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H. D. DUFAULT

2,201,678

BURNER APPARATUS

Filed Aug. 5, 1938

Fig. 1.

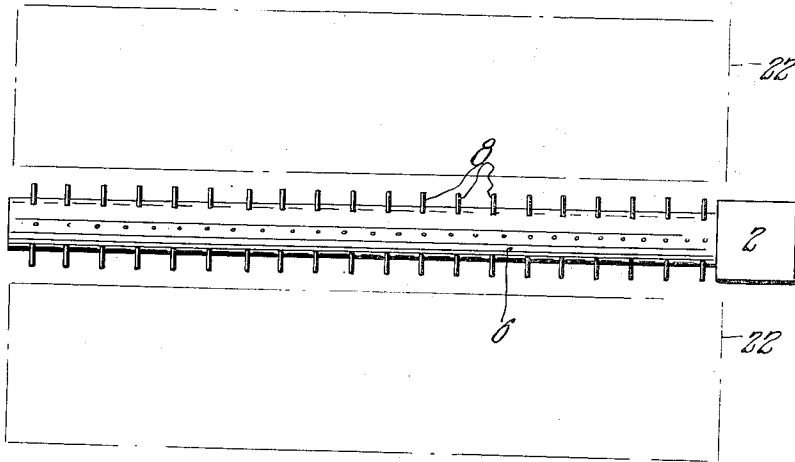


Fig. 2.

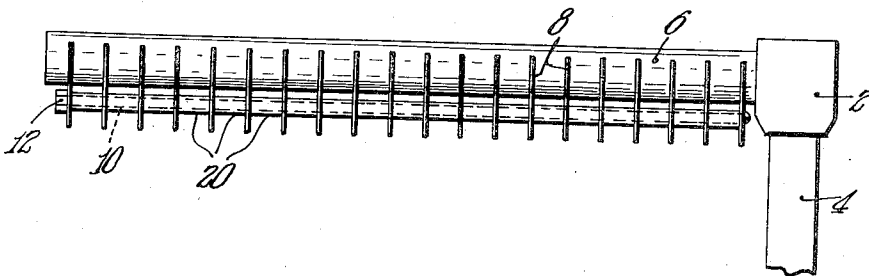
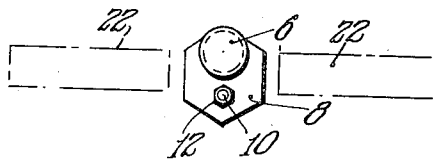


Fig. 3.



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UNITED STATES PATENT OFFICE

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BURNER APPARATUS

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Application August 5, 1938, Serial No. 223,280

2 Claims. (Cl. 158—99)

This invention relates to improvements in burner apparatus and is directed more particularly to gas burners for use in fire boxes of various apparatus and this application is a continuation in part of an application filed by me on December 27, 1935, Ser. No. 56,326.

It is a principal object of the invention to provide a burner of the luminous flame type as contrasted with the type requiring admixture of air and gas. The burner of this invention is not only capable of operating efficiently but at low cost.

It is still another object of the invention to provide a burner which is capable of operating with maximum efficiency and silence, without requiring the frequent and various adjustments for mixing air with fuel which are necessary with burners of the bunsen type, or the like, for example. The burner is adapted for use in fire boxes of room heaters, coal or combustion ranges, and other stoves and may burn either natural, liquid, or manufactured fuel gas.

Still another object of the invention is the provision of a burner apparatus wherein the parts are novelly arranged so that better heat distribution may be obtained and the desired air circulation between flames is had. This is accomplished by the provision of a burner bar having parts properly spaced so that the proper amount of air will circulate between the flame jets yet close enough for good ignition.

Various other novel features and advantages of the invention will become more apparent after a reading of the following description, reference being had to the accompanying drawing, wherein:

Fig. 1 is a plan view of the apparatus of the invention;

Fig. 2 is a side elevational view of the same; and

Fig. 3 is an end elevational view of the same.

Referring now to the drawing more in detail the invention will be fully described.

A header member 2 is provided and while this may vary in form it is connected, as by a pipe 4, to a source of fuel supply. The header 2 is hollow, of course, and it and pipe 4 may be formed of metal.

Extending from the header 2 are one or more hollow, substantially elongated tubes 6, which I call burner bars. This bar 6 has its inner end in communication with the pipe 4 and its outer end may be closed as shown in Fig. 3.

Secured to the pipe or bar 6 are a plurality of fins 8 which are preferably of thin metal such as steel or the like. According to the preferred form

of the invention the fins may take the form shown in Fig. 3 and are secured at their upper sides to the bar in such a way that they extend from the sides and lower portions thereof.

A rod 10 extends through lower portions of the fins 8 and it may have a threaded portion for receiving a nut 12. Around the rod and between adjacent fins are tubular separators or spacers 20. These serve to hold the fins the desired distance apart and also with the nut tightened on the rod serve to strengthen the structure.

The burner is preferably made from an aluminum alloy and this is for a very particular reason. Metal such as cast iron, brass, steel or copper, tends to oxidize or carbonize to an objectionable extent through the action of natural or manufactured gases. Oxidization and carburization causes the ports of the burner bar not only to clog up and interfere with the flame but renders the bar unfit for service. I have found, however, that there is no such objectionable reaction when an aluminum or aluminum alloy bar is used.

The burner bar is provided with a plurality of ports which may be disposed, as shown, or otherwise as may be desired.

Aluminum has a relatively low melting point so that it tends to warp or bend when subjected to the heat from a gas flame or flames whereof the fins, and clamping parts just described, is such that the bar is reinforced and held against warping or bending from its desired relation.

The fins are spaced apart to allow air circulation upwardly between them and past the burner bar 6. The member 6 is provided with ports as shown and the air by passing through or between the fins passes upwardly closely adjacent the bar 6. There may be baffles such as 22 or of various shapes at opposite sides of the burner bar and there may be a pilot burner not shown adjacent the burner for ignition purposes.

The fins and associated parts not only serve to strengthen and reinforce the bar 6 and prevent it from warping or bending but tend to cool the same so as to protect the aluminum from the high temperatures. Where baffles are used they form restricted passageways at the sides of the burner bar and serve to direct the air upwardly past the burner bar.

The fins have suitable connections with the burner bar so that heat is conducted from the said bar and have in the aggregate a considerable area so that air passing through the fins wipes across the surfaces thereof and absorbs heat.

Altogether the structure is such that the

burner bar is supported and reinforced against distortion, which is desirable and necessary when aluminum is employed for the burner bar to obtain the benefits of its ability to withstand corrosion, oxidation, etc. The fins not only serve for the reinforcing function but dissipate heat which is desirable for the maximum efficiency while the baffles, when employed, cooperate with the burner bar to provide restricted passageways for the flow of air past the fins all of which insures the desired absorption of heat by the air.

While I have described the invention in great detail and with respect to a preferred form thereof, it is not desired to be limited thereto since many changes and modifications may be made therein without departing from the spirit and scope of the invention. What it is desired to claim and secure by Letters Patent of the United States is:

1. A reinforced burner bar construction comprising in combination, a longitudinally-extending tubular burner bar provided with ports spaced along the upper side thereof, a set of spaced-apart relatively thin metallic fin members disposed along and in planes transverse to the longitudinal axis of said burner bar provided with recesses on the upper sides thereof which receive said burner bar, said fin members having their upper sides spaced below the plane of the upper side of said burner bar and extending outwardly from the sides thereof and downwardly therefrom so as to lie generally at the sides of and below said bar with portions thereof below said burner bar and provided with openings therethrough, hollow spacers disposed between adjacent sides of adjacent fin members of said set thereof, a rod member extending through said

spacers and the openings in said fin members, and a means on the opposite ends of said reinforcing member acting on outermost faces of the endmost fin members drawing said fin members and spacers together whereby a rigid reinforcing structure is associated with said burner bar at the sides and bottom longitudinally thereof.

2. A reinforced burner bar construction comprising in combination, a longitudinally-extending tubular burner bar provided with ports along the upper side thereof, said bar being adapted to be disposed in substantially horizontal relation in a space formed by adjacent inner sides of adjacent baffle plates, a set of spaced-apart relatively thin metallic fin members disposed along and in planes transverse to the longitudinal axis of said burner bar provided with recesses on the upper sides thereof which receive said burner bar, said fin members having their upper sides spaced below the plane of the upper side of said burner bar and extending outwardly from the sides thereof and downwardly therefrom so as to lie generally at the sides of and below said bar with portions thereof below said burner bar and provided with openings therethrough, hollow spacers disposed between adjacent sides of adjacent fin members of said set thereof, a rod member extending through said spacers and the openings in said fin members, and a means on the opposite ends of said reinforcing member acting on outermost faces of the endmost fin members drawing said fin members and spacers together whereby a rigid reinforcing structure is associated with said burner bar at the sides and bottom longitudinally thereof.

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