

Nov. 26, 1968

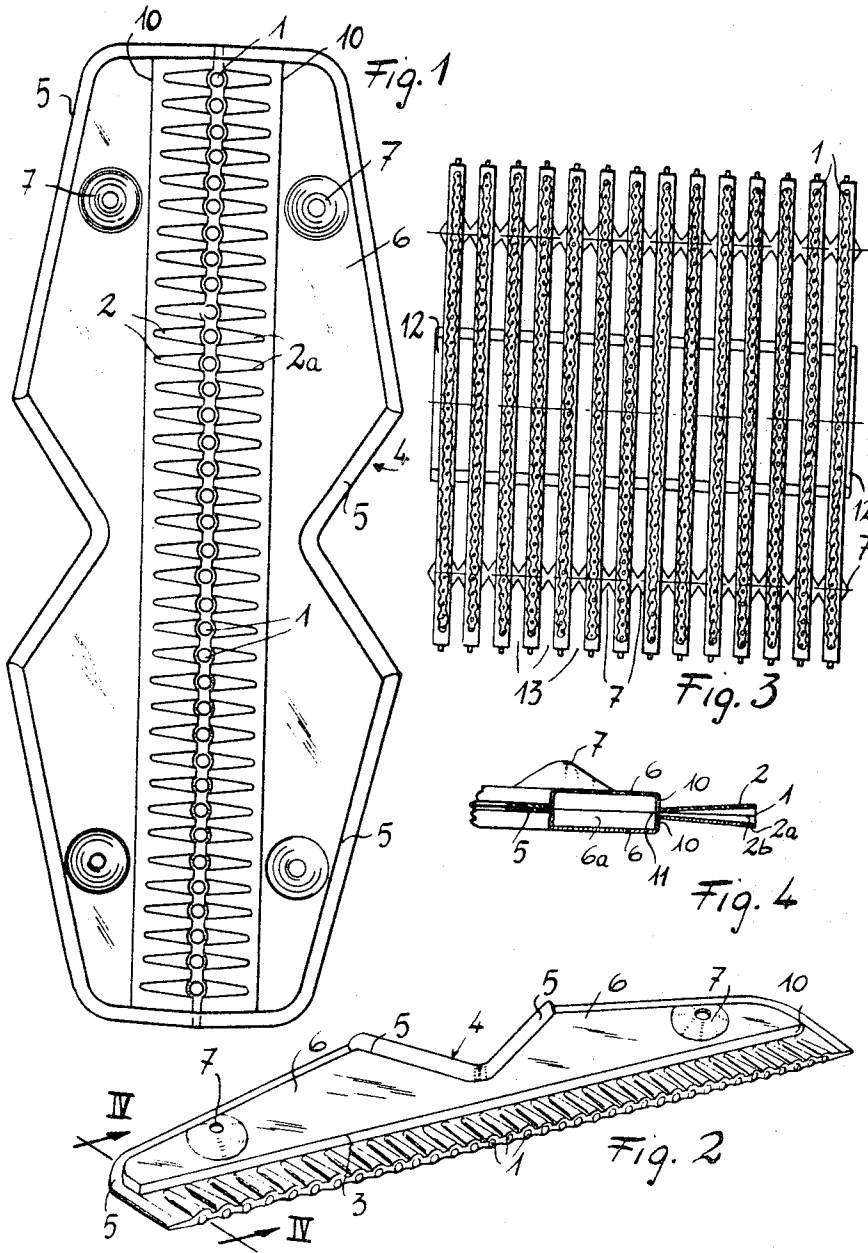
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BURNER FOR TOWN GAS, LIQUEFIED GAS, NATURAL GAS AND MIXTURES THEREOF, AND ADAPTED TO BE FITTED ON BOILERS, STOVES, AIR HEATERS AND THE LIKE

Filed June 13, 1966

2 Sheets-Sheet 1



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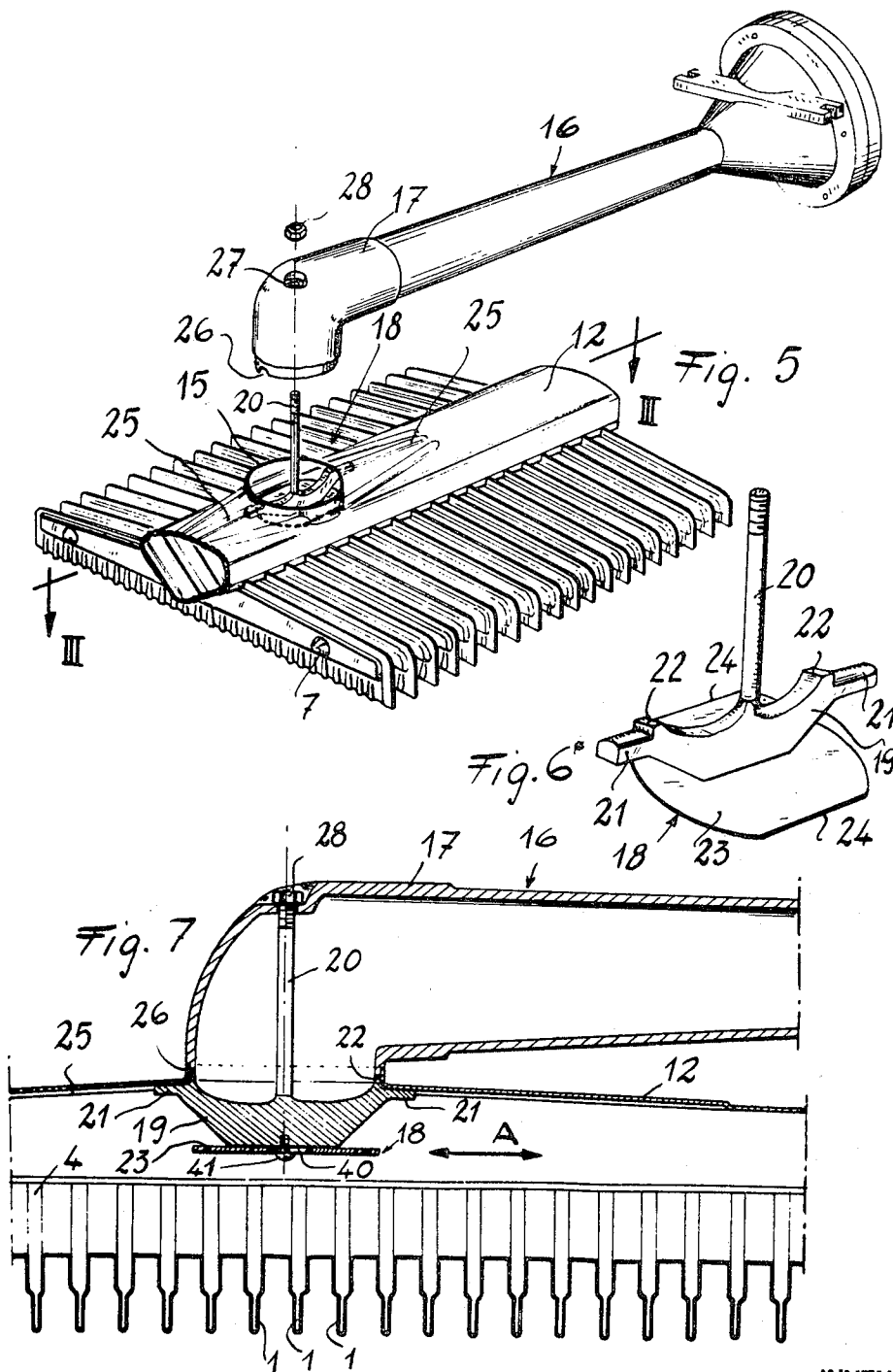
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Filed June 13, 1966, Ser. No. 556,937

6 Claims. (Cl. 239—553)

ABSTRACT OF THE DISCLOSURE

A gas burner assembly having a plurality of burner units which can be assembled together to receive gas from a common source. Each of these units is formed from a single body of sheet metal which is folded so as to have a pair of opposed walls the configurations of which coact with each other to provide the entire structure for each burner unit. Each of these units has an elongated bottom edge provided with a row of spaced openings through which the combustible gas is adapted to issue, and these openings are situated at the bottom ends of small, tapered channels which extend upwardly from the bottom openings where these channels have their largest cross-sectional area, the elongated row of tapered channels having their top smallest ends in communication with an elongated gas-receiving chamber defined in each unit between the opposed walls thereof just over the tapered downwardly diverging channels. All of the chambers of the several units communicate with a common header from which gas is delivered to the several units to flow from the chambers thereof through the downwardly diverging channels to the openings at the bottom of the units where the combustible gas can be burned.

This invention relates to a burner that consists of single elements adapted to be gang or bank-fitted.

The burner according to the invention is characterized in that their elements consist each of a single piece of blanked and bent metal sheet, which is formed with a row of aligned holes extending along a symmetry axis of the blanked piece, and that are all in communication with a common feeding chamber defined by the spaced, opposite walls of same piece.

This invention will be better appreciated from a consideration of the following, detailed description, taken with the accompanying drawing, both description and drawing being given as a non restrictive example only. In same drawing:

FIG. 1 is a plan view of a burner component, as a single blanked piece, before of being bent.

FIG. 2 is a perspective view of an already bent burner component ready for the use.

FIG. 3 is a plan view of a plurality of gang-fitted components by which a burner is made.

FIG. 4 is an enlarged diagrammatic part sectional view, taken on the line IV—IV of FIG. 2.

FIG. 5 is an exploded perspective view of a burner according to the invention.

FIG. 6 is a perspective view of a jet-breaking baffle, to be inserted into the header body.

FIG. 7 is a cross-section taken on the line III—III of FIG. 5.

The burner according to the invention is made-up of a plurality of components, each of which consists of a single piece blanked from a metal sheet (see FIG. 1). The blanked, flat component has the shape of an irregular polygon, and is formed with a row of holes, aligned along the major axis of symmetry of the component. Crimps 2, 2a are formed on either sides of each hole, the cross-

section of such crimps gradually decreasing from the holes toward a step 10. Each pair of crimps is designed to form, after the component is bent round its symmetry axis, a tiny outwardly diverging channel or pipe 2b, through which the gas is fed to hole 1.

Steps are formed all along the lines 10, to form a narrow slit 11 upstream of channels 2b, in order to obtain a more uniform flow of the gas toward the nozzles formed by the channels 2b and by the holes 1. Thus it will be seen that the several channels 2b of each unit taper upwardly or inwardly from their bottom or outer open ends 1 where the channels have the largest cross-sectional area, and at their smallest inner or upper ends the tapered channels 2b which diverge outwardly have their smallest cross-section at the slit 11 where they communicate with the interior chamber 6a from which the gas flows into the outwardly diverging channels 2b so as to provide an exceedingly uniform and highly efficient gas flow for combustion purposes. A stepped-down edge 5 is formed along the whole periphery, with the exception of the central sections 4 which have a substantially downward directed V-shape whereby, after the component is bent round the symmetry axis, and the opposite edge portions have been brought into contact with each other, and welded in such a position, an inside chamber 6a having an uniform width, is formed between the walls 6, the gas being fed therethrough to the holes 1.

Along the central portions 4, the edge 5 is bent outwardly (see FIG. 2), to allow the components to be welded with one another and then set, thus-formed-welded, on a header body 12, having a section such as to allow it to be inserted into the V-shaped recess 4.

The sides 6 of the burner component according to the invention are moreover formed with four symmetrically arranged bosses 7, which are adapted to act, after the folding of blank, as spacers between one component and the adjacent ones, thereby to leave intervening spaces 13 (see FIG. 3) as required for the flow of combustion air, between same elements.

A complete burner is obtained by gang-fitting a comb-like plurality of components welded with one another and onto a header body 12 having a shape such that to allow it to be inserted into the central, V-shaped recess 4. The gas is conveyed to chambers 6, and then to different nozzles, through said header body 12.

Said header body 12 is formed with an orifice 15, wherein a conventional Venturi tube, indicated in its entirety by numeral 16, is fastened with the aid of a curved pipe fitting 17.

According to one feature of the invention, the burner is provided with a jet-breaking baffle, indicated in its entirety by numeral 18 (see FIGS. 5, 6 and 7), and consisting substantially of a keeper 19, having a central threaded pin 20, protruding ends 21 and upper stepped ridges 22. Fast with said keeper is a plate 23 having a circular contour similar to that of orifice 15, except for two straight chamfers 24, to allow its insertion into the orifice, while inclined in respect thereof.

Said keeper 19, together with the jet-breaking baffle 23, is located inside of header body 12, the ends 21 being accommodated in grooves 25 as formed on the body 12, while the teeth 22 are inserted into notches 26 as provided on the edge of curved pipe fitting 17. Said curved pipe fitting is formed with a hole 27, having a flat seat formed on one end, and designed to act as a stop for a nut 28 with which the jet-breaking baffle is secured, and the burner is coupled with the Venturi tube 16.

As it can be readily appreciated from what precedes and from the accompanying drawings, the diaphragm 23 is located suitably spaced from the orifice of body 12, and parallel thereto, whereby to act as a baffle or jet-breaker, by which the flow of gas to single components

of burner and thus, in point of fact, to single nozzles, is made more uniform and regular. In other words, the real purpose of said diaphragm consists in having the amount of gas distributed as smoothly and uniformly as possible to all burner elements.

The diaphragm or baffle 23 can be adjusted in the direction of the arrow A, and in respect of keeper 19, by means of an elongated slot 40 and set screw 41, in order to attain a better control of gas distribution toward each burner element. It is also possible to vertically adjust the diaphragm position, e.g. by having shims interposed between the diaphragm and the keeper.

What I claim is:

1. A gas burner comprising a plurality of units each consisting of a single piece of folded sheet metal having an axis of symmetry and formed with a row of aligned holes along said axis, the folded sheet metal piece having opposed wall portions spaced from each other and defining between themselves a chamber which communicates with said holes, said units being spaced from each other and respectively being formed with bossages which extend into the space between the units to maintain them apart from each other so as to form between the units intervening spaces for the flow of combustion air, and each unit being formed in the sheet metal body with an elongated stepped portion providing the spaced wall portions which define said chamber which communicates with said holes, the folded portions of each unit being welded to each other and each unit being formed at a side thereof which is directed away from and opposite to a side where said holes are located with a V-shaped recess defining an orifice, and a header body common to all of the units and welded to the latter at said orifice for feeding gas therethrough into said chambers.

2. The combination of claim 1 and wherein said header is formed with a header orifice through which gas is supplied to the interior of said header, and a jet-breaking baffle situated in said header spaced from said header orifice and being substantially parallel thereto, a gas-feeding Venturi tube, a keeper situated in said header and connected with said baffle, and said keeper having a threaded pin connected to said tube for connecting said header and thus the entire burner to said Venturi tube, said baffle being circular except for portions of its circumference which are formed with straight, parallel chamfers, and said keeper having projections, a pipe fitting connecting said Venturi tube to said header, and said pipe fitting being formed with notches while said header is formed with grooves, said notches and grooves receiving said projections of said keeper.

3. The combination of claim 1 and wherein said header is formed with a header orifice and a jet-breaking baffle situated in the interior of said header spaced from and being substantially parallel to said orifice, a keeper connected to said baffle, to support the latter, and

said baffle being formed with an elongated hole, a set screw extending through said hole into said keeper for connecting said baffle adjustably thereto.

4. A gas burner comprising a plurality of units each of which consists of a single body of sheet metal folded along a given line so as to provide the sheet metal body with a pair of opposed wall portions located against each other and interconnected at said fold line, said sheet metal body being formed with a row of openings distributed along said fold line and said wall portions defining between themselves elongated tapered channels respectively terminating at said openings and having their largest ends situated at said openings, said wall portions of said sheet metal body defining between themselves a chamber for receiving gas and communicating with ends of said channels distant from said openings at parts of said channels where they have the smallest interior cross-sectional area so that said channels respectively diverge outwardly away from said chamber.

5. The combination of claim 4 and wherein the opposed wall portions of each unit are formed at the side of each unit distant from the row of openings thereof with a pair of opposed wall portions located against each other communicating with said chamber, all of said units being arranged in a position parallel to and spaced from each other with all of said V-shaped recesses aligned, and an elongated hollow tubular header extending transversely of said units and connected to said V-shaped recesses thereof for supplying gas to the chambers of said units.

6. The combination of claim 5 and wherein said header has an outer wall directed away from said units and formed with an orifice, a keeper within said header at said orifice, a supply tube connected to said header at said orifice thereof and fixed with said keeper for supplying gas to said header, and a baffle fixed to said keeper in the interior of said header.

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