May 27, 1952 J. L. RAULSTON 2,598,602

TRIANGULAR RADIANT

Filed Aug. 4, 1949

FIG. 1

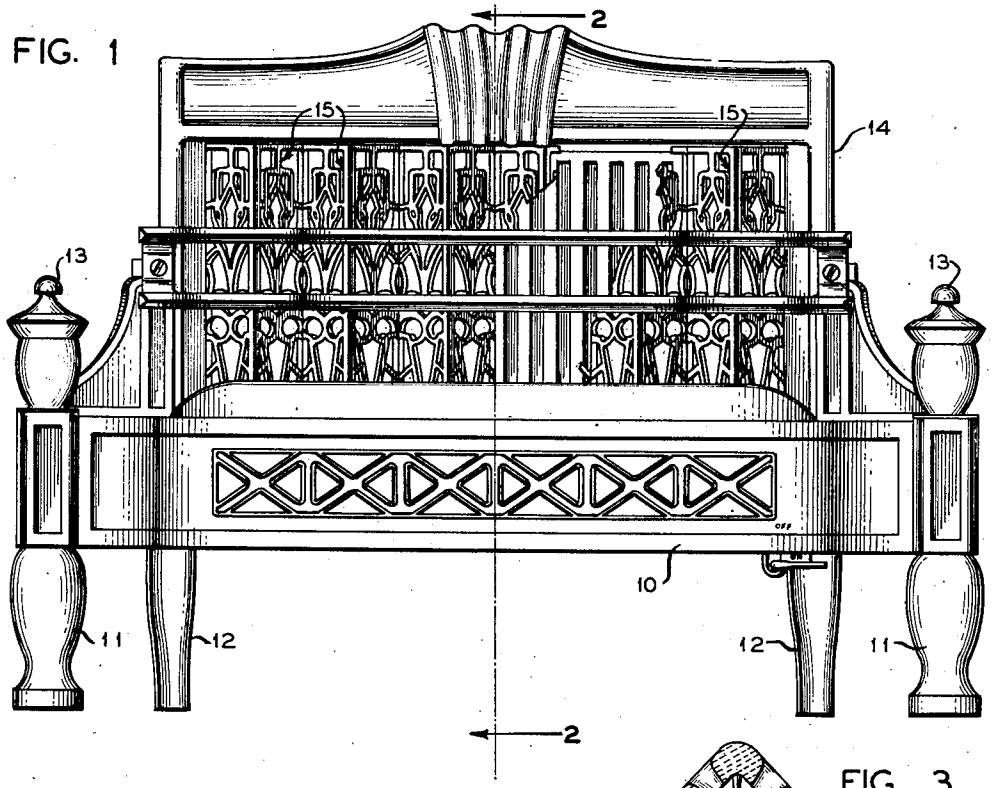


FIG. 2

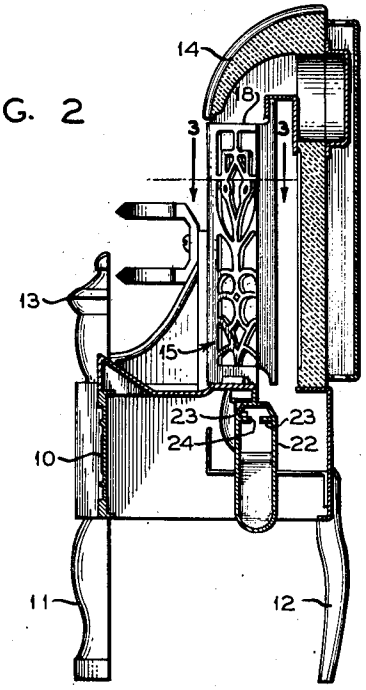


FIG. 3

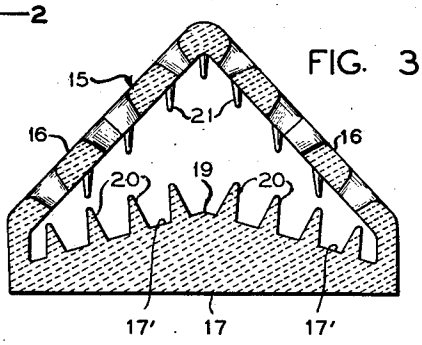
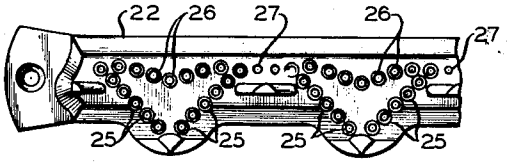


FIG. 4



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TRIANGULAR RADIANT

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3 Claims. (Cl. 126—92)

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This invention relates to comfort heating and more particularly to heaters employing refractory elements maintained at a relatively high temperature or incandescent by the combustion of a mixture of gas and air over the surface of the same.

Heretofore, numerous burners and radiants which include refractory parts have been employed, and much in the way of effort and expense has been done in an attempt to perfect radiant heaters.

Radiants have been employed some of which were relatively flat or rectangular in cross section while others were of rectangular cross section. These radiants have been supplied with gas from a burner having holes along the front edge of the radiant so that the gas can flow upwardly over the radiant surface and by burning maintain the radiant at white heat or incandescent.

It is an object of the invention to improve the efficiency of a radiant heater by increasing the heat output obtained from the consumption of a definite amount of gas consumed.

Further objects and advantages of the invention will be apparent from the following specification taken in conjunction with the accompanying drawings, wherein:

Fig. 1 is a front elevation of a radiant in accordance with the present invention;

Fig. 2, a section on the line 2—2 of Fig. 1;

Fig. 3, a section through one of the radiants on the line 3—3 of Fig. 2; and

Fig. 4, a top plan view of one end of the burner.

Briefly stated, the invention comprises a heater having elongated vertically disposed radiants of triangular cross section, and supported with their lower ends over a gas burner of spaced independent projections with central gas openings. The projections are arranged in two groups, the first in a triangular manner to supply gas along the front angularly disposed edges of the radiant and the second group of projections arranged in a similar triangular or V arrangement behind the first projections so that gas may flow upwardly over a pair of correspondingly arranged vertical surfaces having spaced horizontally disposed conical projections for distributing the combustible gas over additional radiant surfaces for producing a more thorough mixing of such gas with air to improve combustion and the efficiency of the heating device.

With continued reference to the drawings a modern type of space heater is disclosed having a base 10 supported on front and rear legs 11 and 12, the front legs being topped by ornamental caps 13. A housing 14 is provided for triangular radiants 15, a pair of guard rails being employed for preventing accidental contact with the radiants 15 which are fragile and when hot will cause burns if contacted by anything combustible at or below white heat.

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Each radiant is formed of a hollow elongated fireproof ceramic body of substantially triangular cross-section, including front walls 16 and a rear wall 17. As will be apparent from an examination of Fig. 2 of the drawing, each radiant is of sufficient height that the upper surface 18 thereof will be snugly received beneath the horizontally disposed lower edge of the top of the housing 14.

These radiants are mounted above orifices through which gas is permitted to flow upwardly over the inner surfaces of the front walls of the radiant and the outer and inner surfaces of the rear wall of the radiant so that combustion may take place and heat emitted into the contiguous area.

In order to improve the capacity and efficiency of the heater and to provide for a more even distribution of heat over a wider arc than is possible with conventional heaters, instead of a single flat rear wall a pair of arched surfaces 17' extending inwardly from the rear surface of the wall 15' are provided. These arched surfaces terminate in a vertical line 19 and at each side of this vertical line on the rear walls are provided small conical projections 20 which extend forwardly and the front walls 16 are provided with corresponding rearwardly spaced projections 21.

The front walls are of open work construction facilitating the circulation of the gaseous mixture upwardly over the same and due to the heat of such front walls combustion is materially facilitated. These front walls 16 are disposed substantially at right angles.

In order to provide for the admission thereto of the necessary gas for combustion, a hollow elongated burner casting or manifold 22 is provided having on its interior inwardly extending flanges 23 which form a longitudinal gas slot 24. Through the upper portion of this burner extend longitudinally spaced groups of burner ports 25 and 26, each port being defined by an independent annular raised portion to facilitate increased air circulation around and between the ports. Additional ports 27 serve merely to cause the flame to travel from one end of the burner to the other when it is initially lighted.

Each of the groups of ports 25 and 26 is composed of aligned ports in V formation with the apex of one V located forwardly of the other and with the legs of the forward V disposed substantially at right angles, while the legs of the other V are disposed at a greater angle. The surfaces about the ports preferably are inclined downwardly to facilitate air movement to such ports.

It will be readily understood that with a burner of the above described construction a more intimate mixing of the gas and air is accomplished and in actual experience the efficiency is improved approximately 20%.

In operation the burners heat the radiants 15 to the desired temperature at which they radiate heat outwardly to the space in which the heater is located. By reason of the V-shaped front walls 16 of the radiant the heat is radiated divergently to the plane of the heater, and due to the number and spacing of the radiants an even heat is radiated over a wider arc than with a conventional heater having a flat radiant member at its front. The V-shape of the arched surfaces 17' of the rear wall 17 improves the operating efficiency and uniformity of heating of the radiants, the rear surface 17' sending heat rays some of which pass through the openings in the walls 16 and some of which heat the walls 16.

It will be obvious to those skilled in the art that various changes may be made in the invention without departing from the spirit and scope thereof and therefore the invention is not limited by that which is shown in the drawing and described in the specification but only as indicated in the appended claims.

What is claimed is:

1. A heater comprising a hollow elongated casting providing a manifold having longitudinally spaced groups of burner ports in its upper wall, each port being defined by an independent annular raised portion to facilitate increased air circulation around and between said ports, each group being composed of two series of ports each arranged in V formation with the apex of one V located forwardly and substantially directly in front of the other, the legs of the forward V being disposed substantially at right angles to each other while the legs of the other V are disposed at a greater angle, an elongated hollow radiant triangular in cross section mounted over each group of ports whereby flames and products of combustion will flow over the internal surface of said radiants, the front walls forming the triangular radiant being disposed substantially at right angles to each other corresponding to the angle of the front series of ports, such angular walls being of open-work construction and being joined by a triangular member at the top and by a transverse wall at the rear, said transverse wall having a raised centrally disposed inner surface with side surfaces inclined rearwardly therefrom with spaced substantially conical projections extending outwardly from said surfaces within said radiant, and a series of projections extending from the inner surface of the front V walls of said radiant toward said conical projections on said rear wall for facilitating the distribution of the combustible mixture of fuel and air.

2. A heater comprising a hollow elongated burner casting having longitudinally spaced groups of burner ports in its upper wall, each port being defined by an independent annular raised portion to facilitate increased air circulation around and between said ports, each group being composed of two series of ports each arranged in V formation with the apex of one V located forwardly and substantially directly in front of the other, the legs of the forward V being disposed substantially at right angles to each other while the legs of the other V are disposed at a greater angle, an elongated hollow radiant triangular in cross-section mounted over each group of ports whereby flames and products of combustion will flow over the surface of said radiants, the front walls forming the triangular radiant being disposed substantially at right angles to each other corresponding to the angle of the front series of ports, such angular walls being of open-work construction and being joined by a transverse wall at the rear having a raised centrally disposed inner surface with side surfaces inclined rearwardly therefrom with spaced substantially conical projections extending outwardly from said surfaces, and a series of projections extending rearwardly from the inner surface of the front walls of said radiant.

3. An elongated hollow radiant of triangular cross-sectional conformation, the front walls thereof being of open work construction and forming the apex of the triangle, said front walls being disposed at substantially right angles with respect to each other, the rear wall of said radiant having a centrally raised inner surface formed by rearwardly inclined surfaces providing an apex on the vertical center line of said rear wall, the angular relationship between said inclined surfaces being substantially greater than the angular relationship between the front walls of said radiant, a plurality of substantially conical spaced projections on said inclined surfaces extending forwardly therefrom, and a plurality of substantially conical spaced projections extending rearwardly from the inner surfaces of the front walls of said radiant.

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