May 2, 1944. E. R. KOPPEL 2,348,011

SHEET METAL GAS BURNER

Filed May 18, 1940

FIG. 1.

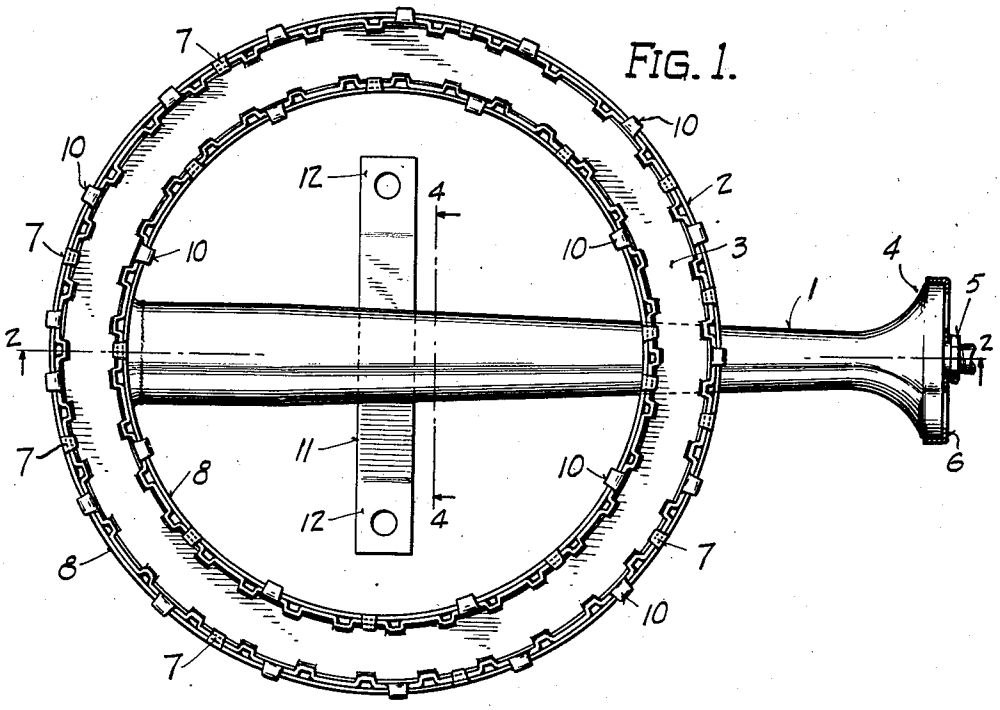


FIG. 2.

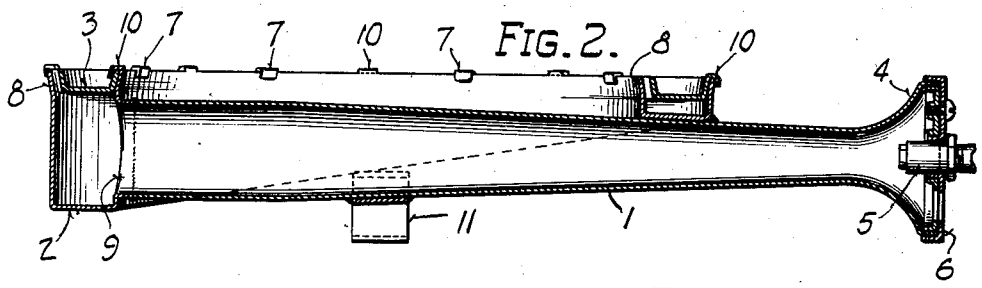


FIG. 3.

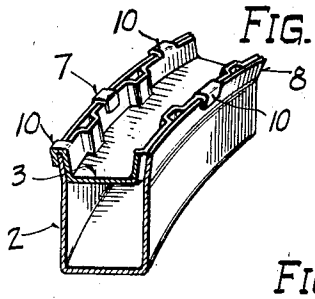


FIG. 4.

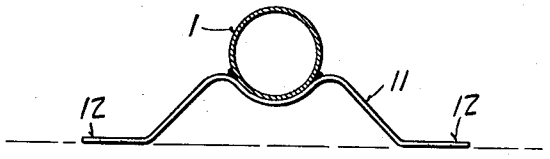
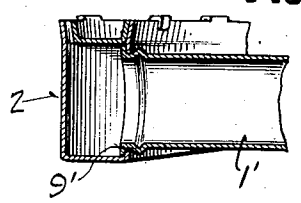


FIG. 5.



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SHEET METAL GAS BURNER

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2 Claims. (Cl. 158—99)

This invention relates to a sheet metal gas burner suitable for use on stoves and gas heaters of various kinds.

The present commercial burners are of cast metal construction and prior attempts to duplicate them by the use of sheet metal have resulted in a more costly burner.

The object of the present invention is to provide a less costly and more durable gas burner.

Another object is to provide such a gas burner of sheet metal in place of cast metal and to eliminate the necessity of expensive machining operations.

Another object is to provide a burner having uniformly distributed gas orifices providing a well balanced flame extending around a circle.

Other objects will appear hereinafter in connection with the description of the preferred embodiment of the invention illustrated in the accompanying drawing.

In the drawing:

Figure 1 is a top plan view of the burner;

Fig. 2 is a vertical section taken on line 2—2 of Fig. 1;

Fig. 3 is a detail perspective showing the crimping of the burner parts together;

Fig. 4 is a section on line 4—4 of Fig. 1 showing the burner support; and

Fig. 5 is a detail section showing a modified joint between the venturi and the burner.

The burner has three principal parts: the venturi 1, the main circular channel 2 and the closing channel 3.

The venturi 1 is preferably formed from seamless or welded tubing by suitable forming operations to provide the outer bell shaped end 4 into the center of which the gas supply nozzle 5 extends and over which an adjustable air valve plate 6 is applied to adjust the mixture of primary air and gas. The central portion of the tube is formed to a Venturi shape for mixing purposes, and the inner end is of substantially larger diameter to supply the burner with the properly mixed air and gas.

The main circular channel 2 of the burner is pressed from a single sheet of metal and is of gradually varying depth. The rear of the burner is of greatest depth and the front of the burner is of shallowest depth. At various locations around the periphery ears 7 are provided for bending over to hold the channel 3 in place. The upper edges 8 of the channel are tapered or flared outwardly to provide a seat for the channel 3.

The channel 2 at the rear has a circular flanged opening 9 and the venturi is preferably butt welded to the flange as shown in Fig. 2. However, various forms of attachment may be employed and in Fig. 5 the venturi 1' is made to extend slightly through the opening 9' and has its end crimped over on the inside of the channel 2.

The venturi 1 passes just beneath the shallow front of the channel 2 and by reason of the fact that both members are small at this point the over all height of the structure remains substantially the same as at the rear of the burner. The bottom of channel 2 is preferably welded to the venturi at the place of contact at the front of the burner in order to provide a more rigid structure.

The channel ring 3 is pressed from sheet metal and has its flanges fluted or corrugated to provide the burner ports when the channel is pressed into the tapered edge portion of the channel 2. Ears 10 on the upper edge of channel 3 may be added and crimped over the edge of channel 2 at selected locations around the periphery of the parts, similar to ears 7 on channel 2.

The depth of the tapered edges 8 and the flanges of channel 3 is determined to provide gas jets of proper length for giving directional properties to the flame. The jets are shown of uniform cross section throughout their length, but it is possible to have the cross section vary and to make them tapered or of any desired shape.

Instead of providing the ears 7 and 10 it is possible to tack weld the adjacent edges of channels 2 and 3 together at a number of points around the periphery.

The burner is supported by a strip of metal 11 formed to receive the venturi 1 and welded to it at the center of the burner, and having horizontal ends 12 adapted to rest on a suitable support.

The simplicity of forming the channels 2 and 3 by normal pressing operations and of assembling the structure without expensive machining of jet holes and the like, provides a burner of few parts and of less costly construction, and lighter weight.

Various embodiments of the invention may be employed within the scope of the accompanying claims.

The invention is claimed as follows:

1. A gas burner comprising two sheet metal channel members extending in a closed circle and disposed in nested relationship with their bottoms spaced apart to provide a chamber for supplying gas to the jets and with the side flanges of the upper channel supported by a flared portion of the respective side flanges of the lower channel and secured thereto, and having their side flanges

relatively shaped to provide a series of gas jets between the same, there being two circular series of gas jets, one formed between the outer two flanges of the channels, and the other formed between the inner two flanges of the channels, and the bottom of the outer channel sloping upwardly gradually toward the bottom of the inner channel to provide a gas chamber of maximum depth near the entrance of gas to the chamber and of minimum depth at the opposite side of the burner to maintain a substantially uniform gas pressure for all of the jets, and a sheet metal Venturi supply pipe entering the side of the inner flange of the outer channel at a point removed from the bottom of said channel and extending across the burner and beneath the opposite side of the channels, said supply pipe lying substantially between the horizontal planes of the highest and lowest levels of the bottom of the outer channel member.

2. A gas burner comprising two sheet metal channel members extending in a closed circle and disposed in nested relationship, the bottoms of the members being spaced apart in a manner to provide a gas distributing chamber of greater depth at one side than at the opposite side, a Venturi tube disposed to enter the side of the inner flange of the lower channel member at the maximum depth portion of the burner and at a point removed from the bottom of the channel, said Venturi tube extending across the bottom of the burner and lying wholly within the vertical extent of the burner to provide a compact unit for use in a confined area.

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