

(No Model.)

W. G. TAYLOR.
FUEL GAS MIXER.

No. 499,151.

Patented June 6, 1893.

Fig. 1.

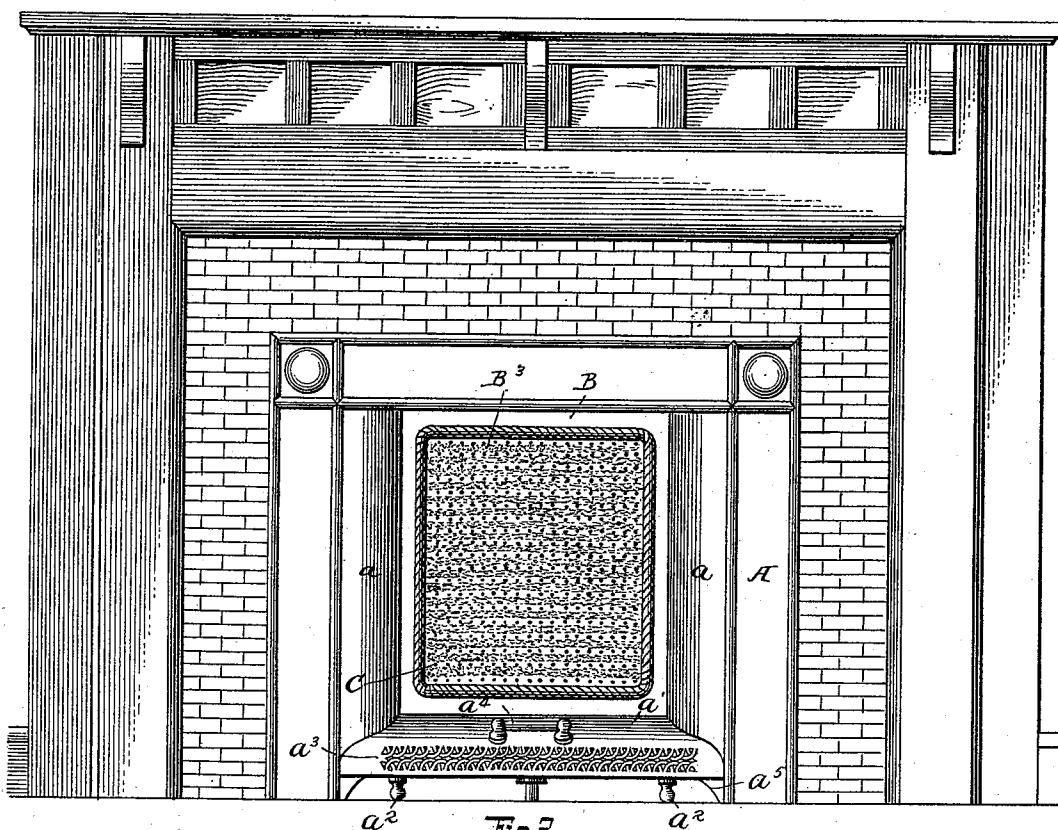


Fig. 3.

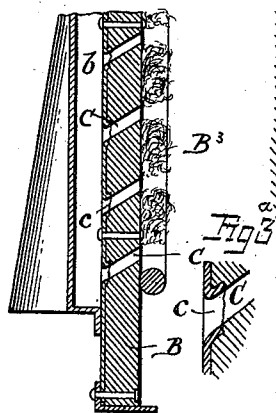


Fig. 2.

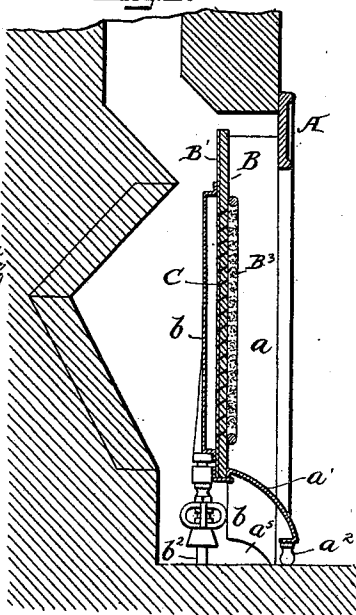
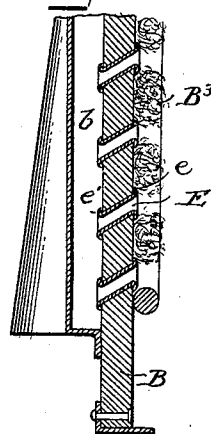


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM G. TAYLOR, OF HULTON, ASSIGNOR TO THE TAYLOR BURNER COMPANY, LIMITED, OF PITTSBURG, PENNSYLVANIA.

FUEL-GAS MIXER.

SPECIFICATION forming part of Letters Patent No. 499,151, dated June 6, 1893.

Application filed December 1, 1892. Serial No. 453,778. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. TAYLOR, a citizen of the United States, residing at Hulton, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Fuel-Gas Mixers, of which the following is a specification.

My invention relates to heaters adapted to burn gas, and it has for its object to improve the construction, arrangement, and mode of operation of such fuel gas heaters, and it consists in the various features of construction and arrangement substantially such as are hereinafter more particularly pointed out.

Referring to the accompanying drawings, Figure 1, is a view showing a heater arranged in a fireplace. Fig. 2, is a vertical transverse section of the same. Fig. 3, is an enlarged view of a portion of the same. Fig. 3^a, is a much exaggerated detail showing one of the perforations; and Fig. 4, is an enlarged view showing a modified arrangement.

In my former application, Serial No. 446,482, filed September 1, 1892, I have shown, described and claimed the general features of my improved gas heater, and my present invention consists more particularly in the details of improvement over the construction and arrangement shown in the above named application to which reference is made for a more full and clear description of the main features of the invention, it being sufficient herein to simply designate in a general way the invention therein described and claimed.

Referring to the drawings A, represents the tiling or fireplace frame in which the burner is placed, it being thus shown in this application, it being understood of course that the burner may be used in other connections, in other kinds of fireplaces, or in stoves or heaters of any form or configuration desired.

a, *a*, represent rounded side pieces which are fitted within the framework, and are preferably made of brass, iron, or other similar material, which can receive a polish, and which serve as reflectors of the heat, while the lower portion between the rounded sides is filled with a removable piece *a'*, which is similarly curved and cut to fit the rounded surface of the rounded side piece *a*, and is provided with feet or legs *a*². This piece is

preferably perforated as at *a*³, and is provided with a suitable handle as *a*⁴.

The heater proper consists essentially of a plate or board B, which is preferably made of asbestos, and secured to this board is a chamber *b*, which preferably extends over a considerable portion of the board. In the present instance I have shown but a single chamber *b*, but it will be understood that the board constituting the burner may be provided with one or more chambers for the gas, depending upon the size and other questions of expediency in each particular case. The chamber or chambers *b*, is connected to a suitable gas inlet pipe *b*², which is provided with a mixer *b'*, which may be of any suitable construction, and serves to supply the chamber *b*, with air and gas mixed in their proper proportions. The chamber *b*, may be directly attached to the asbestos board by suitable rivets or otherwise, but in other instances, and in many instances the preferred form, I use a backing B', of metal to the asbestos board, and secure the chamber *b*, to the backing, as in this way I find I can better superheat the gases in the chamber.

The asbestos board or burner is preferably provided with strips, pieces or blocks of asbestos wool B³, or some similar material on its face, which becomes heated and more or less luminous in using the burner, and this wool operates to more thoroughly spread the flame of the burning gases. It can, however, be dispensed with in some instances.

The gas passes from the chamber *b*, to the front of the board through the passages or perforations C, and in my prior application I have shown these passages as parallel to each other, and at right angles to the face of the plate, and while this is a favorable way of arranging them under some conditions, especially where the gas is under a heavy pressure, I have found that in other instances, especially where the pressure of the gas is comparatively light, there are some disadvantages inherent to their use in this arrangement, and it is with the special object of overcoming these disadvantages that my present improvement is made. These passages are shown as extending through the asbestos board B, and the metal plate B' when used, at a suitable in-

elination to the face of the board, and I preferably arrange them at such an angle that the lower portion of the opening on the outside shall be above the upper portion of the opening on the inside of the burner, although it is evident that the particular angle is not absolutely material, and may be varied to suit the exigencies of any particular case. The principal reason I assign for this change of the angle is that where the gas is under low pressure, and for any reason there is a draft or considerable air pressure on the front side of the burner, the pressure of the air may overbalance the pressure of the gas in the openings, and the air pass into the gas chamber *b*, and this is liable to cause an explosion, the blaze or flame from the burning gases apparently passing through the openings into the chamber. By arranging the openings at an inclination as shown, I have found that even with the lowest pressures there is no danger of the air from the outside passing into the gas chamber and causing the explosion, as whatever gas there may be in the passages, as at the moment the gas is turned out, it will have a tendency to rise and discharge itself from the outer face of the burner, and this tendency is sufficient to prevent the air passing into the gas chamber, and being ignited therein. There are other reasons which make this particular arrangement better, among which may be said that the gas apparently is more evenly distributed over the surface of the heater, by means of the inclined openings, than when they are perpendicular thereto. Furthermore, I find that by the use of the inclined openings, practically the same effects may be produced when these openings are smaller, than they would have to be were they perpendicular. It may be further added that when the openings or perforations are horizontal and the gas is in the opening, owing to its buoyant action it tends to press upon the upper surface of the opening and if the pressure at both ends of the opening is substantially the same the gas will either remain in the opening or escape from both sides about equally; when, however, the openings are inclined the buoyant action of the gas tends to cause it to rise through the opening and as the upper end of the opening in my construction is outside of the gas chamber, it will be seen that the tendency of the gas is to flow out of the burner and this adds to its safety and aids in preventing explosion. While these perforations may be simple holes made through the body of the heater, when I use the metallic backing *B'*, I find it advantageous to perforate the sheet metal from the rear, so that the material forming the holes is bent inward into the body of the asbestos sheet, and not only tends to keep the holes clear and free from obstructions, but also aids in securing the two plates together, as the rough edges *c*, of the metal which are forced outward by the punch, impinge on the sides of the holes and practically embed themselves therein, and this I find to

be a practical advantage in constructing the heater.

When the backing *B'* is not used, and the gas chamber *b*, is secured directly to the asbestos board, I find it an advantage to line the perforations through the board with metal, and this I accomplish by making a substantial eyelet or tube *E*, the outer and inner ends of which *e*, *e'*, are preferably rounded and serve to secure the tubes or bodies of the eyelet in position. In this way I am enabled to provide the heater with a series of holes which may be relatively quite small, and which will still furnish a perfectly free passage for the gas to the front of the burner.

It will be understood that while it is practicable to have the perforations through the board without a metallic or other lining, especially when the board is compact or hard, I find in many instances it is much more desirable to use the eyelet or other tubes in the manner just described, and thereby I am enabled to use boards which are of softer nature than when the tubes are dispensed with.

I have not herein described specifically the operation of the device, as that forms no part of my present invention, but it will be understood that the air is drawn in at the bottom of the heater as near as may be to the bottom of the hearth or level of the floor and passes up through the space behind the gas chamber, and through the space behind the side pieces *a*, the side pieces being preferably cut away as indicated at *a'*, to permit the air ascending behind them, while provision is made at the top of the heater sufficient to allow the passage of the deleterious gases or products of combustion.

What I claim is—

1. A gas burner comprising a plate of asbestos material having a series of perforations through the same, the perforations being at an inclination to the surface of the plate, substantially as described.

2. A gas burner comprising a plate of asbestos material, a metallic plate secured to the rear thereof, the plate being perforated and the portions of the metal plate being forced into the perforations in the asbestos plate, substantially as described.

3. The combination with the burner having a flat heat radiating surface, of a surrounding frame having outward flaring side plates and a flaring bottom plate, means for supporting the latter above the hearth to permit the passage of air behind the burner, and the side plates being cut away at their bottoms to permit the passage of air in the rear of the side plate, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM G. TAYLOR.

Witnesses:

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 ALLE N. DOBSON.