

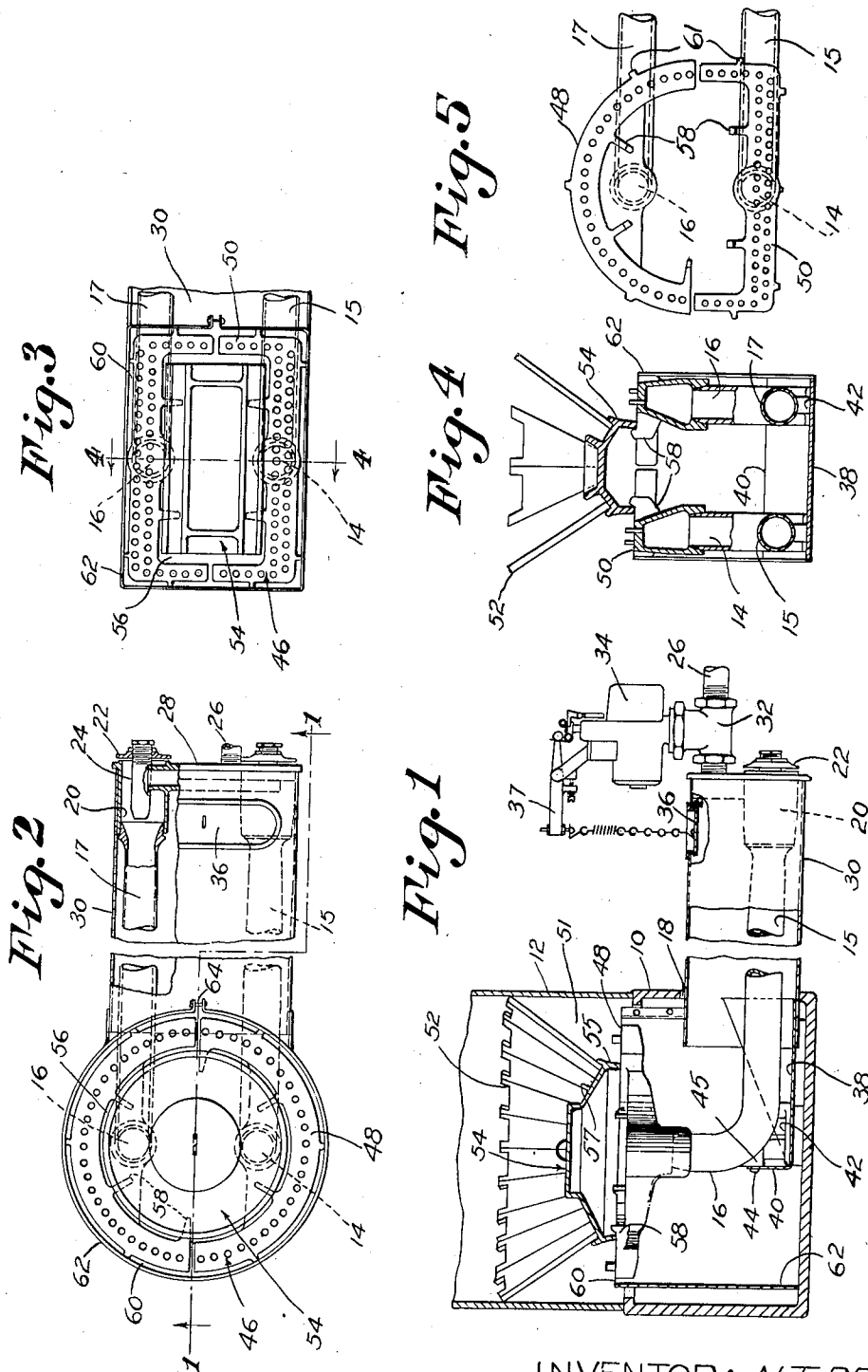
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GAS BURNING APPARATUS

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GAS BURNING APPARATUS

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This invention relates to improvements in gas burning apparatus for converting domestic house heating furnaces, originally designed for burning solid fuel, into gas burning furnaces, the invention being more particularly concerned with the burner parts which are installed within the furnace firebox and ash pit chamber.

Referring to the drawing wherein the preferred form of the invention is shown:

10 Fig. 1 shows the burner end of the apparatus in vertical section (on line 1—1 of Fig. 2) and as applied to a furnace having a circular firebox, that portion of the apparatus outside of the furnace serving to give an understanding of the apparatus as a whole, and being of well known construction; Fig. 2 is a plan view of the apparatus shown in Fig. 1; Fig. 3 shows how the burner end of the apparatus is modified for application to furnaces with rectangular fireboxes; 20 Fig. 4 is a section on line 4—4 of Fig. 3, and Fig. 5 shows the contour relationship between burner heads for circular and rectangular fireboxes.

It is quite immaterial to the present invention whether the furnace be circular or rectangular 25 as regards its firebox for the reason that while the contour of certain parts will depend upon the contour of the firebox, nevertheless the combinational arrangement of the parts remains the same for both circular and rectangular fireboxes. 30 The details of construction of that portion of the apparatus which is outside of the furnace are of no particular concern to the present invention and may be substantially the same as that disclosed in patent to Klees 1,852,119.

35 10 indicates the ash pit and 12 the firebox of an ordinary house heating furnace. To adapt such a furnace to the present invention, the usual grates are removed as is also the ash pit door. In place of the door, there is associated with the 40 door opening 18 an air box or casing 30 to which the admission of air is controlled by a damper 36. Housed and supported by the casing are two identical mixing tubes 15 and 17. At the front end of the casing is a head 28 having two identical open-ended tunnels 20, one for each mixing tube, the receiving end of the latter being supported by its tunnel. At the front end of each 45 tunnel is a disk shutter 22 for controlling the admission of air to mixing tubes. Gas is supplied 50 to the tubes by a pair of gas nozzles 24, one for each tube. 26 indicates a gas supply pipe; 32 a gas valve, and 34 a motor for simultaneously opening and closing the said valve and damper, the latter being operatively connected to the 55 motor by means including a lever 37. The construction thus far described is substantially the same as that disclosed in Klees 1,852,119.

Each mixing tube has an angled extension, 14 and 16. These extensions 14 and 16 are conduits of equal length and together constitute 60 upright supports for the burner assembly. Thus secured to and projecting forwardly from the discharge end of the air box 30 is a bracket 38 having an upturned extension 40, this bracket forming a support for the outer ends of the tubes 65 15 and 17 each of which is provided with a foot 42 adapted to rest on and be secured to said bracket. Securing means, such as screws, 44 passed through the upturned extension 40 and into lugs 45 at the top of the feet 42 serve to more 70 firmly hold the extensions 14 and 16 in upright fixed position.

In accordance with the present invention, the burner assembly comprises a two head burner generally indicated at 46 and a baffle-supporting 75 base generally indicated at 54. In the case of a circular firebox, there will be two semi-circular heads to form a circular burner as shown in Fig. 2 whereas in the case of a rectangular firebox, the heads may be of the form indicated in Fig. 3 80 to provide a burner which is rectangular in plan. The baffle-supporting base 54 will be rectangular or circular in plan accordingly as the burner is rectangular or circular. Each of the burner 85 heads 48 and 50 is hollow; is closed at its opposite ends; is provided with a multiplicity of discharge tips and is apertured and detachably supported midway its ends on one or the other of the upright extensions or conduits 14 or 16. By supporting the heads midway their ends, it will be 90 readily apparent that they are interchangeable. This interchangeability of heads is an important feature of the invention since it makes unnecessary the keeping on hand of a supply of special right and left heads, and what is equally important, it automatically eliminates all possibility of confusion in supplying a customer with two rights or two lefts instead of one of each where the 95 heads are of special right and left construction, it being understood that the burner end of the apparatus is supplied to the customer in knocked 100 down condition.

The baffle-supporting base 54 is detachably supported by the burner heads within the confines of the space encompassed thereby, as on the 105 inwardly projecting lugs 58, and supported on and extending upwardly from the said base are the baffle elements 52 which form with the firebox walls an upwardly converging space 51 110 whereinto the burner fires.

In the preferred form of the invention there is provided on each burner head a number of lateral lugs 58 on which the lower peripheral edge of the base 54 rests, said lugs being provided with upstanding terminal projections for so centering the base on the burner as to provide between the rim of the base and the inner side of the burner a peripheral passage 56 through which air from below the base 54 may flow upwardly and thus supply secondary air to the burner. As clearly shown in Figs. 1 and 4, that part of the base or cover 54 which rests on the lugs 58 comprises an upwardly and outwardly extending rim or flange 55 which extends sufficiently above the lower edge of the baffle seat 57 to prevent the baffles from sliding off the seat.

Secondary air is also supplied to the burner through a passage 60 formed between the outer side of the burner and a surrounding casing 62 which is spaced from the burner by a series of outwardly extending lugs 61 formed on the burner heads. The casing is shown as a sheet metal member whose ends are held together by suitable securing means 64, the air box 30 delivering into said casing.

In Fig. 5, the form relationship of the two types of burner heads is shown, it being seen that the ends of the heads terminate equi-distant from the axes of their respective pipe supports, thus making it possible to use the unit construction comprising the mixture supply pipes and air box 30 for different types of furnace firebox by merely supplying the proper form of burner and baffle base and of course the proper form of burner-surrounding casing 62. It will be readily appreciated that by utilizing a pair of independent but identical burner heads in the construction of the burner and by independently supporting such heads and by supporting the baffle-supporting base in the burner heads, there will be a minimum of trouble in applying the apparatus to a furnace.

What is claimed is:

1. In gas burning apparatus, the combination of a pair of similar mixture supply conduits both extending upwardly in laterally spaced relation, a pair of like elongated hollow burner heads connected midway between their ends to the upper ends of said conduits and constituting a gas burner defining an enclosure, a detachable cover having a downwardly extending flange and forming a seat to receive the lower ends of upwardly and outwardly extending baffle elements, and

means formed integral with the burner heads and coacting with said flange to fix the position of said cover in spaced relation to the burner to permit a flow of secondary air thereto.

2. The combination with a ring type gas burner, of a detachable cover having a downwardly extending flange and a seat to receive the lower ends of a plurality of upwardly and outwardly extending baffle elements, and means formed integral with the burner and coacting with said flange to fix the position of said cover in spaced relation to the burner to permit a flow of secondary air thereto.

3. In a gas burning apparatus, the combination of a pair of mixture-supply conduits extending upwardly side by side in laterally spaced relation, means for supporting and maintaining the conduits in said relation, elongate burner segments of substantially the same form and length, the segments being disengageably mounted and supported midway their ends on the discharge ends of the respective conduits and encompassing an otherwise free and open space therebetween and being disconnected from each other, and a body disengageably supported by the segments and covering the space encircled thereby except along the marginal edges thereof.

4. In a gas burning apparatus, the combination of a pair of mixture-supply conduits extending upwardly side by side in laterally spaced relation, means for supporting and maintaining the conduits in said relation, elongate burner segments of substantially the same form and length, the segments being disengageably mounted and supported midway their ends on the discharge ends of the respective conduits and extending side by side in spaced parallel relation, and a body disengageably supported by the burner segments and covering the space therebetween except along the marginal edges thereof.

5. In the combination specified in claim 4, the said segments having lateral extensions at their ends, the extensions at adjacent ends being arranged in opposition, and the said body terminating short of said ends.

6. In the combination specified in claim 3, the conduits comprising angled extensions of horizontally disposed mixing tubes and the said means for supporting and maintaining the conduits in the manner stated comprising a bracket which extends crosswise of the conduits and tubes.

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