Aug. 15, 1944. R. G. WYLD 2,355,896

BAYONET CATCH MOUNTING FOR FURNACES

Filed April 6, 1942

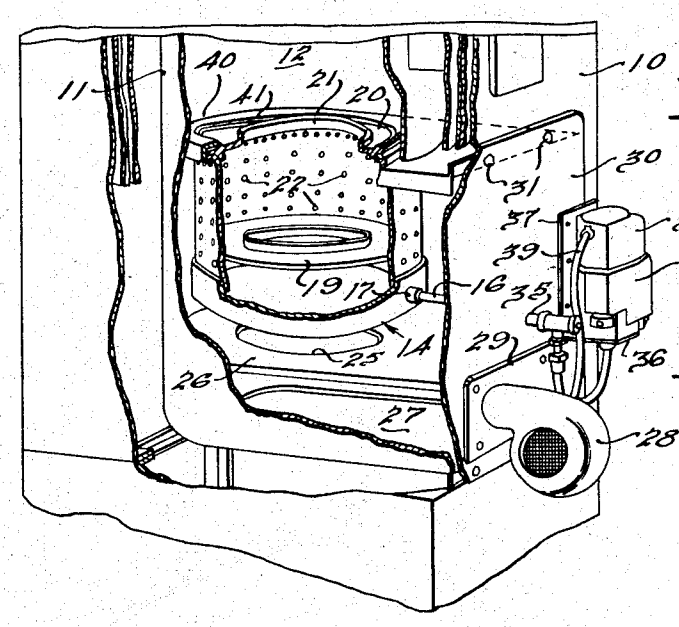


Fig. 1.

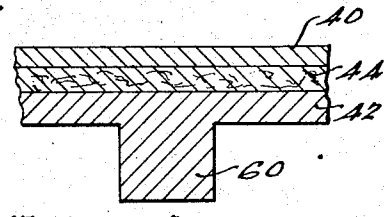


Fig. 7.

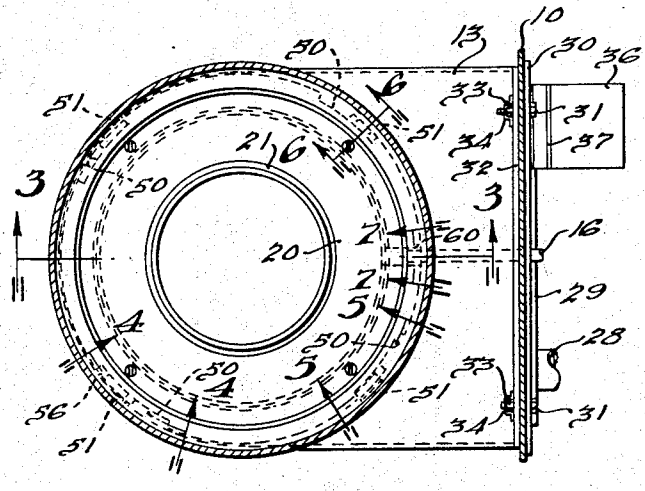


Fig. 2.

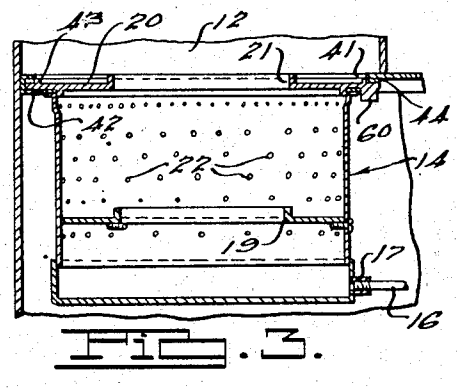


Fig. 3.

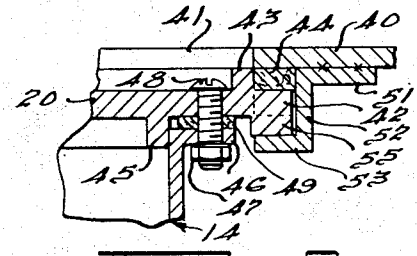


Fig. 6.

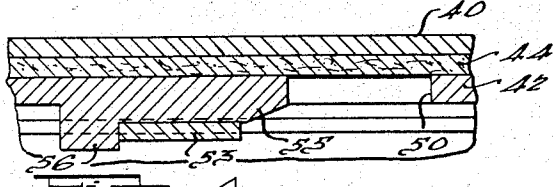
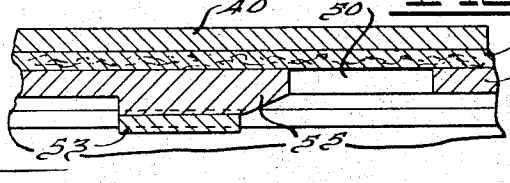


Fig. 4.

Fig. 5.



INVENTOR
Reginald G. Wyld.
BY
Harness, Lind, Potts & Harris
ATTORNEYS.

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BAYONET CATCH MOUNTING FOR FURNACES

Reginald G. Wyld, Dayton, Ohio, assignor to Chrysler Corporation, Detroit, Mich., a corporation of Delaware

Application April 6, 1942, Serial No. 437,786

3 Claims. (Cl. 158—91)

My present invention relates to means for assembling a vaporizing fuel burner and an appliance with which it is to be associated, such means being easily manufactured and operated.

The object of the present invention is to overcome difficulties encountered with prior assemblies of this sort. The foremost function of such means is to provide an air-tight seal between the heating appliance and the burner where they are joined together surrounding the flame-projecting opening of the burner. Fuel vaporizing burners comprise a receptacle having perforations therethrough to admit air for the purpose of consuming liquid fuel vaporized within the receptacle by the heat of previously consumed fuel. The number, spacing, and sizes of the air admitting openings are critical for each size and shape of burner as the amount of air and the points of admission of the air may determine whether incomplete combustion or complete combustion will take place. Upsetting of the delicate balance in any manner may result in the flame being extinguished, or in the formation of a sooty flame, or in the building up of carbon and gum deposits in the burner which would reduce efficiency and eventually extinguish the flame if not cause destruction of the burner. Likewise, overheating of some portion of the burner may occur with resulting warping, cracking or corrosion of portions of the burner. The present invention provides an air-tight seal without resorting to the prior practices of welding the burner to the appliance, using a plurality of bolts or screws, or cementing cracks with furnace cement. The main advantages achieved thereby is that a replacement burner may be inserted, if necessary, without destroying the appliance, and carbon deposits which may form for various reasons may be cleaned out of a burner which is otherwise in good condition. Even the prior practice of using separable fasteners such as nuts and bolts or screws would not always permit separation of the burner and appliance since the gases of combustion and the heat generated by the burner often fuse the separable fasteners together so that they cannot be disengaged.

A further object of the present invention is to provide a mounting for a burner of such nature that it may be assembled and disassembled by one simple movement, thus reducing manufacturing or servicing time and thus lowering the production and maintenance cost of fuel vaporizing heating appliances.

The objects and advantages of the present invention will be more readily understood by reference to the accompanying drawing wherein like numerals refer to like parts throughout and in which,

Fig. 1 shows a warm air furnace with parts broken away to illustrate the present invention;

Fig. 2 is a horizontal section taken through the heating drum of the furnace shown in Fig. 1 and showing a plan view of the present invention;

Fig. 3 is a vertical section taken substantially along line 3—3 of Fig. 2;

Fig. 4 is an enlarged sectional view of a detail taken substantially along line 4—4 of Fig. 2;

Fig. 5 is an enlarged sectional view of a detail taken substantially along line 5—5 of Fig. 2;

Fig. 6 is an enlarged sectional view of a detail taken substantially along line 6—6 of Fig. 2; and

Fig. 7 is an enlarged sectional view taken substantially along line 7—7 of Fig. 2.

Fig. 1 discloses a warm air furnace comprising a jacket 10 enclosing and supporting a heating drum 11 having a flame receiving portion 12. The drum is provided with a laterally extending access extension 13 of sufficient size to permit insertion and withdrawal of the fuel vaporizing burner 14. The burner is shown as being of cylindrical shape but it is to be appreciated that other shapes may be used provided the burner and heating appliance are provided with cooperating portions as will presently appear. Fuel is supplied to the bottom of the receptacle through tube 16 screwed into a spud 17 formed on the bottom of the receptacle and having connection to a fuel metering device 18 preferably having provision for supplying various rates of fuel flow as is well-known in the art. At one rate of flow the flame may be confined to a low stage supported by a pilot ring 19, and at higher rates of flow the flame is at a high stage supported by a top combustion ring 20 having a centralized opening 21 through which the flame projects into the space 12. The vertical side walls of the burner are provided with a plurality of perforations 22 for the purpose of admitting air to support combustion, as is well-known in the art. Details of the fuel metering device, of the burner, of the pilot device, and of the combustion ring may vary considerably, there being many such devices known to the art.

Air for supporting combustion may be provided through an opening 25 in a baffle 26 separating the burner containing space from a lower air admitting passage 27. Such air may be supplied by a forced draft blower 28, or by natural draft when the forced draft blower mounting plate 28

is removed as disclosed in the copending application of applicant, Serial No. 437,787, filed concurrently herewith. The access opening and the air passage are preferably closed by a cover plate 30 held in place by bolts 31 passing through the edges of the jacket 10 and flanges 32 on the edges of the extension 13, to be retained by nuts 33 held in retainer clips 34 on the inner surface of the flanges 32. The tube 16 passes through a closely fitting opening 35 in the cover plate 30 so that the tube may be unscrewed from the spud 17 to permit removal of the cover plate. The fuel metering device 18 is preferably mounted upon a shelf 36 fastened to the cover plate 30 so that the exact height of the fuel metering device in relation to the inlet tube 16 is always fixed. The shelf 36 may support a vertical shield 37 adapted to prevent heat from affecting the fuel flow through the metering orifice. When the forced draft burner is used, a control device 38, adapted to coordinate the action of the blower 28 with the action of the metering device 18 as is well-known in the art, may be mounted upon the metering device 18 and connected to the motor (not shown) of the blower 28 by a cable 39.

In order to provide the demountable means of the present invention the heating appliance is provided with a horizontal flange 40 dividing the space 12 from the burner access space. The flange 40 has an opening 41 through which the flame emitting opening 21 of the burner may extend. Preferably the rim 42 of the combustion ring 20 is provided with an annular flange 43 adapted to match the edge of the opening 41 and provide a ledge to embrace a slightly compressible gasket 44 of asbestos rope or the like which may be compressed during the assembly of the burner to the appliance as will presently appear. The lower surface of the combustion ring 20 may likewise be provided with an annular flange 45 adapted to match the upper edge of the vertical wall of the burner 14. The vertical wall of the burner 14 preferably is provided with an outwardly extending annular flange 46 providing means to be engaged by nuts 47 threaded onto a plurality of bolts 48 passing through the member 20 so that the burner may be formed as an entire assembly. A gasket 49 of asbestos rope or the like is preferably placed between the flange 46 and the member 20 to insure an airtight seal around the upper edge of the vertical wall of the burner. Since the burner as a whole including the combustion ring is intended to be removably associated with the heating appliance as will presently appear, the use of nuts 47 and bolts 48 is permissible even though the heat of combustion and the gases of combustion may permanently fuse the threads together since the bolts may be destroyed when the burner is removed from the appliance in order that the combustion ring 20 may be salvaged even though the vertical wall or bottom portion of the burner 14 may have been destroyed.

In order to provide for rapid mounting of the burner the rim 42 is preferably provided with a plurality of inwardly extending notches 50, and the flange 40 is provided with a plurality of hanger members 51 having vertical, downwardly extending portions 52 adapted to embrace the edge of the rim and horizontal, inwardly extending free ends 53 adapted to pass through the notches 50 when the burner is raised toward the flange 40. The burner may be rotated a few degrees to bring the ends 53 under portions of the rim 42 adjacent the notches 50 to support the burner. Preferably the under surface of the rim 42 adjacent the notches 50 is provided with inclined ramps 55 adapted to wedge the rim 42 toward the flange 40 when the burner is rotated, thus compressing gasket 44 and assuring an airtight seal. The rim may also be provided with a downwardly extending abutment 56 adjacent one of the ramps 55 and adapted to engage one of the ends 53 to limit rotation of the burner.

Since the confined space in which a burner of this character is usually mounted may prevent the application of force to accomplish the wedging compression of the gasket 44, the rim 42 above the front of the burner (the portion having the spud 17 thereon) is preferably provided with a downwardly extending rectilinear projection 60 which may be engaged by a large wrench extended through the access extension 13 for the purpose of rotating the burner. Other means may be provided for cooperation with various leverage applying tools.

Having illustrated and described a preferred embodiment of my invention, it should be apparent to those skilled in the art that the same permits of various modifications in arrangement and detail. All such modifications as come within the scope of the following claims are to be considered a part of my invention.

I claim:

1. In a heating appliance comprising a fuel vaporizing burner, a flange at the bottom of the flame receiving portion of the appliance having an opening through which flame may extend from the burner, a combustion ring forming the top portion of the burner and having a flame opening adapted to be registered with the opening in said flange, said combustion ring having a rim protruding beyond the adjacent portion of the burner, said rim having a plurality of notches in its edge, and a plurality of hanger members carried by said flange having vertical portions extending downward from the lower surface of said flange and adapted to embrace the edge of said rim and inwardly extending free ends adapted to pass through said notches when the burner is raised to bring said rim into engagement with said flange, said hanger members being adapted to support the burner when the burner is rotated sufficiently to move said notches out of registry with the hanger members and thus bring portions of said rim over the free ends of said hanger members.

2. In a heating appliance comprising a fuel vaporizing burner, a flange at the bottom of the flame receiving portion of the appliance having an opening through which flame may extend from the burner, a combustion ring forming the top portion of the burner and having a flame opening adapted to be registered with the opening in said flange, said combustion ring having a rim portruding beyond the adjacent portion of the burner, said rim having a plurality of notches in its edge. a plurality of hanger members carried by said flange having vertical portions extending downward from the lower surface of said flange and adapted to embrace the edge of said rim and inwardly extending free ends adapted to pass through said notches when the burner is raised to bring said rim into engagement with said flange, said hanger members being adapted to support the burner when the burner is rotated sufficiently to move said notches out of registry with the hanger members and thus bring portions of said rim over the free ends of said hanger members, and means on said rim adapted to be

engageable by a leverage applying tool for the purpose of rotating the burner.

3. In a heating appliance comprising a fuel vaporizing burner, a flange at the bottom of the flame receiving portion of the appliance having an opening through which flame may extend from the burner, a combustion ring forming the top portion of the burner and having a flame opening adapted to be registered with the opening in said flange, said combustion ring having a rim protruding beyond the adjacent portion of the burner, said rim having a plurality of notches in its edge, and a plurality of hanger members carried by said flange having vertical portions extending downward from the lower surface of said flange and adapted to embrace the edge of said rim and inwardly extending free ends adapted to pass through said notches when the burner is raised to bring said rim into engagement with said flange, said hanger members being adapted to support the burner when the burner is rotated sufficiently to move said notches out of registry with the hanger members and thus bring portions of said rim over the free ends of said hanger members, said rim having a plurality of inclined ramps formed on its under surface adjacent said notches for the purpose of wedging said rim and flange together when the burner is rotated.

REGINALD G. WYLD.