A burner and pilot assembly for a gas fireplace has a substantially hollow burner enclosure with a plurality of burner outlet apertures at the top of the enclosure. A pilot burner is mounted within the enclosure to underlie a portion of the outlet apertures such that flame from the pilot burner extends from a portion of the outlet apertures to merge the appearance of the pilot flame with the main burner flame when the main burner is lit. The invention is well-suited to a linear-style gas fireplace burner.
GAS FIREPLACE BURNER WITH BUILT-IN PILOT SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of Canadian Patent Application No. 2,678,231, which was filed on Sep. 8, 2009, and is incorporated herein in its entirety by reference.

FIELD OF THE INVENTION

[0002] This invention relates to an improved ignition system for gas fireplaces. In particular, the invention relates to the arrangement of a pilot burner in relation to the main burner of a gas fireplace and its surrounding structure.

BACKGROUND OF THE INVENTION

[0003] The presence of a pilot to ignite the main burner of a gas fireplace is recognized as a safe means to ignite the main flame, as compared to a ‘direct spark’ ignition system where a spark is used to ignite accumulated gas flowing out of the main burner, sometimes with an unexpectedly large explosion. However the look of pilot burner assembly generally detracts from the aesthetic appeal of the fireplace. For that reason, in traditional gas fireplaces having artificial log sets, the pilot assembly is often intentionally camouflaged by the log set.

[0004] It is presently in fashion for consumers to seek a clean, modern look for home furnishings and appliances: to that desire, a few years ago the market saw the introduction of a gas fireplace style called a ‘linear burner’. This style of burner provides a contemporary look using rocks or glass beads as a decorative medium around the flame, as opposed to the artificial logs used in traditional gas fireplaces. However, without the logs to act as camouflage, the pilot burner becomes visible in a contemporary look fireplace.

[0005] The effectiveness of a pilot burner is also subject to it being properly installed. If the pilot burner is placed too far away from the main burner, or too high or too low in relation to it, it may fail to ignite the burner, again resulting in potentially dangerous build up of gas.

[0006] It is an object of this invention to eliminate the unsightly appearance of a pilot in a gas fireplace, particularly but not exclusively in a linear burner style of gas fireplace, yet retain the safety aspect of a pilot as compared to a direct spark ignition system.

[0007] It is another object of the invention to avoid the appearance of a separate pilot candle alongside a main burner when the fireplace is in operation, which can occur when the pilot burner assembly is not properly camouflaged.

[0008] These and other objects of the invention will be better understood by reference to the detailed description of the preferred embodiment which follows.

SUMMARY OF THE INVENTION

[0009] The present invention provides a pilot burner that is directly adjacent and provides a flame that appears as a continuous extension of the flame from the main linear burner. The pilot burner is provided within the linear burner enclosure that otherwise directs gas from the gas supply toward a linear series of openings at the top of the enclosure. By being situated within the main burner enclosure, the pilot burner is effectively invisible to the user.

[0010] The invention retains the safety characteristics of the pilot over the direct spark ignition system, while avoiding the unsightliness of the pilot burner and eliminating the candle effect of a pilot flame spaced from the main burner.

[0011] In one aspect, the invention comprises a burner and pilot assembly for a gas fireplace comprising a substantially hollow burner enclosure, a plurality of burner outlet apertures at the top of the enclosure, a pilot burner mounted within a portion of the enclosure. The pilot burner underlies a portion of the outlet apertures such that flame from the pilot burner extends from some of the outlet apertures.

[0012] In a more specific aspect of the invention, the pilot burner is mounted in a walled compartment within the main burner enclosure.

[0013] In another aspect, the main burner enclosure comprises a bottom plate that also acts as the first portion of the walled compartment which also includes at least one air inlet aperture.

[0014] In another aspect, a venturi element is provided to control the inlet of combustion air to a portion of the compartment that contains the outlet of the pilot burner.

[0015] In another aspect, the invention comprises the foregoing features as applied specifically to a linear style burner.

[0016] The foregoing was intended as a broad summary only and of only some of the aspects of the invention. It was not intended to define the limits or requirements of the invention. Other aspects of the invention will be appreciated by reference to the detailed description of the preferred embodiment and to the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The invention will be described by reference to the detailed description of the preferred embodiment and to the drawings thereof in which:

[0018] FIG. 1 is a perspective view of a prior art linear style burner for a gas fireplace;

[0019] FIG. 2 is a perspective view of the linear style burner according to the preferred embodiment of the invention;

[0020] FIG. 3 is an exploded view of the burner of FIG. 2;

[0021] FIG. 4 is a plan view of the burner of FIG. 2;

[0022] FIG. 5 is a cross-sectional view of the burner of FIG. 4 taken along line 5-5, and;

[0023] FIG. 6 is a right end view of the burner of FIG. 4.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0024] FIG. 1 illustrates a ‘linear burner’ style gas fireplace assembly. The assembly generally consists of a substantially hollow burner 10 and a pilot assembly 12.

[0025] Hollow burner 10 comprises opposed inclined side plates 14 (only one of which is visible in FIG. 1), opposed end plates 16 (only one of which is visible in FIG. 1), a top burner plate 18 having a series of linear apertures 20, and a bottom burner plate (not shown in FIG. 1). The bottom burner plate accommodates a gas supply conduit 22 for supplying gas to the hollow interior of the burner 10. The gas is collected within the hollow burner enclosure and exhausted through the apertures 20 at the top of the burner.

[0026] Pilot assembly 12 includes a bracket 24 for mounting the assembly to the side of the burner 10. A pilot burner 26 and pilot flame diverter 28, a pilot igniter 30 and a pilot flame sensor 32 are mounted in bracket 24.
In use, this style of burner would be partly covered with rocks or glass beads to barely cover the top burner plate 18. It will be appreciated that in such configuration, the pilot burner 26 and diverter 28 remain visible, as well as presenting a distinctly separate candle-like flame besides the flame generated by the burner 10. FIGS. 2 to 6 illustrate the preferred embodiment of the present invention. The hollow burner 34 consists of opposed inclined side walls 36, 38, a top burner plate 40 having linear apertures 42, opposed end walls 44, 46 and a bottom burner plate 48. Bottom burner plate 48 includes an aperture 50 for receiving gas supply conduit 52. The pilot burner 54 is mounted within an aperture 56 that is provided in bottom burner plate 48 alongside air inlets 58. A divider plate 60 isolates the pilot burner 54 and the pilot flame from the main portion of the enclosure 62. A venturi bracket 64 regulates the mixing of combustion air supplied through air inlets 58 and of the gas emitted from the outlet of pilot burner 54. Pilot burner 54 and its associated venturi bracket 64 are therefore enclosed in a compartment between divider plate 60 and end wall 44 and are not visible from the exterior of the burner 34. In the preferred embodiment, pilot flame sensor 66 and pilot igniter 68 are mounted to end wall 44 by means of a bracket 70. When the pilot burner is lit, the pilot flame extends upward from the apertures in the portion of the top burner plate 40 that directly overlies the pilot burner 54. When the burner 34 is lit, the pilot flame therefore appears to be a continuous and integral extension of the flame emitted from main burner 34. In addition, as the pilot burner 54 is now supplied integrally with the housing of burner 34, there is little possibility of incorrect positioning of the pilot burner in relation to the main burner thereby ensuring reliable ignition of the main burner.

It will be appreciated by those skilled in the art that the preferred embodiment has been described in some detail but that certain modifications may be practiced without departing from the principles of the invention.

1. A burner and pilot assembly for a gas fireplace comprising a substantially hollow burner enclosure, a plurality of burner outlet apertures at the top of said enclosure, a pilot burner mounted within a portion of said enclosure, said pilot burner underlying a portion of said burner outlet apertures such that flame from the pilot burner extends from a portion of said plurality of burner outlet apertures.

2. The assembly of claim 1 wherein said pilot burner is mounted in a walled compartment within said enclosure.

3. The assembly of claim 1 wherein said substantially hollow burner enclosure comprises a bottom plate, said bottom plate also defines a bottom portion of a walled compartment of said enclosure, and said bottom portion of said compartment comprises at least one air inlet aperture.

4. The assembly of claim 3 further comprising a venturi element for controlling the inlet of combustion air to a portion of said compartment that contains the outlet of said pilot burner.

5. The assembly of claim 1, 2, 3 or 4 wherein said plurality of burner outlet apertures comprises an elongated plurality of burner outlet apertures.

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