

UNITED STATES PATENT OFFICE.

COLIN WILLIAM CLAYBOURNE, OF INDIANAPOLIS, INDIANA.

GAS-HEATER.

SPECIFICATION forming part of Letters Patent No. 697,235, dated April 8, 1902.

Application filed December 1, 1900. Serial No. 38,371. (No model.)

To all whom it may concern:

Be it known that I, COLIN WILLIAM CLAYBOURNE, of Indianapolis, in the county of Marion, and in the State of Indiana, have invented certain new and useful Improvements in Gas-Heaters; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a heater embodying my invention. Fig. 2 is a side elevation of another embodiment of my invention. Figs. 3, 4, and 5 are respectively perspective views of the lower burner, upper burner, and deflector illustrated in Fig. 2; and Fig. 6 is a detail view, in vertical section, through the upper burner and the deflector, showing the latter supported adjustably.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention has been to provide a gas-heater for deriving heat from gas, which heater shall have great efficiency; and to such ends my invention consists in the gas-heater hereinafter specified.

In carrying my invention into practice I provide a structure comprising a lower burner A, an upper burner B, a deflector C, and suitable gas and air supply pipes. The lower burner consists, preferably, of a number of hollow radiating arms a and a , having gas-emitting apertures a' and a' in their upper surfaces. The number and form of such arms can be varied as desired, or a circular, annular, or other form of gas-receptacle having gas-emitting apertures can be used. The lower burner is supported in any desired manner, and such burner has connected with it, preferably at a point on its under surface, a pipe a^2 for conveying to the interior of the burner a mixture of gas and air. Such mixture can be supplied in any desired manner and from any desired fuel. I prefer to place at the inlet of the pipe a^2 a mixer a^3 , such as is shown in my Patent No. 652,085, granted May 31, 1900, and to supply gas thereto by a pipe a^4 , having a cock a^5 therein, the outer end of such pipe being connected to a gas-main a^6 .

The upper burner B consists, preferably, of a hollow cylindrical casting b , which is preferably closed at both ends and whose lower

end fits over and is retained in place by an annular flange a^7 on the lower burner A. A pipe b^1 is connected with the interior of the casting b at a point well below its top, which pipe is for the purpose of supplying the combustible mixture for the upper burner. Said pipe is, like the pipe a^2 , preferably provided with a mixer b^3 , to which gas is supplied through a pipe b^3 , that is connected with the main a^6 . Around the upper portion of the casting b are provided a series of apertures b^4 and b^4 , through which the combustible mixture issues from the interior of such casting. At some distance above the apertures b^4 and b^4 the deflector C is supported in any desired manner. I have illustrated it as resting upon lugs b^5 and b^5 , formed on the top of the casting b . It is obvious, however, that supporting lugs or legs could be formed on the deflector or that the latter could be independently supported from above. The deflector is preferably a circular body of a diameter preferably as large or larger than the diameter of the lower burner. Such deflector can be made of any material which will stand a high temperature. The deflector illustrated in Fig. 1 is made of cast-iron in a dish-shape form, there being ribs on its upper side for strength. In Fig. 5 I have illustrated a deflector made of fire-brick. The deflector can be made vertically adjustable, if desired, so as to enable the position to be secured where the best results are obtained.

In the operation of my burner a mixture of gas and air is caused to flow through the pipe a^2 and into the lower burner, from whence it issues through the apertures in its upper surface and is burned. The heat and the heated gas ascend and strike the deflector. Similarly a mixture of gas and air is caused to flow through the pipe b^3 and into the upper burner, from whose apertures it finds exit. Such mixture is burned beneath the deflector, and the latter is preferably at such a height above the apertures that the combustion is complete before the combustible mixture has risen to the lower side of the deflector. Under the action of the burners the deflector becomes highly heated, and heat is effectively radiated therefrom in all directions. If any of the combustible mixture is not completely burned before reaching the

deflector, the latter by its great heat raises the gas to a temperature where the combustion is completed. The heat not being directly applied to the boiler or other object to be heated does not heat such object unequally; but the deflector first receives the direct heat and then distributes the same evenly over the surface to be heated.

The upper burner B is provided as an auxiliary burner, it being used alone when a very low fire is required. Either burner can be used to light the other.

Changes in the above-described construction can be made which are within the scope of my invention. For instance, the two burners and the deflector can be formed in one casting instead of in separate pieces.

Having thus described my invention, what I claim is—

1. In a heater, the combination of a burner having gas-emitting apertures, a second burner consisting of a hollow part located centrally above and smaller than the other burner, and having a substantially vertical surface in which are gas-emitting apertures, and a deflector above both of such burners, substantially as described.

2. In a heater, the combination with a part having substantially horizontal hollow arms provided with gas-emitting apertures, of a hollow part located centrally above said arms having a substantially vertical surface in which are gas-emitting apertures, and a deflector above such parts, substantially as and for the purpose described.

3. In a heater, the combination with a part

having substantially horizontal hollow arms provided with gas-emitting apertures, of a hollow part located centrally above said arms having a substantially vertical surface in which are gas-emitting apertures that are above the level of said first-mentioned apertures, and a deflector above such parts, substantially as and for the purpose described.

4. In a heater, the combination with a part having hollow arms radiating horizontally from a center, such arms having gas-emitting apertures, of a hollow part having a substantially vertical surface in which are gas-emitting apertures, that are above the level of said first-mentioned apertures, such part being located centrally above said arms, and a substantially circular horizontal deflector above such parts, substantially as and for the purpose described.

5. In a heater, the combination of a burner having gas-emitting apertures and provided with a centrally-disposed flange on its upper side, the gas-emitting apertures being outside of the flange, a second burner consisting of a hollow cylindrical part having gas-emitting apertures in its side and fitted over said flange, and a deflector for both of said parts supported by said hollow part, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of November, A. D. 1900.

COLIN WILLIAM CLAYBOURNE.

Witnesses:

ADDISON BYBEE,
L. C. WILLIAMS.