June 20, 1972 B. G. CAMPBELL 3,671,175

FIREPLACE LOG BURNER

Filed Oct. 26, 1970

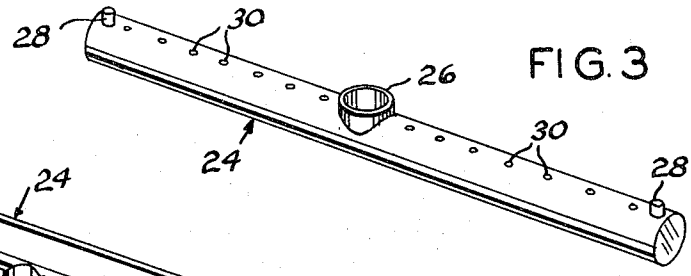



FIG. 3

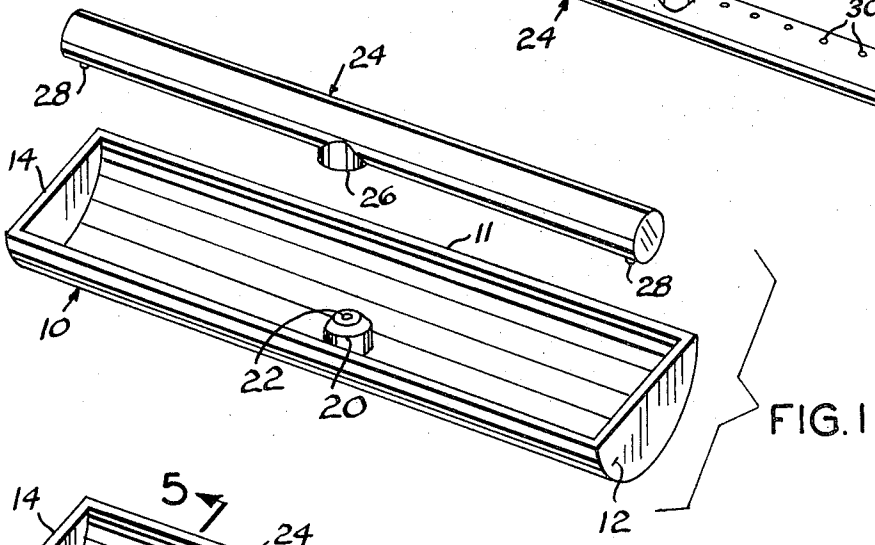



FIG. 1

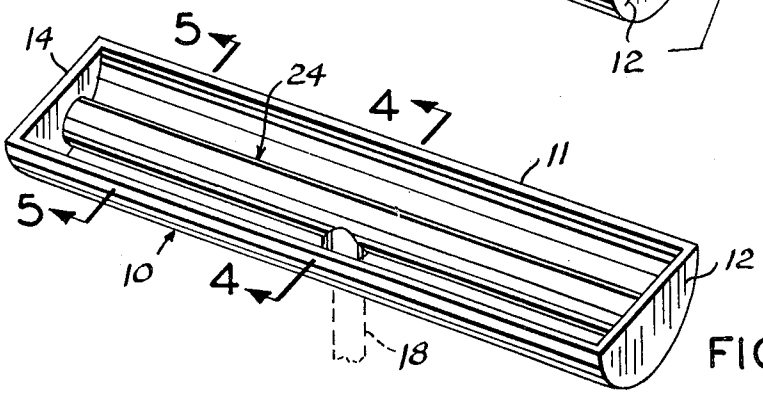



FIG. 2

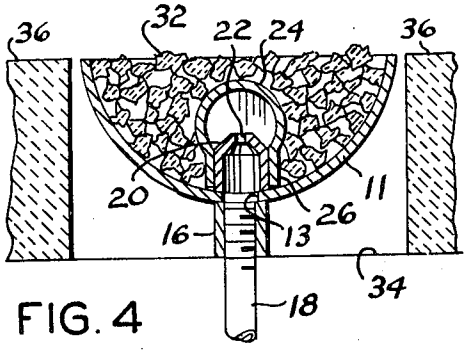



FIG. 4

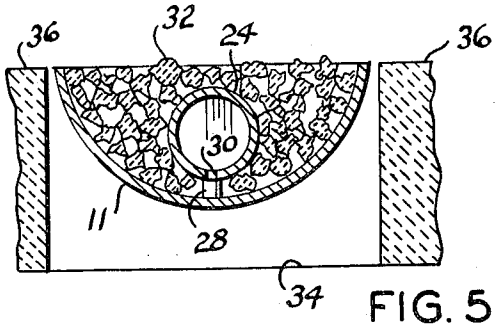



FIG. 5

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# FIREPLACE LOG BURNER

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U.S. Cl. 431—328 3 Claims

## ABSTRACT OF THE DISCLOSURE

An elongated trough-like body is centrally connected with a gas supply pipe in a fireplace area. A mandrel, secured to the inner surface of the trough in communication with the gas supply, supports a tubular gas distributor in the bottom portion of the trough and longitudinally coextensive therewith. The trough is filled with granular material for further distributing and burning the gas.

## BACKGROUND OF THE INVENTION

### (1) Field of the invention

The present invention relates to gas burners and more particularly to a gas burner for burning logs in a fireplace, or the like.

There are presently available a number of different types of fireplace burners for synthetic log-like members which distribute the gas to present a log burning appearance. These burners operate satisfactorily for the most part but do not produce a natural wood burning appearance as is possible when burning wooden logs. Conventional burners, installed in fireplace areas for igniting and maintaining combustion of logs, usually require frequent periodic adjustment of the air and gas mixture for the reason the burner holes or orifices become stopped up as a result of ash, charcoal, or the like, clogging the burner holes.

It is, therefore, desirable to provide a fireplace log burner which is constructed in such a manner that the logs placed on the burner where ash, and the like, resulting from the combustion of the logs, serves to enhance the distribution of the gas and its mixture with air for maintaining an efficient gas burning flame.

### (2) Description of the prior art

Pat. Nos. 2,762,362; 3,042,109 and 3,382,861 are illustrative of artificial log fireplace burners which simulate the appearance of burning logs.

It has also been proposed to provide a fireplace burner which comprises a pan or trough-like receptacle which is filled or substantially filled with fine sand. A gas is introduced into the pan adjacent the bottom thereof and into the mass of sand. The spacings between the particles of sand are very small and the gas introduced thereinto must pass through these small spaces. The gas thus cannot be mixed with air until it reaches the surface of the sand mass which results in yellow flames. Such flames produces a proportional amount of carbon which accumulates on the ceramic logs, if such is being used, and also gets into the air in the room where the fireplace is located. This inefficient burning of the gas also produces carbon monoxide which is harmful to the health of the occupants and is unsafe where inadequate ventilation is present.

This invention provides a burner wherein granular refractory material is placed adjacent a gas distributor so that the gas must pass through the granular material where it mixes with air so that a sufficient amount of oxygen is present to form a blue flame. Natural logs placed on this burner are efficiently burned and provide a wood smoke odor in the room where the fireplace is located.



## SUMMARY OF THE INVENTION

An elongated trough, semicircular in cross section, is connected by its bottom portion to a gas supply pipe. A hollow mandrel is secured to the inner surface of the trough in communication with the gas supply pipe and is provided in its upper end with an opening or orifice. A gas distributor, comprising a tubular member having closed ends, includes a central socket which surrounds the mandrel, in communication with the pipe, and supports the distributor longitudinally of the trough adjacent its lowermost limit. The distributor is provided with a longitudinally extending row of space-apart downwardly open gas discharging apertures or orifices. The trough is filled with granular refractory material of irregular shape to provide air spaces for mixture with and burning the gas. Wooden logs may be placed in any desired arrangement on or above the trough to be burned by the flames.

The principal object of this invention is to provide a fireplace gas burning device for igniting and burning logs.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded perspective view of the device;

FIG. 2 is a perspective view of the device in operative position;

FIG. 3 is a perspective view of the gas distributor when inverted; and

FIGS. 4 and 5 are vertical cross-sectional views taken respectively along the lines 4—4 and 5—5 of FIG. 2 and illustrating fragmentary portions of associated firebrick.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

Like characters of reference designate like parts in those figures of the drawings in which they occur.

In the drawings:

The reference numeral **10** indicates a trough-like body substantially semicircular in cross section and having end members **12** and **14**. The body wall **11** is centrally drilled, as at **13**, and provided with a depending threaded boss **16** threadedly connected with the upstanding end portion of a gas supply line or pipe **18**. A relatively short tubular mandrel **20** is secured, as by welding, to the inner surface of the trough around its bore **14** and in communication with the boss **16**. The upper end of the mandrel is closed and provided with an orifice **22**.

A gas distributor **24**, comprising a length of pipe or tubing substantially coextensive with the spacing between the body end walls **12** and **14** and having closed ends, is longitudinally received by the body. The distributor **24** is centrally provided with a short tube **26** communicating with its interior and forming a socket for receiving the mandrel **20**. The distributor is thus supported in longitudinal upwardly spaced relation with respect to the lowermost inner surface of the body wall **11**. Short lugs or legs **28**, secured, in depending relation, to the respective end portion of the distributor **24** maintain the distributor parallel with respect to the inner wall surface of the body **10**. The distributor is provided with a longitudinal row of spaced-apart apertures or orifices **30** for discharging gas downwardly toward the lowermost inner surface of the body **10**.

The trough or body **10** is substantially filled with irregular shaped granular refractory material, indicated generally at **32**. This material is refractory in the sense that it will withsatnd high temperature and not burn. The particle size of the refractory material is relatively large and may be coarse gravel, or the like, wherein the irregular particle shapes provide relatively large continuous air spaces between the granules which will allow free flow of the gas, emitted by the distributor, into the trough and

upwardly to the surface of the granular material **32** where combustion occurs. The free gas prevents any back pressure against the gas supply. Other materials may be used in place of the granules **32** such as expanded vermiculite or perlite which has a relatively low mass compared with gravel, or the like, and is desirable where the burner and granules are sold as a complete packaged unit. Other materials may be used, if desired, such as volcanic cinders.

## OPERATION

In operation the device is assembled, as described hereinabove. The combined vertical height of the trough body **10** and boss **16** is substantially equal to the thickness of a conventional firebrick. The boss **16** is threadedly connected with the gas supply pipe **18** projecting through the fireplace floor, indicated by the line **34**. Obviously the boss **16** and mandrel **20** may be formed as a single unit and project through the wall **11**, if desired. A plurality of firebrick **36** are flatly disposed on the fireplace floor **34** in surrounding relation with respect to the trough **10** to form a horizontal plane or surface on which a wooden log or logs are placed and supported. The gas is controlled by a valve, not shown, interposed in the line **18**. The gas is ignited at or adjacent the upper limit of the refractory material **32** and its burning burns the log or logs, not shown. Ashes falling on the trough **10** serve as a further distribution or dispersion of the gas and does not hamper the flow of gas for the reason that the gas being discharged downwardly into the trough forms channels through the ashes. Furthermore, I have found that the trough **10** may be filled with a wood ash in lieu of the granular material and that it still operates satisfactorily.

Obviously the invention is susceptible to changes or alterations without defeating its practicability, therefore, I do not wish to be confined to the preferred embodiment shown in the drawings and described herein.

I claim:

**1.** A fireplace log burner, comprising:

an elongated trough having a wall generally semicircular in transverse cross section and having parallel ends,

said wall having an opening medially its ends adapted to be connected with a gas supply pipe;



an upstanding hollow mandrel connected with said wall around the opening; and

gas distributor means within said trough,

said distributor means including,

a pipe having closed ends being freely received within said trough between said wall ends,

a relatively short tube secured to and communicating with said pipe medially its ends and forming a mandrel receiving socket supporting said pipe in parallel spaced relation with respect to said wall,

said pipe having a longitudinally extending row of spaced-apart downwardly directed gas passing apertures, and

a depending leg secured to the prespective end portion of said pipe.

**2.** The log burner according to claim **1** in which said distributor means further includes:

a mass of fine particle refractory material substantially filling said trough around said pipe for dispersing gas throughout the confines of said trough.

**3.** The log burner according to claim **1** in which said distributor means further includes:

a mass of coarse granular refractory material filling said trough around said pipe and forming spaces between adjacent granules of the material for dispersing gas discharged from said pipe.


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U.S. Cl. X.R.

126—92 R 127