

Aug. 23, 1927.

1,640,240

O. J. KIRCHEN
LIQUID FUEL BURNER

Filed July 27, 1926

2 Sheets-Sheet 1

Fig. 1.

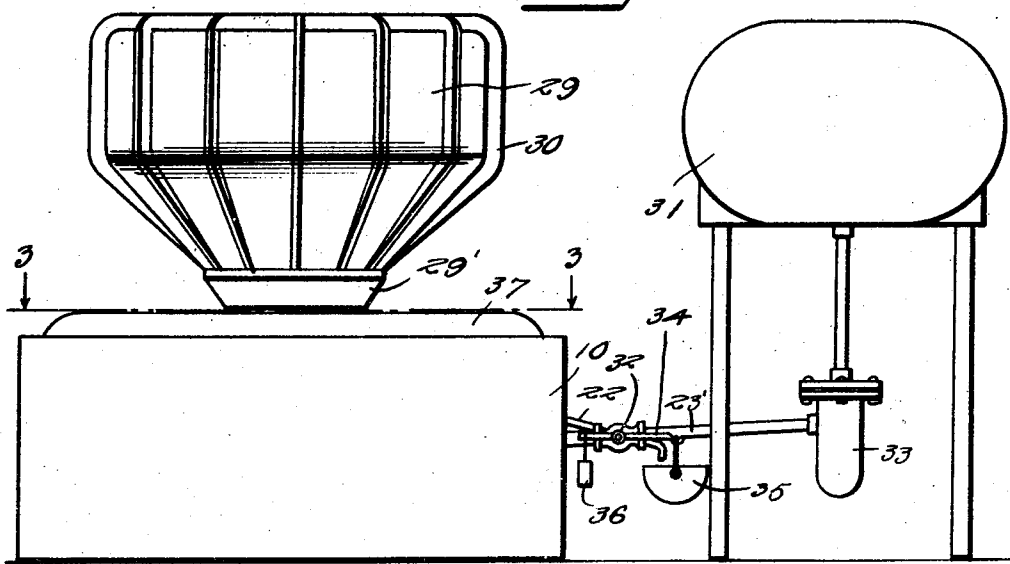


Fig. 3.

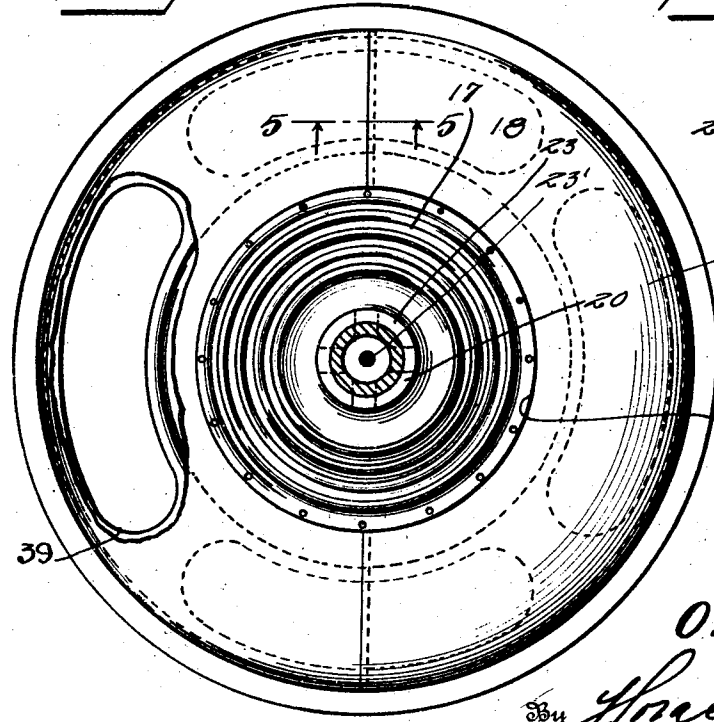


Fig. 4.

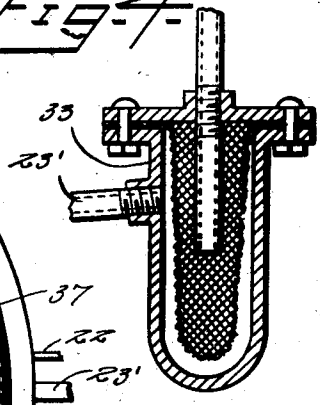


Fig. 5.



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2 Sheets-Sheet 2

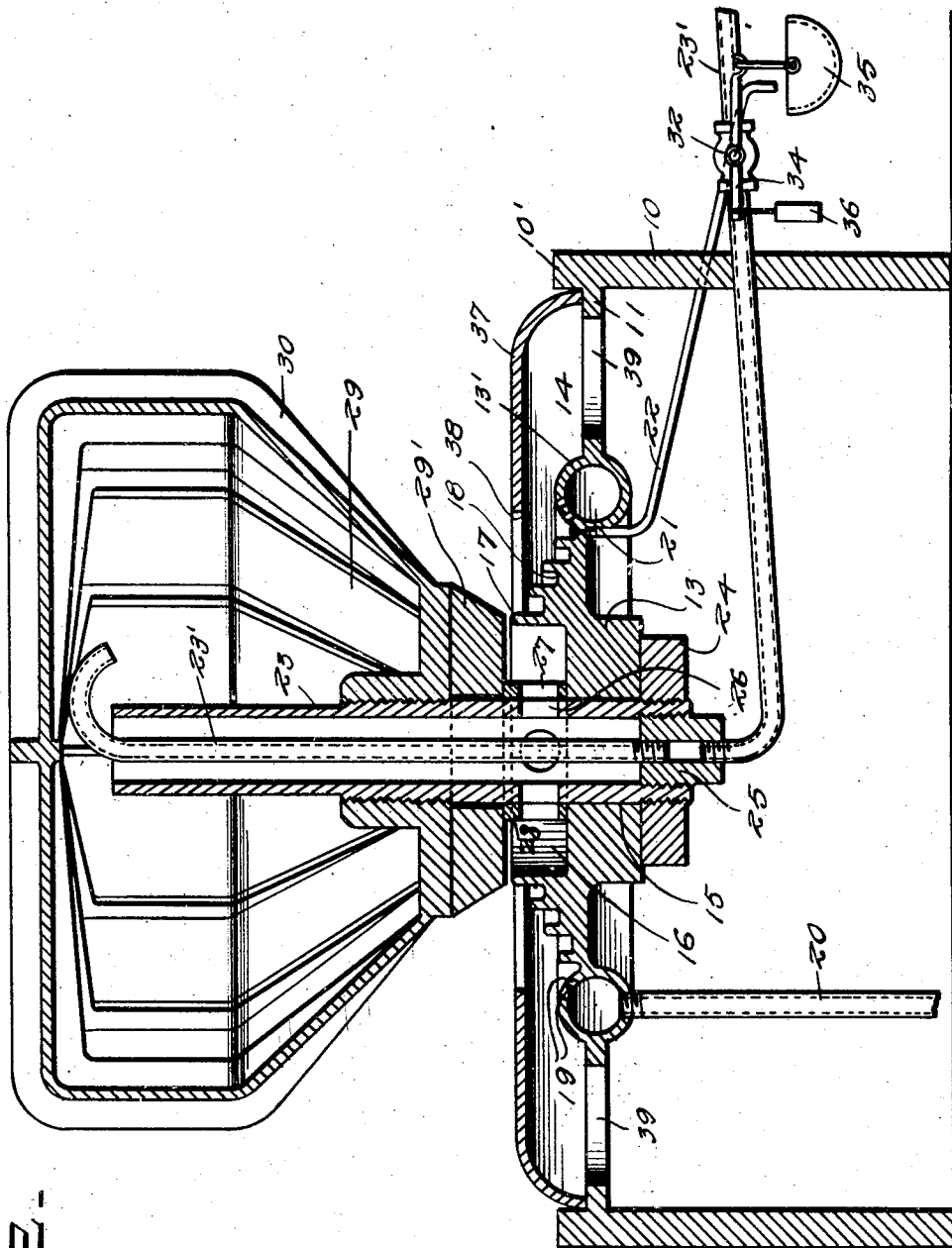


FIG. 2

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UNITED STATES PATENT OFFICE.

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LIQUID-FUEL BURNER.

Application filed July 27, 1926. Serial No. 125,297.

This invention relates to new and useful improvements in heating devices and particularly liquid fuel burning devices.

One object of the invention is to provide a burner of this character which is simple in construction, durable and effective in its operation, and which can be manufactured at a comparatively low cost.

Another object is to provide an oil burner of this character which economizes in the use of liquid fuel, and wherein the gasification of the fuel is produced in a closed chamber, thereby obviating the loss of gas which ordinarily takes place when gasification is produced in the open air.

A further object is to provide a burner of this character wherein the flame of the burning gas issues from a narrow circular slit, thereby producing a sheet-shaped circular flame, directly beneath the generating chamber.

Other objects and advantages will be apparent from the following description when taken in connection with the accompanying drawings.

In the drawings:

Figure 1 is an elevation of the burner and the connections to the supply tank.

Figure 2 is an enlarged vertical sectional detail view of the burner.

Figure 3 is a horizontal sectional view on the line 3—3 of Figure 1, enlarged.

Figure 4 is a detail sectional view of the strainer in the oil line.

Figure 5 is an enlarged section on the line 5—5 of Figure 3.

Referring particularly to the accompanying drawings, and especially to Figure 1, 10 represents the base of the burner which has the upper horizontal wall 11. Formed in the center of the wall 11 is the lower portion 13, of the burner. This portion 13 has a central vertical opening 15 therethrough, and in the upper face of said portion, which portion is preferably cast, there is formed a central recess 16. Surrounding the recess 16 are the stepped circular ribs and grooves 17 and 18 for receiving oil, overflowing from the recess 16, such oil being adapted to be ignited to heat the generating chamber which will later be described. The peripheral portion of the casting 13 is in the form of a hollow ring 13', and formed in the upper portion thereof, at certain points, are gas escape openings 19, to provide for the use

of illuminating gas to start the burner. A gas conduit 20 is connected to the lower side of the said ring portion 13'. At one point in the lowermost of the grooves 18 there is formed a slight elevation in the bottom of such groove, and formed vertically through this elevation is a drain opening 21, connected with a pipe 22, for carrying off the overflow from said groove, said pipe leading out through the side of the base. Disposed vertically through the opening 15 is a tube 23, the lower end of which is both internally and externally threaded, the outer threaded portion receiving a nut 24 thereon and adapted to bear against the lower face of the casting, while the internally threaded portion receives a centrally apertured plug 25. Formed in the sides of the tube 23 are the laterally directed openings 26, which are arranged to discharge from the interior of the tube into the recess 16. Surrounding the apertured portion of the tube 23, and provided with corresponding openings 27, registering with the openings 26, is a sleeve 28, said sleeve being of a height slightly greater than the height of the innermost of the ribs 18. The portion of the tube 23, above the casting 13, is threaded into the lower portion of the closed chamber 29, the bottom of said chamber being tapered downwardly and resting on the upper end of the said sleeve 28, whereby to space the lower face of this tapered portion slightly above the uppermost of the ribs 17, whereby to provide a narrow opening completely surrounding the burner. The walls of the chamber 29 are formed with heat radiating and reinforcing ribs 30, both inwardly and outwardly thereof. The tube 23 extends to a point adjacent the upper wall of the chamber, and within said chamber. Disposed vertically and centrally in the tube 23, with its lower end extending through the opening in the plug 25, and its upper end bent to extend laterally beyond one side of the upper end of the tube, is a pipe 23' of small diameter, for conveying oil into the chamber. The other end of the pipe 23' is connected to the oil tank 31, and is provided with a cut off valve 32, and the strainer 33. One end of the valve is provided with a transverse arm 34 on one end of which is supported a cup 35, arranged to receive the overflow oil from the lower groove 18, while the other end is provided with a counterbalancing weight 36, the valve being adapted

to be closed when the cup is full of oil, and to be opened by the weight, when the cup is empty.

The base has an upstanding flange 10', and disposed on the horizontal wall 11, inwardly of the said flange, is an inverted concavo-convex guard disk 37, a central opening 38 being formed therein for passage of air to the jet of the burner. In the said wall 11 there are formed a plurality of elongated openings 39, through which air passes, to aid in the combustion of the gasified oil, at the jet or opening between the chamber and casting rib 17.

The valve 32 being in open position, oil will flow from the tank through the pipe 23', and be discharged into the chamber 29. When the oil level in the chamber rises above the upper end of the pipe or tube 23, such oil will flow down said tube into the recess 16, from whence it overflows to the grooves 18. The oil in the grooves is then ignited, whereupon the flame therefrom will heat the chamber to such a temperature that the oil in the chamber will be gasified and escape through the tube 23, and issue from the jet or opening between the casting 13 and the tapered bottom of the chamber, such gas igniting from the flame of burning oil in the grooves 18. When the chamber has become sufficiently hot, the oil flowing thereinto, will immediately become gasified and issue from the jet in the form of gas, where it burns.

Where it is not desired to fill the chamber 29 with oil, so that it overflows into the grooves 18, ordinary illuminating gas may be conveyed to the hollow ring 13', by means of the pipe 20, so that the chamber may be heated by the gas flame, until the gasified oil begins to burn at the jet of the burner, when the operator cuts off the flow of illuminating gas. By placing sleeves 28, of different

lengths on the tube 23, the space between the bottom of the chamber 29, and the upper rib 17, may be varied, whereby to regulate the flow of gas therethrough.

Between the gasifying chamber and the sleeve 28 is a removable block 29' which rests on said sleeve, and in turn receives the bottom of the chamber thereon.

What is claimed is:

1. A liquid fuel burning device including a starting member having a recess and grooves in its upper face, a tube disposed vertically through the member and having openings leading into the recess; a sleeve surrounding the tube and resting within the recess, said sleeve having openings registering with the tube openings, a gasifying chamber supported on the sleeve whereby its bottom face is spaced above the wall of the recess to provide a gas escape crevice, said tube extending into the chamber, and a fuel conduit leading into the chamber.

2. A liquid fuel burning device including a member having a central recess, a concentric series of stepped grooves, and a circumferential tubular portion having upwardly directed openings for receiving overflow of fuel from said grooves, a vertical tube extending through the member and recess, a liquid fuel conduit extending through the tube, said tube having lateral openings within the recess, a gas generating chamber above the recess and receiving the upper portion of the tube therein, a sleeve surrounding the tube within the recess and being formed with openings registering with the openings of the tube, said chamber resting on the sleeve whereby to be spaced from the member to provide a gas escape crevice.

In testimony whereof, I affix my signature.

OTTO J. KIRCHEN.