Jan. 1, 1957 C. E. GOULDING, SR 2,776,001

CROSS DRAFT BURNER

Filed April 15, 1953

Fig. 1.

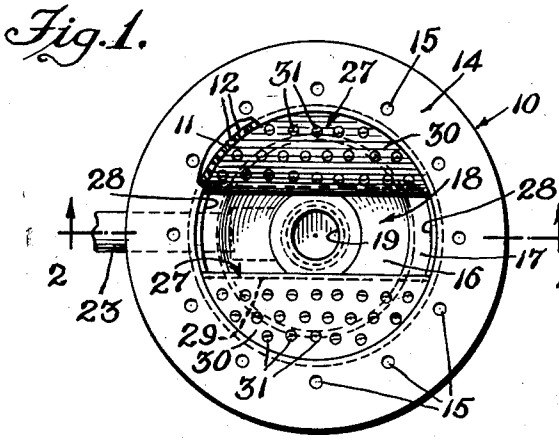


Fig. 2

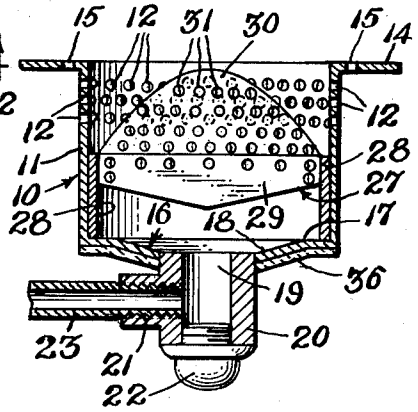


Fig. 3.

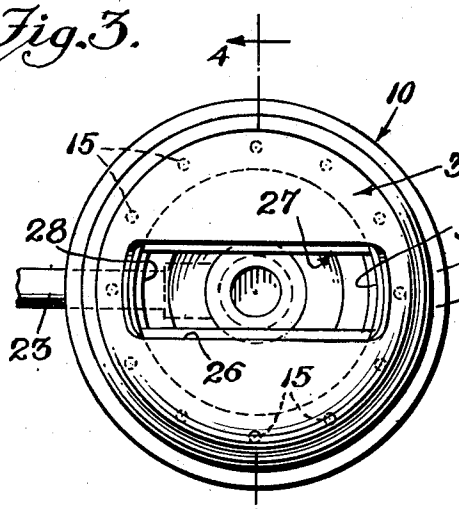
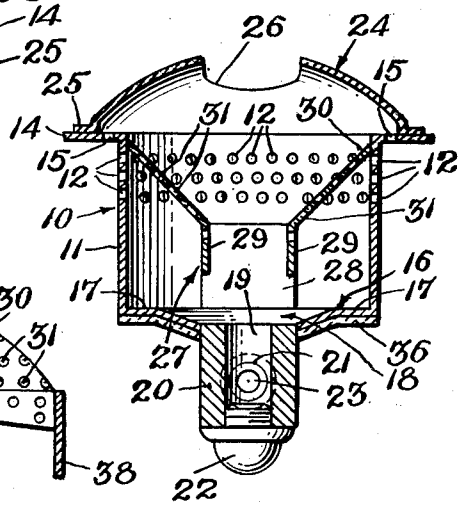


Fig. 4.



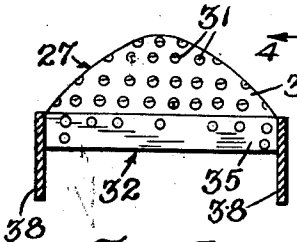


Fig. 5.

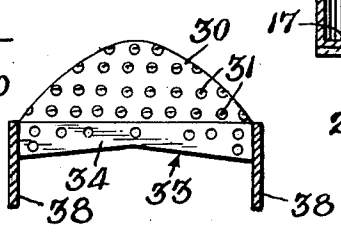


Fig. 6.

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2,776,001

CROSS DRAFT BURNER

Charles Edwin Goulding, Sr., Tampa, Fla.

Application April 15, 1953, Serial No. 348,927

1 Claim. (Cl. 158—91)

This invention relates to a fuel burner, and more particularly to an oil burner.

This invention is an improvement over the oil burner shown and described in my Patent No. 2,154,567, dated April 18, 1939.

The object of the invention is to provide an oil burner which will provide a very intense flame with a minimum amount of fuel, the burner being constructed of a minimum amount of parts.

Another object of the invention is to provide an oil burner which includes a fuel vaporizer for gasifying or vaporizing the fuel before it enters the combustion chamber or burner housing, there being a removable plug on the bottom of the generator so that the generator can be readily cleaned.

A still further object of the invention is to provide a burner which includes a cap that is adapted to be placed on the burner, the flame produced having such a shape as to prevent eddies or cold spots, the being a mechanism provided for preventing overheating or burning of the various parts.

A further object of the invention is to provide a burner which is extremely simple and inexpensive to manufacture.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application, and in which like numerals are used to designate like parts throughout the same:

Figure 1 is a top plan view of the burner, with parts broken away and in section.

Figure 2 is a sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a top plan view, showing the cap positioned on the burner.

Figure 4 is a sectional view taken on the line 4—4 of Figure 3.

Figure 5 is a longitudinal sectional view taken through a modified deflector.

Figure 6 is a longitudinal sectional view taken through another modified deflector.

Referring in detail to Figures 1–4 of the drawings, the numeral 10 designates a housing which may be fabricated of any suitable material such as metal, and the housing 10 includes an annular side wall 11 which is provided with a plurality of apertures or openings 12 adjacent its upper end. A horizontally disposed flange 14 extends outwardly from the entire upper edge of the side wall 11, and the flange 14 is also provided with a plurality of openings 15 therein.

There is further provided a bottom wall 16 which includes an outer horizontally disposed portion 17 and a central downwardly extending or inclined portion 18, the central portion 18 having a central opening 19 therein. A body member or tube 20 has a central vertically disposed passageway 21 communicating with the bottom of the housing 10, Figure 2. A plug 22 is arranged in threaded engagement with the lower end of the tube

20, whereby the plug 22 can be removed when the parts are to be cleaned. A conduit 23 is arranged in threaded engagement with the tube 20 and the conduit 23 communicates with the passage 21, the conduit 23 serving to convey fuel such as oil from a suitable source of supply to the burner vaporizing tube 20.

Mounted on the upper end of the burner is a cap 24 which includes an annular lip 25 that abuts the flange 14. The cap 24 is provided with an elongated recess or cut-out 26, Figure 4.

There is further provided a deflector which is indicated generally by the numeral 27, and the deflector 27 is arranged within the housing 10. The deflector 27 includes a pair of spaced parallel legs 28 which have their lower ends resting on the outer portion 17 of the bottom wall 16. Extending between the pair of legs 28 and secured thereto or formed integral therewith is a pair of vertically disposed spaced parallel baffles 29, and extending outwardly from the upper ends of each of the baffles 29 is a plate 30. The baffles 29 and plates 30 are each provided with a plurality of apertures or openings 31 therein, Figures 2 and 4.

Referring to Figure 5 there is shown a slightly modified deflector which is indicated generally by the numeral 32. The deflector 32 includes a pair of spaced apart legs 38, and extending between the legs 38 are a pair of baffles 35. The baffles 35 have their lower edges straight instead of being tapered downwardly at their center as is the case with the deflector 27, Figure 2.

There is shown still another modified deflector in Figure 6 and this deflector is indicated by the numeral 33. The deflector 33 differs from the previously described deflectors in that the baffle which is indicated now by the numeral 34 has its center portion recessed or cut-away.

From the foregoing it is apparent that an oil burner has been provided which is an improvement over the oil burner shown and described in my Patent No. 2,154,567. In use the fuel passes through the pipe 23 and enters the generating space 21 where it is gasified or vaporized and ignited. This vaporized fuel is then caught between the draft streams and passes up through the housing 10 where it is mixed with the incoming air and the issuing flame has great intensity. The burner of the present invention has a minimum number of parts and the tube 20 is of sufficient size and thickness or weight and can be made of a suitable metal so that it will absorb and hold sufficient heat to vaporize the fuel before it enters the combustion chamber. A removable plug 22 is provided whereby the plug 22 can be removed when the burner is to be cleaned. The openings 15 in the flange 14 provide an overdraft for the flame after it has passed out of the burner. The cap 24 is placed over the openings 15 so that the air is directed against the rising flame without interfering with the free passage of the flame and whereby there will be no change of shape of the flame. The bottom wall 16 includes the outer rim portion 17 on which is supported the legs 28 and the depressed portion 18 holds the fuel for the initial start of the burner. The construction of this bottom wall together with the baffles 29 gives the incoming lower draft currents such a shape as to prevent eddies or cold spots where the two drafts meet and suitable insulation 36 is arranged on the outside of the bottom wall. The insulation 36 prevents loss of heat. The deflector may be made of one piece of material and the openings 31 in the inclined plates 30 admit sufficient air to prevent overheating or burning of the plates 30. The baffles 29 are shaped so that they give the incoming lower draft a shape that will not form eddies or cold spots where the two drafts meet. The deflector plate may have different shaped baffles. Thus, the lower edge of the baffles

35 are straight as shown in Figure 5 when the burner is being used with a natural draft so that the flame discharges into a partial vacuum. Also, when forced draft is being used the flame discharges into atmospheric pressure and the most efficient shape for the baffles is shown in Figure 2. In Figure 5 when forced and natural drafts are used at the same time, the bottom edge has a straight line shape. In Figure 6 the baffles **34** are recessed as when the deflector is being used with natural draft so that the flame discharges into a partial vacuum.

I claim:

A fuel burner comprising a housing including a cylindrical vertically disposed side wall provided with a plurality of spaced apertures therein, a bottom wall including an outer flat portion and an inner inclined portion provided with a central opening, an annular flange extended outwardly from the upper edge of said side wall and provided with a plurality of openings for providing an overdraft for the flame after it has passed out of the burner, a deflector arranged within said housing, a vaporizer tube provided with a vertically disposed passageway communicating with the opening in said bottom wall, a conduit for conveying fuel from the source of supply to said vaporizing tube, a plug detachably connected to the lower end of said tube, a cap mounted on said housing and including an annular lip abutting said flange, said cap including a major curved portion extending upwardly from said housing, there being an elongated cut-out in said cap, said deflector including a pair of spaced parallel vertically disposed legs having their lower ends engaging the outer portion of said bottom wall, said legs abutting the inner surface of said side wall, the top of said legs terminating below the apertures in said side wall, a pair of spaced parallel vertically disposed apertured baffles extending between said legs and secured thereto, and an outwardly extending plate having apertures therein extending from the upper edge of each of said baffles, the upper surface of said plates being shaped arcuately, said plates extending from said baffles to said side wall, the upper edges of said plates having the same contour as the inner surface of said side wall, the bottom wall of said housing and said baffles coacting to give the incoming lower draft currents such a shape as to prevent eddies and cold spots where the two drafts meet, the apertures in said plates admitting sufficient air to prevent overheating and burning of the plates.

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