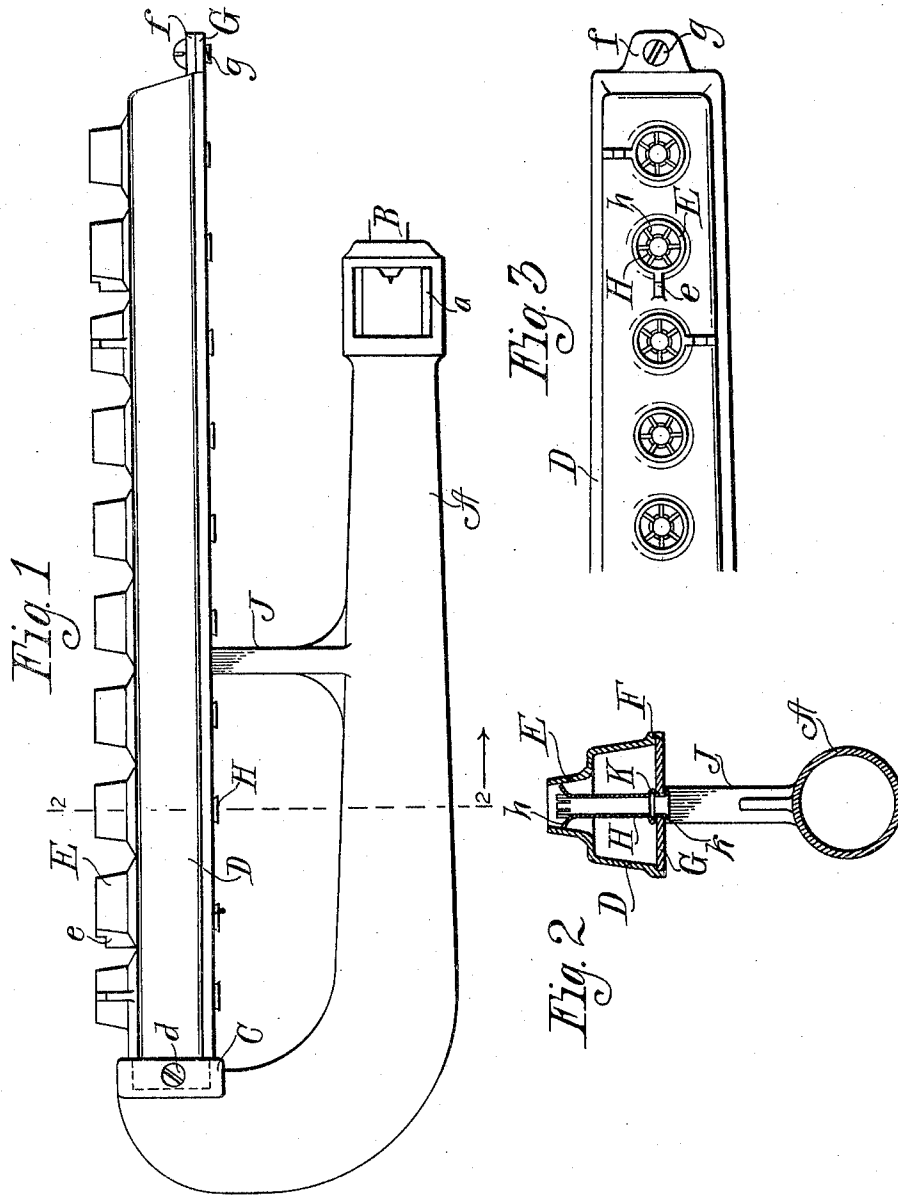


J. F. ADAMS.
 BURNER FOR GAS HEATERS.
 APPLICATION FILED AUG. 13, 1919.

1,361,804.

Patented Dec. 14, 1920.



By

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UNITED STATES PATENT OFFICE.

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BURNER FOR GAS-HEATERS.

1,361,804.

Specification of Letters Patent.

Patented Dec. 14, 1920.

Application filed August 13, 1919. Serial No. 317,165.

To all whom it may concern:

Be it known that I, JULIUS F. ADAMS, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Burners for Gas-Heaters, of which the following is a specification.

This invention relates to burners for gas heaters, and belongs to the class of multiple burners of the concentric gas and air jet type. It is particularly intended for use in gas heaters wherein are mounted certain formed, tubular, open-work clay bodies termed "clay radiants." The burner nozzles are arranged to direct the flame in and upon the clay radiants, which become highly heated and luminous, giving out great heat by radiation, and presenting a very attractive and agreeable appearance.

The object of this invention is the production of a multiple burner of the class and type and for the service stated, comprising parts of special construction and arrangement, whereby it is believed the fuel gas is most economically consumed, and by reason of which construction and arrangement of parts the burner may be lighted every time certainly and conveniently, without the disturbing "flare-back" or explosive action that almost always occurs in burners for this purpose with which the applicant is familiar.

The particular construction and arrangement of the parts comprising this invention are set forth in the accompanying drawings, of which Figure 1 represents a side view of all the parts assembled. Fig. 2 is a vertical cross-section on the broken line 2—2 of Fig. 1. Fig. 3 is a top plan view of the outer end of the receiving or mixing chamber, showing the burner nozzles, with the auxiliary air tubes therein and illustrating also the fingers formed at the ends of those air tubes to center them in the nozzles.

Throughout the description and drawings the same letter is used to refer to the same part.

Considering the drawings, the intake pipe or horn A, is provided with the usual opening for the entrance of air, marked *a*, within which the gas is axially discharged in the customary manner by means of the needle valve B.

In Fig. 1 it will be noted that the end portion of the intake pipe A is turned up-

wardly, and it is provided at the mouth of the up-turned end with a socket or seat C, constructed to receive the end of the mixing or receiving chamber D, that end being secured in the socket by the set screw *d*.

In Fig. 1 will also be noted the burner nozzles E in a row comprising in practice either ten nozzles as shown or seven for burners for smaller stoves. The nozzles at the ends of the row, usually three nozzles at either end, are provided with the shoulders *e*, the functions of the shoulders being to engage and to hold in position the radiant rest illustrated and described in my application for Letters Patent of the United States for improvements in gas heaters, filed June 28, 1919, Serial Number 307,464.

As best illustrated in Fig. 2, the mixing chamber D has along its lower edge the shoulder or ledge F, forming a seat for the removable bottom G of the chamber. At the outer end, a lip *f* projects from the chamber D, and a screw *g* secures the lip to the end of the bottom G.

Within the chamber D are the auxiliary air tubes H. These air tubes open through the bottom G, to which they are perpendicularly secured by means of the annular enlargement K lying against the bottom G on the inside, and the swaged, expanded or peened end edge *h* forced against the bottom on the outside thereof. The tubes H extend upwardly into the nozzles E, and to center the tubes in the nozzles and to keep them always in the same place, fingers *h* are split or stamped from the wall of the tube near the end, and the fingers are turned outwardly so as to come into contact with the inside of the nozzle. It will be understood that the tubes H are made of relatively thin bendable metal. For example, pieces of common brass or copper tubing may be used, in order that the bent fingers *h* may be formed by splitting the end of the tube, and the end *h* may be expanded against the lower surface of the bottom of the mixing chamber after the end has been passed through the bottom G. In that manner the bottom and the tubes are secured together and may be removed and replaced together when it is necessary to clean out the mixing chamber.

The operation of this invention is thought to be readily discernible from the drawings and the foregoing explanation. The gas and air first enter the intake and flow

into the receiving and mixing chamber D. Obviously, the intake is also a mixing tube. The mixture is discharged by way of the burner nozzles E whereon it is ignited, and
5 the outflow of the mixture from within the chamber D draws up additional air through the auxiliary air tubes H, rendering the combustion practically perfect and resulting in a set of flame of the hottest character
10 possible with the fuel employed. It will be noted that the up-turned end of the intake horn A and the end of the chamber D are joined together as explained, and that the chamber extends directly above the intake
15 and parallel with it, and it will be also observed that the intake carries the post J for supporting the chamber. It is believed that the arrangement herein set forth is responsible for the fact that this burner ignites
20 without any "flare-back" or explosive effect when properly lighted.

Having now described this invention, and explained the mode of its operation, what I claim is:—

25 1. In a burner for gas heaters, the combination with an intake pipe, of a mixing chamber having a row of upwardly projecting burner nozzles at the top, the said mixing chamber having a closed bottom, air
30 tubes having their lower extremities passing through the said bottom, each of the said tubes having an annular projecting portion arranged against the inner surface of the said bottom, and each of the said tubes

having its lower end expanded against the 35 exterior of the said bottom to hold the tube in position, the said tubes passing upwardly through the mixing chamber and centrally into the said burners, and the upper end of each tube having portions partially de- 40 tached and extended outwardly into contact with the interior of the burner nozzle to center the tube therein.

2. In a burner for gas heaters, the combination with an intake pipe, of a mixing 45 chamber having a row of upwardly projecting burner nozzles at the top, the said mixing chamber having a removable bottom, air tubes having their lower extremities passing through the said bottom, each of 50 the said tubes having an annular projecting portion arranged against the inner surface of the said bottom, and each of the tubes having its lower end expanded against the exterior of the bottom to hold the tube in 55 position whereby the said tube and the bottom may be removed and replaced together, the said tubes passing upwardly through the mixing chamber and centrally into the said burner nozzles, and the upper end of 60 each tube having portions partially detached and extended outwardly into contact with the interior of the nozzle to center the tube therein.

In testimony whereof I affix my signature. 65

JULIUS FERDINAND ADAMS.