GAS BURNER UNIT

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1. Claim 2 Claims. (Cl. 158—113)

ABSTRACT OF THE DISCLOSURE

A burner unit has a refractory member of generally L-shaped cross section with a flat bottomed portion resting on a base plate, the upper surface of the refractory member being at an acute angle to an upward burner tube, the burner tube being provided with a horizontal partition wall defining a gas receiving chamber below the wall and a plenum chamber above the wall. A deflecting plate is mounted on top of the burner tube to deflect burning gases onto the refractory member.

This invention relates to gas burner units wherein gases are ignited and directed onto refractory members. The invention is specially adapted but not limited to use in industrial processes, such as for the textile and paper industries.

Pursuant to the invention, a burner unit of structural features is provided such as to simplify the manufacture and construction thereof and to enhance the mixture and combustion of the gases and their more efficient use and deflection onto the refractory members.

A further feature of the invention is in the provision of a burner unit wherein the refractory member is disposed at an angle to the plane of the burner base plate and a deflector plate is provided on the burner with a complementarily angularly directed marginal edge to facilitate complete combustion and mixture of the gases.

The drawings, illustrating procedures and devices useful in carrying out the invention, and the description below, are exemplary only of the invention, which shall be deemed to cover all other devices and procedures coming within the scope and purview of the appended claims.

In the drawings, wherein similar reference characters indicate like parts:

FIG. 1 is a transverse, sectional view of a gas burner unit embodying the invention, taken at line 1—1 of FIG. 6.
FIG. 2 is a vertical, sectional view taken at line 2—2 of FIG. 6.
FIG. 3 is an exploded, fragmentary, perspective view of the burner tube, spacer, and deflector plate which may be used in carrying out the invention.
FIG. 4 is a fragmentary perspective view of the base plate and burner shown in FIG. 6.
FIG. 5 is an end perspective view of the FIG. 1 form.
FIG. 6 is a top plan view of the base plate and burner shown in perspective in Fig. 4.
FIG. 7 is a transverse sectional view generally corresponding to FIG. 1 but of a form of the invention having a single refractory member.

As shown in the drawings, the burner unit of this invention comprises a base plate 16 (FIGS. 4 and 6) of essentially planar configuration, a burner tube 12 being formed medially on the base plate and extending upwardly therefrom and axially therealong and (FIG. 1) having a wall 13 formed intermediate the height thereof and defining with the base plate, a gas receiving chamber 14 below the top 15 (FIG. 4) of the burner; and end portions 16, 17 (FIG. 2) extend above the wall 13. The wall 13 of the burner is substantially coextensive with the burner tube and (FIGS. 3 and 4) is provided with apertures 18 therethrough and with bosses 19 formed thereon to receive the spacer 20 and deflector plate 21 which, with the wall 13 and the side and end wall portions 16, 17 of the burner tube, defines (FIG. 1) a plenum portion 22 thereof. The base plate 11 may be provided with a depending fitting 23 (FIG. 1) which may be coupled as at 24, 25 with a gas supply pipe 26. The deflector plate 21 and spacer 20 may be secured to the bosses 19 of wall 13 of burner tube 12 by any suitable means, such as indicated at 40 (FIG. 1). The deflector plate 21 is preferably formed with marginal edges 27 proportioned to overlap the side walls 16 of the burner tube and downwardly directed to deflect gases emanating from the plenum portion 14 downwardly and onto the correspondingly angularly directed recessed portions 38 of refractory members 30, 31. The latter are generally L-shaped in cross section and are further provided with angularly cut bottom portions 32 to dispose the refractory members facing toward the marginal edges 27 of the deflector plate 21 as presently described. The spacer 20 and bosses 19 are so proportioned that, on positioning the spacer 20 on the bosses 19 and positioning the deflector plate 21 on the spacer, the deflector plate will be marginally spaced from the top of the tube. Side plates 33 extend upwardly marginally of the base plate 11 and are secured to the base plate by suitable means, such as bolts 34 (FIG. 1); said side plates engage the upper ends 35 of side portion 36 of the refractory members 30. On positioning the refractory member 30 intermediate the side plate 33 and the gas burner tube 12, the recessed portion 38 (FIG. 1) of the refractory member 30 will be angularly disposed toward the complementarily downwardly directed marginal edge portions 27 of the deflector plate 21. Recessed portions of the refractory members 30, may be formed therein in spaced parallel relation to define therebetween parallel fins 39 (FIG. 5).

FIG. 7 shows a burner unit formed pursuant to the invention, with a single refractory member 30a; parts shown in FIG. 7 correspond with those of FIG. 1 above described are correspondingly numbered. The deflector plate 21a in the FIG. 6 form has a single downwardly directed marginal edge portion 27a and is secured to the base 11 intermediate the tube 16a and the side plate 33a; the opposite marginal edge 27b is in closing contact with the tube 16a.

While the foregoing disclosure of exemplary embodiments is made in accordance with the patent statutes, it is to be understood that the invention is not limited thereto or thereby, the inventive scope being defined in the appended claims.

I claim:
1. In a gas burner having a base plate and a side plate extending upwardly of the base plate and secured thereto and defining therewith an upwardly opening outline, a burner tube on said base plate extending upwardly therefrom and axially therealong, said burner tube having a wall formed therein intermediate the height thereof and defining, with the base plate, an axial gas receiving chamber, below the top of the burner, side and end walls on said burner tube extending above the said wall formed therein and substantially coextensive with the length of the burner tube, an axial extending gas deflector plate secured to the tube atop said side and end walls and defining therewith a plenum portion, said tube wall being provided with apertures for flow of gas from the gas receiving chamber portion to the said plenum portion thereof, a refractory member positioned on said base plate intermediate the burner and said plate, for flow of gases from the burner tube onto said refractory member, said deflector plate being of greater width than the burner tube and marginally overlapping the burner tube, the resulting marginal portions being downwardly
directed to deflect gases away from the plenum portion downwardly onto the refractory member, a spacer positioned intermediate the deflector plate and the top of the burner tube, and bosses formed on the said wall of the burner tube and extending upwardly therefrom, said spacer and bosses being so proportioned that, on positioning the spacer on the bosses and positioning the deflector plate on the spacer, the deflector plate will be marginally spaced on the burner tube.

2. In a gas burner having a base plate and a side plate extending upwardly of the base plate and secured thereto and defining therewith an upwardly opening outline, a burner tube on said base plate extending upwardly therefrom and axially thereof, said burner tube having a wall formed therein intermediate the height thereof and defining, with the base plate, an axial gas receiving chamber below the top of the burner, side and end walls on said burner tube extending above the said wall formed therein and substantially coextensive with the length of the burner tube, and an axially extending gas deflector plate secured to the tube atop said side and end walls and defining therewith a plenum portion, said tube wall being provided with apertures for flow of gas from the gas receiving chamber portion to the said plenum portion thereof, a refractory member positioned on said base plate intermediate the burner and side plate, for flow of gases from the burner tube onto the said refractory member, said deflector plate being of greater width than the burner tube and marginally overlapping the burner tube, the resulting marginal portions being downwardly directed to deflect gases from the plenum portion downwardly onto the refractory member, said refractory member being of L-shaped cross section and having a flat bottom portion formed on the refractory member at an acute angle to each leg of the L-shaped member and resting on the base plate, the refractory member thus forming an upwardly opening trough adjacent the said deflector plate and leaving spaces between the refractory member and the base and side plates.

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