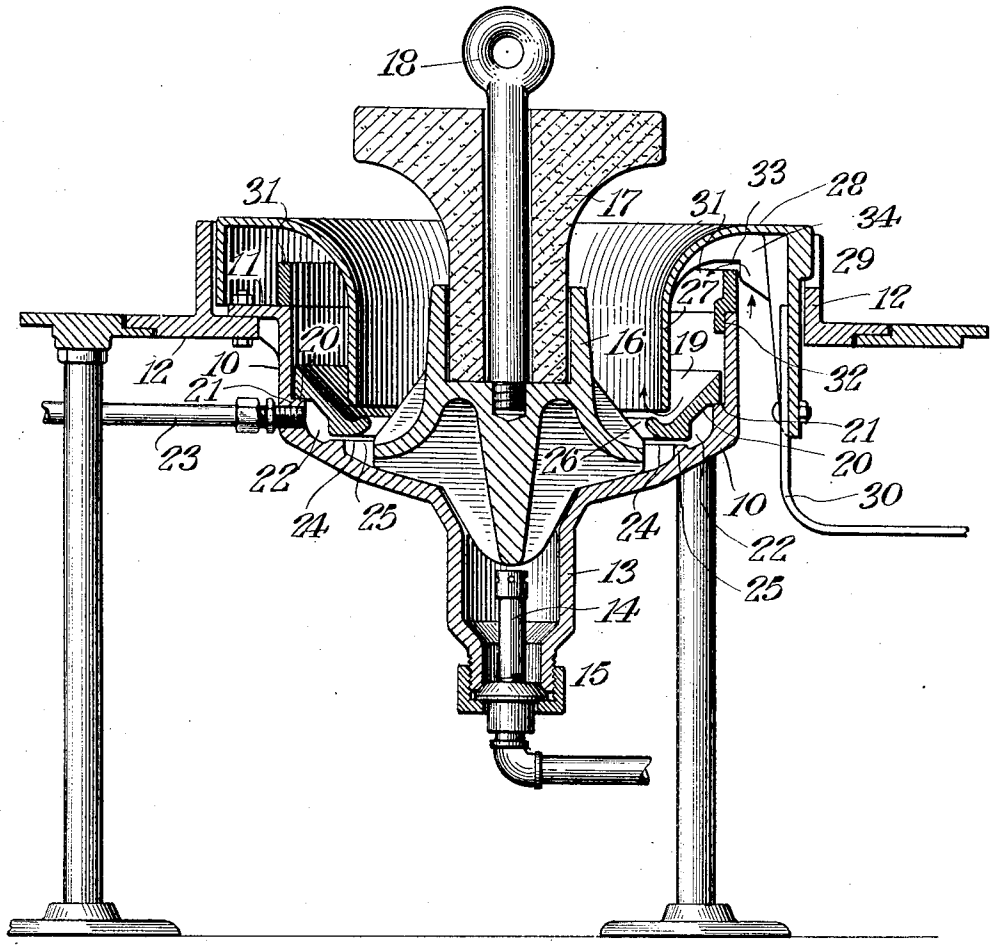
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1,675,843

G. B. DAHL

OIL BURNER

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Inventor,
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UNITED STATES PATENT OFFICE.

GEORGE B. DAHL, OF BROOKLYN, NEW YORK.

OIL BURNER.

Application filed July 19, 1927. Serial No. 206,816.

My invention relates to improvements in oil burners and is an improvement on the structure shown in my application for Letters Patent of the United States Serial No. 187,159 filed April 28, 1927. My present invention relates to improvements and refinements resulting from actual practical experience with the burner disclosed in my prior application above referred to. The object of the present invention is to produce a burner which will burn oil more efficiently, with less noise and with less carbonization. Also to produce a burner in which the air is preheated to a greater extent and easily controlled as it enters the burner to mix with the oil vapor. The particular improvements over the prior structure will be pointed out in detail and will be understood with reference to the drawing.

Reference is to be had to the accompanying drawings in which similar reference characters represent the corresponding parts.

The figure is a vertical section of the burner showing my improvement. In a general way the burner is like that of my prior application referred to, and it has a similar casing or well 10 which at its upper part has outwardly extending lugs 11 carried by a ring 12 which is mounted on suitable supports. All this is like the prior structure. The well also has a central depression 13 as in the prior case to collect sediment, but in the present instance I use this well or depression for the oil intake and the supply pipe 14 enters the well and is held in place by a union coupling 15. Thus when sediment collects in the depression 13 the coupling can be loosened and the sediment removed. This particular arrangement for delivering the oil supply causes it to enter the burner in an advantageous way and to be distributed evenly to the several sides of the well and of the vaporizor 16.

The vaporizor 16 is as shown in my prior application and is provided with a similar spreader 17 and lifting rod 18.

I also use a deflecting ring 19 to direct the air as it enters the burner into the mixing drum or chamber 27 presently referred to. In my former structure this deflecting ring 19 seats on the bottom of the well or casing 10, and I have found in practice that a small quantity of gas or vapor is likely to find its way into the chamber 22 behind the deflecting ring where it will burn slowly and thus deposit carbon. To overcome this objection, I provide the vertical wall of the casing 10 with a seat 21 and the deflecting ring 19 has a corresponding seat or shoulder 20 lying upon the seat 21, and thus the lower part of the deflecting ring is raised slightly leaving a vent 24 between the inner and lower edge of the ring 19 and the rib 25 or analogous part of the casing so that whatever gas accumulates in the chamber 22 will be drawn in with the inflowing air and oil vapor and burned without any noticeable deposit of carbon. Furthermore by this arrangement I can better utilize the pipe 23 which is arranged to deliver into the chamber 22 and which can carry a lighting medium to preheat the burner before the main oil supply is lighted after which the supply through the pipe 23 may be turned off.

A further improvement in the deflecting ring 19 and its relation to the mixing drum 27 is that the inner edge portion 26 of the ring is turned upward slightly so that the incoming air does not impinge directly on the vaporizer 16 but is deflected upward into the chamber of the drum 27 thereby getting a better admixture of gas and air, and I find that this effects a noticeable improvement in the efficiency of the burner.

The drum 27 is as shown in my prior application, flaring outward as at 28 and having a cam connection 29 with the ring 12 so that by turning the drum by means of the rod 30 it can be adjusted up and down. I do not refer to this structure in more detail because any suitable means can be used for regulating the height of the drum, and the means generally shown is like that in my Letters Patent of the United States 1,613,820 dated January 11, 1927.

Another improvement in the present burner is in the ring 31 which seats on the top edge of the casing 10 and has lugs 33 on its inner and lower part to abut with the inner wall of the casing 10 so that the ring 31 can ride securely and be readily seated. At first view it would seem that the same effect could be had by raising the wall of the casing 10, but the separable ring is desirable for the following reasons: the structure can be more cheaply made with the ring, and furthermore the ring is not always desirable, although in most cases it is. Where the ring is used, the ribs 34 on the flaring part 28 of the drum 27 are recessed at 33 to provide space for the ring and permit the drum to be adjusted up and down. Where the ring

is used it will be seen that it makes a longer air draft for the air which enters as shown by the arrows around the outer wall of the casing 10 over the top of the ring and down between the deflecting ring 19 and the lower part of the drum 27. Thus the longer air draft provides for a better preheating of the air and a further and greater advantage is that the ring chokes the air inlet so that it corresponds better to the inflow between the parts 26 and 27, and as the drum 27 is raised or lowered the inflow over the ring 31 and between the parts 26 and 27 are correspondingly changed and in the same ratio.

This arrangement I find of reducing the intake over the top of the wall to the right proportion lessens the noise of the burner as where there is a too big inrush of air in the top of the burner the velocity is such that it roars to a certain extent as it enters the lower part of the drum 27. However in some cases and under some conditions and especially with certain types of oil, it is desirable to have a larger intake of air at the top and therefore when these conditions obtain the ring 31 can be removed. Thus with the same burner I can use the ring 31 in most cases, as it is generally desirable, but leave it off in other cases where it is not desirable.

It will be seen therefore that my improvements lie in the oil intake, and its arrangement, the disposition and structure of the deflecting ring 19, the means for utilizing the preliminary heating fluid to better advantage through the chamber 22 and ring 19, and in the ring 31 by which the air intake is better regulated.

I claim:

1. In a burner such as described, the combination with the casing, the vaporizer and mixing drum, of a deflecting ring supported on the casing and extending around the drum and beneath the lower part thereof, said ring having its lower and inner part upturned whereby the inflowing air is discharged upwardly into the mixing drum.

2. In a structure of the kind described, the combination with the casing forming a well and having essentially vertical sides, the vaporizer seated in the casing, and the vertically adjustable mixing drum encircling the vaporizer and spaced between the vaporizer and the side walls of the casing, of the deflecting ring spaced within the casing and spaced from the lower part of the mixing drum, and a removable ring on the upper part of the casing whereby the inflow of air can be changed.

3. In a structure of the kind described, the combination with the casing forming a well and having essentially vertical sides, the vaporizer seated in the casing, and the vertically adjustable air drum spaced between the side wall of the casing and vaporizer, of the deflecting ring seated in the casing and extending beneath the lower edge of the air drum, and means for changing the height of the casing wall.

4. In a burner such as described, the combination with the casing, the vaporizer and mixing drum, of a deflecting ring supported on the casing and extending around and beneath the lower part thereof, said ring being shaped at its inner part to direct the inflowing air upward into the mixing drum.

5. In a burner of the kind described, the combination with the casing, the vaporizer and mixing drum, of an annular deflector disposed beneath the lower edge of said drum, said deflector having an upturned annular lip having a diameter slightly less than that of said drum, whereby incoming air is directed upwardly into the mixing drum.

In testimony whereof, I have signed my name to this specification this 15th day of July, 1927.

GEORGE B. DAHL.