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2,887,074

INCINERATOR BURNER CONSTRUCTION

Original Filed Sept. 27, 1954

2 Sheets-Sheet 1

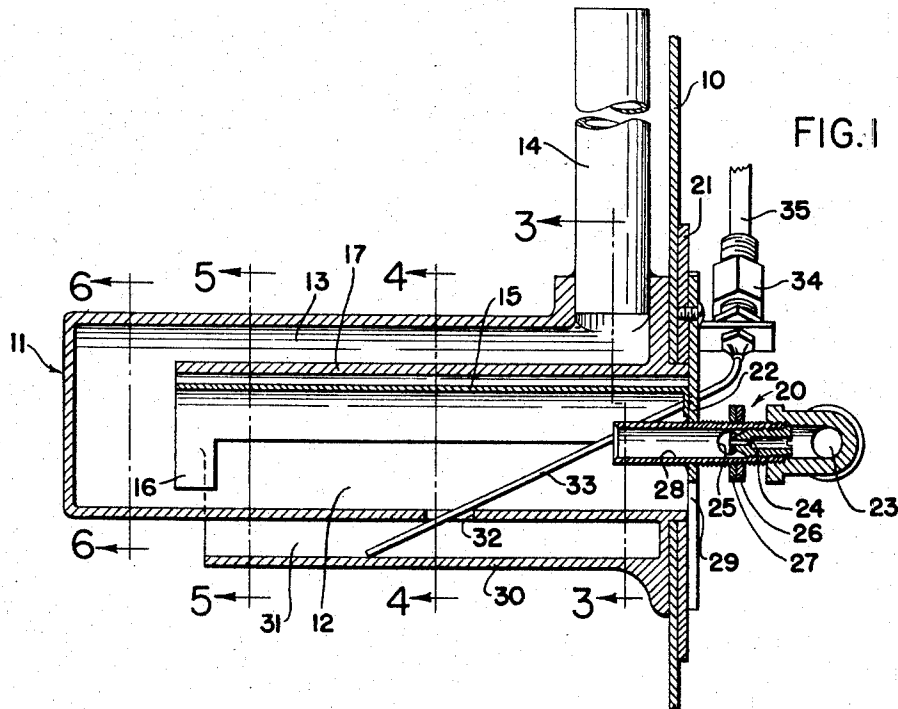


FIG. 1

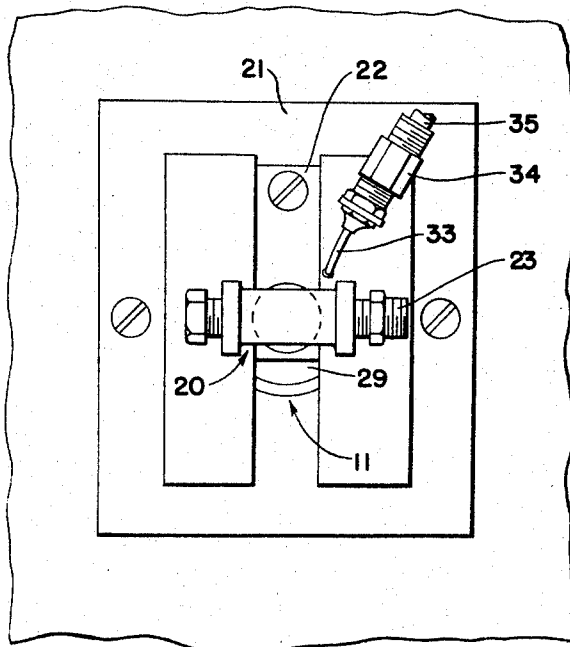


FIG. 2

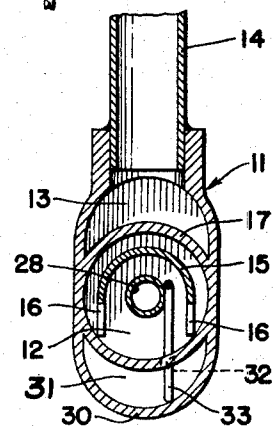


FIG. 3

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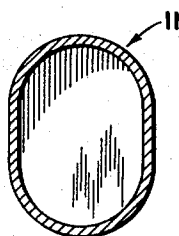
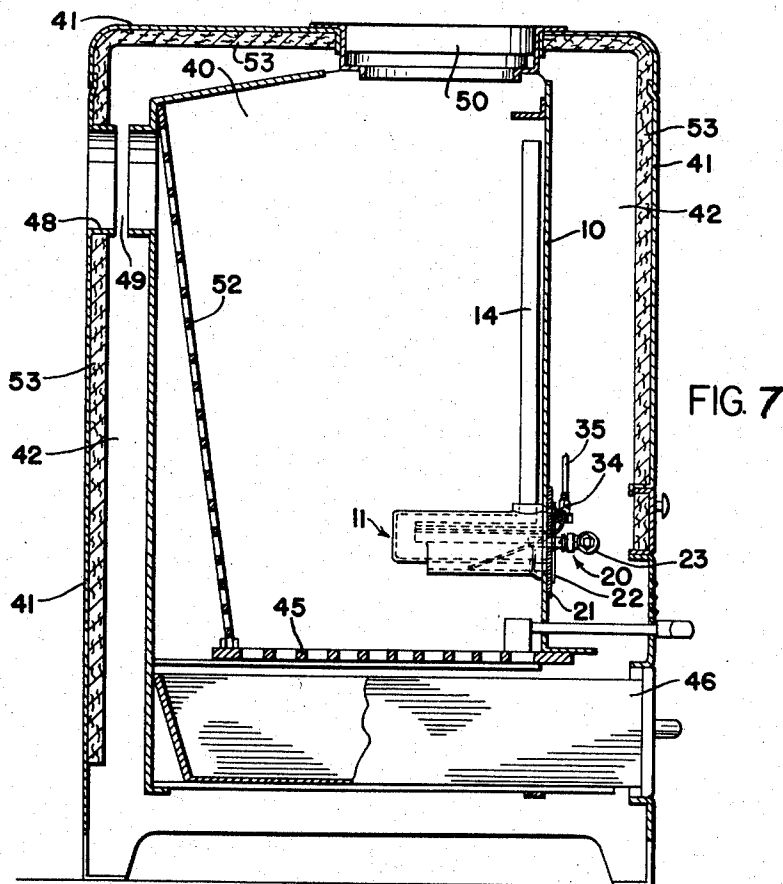


FIG. 6

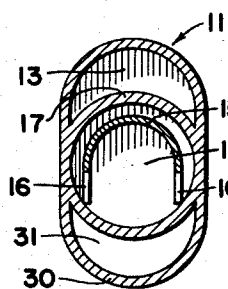


FIG. 5

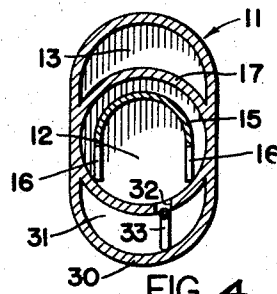


FIG. 4

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1

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INCINERATOR BURNER CONSTRUCTION

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Continuation of application Serial No. 458,555, September 27, 1954. This application November 15, 1956, Serial No. 622,360

2 Claims. (Cl. 110—8)

The present invention relates to gas burners and more specifically to a heating assembly package which, for a given burner capacity, may have a relatively small and restricted volume.

An advantageous application of the invention is in dehydrating incinerators of the covered flame type in which refuse is heated by re-radiating combustion chamber walls to drive off moisture, the refuse finally igniting, either incidentally to heating by the combustion chamber walls or under action of a separate open-flame igniter. In such an application, it is at once important to centrally locate the chamber and to allow free fall and avoid packing or lodging of the refuse. Previous combustion chambers have been unsatisfactory because central location of the combustion chamber required central venting, thus necessitating elbows or bends which tended to catch refuse and impede the orderly settling of reduced residues. By employing the present invention, the heating assembly package, in the form of an obstruction-free stubby cantilever, may project to the center of the chamber with no impediments or bends and without continuing members at its outer free end.

These and other objects and advantages of the invention will become more clear from the following description of a specific example of the invention, together with the accompanying drawings, in which:

Figure 1 is a longitudinal cross-section of a heating unit embodying the invention;

Figure 2 is an end view of the structure shown in Figure 1, the view being taken from the right side of Figure 1;

Figures 3 to 6 are sectional views taken on lines 3—3, 4—4, 5—5 and 6—6, respectively in Figure 1;

Figure 7 illustrates the installation of the illustrated heating unit in a refuse incinerator.

A heater assembly embodying the invention is illustrated in Figure 1, the unit being shown in position on the panel or wall 10 of a chamber, the contents of which the unit is designed to heat. The unit comprises a body, generally indicated at 11, which, in the present illustration, is made up of walls defining a flame chamber 12 and a return flow vent passage 13. The body 11 is fabricated from cast iron, heavy gauge steel or other material which will function as a radiator by giving off radiant heat when raised to elevated temperatures. At the output end of the return flow vent passage is located a suitable stack 14. In the particular embodiment illustrated, a wall 17 divides the return flow vent passage 13 from the flame chamber 12. This wall is cast with or welded to the remainder of the body 11. Located within the flame chamber 12 is flame impingement shield 15, supported at its outer free end by leg portions 16. The flame impingement shield is supported throughout its length, save at its base mounting, in spaced relation from all other elements or walls of the body 11.

Provided at the input end of the flame chamber 12 is a standard gas burner 20 mounted on the panel or wall 10 by means of plates 21 and 22, in a manner which will

2

be apparent from the drawing. The burner is supplied by a gas inlet line 23 and comprises a gas metering orifice 24, a primary air orifice or orifices 25, and air orifice adjusting nuts 26 and 27, which are adapted to lock against each other and which are threaded on the mixing tube 28. Secondary air is supplied through the secondary air opening 29 formed in the plate 22.

The unit may optionally include an extra wall 30 on the body 11 to define a lower chamber 31 communicating with the flame chamber 12 through a slot 32. Passing into the lower chamber from the flame chamber is a slotted ignition tube 33. The ignition tube 33 is supplied with gas from a line 35 through a suitable coupling 34. The ignition tube 33 is provided on its top side with a narrow longitudinal slot (not shown) extending from its bore to its outside. This slot commences at the mouth of the mixing tube 28 and extends to the lower end of the ignition tube 33. Through the provision of this slotted ignition tube, a flame occurring at the mouth of the mixing tube 28 will be carried down into the lower chamber 31 when gas is supplied through line 35, as will be apparent to those familiar with this standard traveling flame arrangement, widely used in gas appliances.

The specific unit described above is particularly adapted for use in a refuse incinerator, and is illustrated in connection with such an incinerator in Figure 7. This incinerator may have a combustion chamber 40, a casing 41 surrounding the combustion chamber and spaced therefrom to define an air jacket space 42, a grate 45 at the bottom of the combustion chamber 40, and an ash drawer 46 below the grate 45. The combustion chamber 40 is vented to a flue 48, to which the air jacket space 42 may also be vented, through an opening or gap 49.

The charge to be disposed of is deposited in the combustion chamber 40 by temporarily lifting a lid 50, and the charge is held away from the flue outlet by means of a perforated screen or grate 52. Fiberglas insulation 53 may be included around the inside of the casing 41 to maintain the outside of the casing cool. It will be seen that the body 11, projecting as it does as a stubby cantilever into the combustion chamber 40, provides a central source of heat while, at the same time allowing ready settling of the refuse without packing or lodging. Note in Figure 7 that the burner housing 11 does not extend substantially over half way across the incinerator chambers between the side walls thereof which extend generally at right angles to the longer dimension of the burner housing. Note also in Figures 4, 5 and 6 that the top outer surface of burner housing 11 is smooth and preferably generally convex upwardly so that refuse can move easily downward past the burner.

What is claimed is:

1. A heater unit package in the form of a stubby cantilever comprising a longitudinally extending hollow body having an interior dividing wall extending from the end of said body along the length thereof to define, within said body, a flame chamber and an exhaust passage on opposite sides of said dividing wall and a passage past said dividing wall at the other end of said body to connect said flame chamber with said exhaust passage, gas burner means extending into said flame chamber from said one end of said hollow body, said hollow body being formed with an opening into said flame chamber at said one end of said hollow body to admit secondary air, said hollow body being formed with an opening from said exhaust passage at said one end of said hollow body to exhaust products of combustion, said other end of said hollow body being closed, flame impingement plate means extending from said one end along the length of said dividing wall, said flame impingement plate means being within said flame chamber and adjacent to, but in spaced relation with, said dividing wall, a wall spaced below and

3

secured to said hollow body and providing an ignition chamber open toward said other end of said hollow body, and a slotted ignition lance extending from a point ignitable by said burner means into said ignition chamber, whereby fuel supplied to said lance will be ignited by said burner means to cause a refuse igniting flame to issue from the open end of said ignition chamber.

2. An incinerator heater unit in the form of a stubby cantilever comprising a longitudinally extending hollow body having an interior dividing wall extending from the end of said body along the length thereof to define, within said body, a flame chamber and an exhaust passage on opposite sides of said dividing wall and a passage past said dividing wall at the other end of said body to connect said flame chamber with said exhaust passage, gas burner means extending into said flame chamber from said one end of said hollow body, said hollow body being formed with an opening into said flame chamber at said one end of said hollow body to admit secondary air, said hollow body being formed with an opening from said ex-

4

haust passage to exhaust products of combustion, said other end of said hollow body being closed, a wall spaced below and secured to said hollow body and providing an ignition chamber open toward said other end of said hollow body, and a slotted ignition lance extending from a point ignitable by said burner means into said ignition chamber, whereby fuel supplied to said lance will be ignited by said burner means to cause a refuse igniting flame to issue from the open end of said ignition chamber.

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