May 10, 1949. J. P. DRESEN 2,469,499

GAS BURNER

Filed Sept. 7, 1945

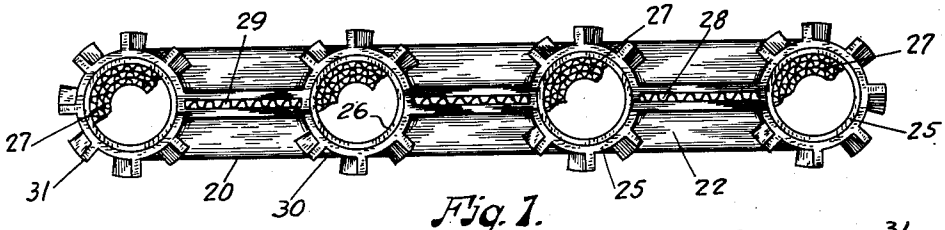


Fig. 1.

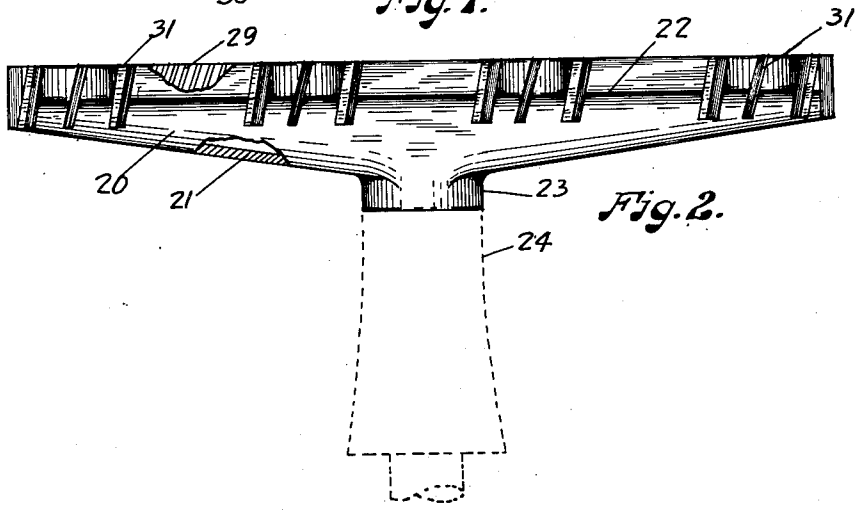


Fig. 2.

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GAS BURNER

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2 Claims. (Cl. 158—104)

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This invention relates to improvements in gas burners of the type employed in connection with the production of large quantities of heat, but which may also be employed for other purposes.

In heating air or water for use in heating buildings, the air or water is passed about or around flues through which hot gases of combustion flow. It is evident that the efficiency of such a heating system depends on what proportion of the heat contained in the gas is transferred to the surrounding air or water.

If the flues are large and straight currents of heated gases may flow through the center of the flue without transferring any considerable portion of their heat units to the air or water surrounding the flue, because the gases do not come into contact with the flue and the latter receives only radiant heat from such gases.

If all of the heated gas is brought into contact with the flue, the latter will receive heat by conduction and will conduct the same to the surrounding heat convection medium.

It is the object of this invention to produce a burner of such construction that when it is employed to heat the interior of a flue, it will give to the gases a rotary motion which will bring them into close contact with the inner flue surface, whereby the heat transfer will take place by conduction to thereby obtain a greater efficiency of heat transfer.

This invention, briefly described, consists in a burner construction that will impart to the gases of combustion a rotary motion producing a centrifugal force which urges the gas towards the inner surface of the flue.

The above and any other objects that may become apparent as the description proceeds are attained by a construction and an arrangement of parts that will now be described in detail and for this purpose reference will be had to the accompanying drawings in which the invention has been illustrated, and in which:

Figure 1 is a top plan view of a burner constructed in accordance with this invention; and

Figure 2 is a side elevation of the burner.

In the drawing reference numeral **20** designates a burner body. This has been shown in plan and side elevation in Figures 1 and 2, respectively. The bottom wall of the burner body has been designated by reference numeral **21** and the top wall thereof by reference numeral **22**.

The body has a central downwardly extending nipple **23** with which the mixing throat **24**, which has been indicated by dotted lines in Figure 2, is connected.

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The actual construction of the mixing throat has not been illustrated, but it may be either of the atmospheric type or of the pressure type, both of which are well known.

The upper wall of the burner is provided with a plurality of circular openings like those designated by reference numeral **25**. Each opening has an inwardly extending shoulder **26** on which the burner nozzle **27** rests in the manner shown in Figure 1.

It will be observed from Figure 2 that the upper surface of wall **22** extends a short distance below the top and between the several burner openings there is a linear burner having a straight opening **28** in which is positioned a corrugated ribbon **29**. Openings **28** are in communication with the interior of the burner body and gas therefor escapes through these openings and serves to carry the flame from one burner to another.

One of the burner nozzles **27** is provided with a central opening in which is positioned a pilot flame assembly which forms the subject of another application whose Serial Number is 614,888, filed September 7, 1945. Since the pilot burner does not form any part of this invention, it will not be shown nor described herein.

Surrounding the outer wall of each opening **25** are a number of vanes **31** which, in the drawing, have been shown as inclined in such a way as to produce a counterclockwise rotation of the air that flows upwardly along the outer wall. It is, of course, to be understood that these vanes may be inclined in the opposite direction, if desired.

Due to the whirling motion imparted to the gas stream by the vanes **31**, the flame is given a rotary motion, which imparts to the gases a counterclockwise rotation, when viewed from the top. The counterclockwise rotation of the gas produces a centrifugal force that urges it against the inner surface of the flue. Gas is supplied to the burner **39** by means customarily employed for this purpose in connection with gas burners and may be either an atmospheric gas mixing device or a pressure mixer, both of which are old and have been referred to above.

The rotation of the flame prevents stratification, gives a better mixture which, in turn, results in a faster combustion. The length of the flame can be controlled by varying the amount of primary air.

Having described the invention, what is claimed as new is:

1. A gas burner comprising, an elongated hol-

low body forming a gas manifold, one wall having a single opening for the admission of a combustible gaseous mixture, the opposite wall having a plurality of spaced aligned circular openings, each opening being surrounded by a short cylindrical wall, the inner surfaces of said cylindrical walls being provided with an inwardly extending shoulder for the support of a perforated nozzle, the outer surfaces of the latter walls having each a plurality of short helical vanes for imparting a rotary motion to the secondary air.

2. A burner in accordance with claim 1 in which the wall having the spaced openings is also provided between each pair of spaced openings with a narrow slot for the escape of gas for transferring flame along the burner.

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