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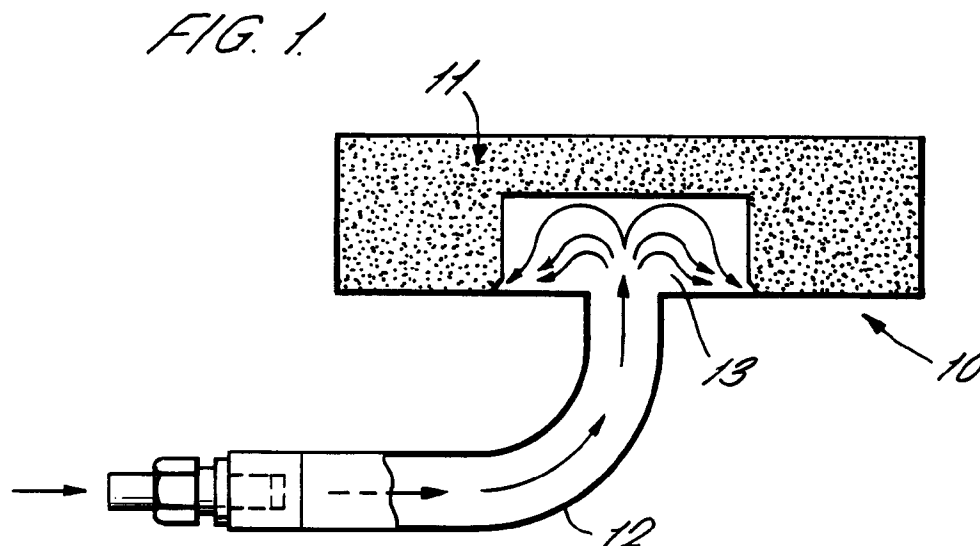
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**(54) Improvements in fireplace appliances**

(57) The invention relates to improvements in fireplace appliances, and in particular to a device for controlling the distribution of the gas/air mixture in gas burners for such appliances.

A gas burner (15) for a fireplace appliance comprising a gas/air mixing chamber (22), a dispersal medium (17) for spreading the gas/air mixture across a surface for burning and a distribution device (18) positioned between the mixing chamber and dispersal medium, characterised in that said device comprising a lower distribution plate (19) having a plurality of apertures (20) therein to direct the distribution of the gas/air mixture to a selected location and an upper distribution plate (21) to prevent the dispersal medium from entering the apertures.



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## Description

The invention relates to improvements in fireplace appliances, and in particular to a device for controlling the distribution of the gas/air mixture in gas burners for such appliances. This device is generally used to improve the visual and technical performance of fireplace appliances such as decorative fuel effect appliances, inset gas fires, inset live effect fires, free standing gas fires or stoves and the like.

A typical gas burner employs a dispersal medium, such as exfoliated vermiculite, to spread the gas/air mixture across the fire box to all of the artificial fuel elements contained therein. Prior art burners require a deep bed of dispersal medium to avoid lightback to the injector and so have random and meandering gas paths giving uneven peaks of flame. In the prior art gas burners, the usual means of spreading gas/air mixture beneath the dispersal medium (as shown in Fig. 1) is unreliable as the gas/air mixtures does not consistently come through the dispersal medium in the same place leading to unstable combustion results.

It is therefore an object of the present invention to overcome this disadvantage and to provide stable and improved combustion.

According to the invention there is provided a gas burner for a fireplace appliance comprising a gas/air mixing chamber, a dispersal medium for spreading the gas/air mixture across a surface for burning and a distribution device positioned between the mixing chamber and dispersal medium, said device comprising a lower distribution plate having a plurality of apertures therein to direct the distribution of the gas/air mixture to a selected location and an upper distribution plate to prevent the dispersal medium from entering the aperture.

Preferably the dispersal medium comprises exfoliated vermiculite. The dispersal medium is preferably located in a dispersal chamber, a floor of which comprises said distribution device.

In a preferred embodiment of the invention the gas/air is mixed in a venturi or mixing tube or alternatively in half a venturi or mixing tube.

The cover means preferably comprise a single or a discrete series of plates.

In a preferred embodiment of the invention an upper distribution plate is positioned relative to the lower distribution plate such that the lightback to the injector is prevented with or without dispersal medium.

The dispersal medium preferably is of a depth above the lower distribution plate which allows direct control over the pattern of gas concentration.

There will now be described, by way of example only, a preferred embodiment of the present invention in which:-

Fig. 1 is a side sectional view of a typical prior art gas burner;

Fig. 2 shows a side sectional view of a gas burner according to the present invention;

Fig. 3 is a plan view of a distribution plate for use in the gas burner of Fig. 2; and

Figs. 4 and 5 are side sectional views of a section of the distribution plate of Fig. 3.

Fig. 1 shows a typical prior art gas burner 10 containing a dispersal medium 11, such as exfoliated vermiculite. The burner 10 is located beneath a fire box of a fireplace appliance, containing fuel elements. The fuel elements may be real-effect coal or wood elements. The gas/air mixture for burning enters the inlet chamber 13 of the burner 10 from an appropriate supply by means of conduit 12 in the direction of the arrows. The arrows show how the gas/air mixture spreads out unevenly in the inlet chamber 13 before passing through the dispersal medium 11 to reach the fuel elements.

Referring to Fig. 2, there is shown a gas burner 15 according to the invention. Gas burner 15 comprises a dispersal chamber 16 containing a dispersal medium 17, such as exfoliated vermiculite. At the lower end of the chamber 16 is a distribution plate 18. The dispersal medium is preferably of a depth above the lower distribution plate which allows more direct control over the pattern of gas concentration. As shown in Figs. 3 to 5 the plate 18 consists of a lower plate 19 containing slots 20 and, located above the lower plate 19, an upper plate or cover 21 which prevents the dispersal medium from falling through the slots 20 in the lower plate 19 whilst allowing the passage of the gas/air mixture through the plate 18. The upper plate 21 may be a single plate or a series of individual plates located so as to shelter the slots 20. The upper distribution plate is positioned relative to the lower distribution plate such that lightback to the injector is prevented with or without dispersal medium.

The distribution plate 18 may form a lower wall of said dispersal chamber 16 and is located directly above a mixing chamber 22. The gas/air mixture is introduced into the mixing chamber 22 from an appropriate supply by means of a venturi or mixing tube 23.

The plate assembly 18 ensures that by placing the slots 20 in a particular position for a particular appliance, the gas/air mixture is released through the dispersal medium 17 in the required place. This leads to stable and improved combustion results.

For example, some appliances may require a slot or slots 20 in a particular area of the distribution plate 18 in order for the gas/air mixture to come through the dispersal medium 17 between two artificial logs or coals.

The mixing of the gas/air can be achieved by using just one half of the venturi or mixing tube 23 for ease of manufacture. Using a half venturi or tube with a flat face makes it easy to fit it to the base of the mixing chamber 22.

## Claims

1. A gas burner (15) for a fireplace appliance comprising a gas/air mixing chamber (22), a dispersal medium (17) for spreading the gas/air mixture across a surface for burning and a distribution device (18) positioned between the mixing chamber and dispersal medium, characterised in that said device comprising a lower distribution plate (19) having a plurality of apertures (20) therein to direct the distribution of the gas/air mixture to a selected location and an upper distribution plate (21) to prevent the dispersal medium from entering the apertures.
 

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2. A gas burner (15) as claimed in claim 1 in which the dispersal medium (17) comprises exfoliated vermiculite.
3. A gas burner (18) as claimed in claim 1 or claim 2 in which the dispersal medium (17) is located in a dispersal chamber (16), a floor of which comprises said distribution device (18).
 

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4. A gas burner (15) as claimed in any one of the preceding claims in which the gas/air is mixed in a venturi or mixing tube (23).
 

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5. A gas burner (15) as claimed in claim 4 in which the gas/air is mixed in half a venturi or mixing tube (23).
 

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6. A gas burner (15) as claimed in any one of the preceding claims in which the upper plate (21) comprise a single or a discrete series of plates.
 

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7. A gas burner (15) as claimed in any one of the preceding claims in which the upper distribution plate (21) is positioned relative to the lower distribution plate (19) such that lightback to the injector is prevented with or without dispersal medium (17).
 

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8. A gas burner (15) as claimed in claim 7 in which the dispersal medium (17) is of a depth above the lower distribution plate (19) which allows direct control over the pattern of gas concentration.
 

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FIG. 1.

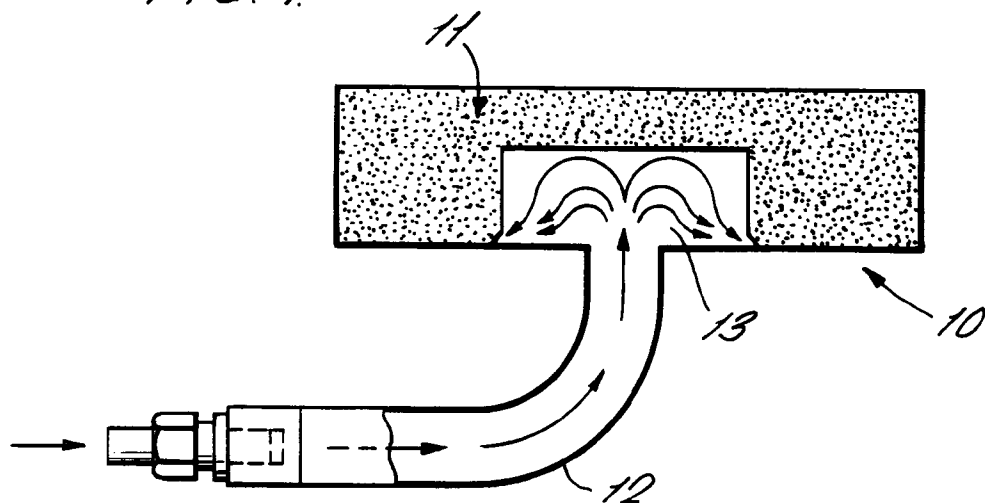


FIG. 2.

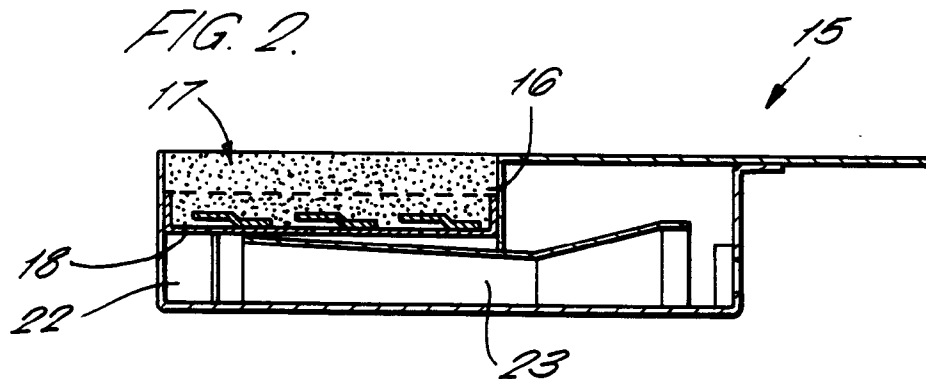


FIG. 3.

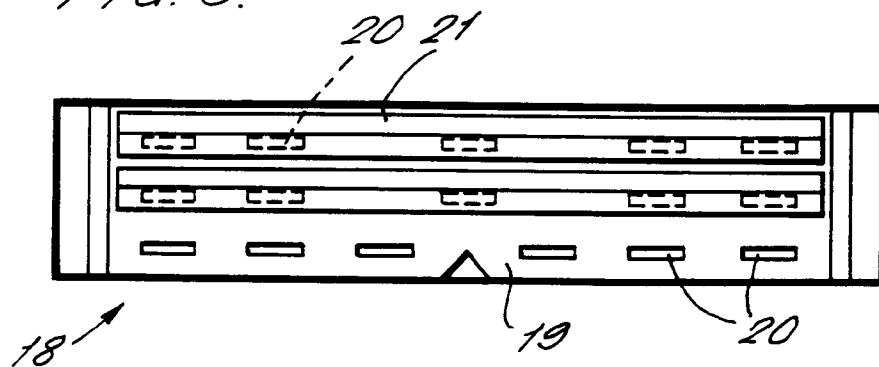


FIG. 4.

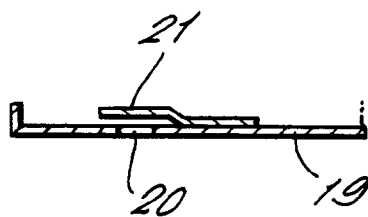


FIG. 5.

