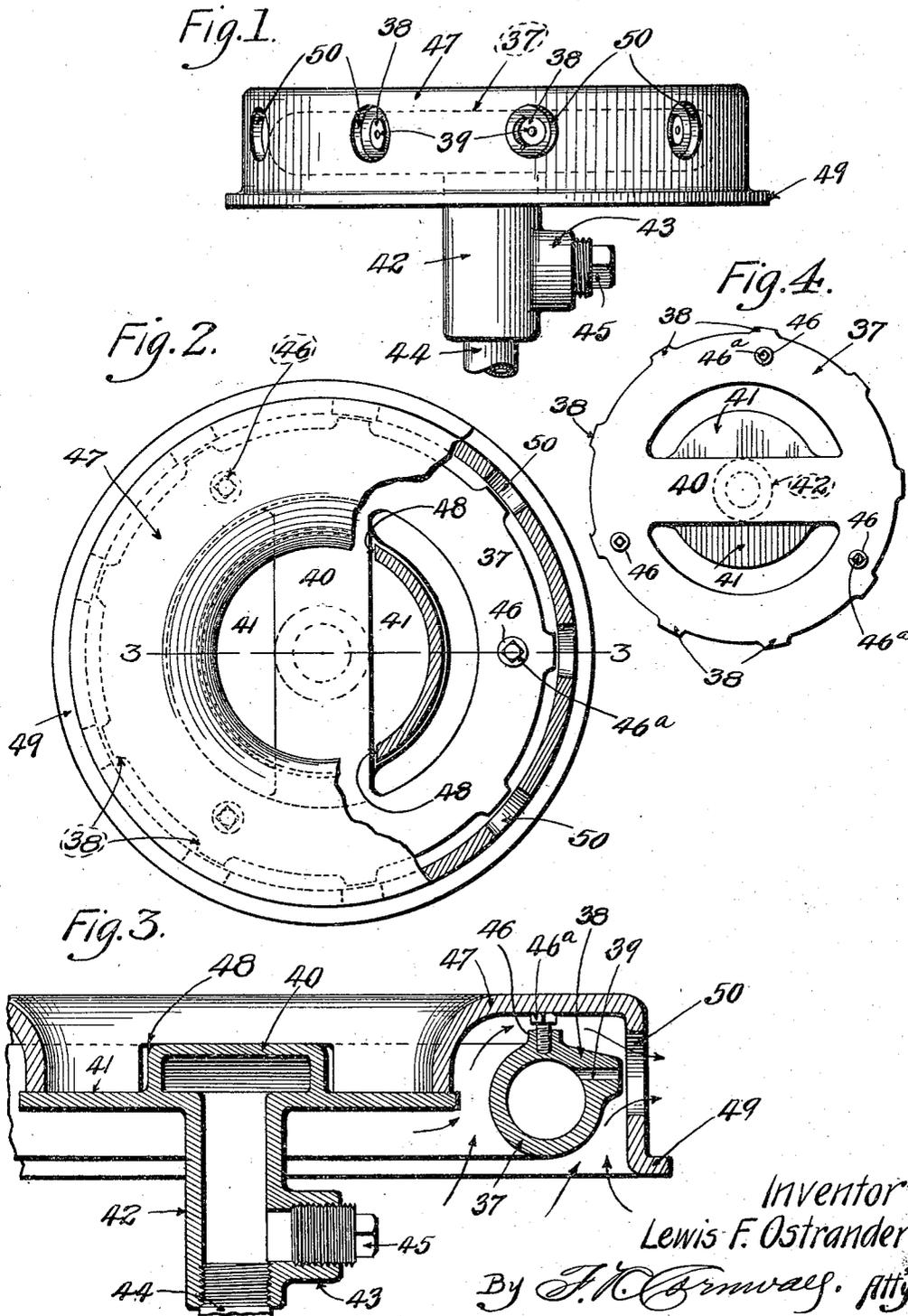


L. F. OSTRANDER.
 GAS BURNER.
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1,227,189.

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Inventor
 Lewis F. Ostrander

By *J. M. Bernwalder*, Atty.

UNITED STATES PATENT OFFICE.

LEWIS F. OSTRANDER, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO J. F. ESPERON, OF INDIANAPOLIS, INDIANA.

GAS-BURNER.

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To all whom it may concern:

Be it known that I, LEWIS F. OSTRANDER, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Gas-Burners, of which the following is a full, clear, and exact description; such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates generally to heating appliances and more particularly to a gas burner, the principal object of my invention being to provide a comparatively simple and inexpensive gas burner, the same being constructed so that the gaseous fuel and the air to support perfect combustion thereof is pre-heated to a considerable degree prior to the discharge of the gas through the jet openings, and which construction is not only economical in point of fuel consumption, but effective to a maximum degree, owing to the utilization of all the thermal energy contained in the gaseous fuel.

Further objects of my invention are to provide a comparatively simple gas burner which can be readily positioned within the heater when the usual grate is removed therefrom, and further to provide a gas burner having an adjustable hood by means of which air is pre-heated and delivered to the flames resulting from the combustion of the gaseous fuel issuing in jet form from the burner, and which action is effective in producing perfect combustion and the conserving and utilization of all of the heat units produced by such combustion.

With the foregoing and other objects in view, my invention consists in certain novel features of construction and arrangement of parts, hereinafter more fully described, claimed and illustrated in the accompanying drawings, in which—

Figure 1 is an elevational view of my improved burner.

Fig. 2 is a plan view of the burner with parts thereof broken away and in horizontal section.

Fig. 3 is an enlarged detail section taken approximately on the line 3—3 of Fig. 2.

Fig. 4 is a plan view of the burner ring forming a part of my improved gas burner.

As illustrated in the accompanying drawings my improved burner includes a hollow

member 37, preferably cast, and formed integral with the outer wall thereof at suitable distances apart are lugs 38 through which are formed suitable apertures which serve as jet openings 39. In the present instance, I have shown the hollow member 37 in the form of a ring, but it will be readily understood that said member can be square, oblong, or of any desired shape and size.

Formed integral with the member 37 is a diametrically arranged hollow member 40 and formed integral with the sides thereof are laterally projecting flanges 41, the outer edges of which are concentric with the inner edge of ring 37.

Formed integral with or fixed to the underside of the central portion of member 40 is a depending tubular member or nipple 42, the same being provided with a horizontally disposed tubular extension 43.

The gas supply pipe 44 is connected to either the lower end of the nipple or to the extension 43, and when such connection is made to either opening, the other opening is closed by a screw plug 45.

Formed integral with the upper portion of ring 37 is a series of three or more upwardly projecting lugs 46, and seated in each lug is an adjusting screw 46^a. Positioned over the ring 37 and spaced apart therefrom is a hood 47, preferably of cast metal and the body thereof being substantially of inverted U-shape in cross section with the inner leg somewhat shorter than the other leg. The lower edge of the inner wall or leg of this hood bears directly upon or is positioned immediately adjacent to the outer edges of flanges 41 and said inner wall is provided on opposite sides with notches 48 which accommodate the hollow member 40 of the burner ring.

The outer leg or wall of the hood is vertically disposed with its lower edge positioned slightly below the bottom of ring 37 and formed integral with the lower edge of said outer wall or leg is an outwardly projecting flange 49.

Formed through the outer wall of the hood is a series of apertures 50, there being one aperture for each of the jet openings 39. The hood normally rests on top of the adjusting screws 46^a and by manipulating the latter, the height at which the hood is maintained with respect to the burner ring, can be varied.

Where the burners are made in regular sizes, the set screws 46^a may be dispensed with, in which instance, the hood rests directly on top of the lugs 46.

It will be understood that burners constructed in accordance with my invention can be made in various shapes and sizes so as to be utilized in connection with all forms of stoves, furnaces, fire boxes and the like.

When my improved burner is in use, gaseous fuel is supplied through pipe 44 and passes from nipple 42 into the chamber within hollow member 40, from thence laterally in both directions to the chamber within burner ring 37 and from which latter, the gaseous fuel discharges in jet form from apertures 39.

Combustion of the jets of gaseous fuel takes place within apertures 50 and immediately outside the outer wall of the hood 47 and the heat resulting from such combustion maintains the hood and the burner ring in a highly heated condition, and as a result, the gaseous fuel entering and passing through the burner is thoroughly pre-heated prior to its discharge through the jet openings to the points of combustion.

Further, the jets of gaseous fuel issuing from the apertures 39 and burning immediately after issuing from said apertures, create to a certain extent siphonic action which draws air upwardly into the hood 47, as illustrated by arrows in Fig. 3, and this air is thoroughly pre-heated during its passage through said hood and said air in its heated condition, discharges outward through the apertures 50, thereby supporting combustion of the gaseous fuel issuing from the jet apertures 39.

By thus thoroughly pre-heating the gaseous fuel prior to its combustion and pre-heating the air which unites with the jets of fuel at the points of combustion, very effective results are obtained, and practically all of the thermal energy of the heat units contained in the gaseous fuel is developed and utilized.

Repeated tests which I have made with a burner constructed as herein described have demonstrated the fact that the heat from the burner is increased from 600 to 800 degrees F. above the heat developed in burners which are not provided with hoods over the burner rings.

The apertures 50 in the outer wall of the hood are considerably larger than the jet openings 39, and this construction results in a continuous or circular area of pre-heated air which entirely surrounds and passes outward in the same direction with the jets of flame produced by the combustion of the fuel at the jet openings. In some instances, it may be found desirable to utilize slots instead of round jet openings, and

where such construction is carried out, the openings 50 in the outer wall of the hood are correspondingly changed.

A burner of my improved construction is comparatively simple, can be easily and cheaply manufactured, is adapted for a wide variety of uses, and is very efficient and economical in operation.

It will be readily understood that minor changes in the size, form and construction of the various parts of my improved burner can be made and substituted for those herein shown and described, without departing from the spirit of my invention, the scope of which is set forth in the appended claims.

I claim:

1. The hereindescribed gas burner comprising a hollow burner ring provided with jet openings, a gas supply pipe leading to said hollow member, an annular hood removably positioned over the hollow ring, the body of which hood is of substantially inverted U-shape in cross section, the walls of said hood being spaced apart from said ring, and there being openings formed in the outer wall of the hood directly opposite the jet openings.

2. The hereindescribed gas burner comprising a hollow member provided with jet openings, means for supplying gaseous fuel to said hollow member, an annular hood positioned over said hollow member, the body of which hood is of substantially inverted U-shape in cross section, adjustable means seated in said hollow member for supporting said hood, and there being openings formed in the outer wall of the hood directly opposite the jet openings in the hollow member.

3. In a burner of the class described, a hollow member provided with jet openings, a tubular member connecting opposite sides of said hollow member, flanges on said tubular member, a hood positioned over the hollow member, the inner wall of which hood rests upon the tubular member and the flanges thereof, and there being openings formed in the outer wall of the hood directly opposite the jet openings in the hollow member.

4. In a burner of the class described, a hollow member provided with jet openings, a tubular member connecting opposite sides of said hollow member, flanges on said tubular member, a hood positioned over the hollow member, the inner wall of which hood rests upon the tubular member and the flanges thereof, there being openings formed in the outer wall of the hood directly opposite the jet openings in the hollow member, and adjustable means seated in the hollow member for supporting said hood.

5. The combination with a burner ring having a gas inlet and a series of jet openings, of an annular hood for said burner

ring, the body of which hood is substantially of inverted U-shape in cross section with both of its walls extending downward to the sides of the burner ring so as to provide an air chamber above and on both sides of the burner ring when the parts are assembled, and there being openings formed in the outer wall of the hood directly opposite the jet openings in the burner ring.

6. The combination with a burner ring having a gas inlet and a series of jet openings, of an annular hood for said burner ring, the body of which hood is substantially of inverted U-shape in cross section with both of its walls extending downward to the sides of the burner ring so as to provide an air chamber above and on both sides of the burner ring when the parts are assembled, there being openings formed in the outer wall of the hood directly opposite the jet openings in the burner ring, and

means for adjusting the vertical position of the hood with respect to said burner ring.

7. The combination with a hollow member provided with a gas inlet and a series of jet openings formed through its outer wall, of a hood positioned over said hollow member, the body of which hood is substantially of inverted U-shape in cross section with both of its walls extending downward to the sides of the hollow member, there being openings formed in the outer wall of the hood directly opposite the jet openings in the hollow member and the space within the inner wall of said hood being closed.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this 8th day of July, 1916.

LEWIS F. OSTRANDER.

Witnesses:

M. P. SMITH,
M. A. HANDEL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."