IGNITOR BURNER OF DUAL FUEL FLOW DESIGN UTILIZING AN EDDY PLATE

FIG. 1
This invention relates to a fuel burner and in particular to an ignitor or pilot burner capable of maintaining a large, stable flame.

It is an object of this invention to provide a pilot burner which has a stable flame by providing an intimate mixing of the fuel and air therein.

It is a further object to provide a pilot burner having a high B.t.u. firing rate, so that a large flame can be maintained for reliable ignition of hard to ignite main burner fuels, such as pulverized coal or bunker C oil.

Other objects and advantages of the invention will become apparent from the following description taken in conjunction with the accompanying drawings wherein:

FIGURE 1 is a cross sectional plan view of a furnace incorporating the novel burner arrangement;

FIGURE 2 is an enlarged cross sectional view of the ignitor burner taken on line 2—2 of FIG. 1;

FIGURE 3 is a view of a portion of the ignitor burner taken on line 3—3 of FIG. 2;

FIGURE 4 is a sectional view of the burner tip shown in FIGURE 2.

Looking now to FIG. 1 of the drawings, numeral 1 designates the furnace of a steam generator, all four walls 2 of which are lined with steam generating tubes 12. Mounted in each corner of the furnace 1 is a main burner 14, to which fuel and air are supplied. In order to ignite the fuel and air issuing from the main burners, each main burner 14 has an associated ignitor or pilot burner 16. These ignitor burners are utilized in establishing a flame at the main burners when initially starting up the unit and also for stabilizing the main burner flame, when the steam generator is operating at low load (when minimum amounts of fuel are being fired in the main burners).

FIGURES 2 and 3 are enlarged views of the ignitor burner shown in FIGURE 1. Each burner 16 has an outer housing or pipe 18 which is supplied with air through duct 19. Positioned within pipe 18 are a pair of concentric fuel pipes 20 and 22 which are supplied with gas.

As shown in FIGS. 2 and 3, legs 58 support the eddy plate 26 and associated fuel pipes, thus maintaining proper position of the eddy plate with respect to pipe 18. The eddy plate is positioned a few feet from the furnace interior, so that the spark plug 36 is not detrimentally affected by heat radiation from the furnace.

In operation, air is supplied to pipe 18 from duct 19. The spark plug 36 is energized and the igniter circuit is applied to pipes 20 and 22. As soon as flame has been established in an ignitor burner, fuel and air can be supplied to its associated main burner, which is ignited by the ignitor burner flame.

While I have shown and described the preferred embodiment of the invention, it is to be understood that the invention is not limited thereto, and may be otherwise variously embodied and practiced within the scope of the following claims.

What I claim is:

1. In an ignitor burner where a combustion supporting medium and fuel are burned, a first pipe having an inlet end, to which a combustion supporting medium is supplied and an outlet end for discharging products of combustion, an eddy plate positioned within said first pipe, there being a restricted annular space between said eddy plate and the first pipe, a second pipe, to which fuel is supplied, positioned within said first pipe and extending through the eddy plate, said second pipe having a outlet positioned within said first pipe downstream of and adjacent to said eddy plate, ignition means positioned downstream of said eddy plate for igniting the fuel and combustion supporting medium adjacent the eddy plate, a third pipe, to which fuel is supplied, positioned within said second pipe, said third pipe having an outlet downstream of the outlet of said second pipe, whereby a portion of
the combustion supporting medium combines with the fuel being emitted through the outlet of the second pipe to establish a stable flame, and the remaining portion of the combustion supporting medium combines with the fuel being emitted through the outlet of the third pipe, the flame issuing from the second pipe maintaining combustion of the fuel discharged from the third pipe, first flow control means positioned in said second pipe and second flow control means positioned in said third pipe, whereby the amount of fuel being discharged from the outlets of the second and third pipes can be separately and independently regulated.

2. In an ignitor burner where air and fuel are burned, a first pipe having an inlet end to which air is supplied and an outlet end for discharging products of combustion, an eddy plate positioned within said first pipe in such a manner that there is a restricted annular space between said eddy plate and the first pipe, a second pipe to which fuel is supplied positioned within said first pipe and extending through the eddy plate, said second pipe having a first outlet positioned within said first pipe downstream of and adjacent to said eddy plate, a third pipe to which fuel is supplied, positioned within said second pipe, said third pipe having an outlet downstream of the first outlet of said second pipe, said second pipe having a second outlet intermediate the first outlet of the second pipe and the outlet of the third pipe, the air to support combustion of all of the fuel being supplied through the first pipe, whereby a very stable flame is established in the ignitor burner, including first valve means positioned in the second pipe and second valve means positioned in said third pipe, whereby the amount of fuel supplied to said second and third pipes can be separately and independently controlled.

3. The ignitor burner set forth in claim 1, wherein said second pipe surrounds said third pipe.

4. The ignitor burner set forth in claim 1, wherein said second pipe and said third pipe are concentric.

5. The ignitor burner set forth in claim 1, including ignition means positioned within said first pipe downstream of and adjacent to said eddy plate for igniting the fuel issuing from the outlet of said second pipe.

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JAMES W. WESTHAVER, Primary Examiner.

FREDERICK L. MATTESON, Jr., Examiner.

H. B. RAMEY, Assistant Examiner.