

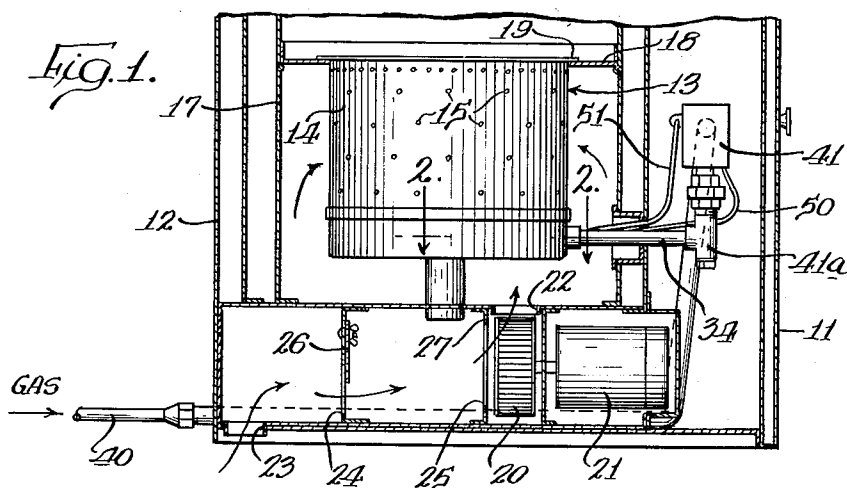
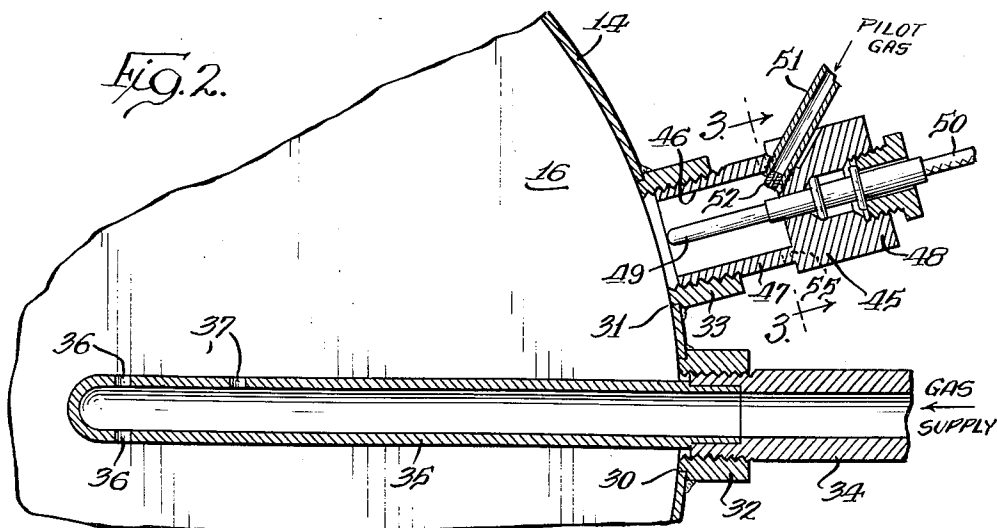
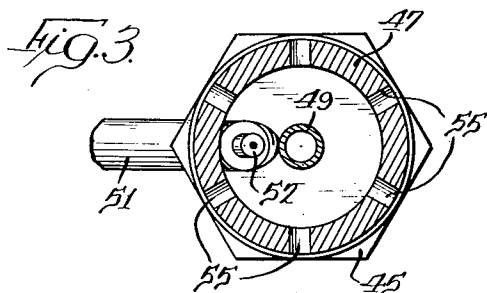
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C. J. PAVLAK

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FURNACE WITH GAS BURNER

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INVENTOR:
Casimir J. Pavlak
 BY *Hofgren, Brady,*
Wagner, Allen & Stillman
Attys.

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FURNACE WITH GAS BURNER

Casimir J. Pavlak, Wisconsin Rapids, Wis., assignor to
Preway Inc., a corporation of Wisconsin
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1 Claim. (Cl. 158—7)

This invention relates to a furnace having a burner pot and more particularly to a conversion device adapting an oil burner pot for the utilization of gas.

An object of this invention is to provide new and improved gas furnace structure and more particularly gas burner structure readily adaptable for use with a burner pot of a type constructed to burn oil.

Another object of this invention is to provide a gas burner construction utilizable with an oil burner pot having a peripheral wall in which a gas burner is mounted within the pot, a gas pilot is mounted externally of the burner pot whereby the pilot has sufficient air to maintain a flame even when combustion is taking place inside the burner pot and the pilot is arranged whereby air under pressure is directed to the pilot to cause the pilot flame to project into the burner pot whereby gas emitted from the outlet end of the gas burner is ignited when operation of the burner commences.

A further object of the invention is to provide a gas burner as defined in the preceding paragraph in which the gas pilot embodies a casing having a central chamber aligned with an opening in the peripheral wall of the burner pot, a pilot gas line is connected into said chamber to direct gas against the wall of said chamber to create turbulence in the gas whereby entry of pressure air from externally of the casing is aided with the air entering the chamber through a series of pressure air inlets in the wall of the casing, the turbulence of the gas in addition to the velocity of the air entering the pilot causing the pilot flame to project through the burner pot wall opening into the burner pot.

Still another object of the invention is to provide a furnace as defined in the preceding paragraphs wherein an air blower is provided for supplying pressure air to the pot for combustion of the gas and some of this air is directed to the pressure air inlet openings in the pilot casing.

Further objects and advantages will become apparent from the following detailed description taken in connection with the accompanying drawings in which:

FIG. 1 is a fragmentary vertical section taken along the center line of a furnace and showing the lower part thereof;

FIG. 2 is a fragmentary plan view on an enlarged scale taken generally along the line 2—2 in FIG. 1; and

FIG. 3 is a section on an enlarged scale taken generally along the line 3—3 showing a part of the gas pilot casing and pilot gas line.

While this invention is susceptible of embodiments in many different forms, there is shown in the drawings and will herein be described in detail an embodiment of the invention with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the embodiment illustrated. The scope of the invention will be pointed out in the appended claim.

As shown in the drawings, a furnace has a casing with a front wall 11 and a rear wall 12 which mount there-within a burner pot 13 having a peripheral wall 14 with a plurality of combustion air inlets 15 for supplying air to the interior of the burner pot. As shown in FIG. 2, the burner pot 13 has a bottom 16.

The burner pot 13 is mounted within a cylindrical

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jacket 17 mounted within the furnace casing in sealed relation thereto and is supported from an annular ring 18 suitably supported on the interior of the jacket and which engages under a peripheral flange 19 on the burner pot for support thereof.

Air under pressure is supplied to the interior of the jacket 17 and externally of the burner pot by an air blower 20 driven from a motor 21 having an outlet opening 22 into the jacket. The blower 20 has communication with the exterior of the furnace through a furnace wall opening 23 and a pair of openings 24 and 25 in a pair of walls 26 and 27 of the furnace. Operation of the motor 21 causes the blower 20 to direct air under pressure as supplied from the furnace wall opening 23 to the jacket 17 through the opening 22.

The burner pot 13 has its wall 14 formed with a pair of openings 30 and 31 formed adjacent the pot bottom 16. Each of the openings 30 and 31 is fitted with an internally threaded member 32 and 33, respectively, suitably secured to the exterior of the burner pot wall by means such as welding. The threaded member 32 may suitably mount a pipe for supplying oil to the burner pot 13, however, as shown in the drawings, with the burner pot converted to gas, a gas supply pipe 34 is threaded into the member 32 and carries a snorkel tube 35 which extends into the burner pot. The tube has outlet openings 36 and 37 disposed centrally of the pot near the bottom 16 for emission of gas. Gas is supplied to the pipe 34 from a main line 40 as shown in FIG. 1 which extends to a solenoid valve 41 having the gas pipe 34 connected thereto. The valve 41 is a 100% automatic pilot-solenoid valve with an attached gas pressure regulator regulating the gas pressure, either natural or propane. An orifice fitting 41a is attached to the valve 41 for orificing the gas flow to line 34. The fitting includes an orifice member usable with propane gas and which can be removed when using natural gas since the fitting has the proper orifice size for natural gas.

A gas pilot having a casing 45 is attached to the threaded member 33 associated with the second pot wall opening 31 and has a cylindrical chamber 46 defined by a cylindrical portion 47 of the casing wall communicating with the wall opening 31. A base part 48 of the gas pilot casing mounts a thermocouple 49 for detecting the presence of a pilot flame with the thermocouple having a line 50 extending to the solenoid valve 41 for causing shut off of the valve when there is no pilot flame.

Gas for pilot operation is directed to the pilot casing by a gas line 51 fitted into the casing base 45 and extending from the solenoid valve 41. The gas flow is adjustable at the valve 41. The outlet end of the pipe 51 has a plug 52 with an orifice opening directed to cause gas entering the chamber 46 to strike the interior of the chamber wall at an angle to create turbulence. The gas pilot is located externally of the burner pot whereby combustion taking place within the burner pot does not block off oxygen to the pilot flame to thus permit continued operation of this flame.

Air under pressure is supplied to the pilot by having a plurality of radially extending air inlets 55 in the section 47 of the casing wall located adjacent the casing base 48 which communicate with the area inside the jacket 17 and externally of the pot 13. The flow of this air into the gas pilot chamber 46 is aided by the turbulence of the pilot gas entering the chamber 46. The turbulence of the gas combined with velocity of the air results in projecting the pilot flame into the burner pot whereby gas emitting from the gas burner outlets 36 and 37 is ignited when operation commences.

In normal operation, the air blower 20 is operating to supply pressure air to the jacket 17 and thus air under

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pressure is supplied to the pilot chamber 46 to provide for operation of the pilot at all times. Upon blower failure, the pilot does not receive sufficient air to burn with a blue flame and the thermocouple 49 will open with result that the valve 41 operates to shut off the supply of gas through the line 51 to the pilot.

I claim:

A furnace comprising, in combination, a burner pot having a peripheral wall with combustion air inlets, an enclosing jacket for said pot in spaced relation thereto, means for supplying combustion air under pressure to said jacket including an air blower, a pair of openings in the wall of said pot, a gas burner extended through one of said openings with an outlet end adjacent the center of the pot, a constant burning gas pilot mounted externally of the pot and within the jacket at the other of said openings including a casing having a wall defining a generally cylindrical chamber externally of the pot wall and within said jacket communicating with said last recited

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wall opening, a pilot gas line having an outlet end in the chamber at the end remote from said last recited pot wall opening and aimed generally toward said casing wall and said last recited pot wall opening, and a plurality of air inlets in said casing wall for supplying pressure air from within the jacket to said chamber, whereby the emission of gas at an angle into said chamber causes turbulence to cause combustion within the chamber.

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