

July 6, 1937.

J. C. STEINER

2,086,369

BURNER

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Fig. 1.

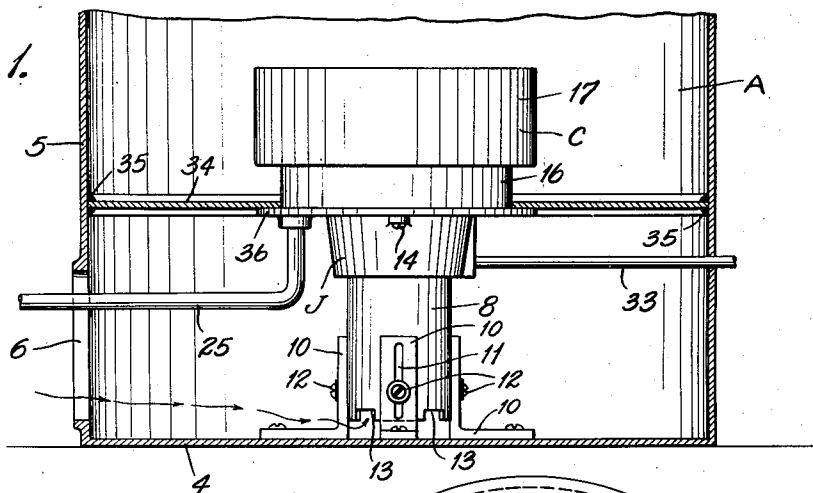


Fig. 2.

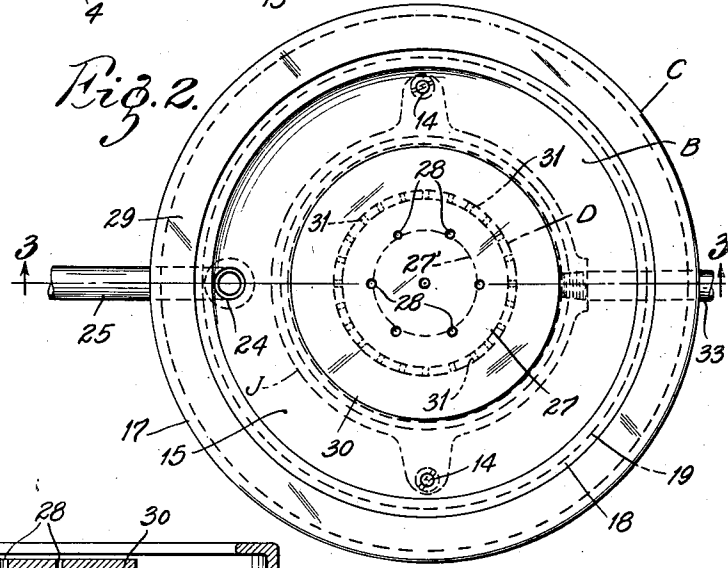
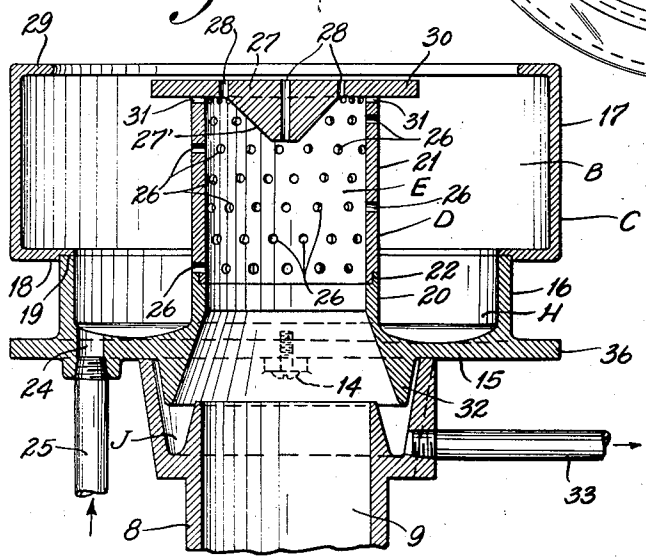


Fig. 3.



INVENTOR:
J. C. STEINER.

By *Albert J. McCauley*
ATTORNEY

UNITED STATES PATENT OFFICE

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BURNER

Joseph C. Steiner, St. Louis, Mo.

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1 Claim. (Cl. 158-92)

This invention relates to burners and more specifically to a burner wherein a liquid fuel is vaporized, and thereafter employed to support the combustion.

One of the objects of this invention is to provide a simple, inexpensive and durable burner, which is extremely silent in operation.

Another object of this invention is to produce a fuel burner wherein air is thoroughly mixed with the vaporized fuel to provide a very efficient combustion of the fuel.

A further object of this invention is to produce a compact burner, which may be readily dismounted and thereafter easily installed in a stove, or heating plant, having a relatively small entrance.

A still further object is to produce a burner with a simple and effective overflow, which will control the escape of fuel if the combustion should accidentally cease.

With the foregoing and other objects in view, the invention comprises the novel construction, combination and arrangement of parts hereinafter more specifically described and shown in the accompanying drawing, which illustrates one form of the invention. However, it is to be understood that the invention comprehends changes, variations and modifications which come within the scope of the claims hereunto appended.

Fig. 1 is a side elevation, partly in section, showing a heating plant equipped with a burner embodying the features of this invention.

Fig. 2 is a top view of the burner.

Fig. 3 is a section taken on line 3-3 of Fig. 2, the lower portion of the structure being broken away.

As an illustration of one form of my invention, I have shown a stove, or heating plant, A, having a bottom wall 4 and a side wall 5, which is provided with an opening 6. Since any suitable heating plant, or stove, may be employed, I have omitted many of the usual details of such devices.

In the heating plant A, I have shown a burner which includes a tubular base, or support, 8, having an internal air passageway 9 and legs 10. The legs 10 may be provided with vertical slots 11 which permit the burner to be raised or lowered to the desired position in the heating plant, and then secured by the screws 12. The bottom of the tubular base 8 may be provided with notches 13 so that an adequate supply of air may be admitted to the passageway 9, even though the bottom of the tubular support 9 is located near the bottom 4 of the heating plant A.

Seated on the tubular support 9, and secured thereto by screws 14, is a combustion chamber B having a bottom wall 15, a cylindrical imperforate outer wall C, and a tubular inner wall D extending upwardly from said bottom wall 15 to provide an air passageway E in communication with the air passageway 9 in the tubular base.

The cylindrical outer wall C may comprise a circular annular wall 16 integral with and extending upwardly from the bottom wall 15, and an annular wall 17 removably seated on the wall 16. The annular wall 17 is preferably larger in diameter than the circular wall 16 and has an turned flange 18 which is seated on the wall 16. As shown in Fig. 3, the inner portion of the turned flange 18 is provided with an annular notch 19 to prevent displacement of the wall 17 on the wall 16.

The tubular inner wall D of the combustion chamber B may include a centrally disposed annular wall, or flange, 20, integral with and extending upwardly from the bottom wall 15, and a tubular wall 21 seated on the flange 20. The upper portion of the flange 20 and the lower margin of the tubular wall 21 may be telescoped and interlocked with each other, as shown at 22, to prevent displacement of the tubular wall 21 on the wall 20.

In the drawing I have shown the upper sections 17 and 21 of the walls B and D, respectively, as removable so that the burner may be readily located in a heating plant having a relatively small entrance for said burner. However, it is understood that either one, or both, of these walls may be entirely integral.

In the bottom of the combustion chamber B, a liquid fuel reservoir H is formed by the lower portions 20 and 16 of the inner and outer walls, and the bottom wall 15. The bottom wall 15 is provided with a fuel inlet 24 through which a liquid fuel, such as oil, may be supplied to the reservoir H through a pipe 25, which extends through the opening 6 in the heating plant A to a source of supply (not shown).

During the operation of the burner the oil in reservoir H is vaporized, or gasified, by the radiant heat produced by the combustion of the vapors in the chamber B.

To provide for the combustion of the oil vapors rising from the reservoir H, the portion 21 of the inner wall, which serves as an air distributor, is provided with numerous staggered air discharge ports 26 through which air is discharged toward the outer wall C, and into

the rising oil vapors, or gases. The discharge ports 26 are preferably so arranged, or staggered, that air is discharged in a substantially continuous area around the combustion chamber.

The tubular wall 21 is provided with an upper wall, or closure, 27 which prevents a free escape of the air upwardly through the air distributor. The top wall 27, however, may have a relatively few air discharge ports 28, as shown in Figs. 2 and 3, to provide for a mixing of air with any unburned gases in the flame above the combustion chamber B.

The heated vapors, or gases, rising from the reservoir, or oil well, H, have a tendency to quickly rise and pass entirely beyond the combustion chamber B. To retard the escape of these vapors from the combustion chamber, the upper portion of the outer wall C is provided with an inturned annular baffle flange 29, and the upper wall 27 of the air distributor is extended beyond the inner wall 21 to provide an annular baffle flange 30. These baffle flanges 29 and 30, which extend toward each other, will effectively retard the escape of unburned gases. The baffle flanges 29 and 30 are located at, or near, the top of the combustion chamber, and, as shown in Fig. 3, I prefer to have the baffle flange 29 located in a plane slightly above the flange 30 so as to direct the flame away from the side wall 5 of the heating plant A. This feature is especially advantageous when the side walls of heating plant A are enameled, or otherwise not suitable for resisting an intense heat.

To provide for a very thorough mixing of air with the baffled gases at the upper part of the combustion chamber, I have shown a continuous row of closely spaced, relatively small, air discharge ports 31 located in the portion of the wall 21 immediately below the baffle flange 30. The top wall 27 of the air distributor 21 may be provided with a conical air deflector 27' extending into the air passageway E, as shown in Fig. 3, to divert air to the discharge ports in the portion of the wall 21 immediately below the baffle flange 30.

To prevent the escape of oil if the flame in the combustion chamber should become accidentally extinguished, I have shown an oil receptacle J located below the bottom wall of the combustion chamber, and surrounding the air passageway 9 to receive the excess oil discharged from the oil well 24. The air discharge ports 26 at the lower portion of the wall 21 will serve as

overflow ports for the discharge of excess oil from the oil well H.

Any oil discharged through the ports 26 will flow down the inner face of the annular flange 20, which is provided with an outwardly flaring extension 32 having a greater diameter than the air passageway 9 and projecting downwardly from bottom wall 15 and into the oil receptacle J to direct the oil into said receptacle.

The oil receptacle J may be provided with a conductor 33 leading from said receptacle to remove the oil therefrom.

When the burner herein described is installed in a heating plant, I prefer to seal off the bottom portion of the heating plant to prevent air from passing directly around the burner as secondary air and mixing with the flame issuing from the combustion chamber.

As illustrated in Fig. 1, a piece of sheet metal in the form of a ring 34 may be located in the heating plant and sealed to the wall 5 by cement 35, the inner edge of ring 34 being seated on an annular flange 36 extending laterally from the bottom wall 15 of the burner. This ring 34 will prevent the air entering through the opening 6 from passing upwardly around the outside of the burner. The entire quantity of air will thus pass upwardly through passageways 9 and E, and into the combustion chamber, where it is intimately mixed with the vapors.

I claim:

In an oil burner, a combustion chamber comprising a bottom wall, an outer wall, and a tubular inner wall extending upwardly from said bottom wall to provide an air inlet passageway, said inner, outer and bottom walls forming an oil reservoir at the bottom of said combustion chamber where oil vapors are generated, said tubular inner wall being perforated above said oil reservoir to permit the admission of air to the combustion chamber and also to provide for the discharge of excess oil from said oil reservoir, said tubular inner wall having an oil deflector projecting downwardly from said bottom wall, an oil receptacle below said deflector to receive the oil therefrom, said oil receptacle having an annular inner wall through which air is transmitted to said air inlet passageway, said annular inner wall being at least as large in diameter as the diameter of the tubular inner wall of the combustion chamber and the diameter of the lower portion of said oil deflector being greater than the diameter of said annular inner wall to deflect the oil out of said air passageway.

JOSEPH C. STEINER.