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Henry

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[54] **GAS DISTRIBUTION APPARATUS FOR ARTIFICIAL LOGS**

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[52] **U.S. Cl.** ..... **126/127,** 431/347, 431/125, 126/92 R

[51] **Int. Cl.** **F24c 3/04,** F24b 1/18

[58] **Field of Search** ..... 431/347, 328, 125; 126/92 R, 120, 127, 165; 239/556, 557, 565, 566

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[57] **ABSTRACT**

A gas distribution system is disclosed herein for producing flames about artificial logs which includes a pan having a continuous outwardly sloping sidewall about the periphery of a flat bottom so as to define a firebed. A plurality of elongated gas discharge tubes in an assembly occupy the firebed in fixed spaced apart relationship wherein each tube is formed with a plurality of jet openings facing the underside of the logs for discharging gas. One end of the tubes is closed while the opposite ends are attached, via couplings, to a supply of pressurized gas. Mounting brackets are provided at opposite ends of the tube assembly for supporting the assembly on the pan bottom.

1 Claim, 7 Drawing Figures

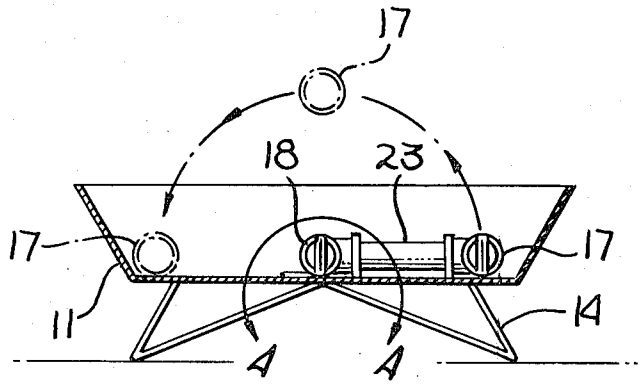


Fig. 1

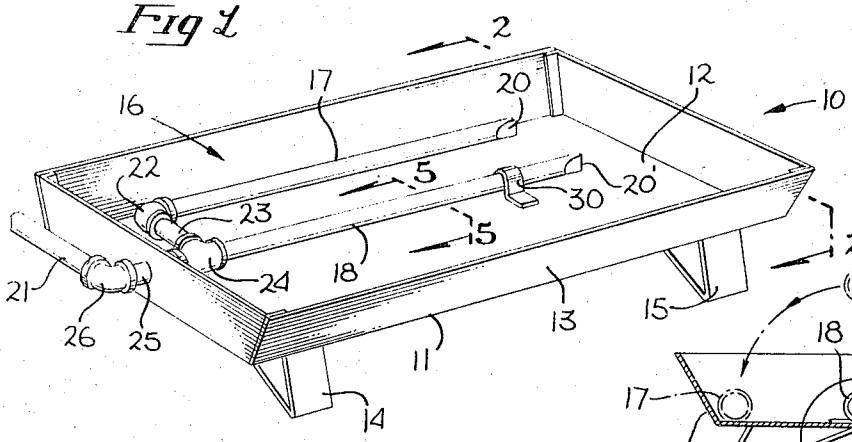


Fig. 2

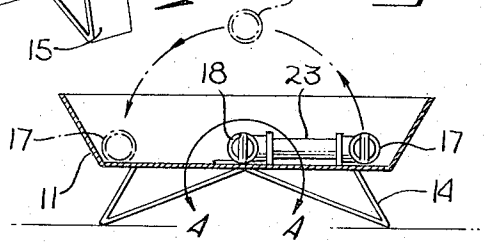
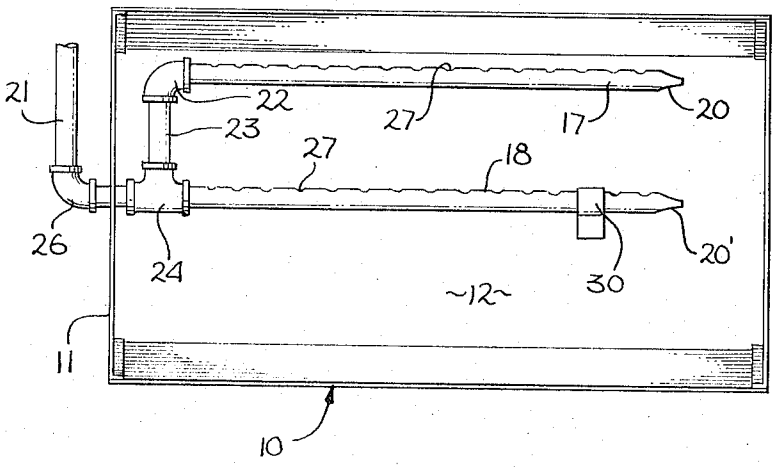


Fig. 3



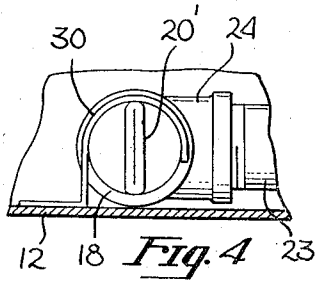


Fig. 4

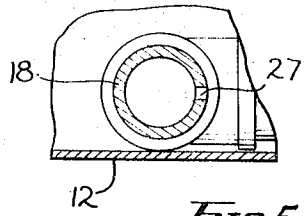


Fig. 5

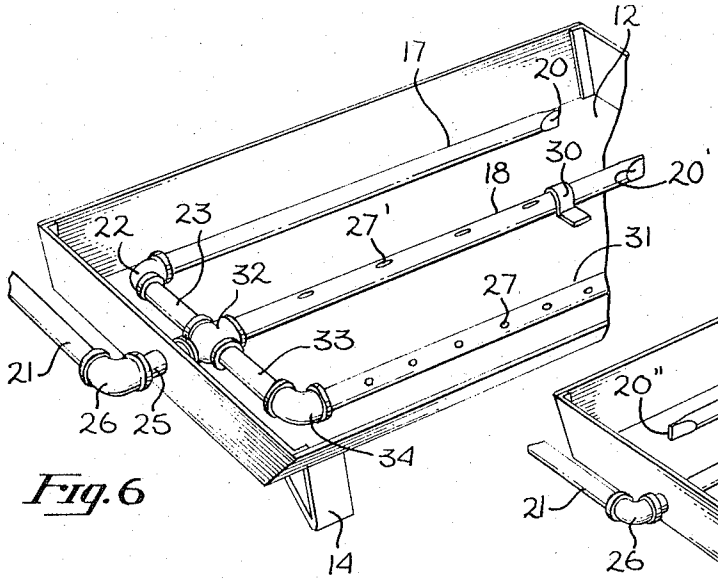


Fig. 6

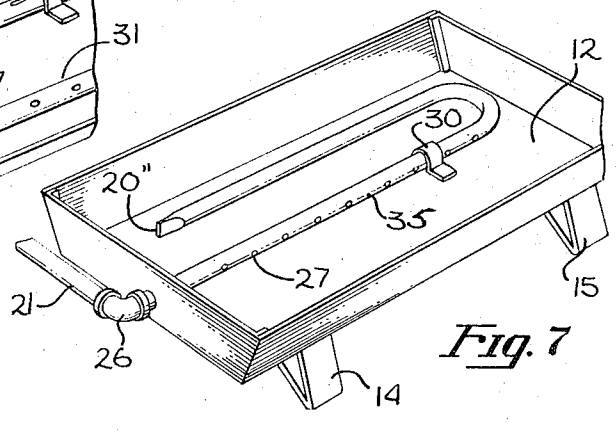


Fig. 7

GAS DISTRIBUTION APPARATUS FOR ARTIFICIAL LOGS

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to natural gas igniters or propane and, more particularly, to a gas distribution system for supplying pressurized natural gas or propane to an arrangement of artificial logs as to provide flames thereto simulating the burning of wood logs.

2. Description of the Prior Art

In many homes and other living quarters, it has been the conventional practice to make use of artificial logs in a fireplace which are enveloped by gas flame to simulate the burning of wood logs. Generally, the artifical logs are composed of some non-combustible material such as ceramic, brick, clay materials or the like. Such artificial logs will not burn but, preferably, have a tendency to glow or produce embers characteristic of the burning of wood logs. The flame produced is a result of pressurized natural gas or propane being supplied beneath the logs and upon ignition, produces sufficient flame to envelop or surround the artificial log arrangement. In such an arrangement, the pressurized natural gas or propane is supplied to the log arrangement via a single pipe formed with a plurality of apertures arranged in a linear row at the top of the pipe facing the underside of the log arrangement.

Such a gas distribution system has resulted in poor flame envelopment of the log arrangement and, in some cases,, the flame resides either behind the logs or in front of the logs which detracts from the realism desired. Furthermore, at the present time it is current practice to arrange the artificial logs in an asymmetrical arrangement leaving spaces and gaps therebetween to promote flame distribution about the exterior surface of the log in the arrangement. By employing the conventional single tube or pipe distribution of the gas, the flames do not adequately surround the log arrangement or occupy the openings and voids between the logs in the asymmetrical arrangement. Therefore, the flame propagation about the artificial logs does not adequately simulate actual flame propagation as observed such as when wood logs are employed.

Another problem with conventional natural gas distribution systems for artificial logs resides in the fact that the row of apertures along the top of the pipe limit the amount of gas disbursed into the artificial log area and, therefore, relatively few flames are produced to create the natural effect desired. One of the problems in employing a single pipe resides in the fact that more than one pipe requires a specialized mounting for supporting the gas distribution pipes in a desired location. The mounting of a single pipe is relatively simple and can be achieved without difficulty.

Therefore, a long standing need has existed to provide a natural gas distribution system for supplying pressurized gas to artificial logs whereby the flames surrounding the artificial logs simulate actual log burning.

SUMMARY OF THE INVENTION

Accordingly, the difficulties and problems encountered with conventional artificial log gas distribution and igniters are obviated by the present invention which provides a pan having an outwardly sloping and continuous sidewall defining a firebed between the interior opposing wall surfaces thereof. A gas distribution assembly is supported by brackets on the bottom of the pan which comprises a plurality of tubes arranged in fixed spaced parallel relationship. In one form a pair of tubes are used and in an alternate form three tubes are employed. One end of the tubes is closed while the opposite ends are coupled to a source of pressurized gas via T and L joints. Means are provided for pivotally mounting the assembly so that flame propagation may be selectively directed in front or behind the artificial log arrangement. A plurality of holes are formed in each tube arranged in a row along the side portion of each tube so as to discharge gas around the underside of the logs.

Therefore, it is among the primary objects of the present invention to provide a novel natural gas distribution and ignition system for propagating flame about artificial logs in a realistic manner so as to simulate the burning of wood logs.

Another object of the present invention is to provide a novel natural gas or propane distribution system for supplying flame to artificial logs which is economical to manufacture and convenient to install.

Still another object of the present invention is to provide a novel gas distribution system for an artificial log arrangement that may be readily moved in front of or behind the log arrangement so as to selectively control the placement of flames emanating from the gas discharge system.

Still a further object of the present invention is to provide a novel gas distribution and ignition system for artificial logs wherein the logs may be arranged in an asymmetrical manner resting on the flame or gas discharge assembly which occupies the firebed of a pan supported on the floor of a fireplace.

Another added feature is that the gas supply can be on either side of the fireplace. The firepan and burner is reversible to be adaptable to be placed in either side position thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

The features of the present invention which are believed to be novel are set forth with particularity in the appended claims. The present invention, both as to its organization and manner of operation, together with further objects and advantages thereof, may best be understood by reference to the following description, taken in connection with the accompanying drawings, in which:

FIG. 1 is a perspective view of the present invention showing one embodiment of a gas discharge assembly comprising a pair of tubes movably supported in a pan firebed;

FIG. 2 is a transverse cross-sectional view of the present invention as taken in the direction of arrows 2—2 of FIG. 1;

FIG. 3 is a top plan view of the present invention shown in FIG. 1;

FIG. 4 is an enlarged sectional view showing the closed end of a selected one of the tubes in the gas discharge assembly as taken in the direction of arrows 4—4 of FIG. 2;

FIG. 5 is an enlarged sectional view of a gas discharge tube shown in FIG. 1 as taken in the direction of arrows 5—5 thereof;

FIG. 6 is a perspective view of another embodiment of the present invention employing at least three gas discharge tubes; and

FIG. 7 is another variation of the invention shown in FIG. 1 using a single tube bent to form two burners.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIG. 1, the natural gas distribution and ignition system of the present invention is illustrated in the general direction of arrow **10** which includes a pan **11** having a bottom **12** about which a continuous peripheral sidewall **13** upwardly projects and outwardly slopes from the edge thereof. The bottom of the pan is supported on the floor of a fireplace such as by legs **14** and **15** which are also disposed on the other side of the pan. Preferably, the pan is composed of sheet metal and the sidewall **155** is suitably joined at the respective corners by any convenient fastening means. The opposing inner wall surfaces of wall **13** define a firebed area into which the gas distribution assembly is disposed. The assembly is indicated in the general direction of arrow **16** and, in one form, comprises a pair of tubes **17** and **18** which are arranged in fixed parallel spaced relationship.

Each tube in the assembly includes an elongated pipe, such as tube **17,** that is closed at end **20** by any suitable means and that is coupled at its opposite end to a source of pressurized gas **21** by means of couplings or joints. In the present instance, an elbow joint **22** connects tube **17** to a short conduit **23** that is joined to one side of a T joint **24.** The T joint is coupled to a conduit **25** and to the supply pipe **21** via an elbow joint **26.** The tube **17** includes a plurality of openings, such as opening **27,** that are formed in a row across the length of the tube. As shown more clearly in FIG. **3,** the apertures or holes **27** are arranged in one row that is arranged on the side portion of the tube so as to discharge gas to the side beneath the underside of the artificial logs. It is to be understood that tube **18** is constructed with the plurality of apertures in a similar fashion to that just described with respect to tube **17.** Tube **18** is connected to the supply of natural gas **21** via the T joint **24.**

Preferably, conduit **25** is supported on the sidewall **13** of the pan by means of a supporting hole formed therein. The opposite end of the tube assembly is permitted to rest on the bottom **12** as shown in FIG. **4.** The tube assembly is retained in this position by means of a bracket **30** which is suitably carried on bottom **12** and partially encircles one of the tubes, such as tube **18,** near its closed end.

With respect to FIG. **2,** it can be seen that by providing the tube connection **18** with T joint **24** in a loose fashion, the tube **17** may be rotated as shown in broken lines. The rotation of tube **17** will be along the longitudinal axis of tube **18** so that tube **17** may be disposed on either side of tube **18.**

In FIG. **3,** it can be seen that tube **18** lies along the central longitudinal axis of pan **11** so that the positioning of tube **17** may be on either side thereof. Also, closed end **20** is associated with tube **17** while closed end **20'** is associated with tube **18.**

Referring to FIG. **4,** bracket **30** serves as an anchor mount for holding the end of tube **18** wherein both the tube and the bracket are supported on the bottom **12** of pan **11.**

In FIG. **5,** attention is directed to the row of apertures formed in tube **18** and that the apertures are formed in the side portion of the tube. The apertures form gas jets for discharging the pressurized natural gas therethrough in a dispersal pattern conductive to producing the flame propagation about the log arrangement. It is again to be understood that the joint attachment between the end of tube **18** and T joint **24** is of a threaded type to form a swivel so that the tube **18** will remain with its openings or gas discharge jets remaining in forward facing disposition while the T joint pivots with the end of tube **18** and its threaded connection with joint **26.**

Referring now in detail to FIG. **6,** a similar gas discharge assembly is shown wherein a third tube **31** is employed in addition to tubes **17** and **18.** Tube **31** is constructed in an identical fashion to that of tubes **17** and **18** and is connected to a union **32** via conduit **33** and an elbow joint **34.** In this construction or embodiment, the tubes are stationary and rotation is not intended since the tube **31** occupies the area between tube **18** and the continuous wall of the pan. Tube **18** employs less holes than the outer tube. The holes in tubes **17** and **31** will point down and outward.

In FIG. **7** it is noted that there is a similarity to the embodiment shown in FIG. **1.** Operation is exactly the same as FIG. **1;** however, the difference is the use of a single tubular piece **35** of conduit bent 180° in the middle, to form two burners. The apertures in the center tube face to the rear of the pan. This was made necessary because the proximity of the front tube makes it impossible to drill from the front.

Fixture attachment is accomplished through the use of conduit to pipe adapter with double compression rings.

It is to be understood that the pan and gas distribution system of the present invention may be sized to fit on top of a conventional fireplace grate and fasteners such as an elongated plate and bolts and nuts may be used to attach the pan so as to be directly carried on the grate.

In actual operation, the artificial logs may be place on top of the gas distribution assembly and when the source of pressurized gas, such as natural or propane, is introduced to the assembly via a conventional shut-off valve (not shown), gas will be discharged through the holes or apertures in each of the tubes.

Once the natural gas or propane has been ignited, flames will surround the artificial log arrangement and the logs will glow. Some logs, depending upon composition, will expose peripheral coal areas which will simulate burning.

While particular embodiments of the present invention have been shown and described, it will be obvious to those skilled in the art that changes and modifications may be made without departing from this invention in its broader aspects and, therefore, the aim in the appended claims is to cover all such changes and modifications as fall within the true spirit and scope of this invention.

What is claimed is:

1. A natural gas or propane distribution apparatus for use in connection with producing flames about an arrangement of artificial logs resting in a firebed above the distribution apparatus, the combination comprising:

a pan having a bottom and a continuous sidewall extending about the peripheral edge of said bottom so as to define a firebed area between the opposing inner wall surfaces;

a gas distribution assembly disposed in said firebed area having one end thereof supported on said bottom and its opposite end supported on said sidewall so that gas distribution assembly is raised above said bottom;

said gas distribution assembly including at least a pair of tubes closed at their ends supported on said bottom and arranged in parallel, fixed spaced apart relationship to produce an irregular, asymmetrical flame pattern and operably coupled at their opposite ends to a source of pressurized natural gas or propane, each of said tubes having at least one row of holes formed therein along the side portion of each tube providing gas discharge jets directed at an opposing surface of said sidewall;

means for anchoring a selected one of said pair of tubes to said pan bottom;

the row of said holes associated with one of said tubes are arranged in an array facing the rear of said pan while the other rows of said holes associated with said other tube faces the front of said pan;

said selected one of said pair of tubes lies along the central longitudinal axis of said pan;

the other tube of said pair than said selected one is joined to said gas supply source and said selected tube by a swivel connection so as to rotate from one side of said selected tube to the other side thereof;

said tubes are closed at their respective cantilevered ends;

said sidewall extends outwardly and slopes upwardly; and

said other tube is coupled to said swivel connection by an elbow joint and a linear conduit.

* * * * *