporation of oil in the cup as well as in the trough with a consequent greater and hotter flame.

When the oil is supplied by a metering valve it will go to the level of the over flow conduit 21 in the trough 12 and will flow through such conduit into a suitable safety device having an overflow valve. The valve will close the oil supply and not permit same to flow until the valve is re-set manually.

The small aperture 22 in the drum 15 provides sufficient air for pilot burning and burning at low flame. When, however, the flame reaches the top of the chamber C, the relatively large openings 22 provide a required greater volume of air for efficient burning of the oil.

During the operation of the burner at high flame, it is to be observed that the oil overflowing the cup 11 causes an increased rate of vaporization of the oil due to its running over the hot metal of the cast iron bottom 10, which is being supplied with heat by means of radiation and conductions from the other metal parts of the burner.

In accordance with the modified construction illustrated in Figs. 3 and 4, an oil burning unit is operatively associated with a heater casing embodying an inner imperforate wall 30 and an outer perforated wall 31 concentrically spaced from the wall 30.

The heating unit in this form of the invention is modified to the extent of the cup and the apertured portion of the top member.

In this form of the invention, the cup 11*a* is separate from the bottom 10*a* and detachably secured thereto by the nuts 19*a* which secure the oil intake conduit 18*a* in position. The high flame or secondary air openings 23 are in accordance with this embodiment of the invention forward in a unitary ring 32 which is maintained in position by opposed flanges 33 and 34 on the rings 24*a* and 25*a* respectively.

The inner wall 30 is secured to the ring 25*a* as indicated at 35 and the outer wall 31 is provided with relatively large apertures 36 for admission of cold air which will become heated as it travels upwardly in contact with the heated wall 30.

The bottom member 10*a* between the drum 14 and wall 30 is provided with openings 37 for admitting air to the chamber C through the air openings 22 and 23.

The oil burning unit in accordance with this form of the invention will operate in the same manner as that of the preferred form above described and the heater casing associated therewith will effectively function to provide heated air for conveyance to any desired location.

Figs. 5 and 6 of the drawings disclose a double burner arrangement wherein a pair of drums 15 are supported on a bottom member 10*b* which member and the top member 16*b* are connected by a casing wall 40, the member 16*b* further supporting a wall 41 in continuation of the wall 40.

The walls 40 and 41 correspond in function to the wall 30 in Figs. 3 and 4.

The burner units in accordance with this embodiment of the invention are of the same construction as disclosed in Figs. 3 and 4 but obviously may be of the construction disclosed in Figs. 1 and 2.

It is to be particularly noted that the assembly according to Figs. 5 and 6 include oil, feed conduits 18*b* jointly connected by a single feed conduit 42 and in accordance with this embodiment of the invention the bottom member 10*b* is provided with air openings 43 which surround both of the burner units.

In Fig. 7 is disclosed a modified secondary air inlet ring or collar 32*a* wherein the air openings 23*a* are arranged at an angle to the radii of the ring instead of being radially arranged as in Figs. 1, 3 and 5.

With the openings angularly arranged as in Fig. 7, the flame will, due to the incoming secondary air, be of spiral formation and will accordingly more efficiently heat the surrounding casing wall.

While the angular air openings 23*a* are disclosed as in a unitary ring 32*a* they may equally as well be provided in accordance with the castellated construction in Figs. 1 and 2.

While we have disclosed different embodiments of our invention, it is to be particularly noted that the same fundamental operative mechanical features are involved in all, viz, a burner unit comprising a bottom member providing an oil trough, an oil receiving cup centrally surmounted by the member, a perforated primary air admitting drum supported on the bottom member and a top member supported by the drum and having relatively large secondary air admitting openings wherein oil is admitted to the cup and trough and the primary and secondary air openings 22 and 23 provide sufficient air at the proper points for an efficient flame within the chamber C.

It is to be particularly noted that the oil burning unit is simple in construction, involving no moving parts to be subject to wear and that the cooperating bottom and top members and interposed drum provide a chamber wherein oil admitted thereto is most efficiently vaporized and burned.

While we have disclosed but certain specific embodiments of our invention same are to be considered as illustrative only, and not restrictive, the scope of the invention being defined in the subjoined claims.

What we claim and desire to secure by U. S. Letters Patent is:

1. An oil burner unit comprising a circular bottom plate having an annular vertical flange adjacent its margin, the plate having a central annular raised portion concentric with the flange and defining an oil trough between same and the flange, the raised portion extending substantially above the upper edge of the flange for providing a maximum oil contacting surface, an unobstructed oil supply cup within the raised portion and including side walls in continuation of the raised portion and a bottom substantially at the level of the upper edge of the flange, an upper centrally apertured flame plate member, and a drum having air openings therein disposed between the bottom plate and the flame plate member.

2. The structure defined in claim 1 together with a fuel inlet conduit extending into the raised portion and through the bottom of the cup and a fuel overflow conduit extending through said flange, and wherein said raised portion and said oil supply cup are each of frusto-conical form with one disposed in opposition to the other.

3. An oil burner unit comprising a circular bottom plate having an annular flange adjacent its margin, the plate having a central annular raised portion defining an oil trough between same and the flange, an oil supply cup supported by the raised portion, an upper centrally apertured flame plate member, the flame plate member comprising upper and lower rings having cooperating flanges defining the aperture in the flame plate member, a drum having air openings therein disposed between the upper edge of the flange on the bottom plate and the margin of the lower ring, the upper ring being of greater diameter than the lower ring, and vertically disposed tie bolts extending through the upper ring and the bottom plate outwardly of the flange thereon for holding the bottom plate, rings and drum in assembled position.

4. The structure defined in claim 3 wherein secondary air openings are provided in the wall of the aperture in the flame plate member, the openings being formed by circumferentially spaced notches in at least one of the ring flanges.

JAMES MICELI.
JACOB TELLER.
ARTHUR P. SCHULZ.