May 15, 1956 A. H. CRONE 2,745,480

CERAMIC RADIANT BROILER BURNER

Filed July 19, 1951

Fig. 1

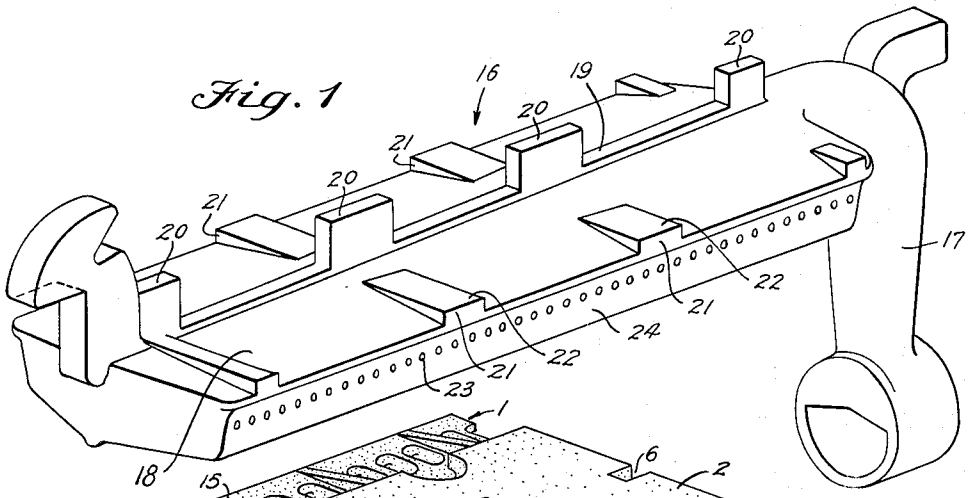


Fig. 2

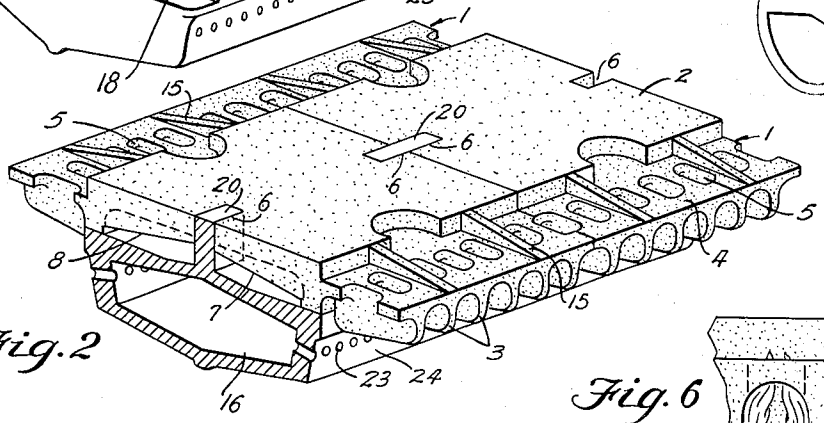


Fig. 6

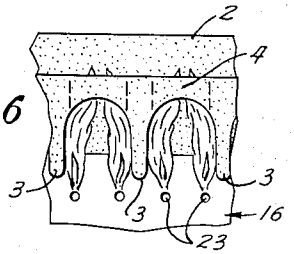


Fig. 3

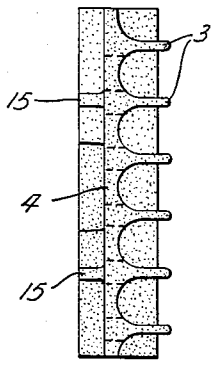


Fig. 4

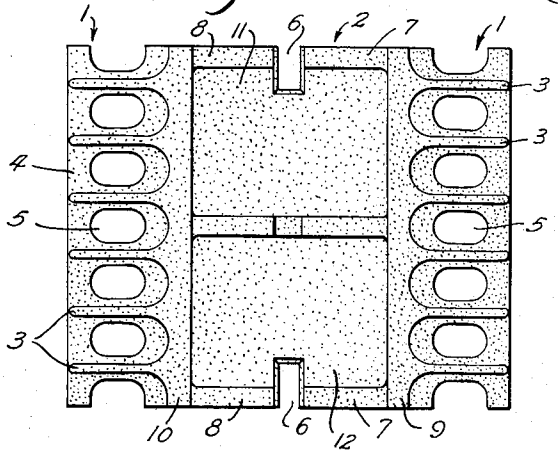
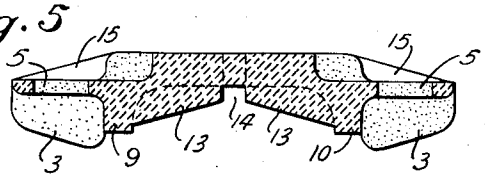


Fig. 5



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CERAMIC RADIANT BROILER BURNER

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6 Claims. (Cl. 158—113)

This invention relates to a radiant broiler for gas stoves.

An object of this invention is to provide a ceramic radiant body of novel construction which adapts it for efficient use in the broiler portion of gas stoves.

Another object of the invention is to provide a novel assembly of a ceramic radiant body on the gas burner tube of the broiler in a gas stove wherein the effective radiating portion of the ceramic body closely overlies the flame ports of the burner tube without interfering with complete combustion at the flame ports.

Another object of this invention is to provide a ceramic radiant body formed with a plurality of depending ribs positioned to be heated by the flame jets of a gas burner tube when the ceramic body is assembled on the gas burner tube.

Another object of this invention is to provide for the dissipation of the gases of combustion from the gas burner tube by which the ceramic radiant body is heated.

Another object of this invention is to provide a plurality of identical ceramic radiant bodies, each adapted to be mounted along any segment of the gas burner tube in the broiler so as to be interchangeable and readily replaceable.

Other and further objects and advantages of the invention will be apparent from the following description.

In the drawings:

Figure 1 is a perspective view of the gas burner tube of the broiler in a gas stove;

Fig. 2 is a fragmentary perspective view showing the assembly of the ceramic radiants of the present invention on a segment of the gas burner tube;

Fig. 3 is a side view of an individual ceramic radiant body according to the present invention;

Fig. 4 is a bottom view thereof;

Fig. 5 is a section across the middle of the ceramic radiant body; and

Fig. 6 is a fragmentary end view of a portion of the gas burner tube and ceramic radiant assembly, showing the relation of the ceramic radiant to the burner ports on the gas burner tube.

Each ceramic radiant according to the present invention is formed as an integral molded clay body having a pair of spaced, oppositely positioned marginal portions 1 and a bridging portion 2 adapted to overlie the gas burner tube of the broiler and provide a physical support for the marginal portions 1. Each marginal portion is formed with a plurality of relatively thin depending ribs 3 spaced evenly along the length of the radiant body. The ribs 3 are interconnected by a relatively thin upper wall 4 in which there are formed apertures 5 between each pair of ribs. These apertures are preferably made as small as possible consistent with good combustion at the burner tube flame ports of the broiler, as will be described hereinafter.

The bridging portion 2 is of a thickness and mass sufficient to make the integral ceramic body strong enough for its intended use. Identical rectangular recesses 6 are formed through the bridging portion 2 at either end thereof half-way between the marginal portions 1. Partially cut away portions 7 and 8 on the bottom face of the bridging portion 2 at either end thereof extend away from the rectangular recess 6, and terminate in depending, flat-bottomed legs 9 and 10, which extend along the entire length of the ceramic body at the junctures of the bridging portion 2 and the marginal portions 1. Between the ends of the ceramic body segments 11 and 12 are cut away at the bottom to reduce the mass of the bridging portion 2. A transverse strengthening rib 13 extends across the bottom of bridging portion 2 between the ends thereof and is formed with a rectangular recess 14 at its middle. Strengthening ribs 15 extend outwardly from the bridging portion to overlie the upper wall 4 of each marginal portion 1.

The gas burner tube 16 for the broiler assembly is supplied with a combustible air gas mixture through mixer 17. The upper face 18 of the gas burner tube is cambered to provide surfaces which slope downward from the middle of the tube along its length toward its sides. A central upstanding rectangular ridge 19 extends lengthwise along the middle of the upper face of the gas burner tube. Rectangular lugs 20 extend upward from this ridge at evenly spaced intervals along its length. Generally wedge-shaped projections 21 are also formed on the upper face of the gas burner tube extending from the sides thereof inward toward the lugs 20 in alignment therewith. The upper faces 22 of these projections 21 are flat and are disposed horizontal. A plurality of gas ports 23 are formed on the sides 24 of the gas burner tube and are directed outwardly and at a slight downward angle.

When assembled, the ceramic radiant bodies are mounted on the top of the gas burner tube to overlie the same. Each ceramic body is disposed between a pair of the upstanding centrally-located burner tube lugs 20, with the rectangular recesses 6 at either end of the radiant body snugly engaging the adjacent lug 20 for half the length of the latter. In this manner, each lug 20 serves as a locator for the adjacent ends of two radiant bodies. The upper flat faces 22 on the burner tube serve as mounting surfaces for the depending legs 9 and 10 of the ceramic bodies. The central rectangular recess 14 on the underside of each ceramic body snugly seats over the central upstanding ridge 19 on the burner tube.

By the provision of these locating studs or ridges on the burner tube and the mating recesses on the ceramic bodies, it will be seen that the ceramic bodies assume a predetermined position relative to the burner tube when mounted thereon. The spacing of the flame ports 23 on the burner tube and the spacing and location of the depending ribs 3 on the ceramic bodies are such that each rib 3 is disposed above and between a pair of flame ports, there being twice as many flame ports as ribs. The depending ribs 3 hang down closely adjacent the flame ports, so that the flames from a pair of ports 23 sweep upwardly over each side of each rib 3 to heat the latter rapidly, as best seen in Fig. 6.

The holes 5 in the upper walls 4 overlying the flame ports permit the escape of the gases of combustion. In addition, the thin construction of the upper marginal walls 4 overlying the flame ports results in a smaller mass of cold material over the flames and thereby permits combustion at the ports 23 to be fully completed. This construction of the upper walls, plus the locating of the ribs 3 at a predetermined position between flame ports 23, permit the ribs 3 to be positioned closely adjacent the flame ports 23 and be heated much faster thereby. This was not possible in former constructions of ceramic radiant broilers because of the smothering effect of a large mass of cold ceramic material overlying the flame ports, such that it was found to be necessary to space the ceramic

body from 1 to 1½ inches above the flame ports to insure complete combustion of the gas under all circumstances. This relatively great spacing of the ceramic body from the flame ports of course had the result that the ceramic body heated up less rapidly, and the overall efficiency of the broiler was inadequate. It is to be understood that essentially all of the radiant heat radiated downwardly from the broiler assembly emanates from the depending ribs 3. The marginal top wall portions 4 and the bridging portion 2 are essentially only physical supports for the several ribs 3, whereby the ribs 3 are properly located with respect to the flame ports 23 in the burner tube and are interconnected in an integral structure of adequate physical strength.

Since the ceramic bodies are identical in construction they may be readily replaced or interchanged, breakage of one of the ceramic bodies requires only replacement of that particular segment and not an entirely new ceramic for the whole length of the burner tube in the broiler. The smaller size of the ceramic segments, compared with the size of a ceramic for the entire length of the broiler burner tube, means that they are more easily formed and less susceptible to breakage.

Each of the ceramic radiants may be provided with a central hole adapted to register with corresponding threaded openings at the top of ridge 19, so that a screw extending through the opening in the ceramic body and threadedly received in the aligned opening at the top of the gas burner tube holds the ceramic body in a positive manner on the gas burner tube. This is especially advantageous when it is desired to ship the assembly of gas burner tube and radiants as a unit.

While there has been described a preferred embodiment of the invention it is to be understood that modifications and variations of the described embodiment may be resorted to without departing from the spirit and scope of the invention.

I claim:

1. A broiler for a gas stove comprising an elongated horizontal gas burner formed with a plurality of evenly spaced pairs of flame ports along its side and a plurality of evenly spaced, upwardly projecting lugs along its top, a plurality of transverse ribs formed on the top of said burner adjacent the side thereof and having the upper surfaces of the ribs disposed in a common plane, and a plurality of identical ceramic bodies each supported on the upper surfaces of said transverse ribs on the burner between adjacent lugs thereon and each formed with a plurality of evenly spaced, thin depending ribs, each said ceramic body being formed at opposite ends with recesses mating with said burner lugs for snugly positioning the ceramic body between adjacent lugs along the top of the burner with each of the depending ribs on the ceramic body disposed midway between the flame ports forming the adjacent pair thereof and spaced thereabove to be contracted on both sides by the flames at said ports.

2. Apparatus as in claim 1, further characterized by a thin horizontal upper wall interconnecting said depending ribs at the tops thereof and formed with apertures between the ribs to liberate the gases of combustion and insure complete combustion at the flame ports.

3. A broiler for a gas stove comprising an elongated horizontal gas burner formed with a plurality of evenly spaced burner ports along both its sides and a plurality of evenly spaced, upwardly projecting lugs along its top, a plurality of transversely extending ribs formed on the top of the burner adjacent the sides thereof and having flat upper surfaces disposed in a common plane, and a plurality of identical ceramic bodies supported on the upper surfaces of said ribs on the top of the burner between adjacent lugs thereon and each formed with a plurality of thin depending ribs along both sides of the body spaced apart a distance equal to the spacing between alternate burner ports, each said ceramic body being formed at opposite ends with recesses mating with said burner lugs for snugly positioning the ceramic body between adjacent lugs along the top of the burner with each of the depending ribs on the ceramic body disposed midway between the flame ports composing an adjacent pair thereof and spaced thereabove to be contacted on both sides by the flames at said ports.

4. Apparatus as in claim 3, further characterized by thin horizontal upper walls interconnecting said depending ribs at the tops thereof on either side of the burner, each said upper wall being formed with apertures located between the ribs and overlying the flame ports to liberate the gases of combustion and insure complete combustion at the flame ports.

5. A broiler for gas stove comprising a horizontal gas burner formed with a plurality of ports disposed in a row and separated from each other by a space, a ceramic body supported on said gas burner, a thin horizontal wall formed on said body extending outwardly from said gas burner above said flame ports, a plurality of evenly spaced ribs extending outwardly from said body and depending from said wall into alternate spaces midway between the flame ports on opposite sides of said alternate spaces whereby a pair of flame ports is disposed between adjacent ribs, the flame ports on opposite sides of each of said alternate spaces being disposed on opposite sides of the rib depending therebetween and arranged so that the flame from each port impinges on one side of each rib whereby opposite sides of each rib are contacted by the flame from two separate flame ports, said horizontal wall having an aperture formed therein between each of said ribs and intermediate the ends thereof to liberate the gases of combustion and insure complete combustion at the burner flame ports.

6. A broiler for a gas stove comprising an elongated horizontal gas burner formed with a plurality of ports disposed in a row along each side thereof and separated from each other by a space, said burner progressively decreasing in depth from the inlet end thereof to the end remote from the inlet to provide more even distribution of the gas to said burner ports, a plurality of projections formed on the top of said burner adjacent the sides thereof having flat upper faces disposed in a plane paralleling said rows of ports, upwardly projecting lugs on said top of said burner, a plurality of identical ceramic bodies each supported on the upper surfaces of said projections on the top of the burner between adjacent lugs and each formed with a thin wall extending horizontally outwardly from opposite sides thereof and overlying said burner ports, a plurality of ribs extending outwardly from opposite sides of said body and depending from said walls and spaced apart a distance equal to the spacing between alternate burner ports, each of said bodies being formed with recesses mating with said burner lugs for snugly positioning the ceramic body between adjacent lugs along the top of the burner with each of the depending ribs on the ceramic body extending into alternate spaces between the burner ports whereby a pair of burner ports is disposed between adjacent ribs, said projections on said top of said burner supporting said ceramic body with said ribs spaced above said burner ports whereby each of said ribs is contacted on opposite sides thereof by the flames from the burner ports, said thin horizontal walls having apertures therein between said ribs to permit the escape of gases of combustion and insure complete combustion at said burner ports.

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