G. F. SCHWARTZ.

GAS HEATER.

APPLICATION FILED OCT. 30, 1915. RENEWED OCT. 29, 1918.

1,303,970. Patented May 20, 1919.

Fig:1.

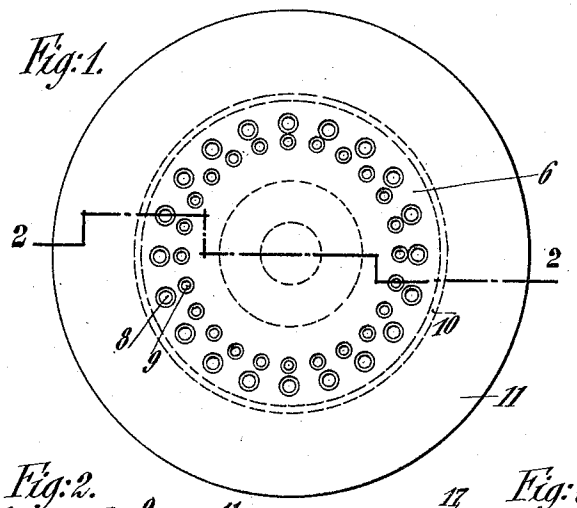


Fig:2.

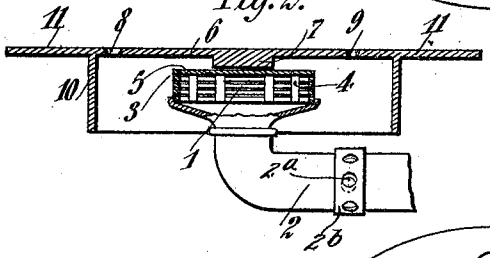


Fig:5.

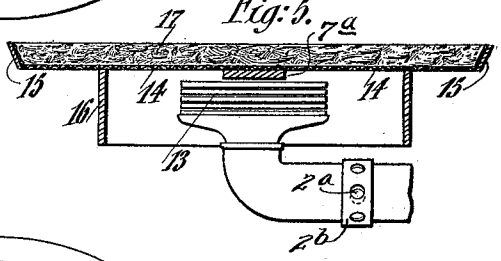


Fig:3.

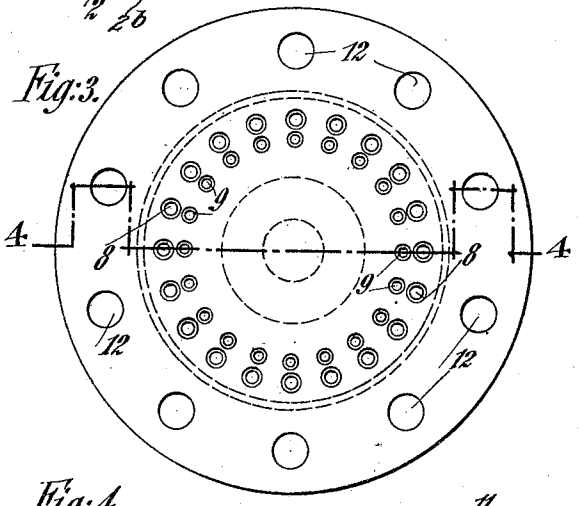
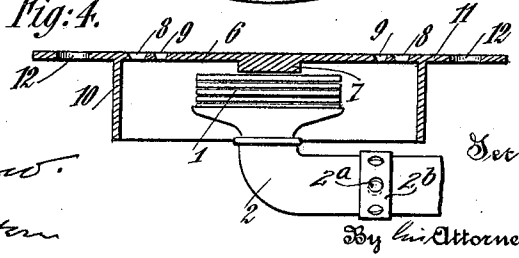


Fig:4.



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UNITED STATES PATENT OFFICE.

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GAS-HEATER.

1,303,970. Specification of Letters Patent. Patented May 20, 1919.

Application filed October 30, 1915, Serial No. 58,928. Renewed October 29, 1918. Serial No. 260,172.

To all whom it may concern:

Be it known that I, GERHARDT F. SCHWARTZ, a citizen of the United States, and a resident of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Gas-Heaters, of which the following is a specification.

This invention relates to gas heaters, and has for its object to provide an improved heater, by the use of which a greater, cleaner, and more efficient heat is obtained, with a great saving of gas as compared with other heaters now in use, and elimination of unpleasant odors and by-products, such as carbon monoxid gas, etc.

With these and other objects in view, my invention consists of the novel features, combination and arrangement of parts, hereinafter more fully described and pointed out in the claims.

In the accompanying drawings,

Figure 1 is a top plan view of one form of my heater;

Fig. 2 is a transverse sectional view thereof, taken on the line 2—2 of Fig. 1;

Fig. 3 is a top plan view of a modified form;

Fig. 4 is a transverse sectional view thereof taken on the line 4—4 of Fig. 3; and

Fig. 5 is a sectional view of a further modified form of construction.

Similar reference numerals indicate corresponding parts throughout the several views.

Referring to the drawings and more particularly to Figs. 1 and 2 thereof, a burner 1, fed by a feed pipe 2 having openings 2^a and an air regulating device 2^b of the Bunsen burner type, consists of a plurality of members 3 superimposed and spaced apart as at 4. This burner 1 is preferably constructed by sawing a hollow metal disk provided interiorly with vertical ridges, so as to have the openings 4. The effect of this burner, combined with the air regulating device contained in the member 2, is to provide an efficient combustion at the burner 1, closely resembling that known as the Bunsen flame. Imposed upon the top plate 5 of the burner 1, is a plate 6 having a central boss 7 and provided with openings 8 and 9 circumferentially arranged as indicated in Fig. 2. These openings 8 and 9 may either be staggered as shown in Fig. 1 or in radial alinement to each other with respect to the center of the plate, as shown in Fig. 3. Annularly of the top plate 6 a depending flange 10 is arranged concentric with the burner 1, and extending below the same as clearly shown in Fig. 2. The plate 6 is provided with a horizontal extension 11, which is adapted to increase the heating effect of the burner. The object of the flange 10 is to retain whatever gases are unconsumed by the first combustion of the burner 1, and cause them to pass out of the openings 8 and 9, and there create a second combustion, characteristic of this type of burner.

When this burner is not to be used in the open air, but is to be put into a heater, larger holes 12 are provided at equal distances, in the horizontal extension 11, as shown in Figs. 3 and 4. These holes are for the purpose of allowing access of air to the flame above the openings 8 and 9, thereby perfecting combustion.

In the form of heater above described, the same is preferably constructed of cast iron, which upon becoming hot aids the ignition of the superheated gases underneath. An efficient heater may, however, be constructed by the use of silica, fire-clay, magnesia, asbestos, or other material of the same character, pressed into the shape shown in Figs. 2 and 4, or as indicated in the embodiment shown in Fig. 5. In this construction a burner 13 which is made of iron is provided in the usual manner, over which is superimposed a plate 14 of copper gauze, perforated cast iron or the like, provided at its outer edge with a circumferential flange 15, extending upward and inclined outwardly therefrom. A depending flange 16 extending slightly below the burner 13, is arranged underneath the plate 14, for aiding in the double combustion above described. Below the central portion of the plate 14 is located an imperforate member 7^a in contact with said plate so as to close the apertures thereof at said portion, and render the central portion imperforate, while the portion of the plate 14 between the member 7^a and the flange 16, being perforated, corresponds in function to the apertures 8, 9 of Figs. 1 to 4, and the perforated portion or extension of the plate 14 exteriorly of the flange 16 corresponds to the apertures 12 of Figs. 3 and 4. The copper plate 14, having the outer flange 15, is filled with the silica, magnesia, asbestos or the like 17, which when the heater is burning, becomes red hot and radiates heat.

I have shown herein preferred and satisfactory forms of my invention, but it is obvious that changes may be made therein without departing from the spirit and scope of the invention, as defined in the appended claims.

I claim:—

1. An improved double combustion burner, comprising a primary burner, a top plate over the primary burner in close proximity thereto, provided with openings for secondary combustion surrounding said burner at a level above the burner top, said plate immediately above said burner being unperforated, and a downwardly extending flange on said top plate, entirely inclosing said primary burner laterally.

2. An improved double combustion burner, comprising a primary burner, a top plate over the primary burner, engaging said burner at its central portion, and provided with openings for secondary combustion surrounding said burner, said central portion of said plate being unperforated and a downwardly extending flange on said top plate, entirely inclosing said burner laterally.

3. An improved double combustion burner, comprising a primary burner, a top plate over the primary burner, engaging said burner at its central portion, and provided with openings for secondary combustion, surrounding said burner, said central portion of said plate being unperforated, and a downwardly extending circular flange on the top plate, extending below said primary burner, said flange being entirely closed at its junction with said top plate, and entirely inclosing said burner laterally.

4. An improved double combustion burner, comprising a primary burner, a top plate over the primary burner provided with openings for secondary combustion, a circular flange on the top plate, extending below the primary burner, and a horizontal extension on the top plate provided with circumferential holes spaced apart.

5. An improved double combustion burner, comprising a primary burner, a top plate for the primary burner of fine mesh, adapted to hold silica, asbestos or the like, an imperforate member engaging the central portion of said plate and closing said mesh at said central portion, and a downwardly extending flange on said top plate entirely inclosing said burner laterally.

6. An improved double combustion burner comprising a primary burner, and a top member over the primary burner and in close proximity thereto, said member being made of a refractory material and adapted to become very highly heated by reason of its proximity to said burner, and being provided with apertures above the level of the primary burner top to form a secondary burner.

7. An improved double combustion burner comprising a primary burner, and a top member over the primary burner and in close proximity thereto, said member being made of a refractory material and adapted to become very highly heated by reason of its proximity to said burner, and being provided with an imperforate portion directly above the primary burner, and with apertures above the level of the primary burner top around said imperforate portion to bring about secondary combustion.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

GERHARDT F. SCHWARTZ.

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