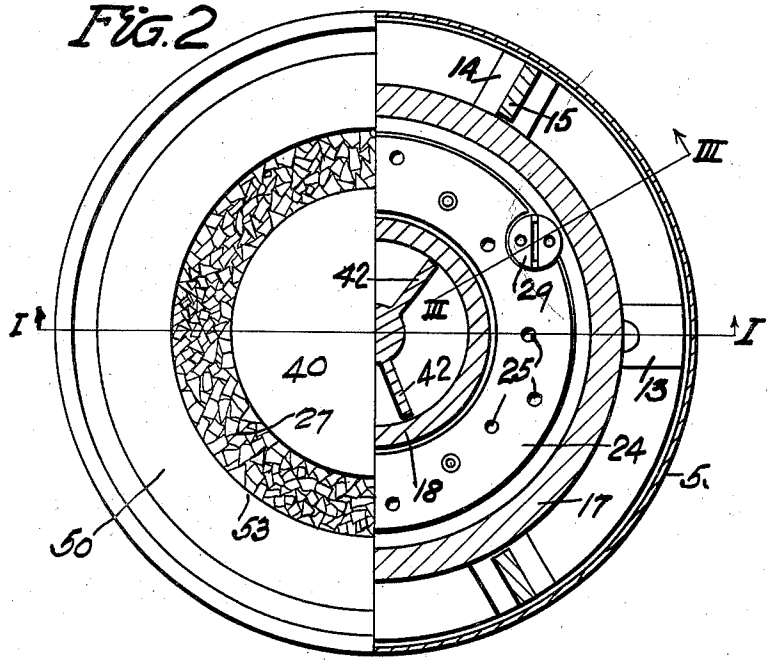
Aug. 9, 1938. J. E. SWEATT 2,125,966

OIL BURNER

Filed June 15, 1936

FIG. 2



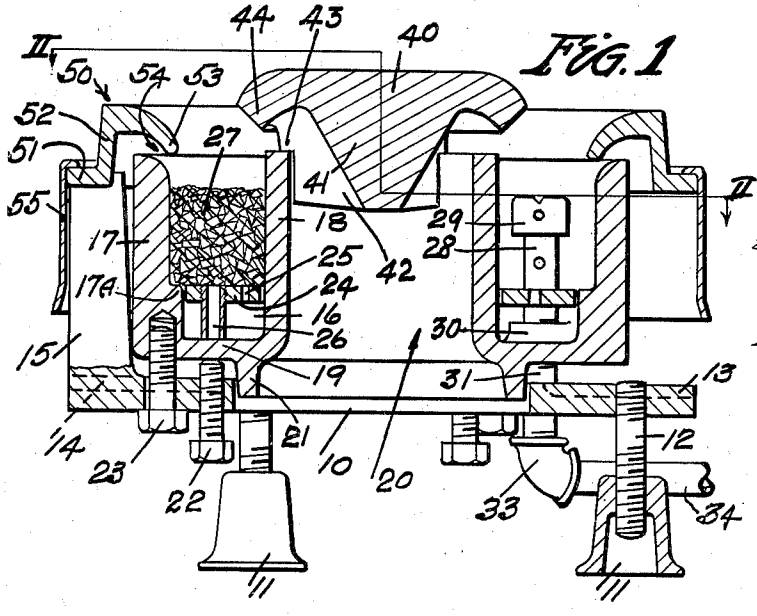
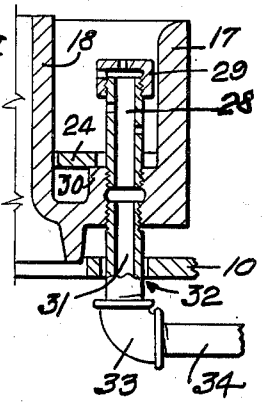


FIG. 1

FIG. 3



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OIL BURNER

James E. Sweatt, Memphis, Tenn.

Application June 15, 1936, Serial No. 85,186

1 Claim. (Cl. 158—96)

This invention relates to oil burners and more particularly to that class of burners for use in furnaces and stoves.

In oil burners, as generally constructed, it is found exceedingly difficult to properly vaporize the oil which is to be burned without gumming up the control valve and nozzles.

The objects of the present invention are:

To provide an oil burner which is of simple and durable construction which may be readily and easily installed in practically any furnace, and which when installed, provides for the generation of a high degree of heat and will be economical in the consumption of fuel;

To provide means for vaporizing the fuel, which means are substantially free from tendency to gum up;

To provide an oil burner having these advantages and which is reliable and safe in operation, and easy to manufacture;

To provide means in an oil burner for regulating and/or adjusting the supply of air to the burner whereby to secure from the fuel maximum results;

To provide means for shielding the air supply against drafts which cause uneven burning;

And to generally improve the details of design and construction.

The means by which these and other objects are accomplished and the manner of their accomplishment will be readily understood from the following description on reference to the accompanying drawing, in which,—

Fig. 1 is a sectional elevation of my improved burner taken on the vertical center line, metal parts only being shown on the right half of the figure.

Fig. 2 is a plan view half in section taken as on the line II—II of Fig. 1.

Fig. 3 is a fragmentary vertical section taken on the line III—III of Fig. 2.

Referring now to the drawing in which the various parts are indicated by numerals, 10 is an annular base plate or base which is supported by feet 11, three feet being indicated although obviously more might be used. 12 are studs which adjustably secure the feet 11 to the base 10. The base 10 may be thickened by lugs 13 where the studs 12 are secured and also at additional places by lugs 14, from which posts 15 extend upward.

16 is an annular chamber loosely disposed within the circle of the posts 15, this chamber having substantially cylindrical outer and inner walls 17 and 18 and an integral annular bottom 19, the inner wall preferably being of slightly greater height than the outer wall to minimize chance of overflow of fuel down the flue 20 which is formed by such inner wall. 21 is an annular flange which extends downward from the bottom 19 into the annular space in the base 10 and which serves as a means to relatively center the chamber and base. The annular chamber 16 is adjustably supported by screws 22 which are tapped through the base 10 and the lugs 14 and abut the underside of the base of the chamber. If desired additional screws 23 passing loosely through the base 10 and tapped into the chamber base may be used for holding the chamber down against the supporting screws 22.

Disposed in the chamber is an annular plate 24 which has holes 25 therethrough, this plate being spaced from the bottom 19 and supported thereabove as by legs 26. It will be noted that the outer diameter of the plate 24 is less than the inner diameter of the upper portion of the wall 17, the wall being suitably inwardly thickened at 17A to abut the plate, this reduction in diameter of the plate being made in order that it may be removed from the chamber without removing an overlying annular deflector 50, hereinafter referred to. The chamber above the plate 24 is filled with a refractory material 27 such as crushed fire brick.

Fuel is fed into the chamber through a perforated nipple 28 preferably closed at the upper end by a perforated cap 29, the nipple 28 being preferably screwed into a boss 30 integral with the chamber bottom 19. Also screwed into this boss, is a nipple 31 which extends downward loosely through an opening 32 in the base 10, this nipple being connected through an elbow 33 with a fuel supply pipe 34 which is controlled by suitable control valve or mechanism not here shown. The upper end of the cap 29 closing the nipple 28 preferably lies slightly below the level of the refractory filling 27 in the chamber.

Resting solidly on the inner wall 18 of the chamber 16, is a flue cap 40 having a downwardly projecting conically shaped center 41 from which wings 42 radiate, these wings lying within the flue 20 and being loosely centered by the wall 18 thereof, and having outward extensions 43 which rest on the top of the wall 18 to support the cap. The upper portion of the cap has an outwardly and downwardly extending flange 44 which extends slightly past the wall 18, its underside forming a curved continuation of the cone 41, and being held above the top of the wall 18 by the supporting wing extensions 43, and forming with the

top of the wall 18 an annular continuation of the central draft flue 20 which directs air entering through the flue, outwardly and downwardly against the surface of the refractory material 27.

Supported on the posts 15 is an annular deflector 50, which deflector may comprise an annular portion 51 resting on top of the posts 15, a generally vertical annular portion 52 integral therewith extending upward from the annular portion 51 and an inwardly extending flange having a downwardly extending portion 53, which cooperates with the upper edge of the wall 17 to provide an additional air flue 54, downwardly directed toward the top of the chamber 16. The area of this flue is adjusted by raising or lowering the chamber 16 by means of the screws 22.

Disposed around the outside of the posts 15 and depending from the annular portion 51, is an annular shield 55, which protects the entrance to the air flue 54 from lateral drafts.

In use, fuel is delivered into the annular chamber 16 through the pipe 34 and the nipple 28, the valve for controlling the flow not being shown. When the fuel reaches the desired level in the chamber usually the top of the refractory material it is ignited, and heating up of the refractory and of the burner parts begins. When sufficiently heated the refractory material vaporizes the oil adjacent its upper surface and this vapor burning with the air of the central flue 20 and the additional regulated air through the flue 54, provides the heating flame. By adjusting the chamber 16 relatively to the edge 53, the area of the flue 54 may be regulated to provide the proper amount of air to accomplish complete combustion and intense flame. The air entering through the flue 54 is shielded against direct lateral inflow by the downwardly extending shield 55, this shield cooperating with the outer side of the wall 17 to form an annular flue through which the regulating flue 54 is supplied, and preventing the rolling and thumping to which laterally unprotected flames in such burners are sometimes subjected.

Regulation of the fuel level may be provided by usual and well known devices purchasable in the open market, and not here shown or involved. However should the level control fail and the fuel rise to overflow level it will necessarily overflow the outer wall which is most remote from the highly heated central portions of the burner and is in addition, in most direct contact with surrounding air by which it may be cooled.

The fuel oil which enters through the pipe 34 is distributed through the perforated nipple 28 into the refractory material immediately thereabout and drops through this material and the perforated plate 24 into the annular open space below such plate through which annular space it is evenly distributed to the entire base of the refractory material, eventually rising upward therein to the level fixed.

What I claim is:

In a burner, an annular base plate, having upwardly projecting posts, an upright annular chamber open at its top and disposed above said base within the circle of said posts, said chamber surrounding an opening concentric with the opening in said base, a granular filler in said chamber, means for conveying liquid to said chamber, the inner wall of said chamber forming an air flue, a spreader cap disposed above said flue, said cap having a plurality of downwardly extending flanges resting on said inner wall and supporting said cap in spaced relation to said wall, said cap having a concave lower face extending outwardly substantially flush with the outer face of said inner wall, and adapted to direct air outwardly and downwardly toward said filler, an annular deflector supported by said posts around the top of the outer wall of said chamber and spaced thereabove, said deflector having a concave face extending inwardly and downwardly substantially flush with the inner face of said outer wall, said deflector being adapted to direct air inwardly and downwardly toward said filler to supplement said outwardly directed air currents, and means carried by said base for supporting said chamber, said means being adjustable to vary the spaced relation of said outer wall and said overlying annular deflector.

JAMES E. SWEATT.