

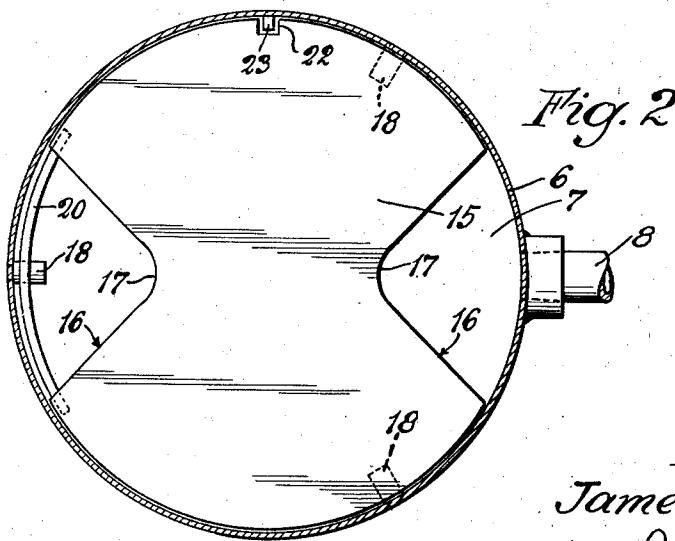
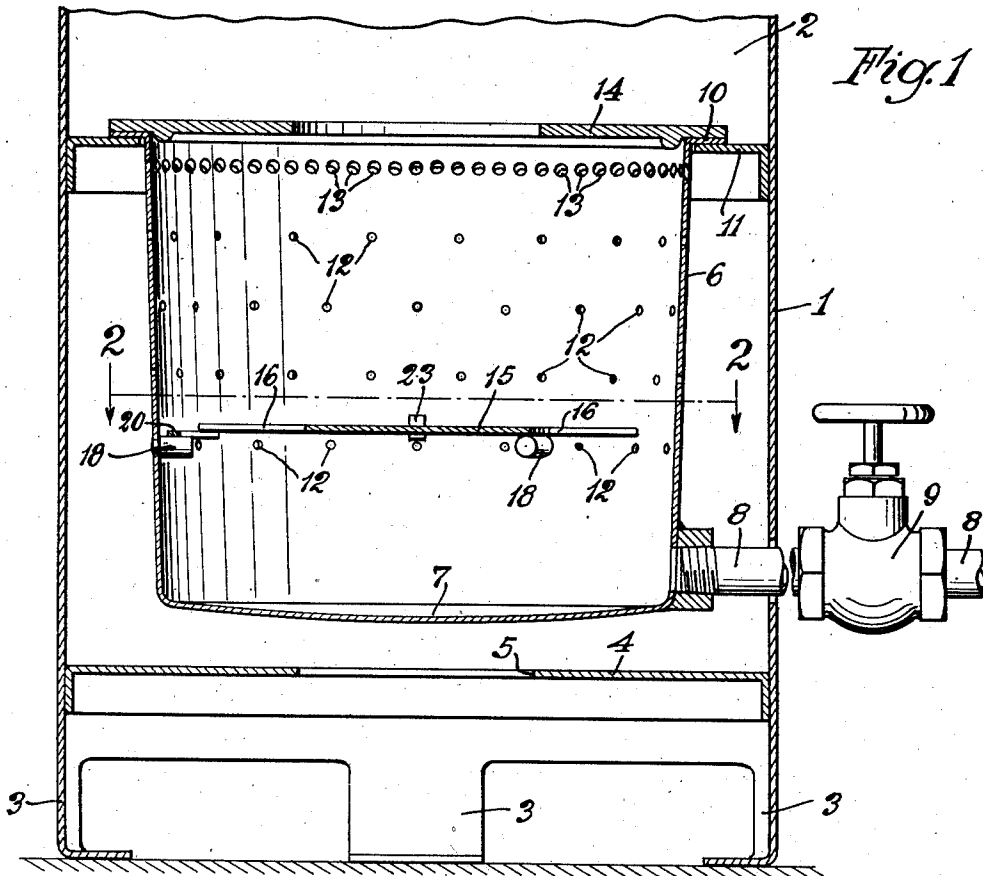
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NOTCHED PILOT BAFFLE

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NOTCHED PILOT BAFFLE

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3 Claims. (Cl. 158—91)

My invention relates to an improvement in pot type burners and particularly to a pilot baffle for providing a relatively low turndown.

One purpose is the provision of a pilot member which shall be effective to provide a low turndown and which shall be cheap and easy to manufacture and easy to apply.

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

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

Fig. 1 is a vertical axial section; and

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

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

Referring to the drawing, 1 generally indicates any suitable outer housing, a portion of which 2 may serve, if desired, as a combustion chamber. Any suitable draft means not herein shown may be employed for said combustion chamber for carrying off the products of combustion and for controlling the draft.

The housing 1 may be supported in any suitable manner, for example upon the supports 3, which, when the device is employed in connection with a space heater, may be employed to space the space heater structure as a whole above the floor of the room or space in which it is employed, while providing air access to the bottom of the heater. The bottom 4 of the housing 1 may be apertured, as at 5.

Located within a lower portion of the housing 1 is a pot, generally indicated as 6, and having a more or less concave bottom 7 and any suitable fuel inlet duct 8 extending to a source of liquid fuel supply not herein shown. 9 diagrammatically indicates any suitable valve means for controlling the rate of flow of liquid fuel to the burner. The valve means may be either manual or automatic, and it will be understood that any suitable float chamber or other means not herein shown may be employed for controlling the maximum level of fuel in the burner.

The pot 6 is shown as having an outwardly extending flange 10, which may rest on any suitable flange 11 which serves to complete the closure of the combustion chamber, in such fashion that any air in the space located between the pot and the lower portion of the housing 1 will be kept from flowing directly into the combustion chamber. The pot is provided with a plurality of primary air inlet apertures 12, herein shown as located in a plurality of rows and at

various levels. 13 indicates a row of larger and more closely spaced and preferably upwardly and inwardly tilted air inlets for supplying secondary air to the primary mixture formed in the lower portion of the pot.

14 is any suitable flame ring interposed between the top of the pot and the interior of the combustion chamber. 15 generally indicates a pilot baffle, the exterior of which preferably conforms to the opposed wall of the pot. In the drawing the fit is shown as fairly snug. It will be understood that a slight peripheral clearance may be provided. The pilot baffle or plate 15 is shown as provided with a plurality of cutaway portions or large notches 16, extending inwardly from the periphery of the plate. I illustrate two, but it will be understood that any suitable number may be employed and that where a larger number is employed, the size of the individual openings 16 may, if desired, be reduced. I find a generally V-shaped form practical, but prefer to round or fillet the inner corners or inner angles, as at 17. I may support the plate 15 in any suitable manner. I illustrate for example a plurality of pilot supporting pegs 18.

If the openings 16 are so located as to be aligned with any of the supporting pegs, as when two diametrically opposed notches are employed in connection with three equally spaced pegs, I may employ a securing member or wire 20, as shown in Fig. 2, which may be welded or otherwise secured to the plate 15 and which will serve to engage one of the pegs 18. Preferably the central portion of the pilot plate is closed or solid. In Fig. 2 I illustrate two notches or cutaway portions 16, one of which is aligned with and located adjacent the oil inlet 8, and the other of which is diametrically opposed thereto. It will be understood that, while this is a practical arrangement, the plate may also be located in such fashion as to have none of the cutaway portions 16 aligned with the oil inlet. The position of the plate may be fixed, for example, by notching the plate, as at 22, in alignment with any suitable aligning projection 23, extending inwardly from the inner face of the pot 6. I illustrate the plate 15 as located just above the lowest row of primary air inlet apertures 12. It will be understood that under some circumstances it may be located below the lowest row of holes, or may be located higher in the pot, depending upon the result desired.

It will be realized that, whereas I have described and illustrated in 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 my description and drawing to be taken as in a broad sense illustrative or diagrammatic, rather than as limiting me to my precise showing.

The use and operation of my invention are as follows:

In pot type burners a liquid hydrocarbon is admitted to the bottom of a pot and is mixed with a primary air supply, which may be supplied, for example, by the lowest row of primary air inlet apertures 12 in the present structure. The liquid hydrocarbon is vaporized by the heat of combustion taking place in the upper portion of the pot or above the pot in the combustion chamber. The vaporized hydrocarbon rises and mixes with the primary air to form a primary mixture which is completed and burned by the secondary air supply at the higher levels in the pot. When the pot is at the high fire stage, all of the rows 12 may supply primary air, and the secondary air may be supplied, for example, by the air inlets 13. It will be understood, of course, that other means may, if desired, be employed to supply the secondary air at or above the top of the pot 6, but the present structure constitutes a practical embodiment of the so-called hydroxylating pot type burner.

In burners of this type a low turndown is desirable. The fire is controlled by controlling the rate of flow of the liquid fuel to the pot. When the low turndown is desired in connection with thermostatically controlled hot water heaters, the fuel flow is reduced to a minimum. When a smaller volume of fuel is supplied, the lowest row of primary air inlet apertures 12 is adequate to supply all of the primary air necessary for the primary mixture. As the primary mixture rises above the level of the plate 15, it receives secondary air from the higher rows of holes 12. Combustion then takes place at or just above the level of the plate 15. When the higher fire is desired, the rate of fuel flow is increased, and the level of combustion in the pot rises until at the full fire stage all of the air inlets 12 serve to supply primary air, and combustion takes place at or above the top of the pot.

I claim:

1. In combination, a burner pot having a cir-

cumferential generally cylindrical wall in which a plurality of air inlet apertures are located at various levels in the wall, said apertures being spaced circumferentially about the wall, means for supplying a liquid fuel to the lower portion of the pot, and a pilot plate supported intermediate the top and bottom of the pot, said plate including a solid portion extending from side to side of the pot, and having a cutaway portion extending inwardly from the periphery of the plate, the edges of said cutaway portion defining, with the opposed part of the pot wall, a communicating aperture between the space below the plate and the space above the plate, vertically aligned with the point of entry of the liquid fuel into the pot.

2. In combination, a burner pot having a circumferential generally cylindrical wall in which a plurality of air inlet apertures are located at various levels in the wall, said apertures being spaced circumferentially about the wall, means for supplying a liquid fuel to the lower portion of the pot, and a pilot plate supported intermediate the top and bottom of the pot, said plate including a solid portion extending from side to side of the pot, having a pair of generally diametrically opposed cutaway portions extending inwardly from the periphery of the plate, the edges of said cutaway portions defining, with the opposed part of the pot wall, communicating apertures between the space below the plate and the space above the plate, one of said communicating apertures being generally vertically aligned with the area of entry of the liquid fuel into the pot.

3. In combination, a burner pot having a plurality of air inlet apertures located at various levels in the wall thereof, said apertures being generally uniformly spaced circumferentially about the wall, means for supplying a liquid fuel to the lower portion of the pot, at one side of the bottom of the pot, a pilot plate positioned intermediate the top and the bottom of the pot, said pilot plate being notched to provide one or more cut away portions the edges of which extend inwardly from the periphery of the plate, the central part of the pilot plate being solid, one of said cut away portions being generally vertically aligned with the area of delivery of the liquid fuel to the pot, and said plate extending substantially entirely across the pot interior.

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