

May 23, 1944.

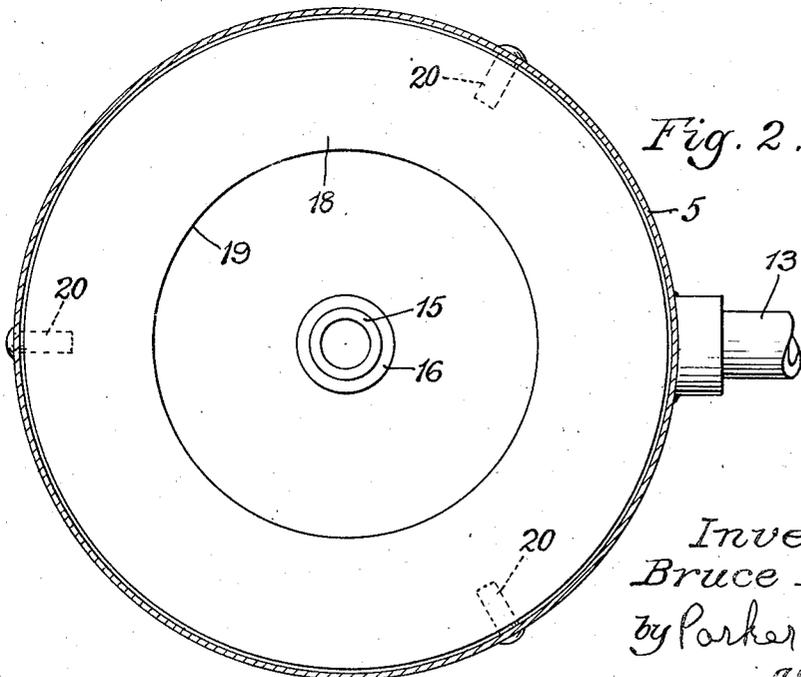
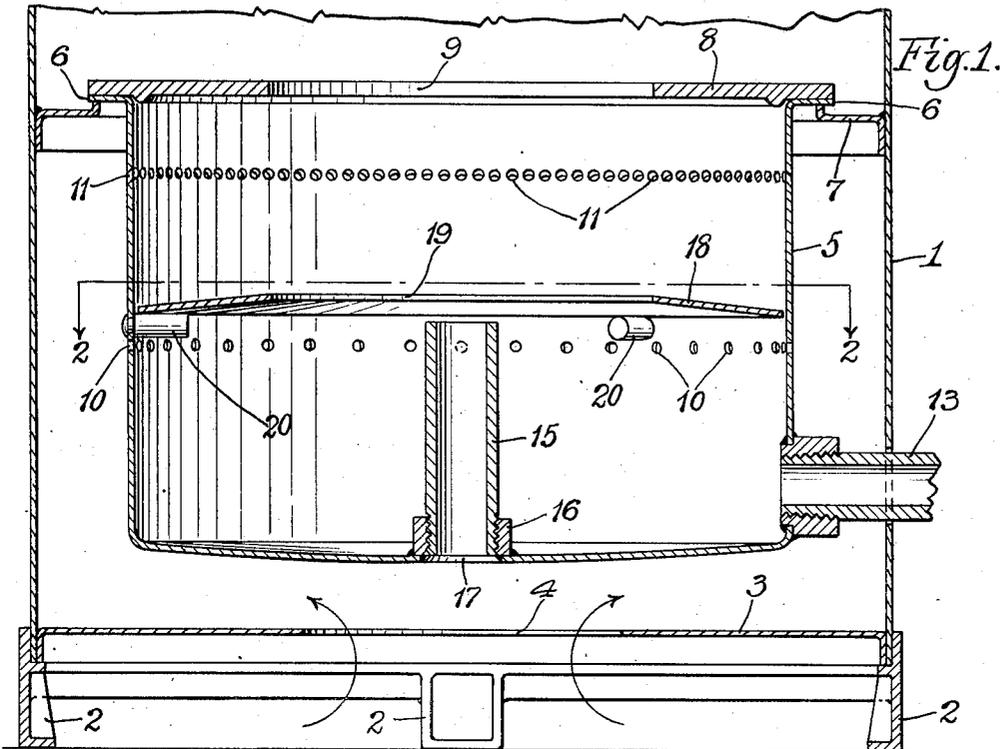
B. HAYTER

2,349,722

POT TYPE BURNER AND IMPROVED AIR SUPPLY MEANS THEREFOR

Filed March 14, 1942

2 Sheets-Sheet 1



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POT TYPE BURNER AND IMPROVED AIR SUPPLY MEANS THEREFOR

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Fig. 3.

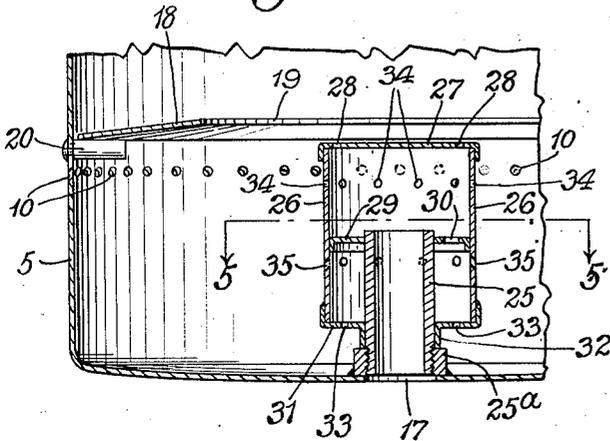


Fig. 4.

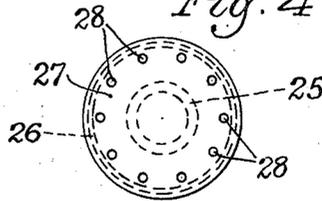


Fig. 5.

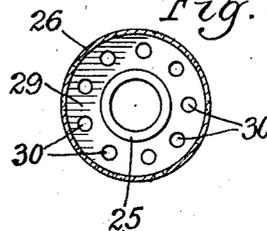


Fig. 6.

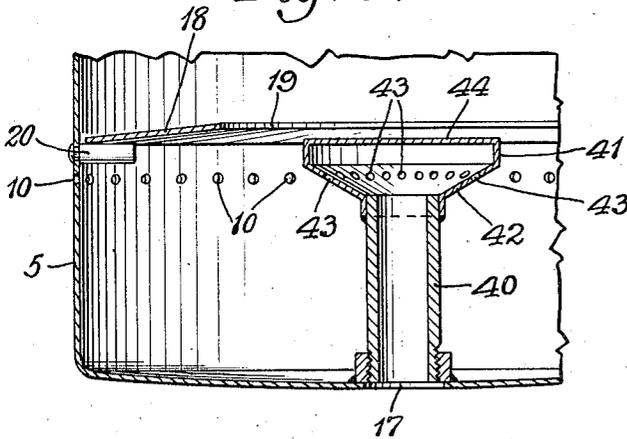


Fig. 7.

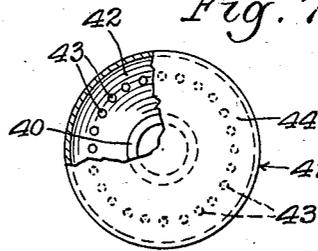
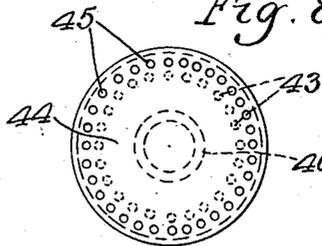


Fig. 8.



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UNITED STATES PATENT OFFICE

2,349,722

POT TYPE BURNER AND IMPROVED AIR
SUPPLY MEANS THEREFORBruce Hayter, Santa Fe, N. Mex., assignor to Oil
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Application March 14, 1942, Serial No. 434,659

2 Claims. (Cl. 158—91)

My invention relates to an improvement in oil burners and has for one purpose to provide an improved pot type oil burner.

Another purpose is to provide an improved pilot means therefor.

Another purpose is to provide an improved means for delivering air to the burner at pilot stage.

Other purposes will appear from time to time in the course of the specification.

I illustrate my invention more or less diagrammatically in the accompanying drawings wherein:

Fig. 1 is a vertical axial section;

Fig. 2 is a section on the line 2—2 of Fig. 1;

Fig. 3 is a partial vertical axial section of a variant form;

Fig. 4 is a partial plan view of the structure shown in Figure 3;

Fig. 5 is a section on the line 5—5 of Fig. 3;

Fig. 6 is a partial vertical axial section through a further variation of the device;

Fig. 7 is a partial plan view of the structure shown in Fig. 6, with parts broken away; and

Fig. 8 is a plan view of a slight modification.

Like parts are indicated by like symbols throughout the specification and drawings.

Referring to the drawings, 1 generally indicates an outer housing or drum, which may be of any suitable form, but which is herein shown as generally cylindrical. It may be supported, for example, on any suitable supporting legs or means 2. 3 indicates a bottom having a central air inlet aperture 4. 5 is a burner pot having an upper outwardly extending flange 6, which may rest on a ring or any other suitable support 7 extending inwardly from the member 1. 8 is any suitable flame ring having a central aperture 9.

The pot 5 is herein shown as having a plurality of primary air inlet apertures 10, located in a single row in a lower portion of the pot. Any suitable means for admitting secondary air may be employed, but I illustrate herein a single row of secondary air inlet apertures 11, which are more closely spaced than the primary air apertures 10 and which may be upwardly and inwardly tilted, as shown in Fig. 1.

13 is any suitable liquid fuel inlet pipe, which may extend from any suitable source of fuel. It will be understood that any suitable means for regulating the flow of fuel inwardly along the pipe 13 may be employed, for example a conventional float valve, and it will be understood that variations of flow may be obtained manually

or thermostatically, such control devices not of themselves forming part of the present invention. It will be understood that any suitable means for varying the flow of fuel to the burner may be employed, preferably maintaining a minimum flow sufficient to support combustion in the burner at the pilot stage.

15 is a centrally located air inlet duct, which may be made of varying size and height, but which is herein shown as terminating near or just above the level of the primary air inlet apertures 10. It may be formed unitarily with the bottom of the pot, or it may be secured thereto. I illustrate for example a nut 16, which may be welded or otherwise secured to the bottom of the pot 5 in alignment with the central aperture 17 in the pot bottom. The duct 15 may then be screw threaded, if desired, into the nut 16. 18 is any suitable pilot ring centrally apertured as at 19 and supported for example on supporting pins or legs 20 inwardly extending from the inner wall of the pot 5. It will be observed that the pilot ring 18 is located just above the primary inlets 10 and is located a substantial distance below the secondary inlet apertures 11.

It will be understood that air flows upwardly through the aperture 4 and about the pot 5. Primary air for the maintenance of combustion at the pilot or low stage of the device flows inwardly through the apertures 10. Secondary air flows upwardly through the pipe 15 and inwardly through the apertures 11. At the low stage combustion takes place at or just above the pilot ring 18. At the highest stage combustion takes place at or above the flame ring 8. While the height of the duct 15 may be varied, I find it very satisfactory to terminate the duct at the general level of the pilot ring 18.

Referring to Fig. 3, I employ a shortened duct 25 and positioned thereabout is a cylindrical element 26, having a top portion 27, having a plurality of air apertures 28. The cylinder 26 may be centered on the air inlet duct 25, for example by an inwardly extending flange or annulus 29, having a plurality of air passages or holes 30. The cylinder is closed at the bottom by a bottom portion 31, which may have a spacing shoulder 32, which extends downwardly about the duct 25 and abuts against the bottom of the pot or the nut 25a. It is also shown as having a plurality of air apertures 33. The wall of the cylinder 26 is provided with an upper row of air apertures 34 and a lower row of apertures 35, preferably downwardly and outwardly tilted. It will thus be observed that the duct 25 serves as a

unitary air supply for the distributing member 26, and that member 26 may be employed to deliver air downwardly at or near the bottom of the pot and downwardly and outwardly through the apertures 35, directly outwardly at a higher level through the apertures 34, and upwardly through top apertures 28. Thus it is well adapted to provide both primary and secondary air for the pilot stage of combustion, and when a higher stage of combustion is initiated, for example by increasing the supply of fuel to the pot, then all of the air supplied through the duct 25 serves as part of the primary air for the higher combustion stage.

In Fig. 6 I illustrate a further variation of the device in which a central inlet or duct 40 is employed corresponding to the inlet 25 of Fig. 3, and the inlet 15 of Fig. 1. At the top of the duct 40 I position a mushroom structure 41 having a downwardly and inwardly inclined bottom wall 42, provided with a plurality of air apertures 43.

In Figs. 6 and 7 I illustrate the top of the mushroom 41 as formed by a closed or solid plate 44. In Fig. 8 it is indicated that the top 44 may have a plurality of air apertures 45, which direct the air upwardly through the central aperture of the pilot ring 18. In the form of Fig. 6, therefore, the mushroom and the apertures 43 are advantageous as directing primary air for the pilot stage downwardly toward the bottom of the pot. In this case the secondary air for the pilot stage may be supplied by the air inlets 10 or may be supplied above the ring 18 by the air inlets 11. The pilot stage may be maintained adjacent the level of the apertures 10 or adjacent or slightly above the level of the ring 18. In the form of Fig. 8 some secondary air for the low stage may be provided by the apertures 45 in the top of the mushroom.

It will be realized that, whereas I have illustrated a practical and operative device, nevertheless many changes may be made in the size, shape, number and disposition of parts without departing from the spirit of my invention. I therefore wish that the description and draw-

ings be taken as in a broad sense illustrative or diagrammatic, rather than as a limitation to the precise showing.

I claim:

1. In a pot type burner, a burner pot having a circumferential generally cylindrical wall, means for supplying a liquid fuel to the interior of the pot, the wall of the pot having a plurality of air inlet apertures arranged circumferentially in two rows, one of said rows being generally intermediate top and bottom of the pot, the other being substantially closer to the top of the pot, a centrally apertured pilot ring located intermediate top and bottom of the pot and just above the lowest of the air inlet apertures, whereby air is admitted through the wall of the pot both above and below the pilot ring, and additional means for supplying air to the interior of the pot, including an air inlet duct extending upwardly from the bottom of the pot in general axial alignment with the central aperture of the pilot ring, the duct being adapted to deliver air into the interior of the pot at a level adjacent the level of the pilot ring.

2. In a pot type burner, a burner pot having a circumferential generally cylindrical wall, means for supplying a liquid fuel to the interior of the pot, the wall of the pot having a plurality of air inlet apertures arranged circumferentially in two rows, one of said rows being generally intermediate top and bottom of the pot, the other being substantially closer to the top of the pot, a centrally apertured pilot ring located intermediate top and bottom of the pot and just above the lowest of the air inlet apertures, whereby air is admitted through the wall of the pot both above and below the pilot ring, and additional means for supplying air to the interior of the pot, including an air inlet duct extending upwardly from the bottom of the pot in general axial alignment with the central aperture of the pilot ring, and a distributor element on said duct having a wall provided with apertures positioned to direct air from the duct into the space below the pilot ring.

BRUCE HAYTER.