

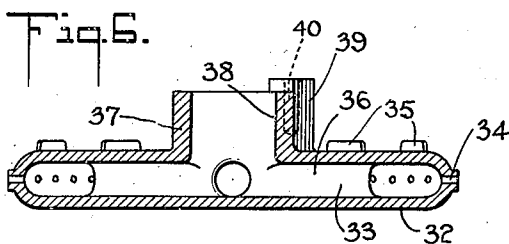
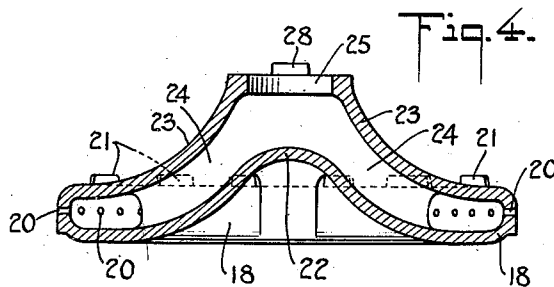
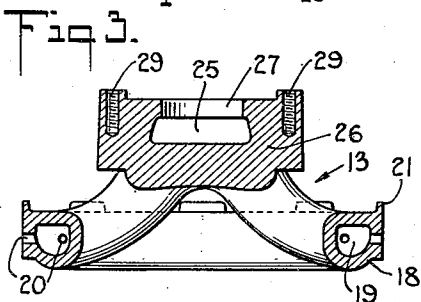
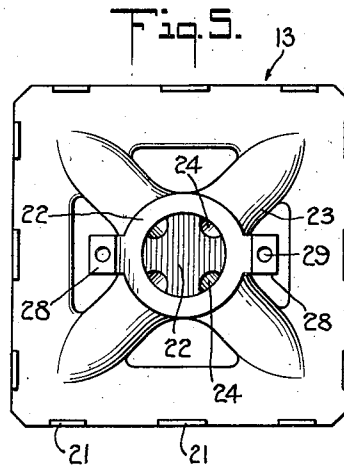
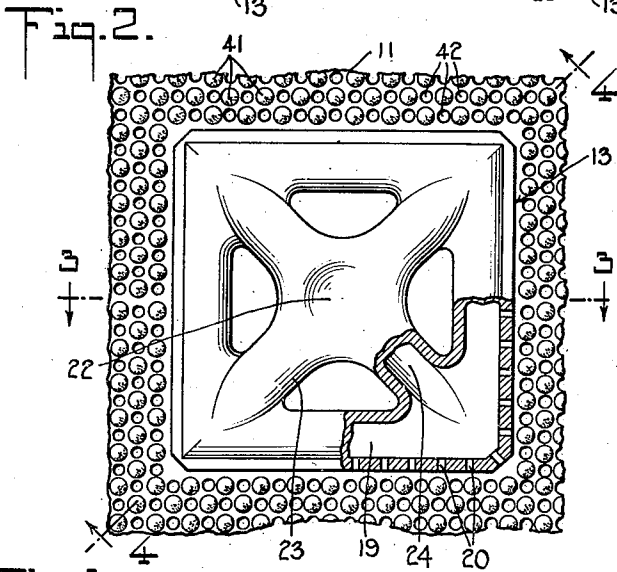
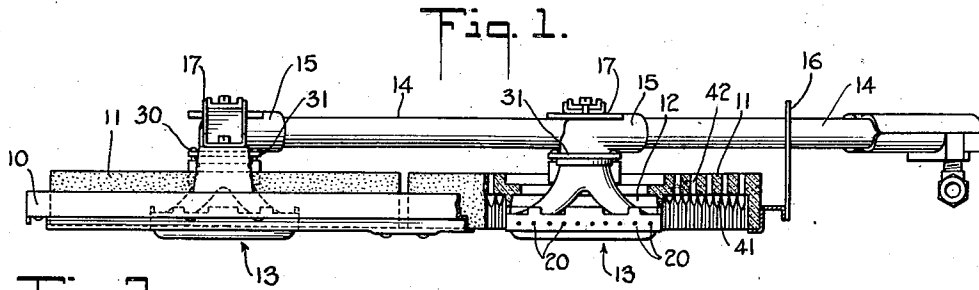
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H. N. CHRISTMAS

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BURNER

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2,255,349

BURNER

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2 Claims. (Cl. 158—116)

My present invention relates to gaseous fuel burners, and more particularly to gaseous fuel burners for use in food-broiling apparatus.

In food-broiling apparatus the higher the concentration of incandescent flame, the better the broiling results, and with my present invention I am enabled to produce highly concentrated incandescence which is rich in penetrative radiant heat rays. With the high concentration of incandescent flame made possible by my present invention there is, in a correctly designed broiler, a very even heating thereby producing a rapid, even broiling of the food product. My improved burners are adapted for use in practically every commercial form of broiling apparatus, and are adapted to be connected in the broiling apparatus with a minimum of effort and in such manner as to be free from strain.

An important feature of my invention is a construction whereby the temperature of the material of the burner is kept at a relatively low point, in contradistinction to previous types of burners wherein in many instances the material of the burner itself is brought to an exceedingly high temperature during operation, with the resultant effect of materially shortening the life thereof.

A feature of my invention is an improved gaseous fuel burner for broilers.

A feature of my invention is a gaseous fuel burner having means for permitting circulation of cooling air about the elements thereof.

Other features of the invention will be apparent as the description of the invention progresses.

In the accompanying drawing,

Fig. 1 is a side elevation partly in section of a broiler;

Fig. 2 is a bottom plan view of my improved gaseous fuel burner—partly in section—in position on the ceramic element of the broiler;

Fig. 3 is a sectional side elevation through my improved gaseous fuel burner taken on the line 3—3 of Figure 2;

Figure 4 is a sectional elevation of my improved burner taken on the line 4—4 of Figure 2;

Figure 5 is a top plan view of my improved gaseous fuel burner illustrated in Figures 1 to 4, and

Figure 6 is a sectional elevation of a modified embodiment of my invention, the section being taken on a diagonal similar to the section shown in Figure 4.

Referring to the drawing, 10 designates the framework of a broiler having positioned therein

radiating broiling elements 11 of ceramic or other heat-resisting material, the ceramic elements being formed in sections and defining a centrally located orifice 12 through which extends the burners designated generally by the reference numeral 13. The burners 13 are provided with suitable gaseous fuel from a suitable source of supply through conduits 14 and elbows 15, such conduits and elbows being supported in operative position on the framework 10 by brackets 16 and 17.

There is shown in Figures 2 to 5 inclusive an embodiment of my invention wherein the base 18 of the burner is substantially rectangular in form thereby conforming generally to the shape of the opening 12 defined by the ceramic elements 11. The base 18, at practically any point, is substantially cylindrical in cross section, is in the form of a hollow square, and has formed therein a tubular passage 19.

The vertical sides of the substantially rectangular base 18 are drilled to form a plurality of perforations 20 and through which from the passage 19 the gaseous fuel may flow in a horizontal direction or in a direction substantially parallel to the cooperative heat radiating face of the ceramic elements 11. Also the top face of the substantially rectangular base 18 is provided on its edge and about the periphery thereof with a plurality of spaced upwardly extending projections 21 which bear against the lower peripheral edge of the passage or opening 12 in the ceramic element 11. As shown, the substantially rectangular base 18 is in the form of a hollow square and therefore it will be apparent that the material of the base 18 is entirely surrounded by and exposed to air which may flow through the passage or opening 12 in the ceramic element 11. Such flow of air is facilitated by the upwardly extending projections 21 which permit the air to flow over the surface of the base 18 in the spaces between such projections 21.

Formed integral with the base 18 and extending upwardly therefrom is a rood-shaped hollow member 22, the lower ends of the arms 23 of which join the base member 18 at the corners thereof. The passages in the arms 23 are designated by the reference numeral 24, and at their upper end communicate with a chamber 25 formed in the upper end 26 of the rood-shaped member 22. The member 26, at the upper end thereof, is provided with a passage 27 communicating with the chamber 25, and which cooperates with the lower end of the elbows 15 to form a gaseous tight joint. Formed at diametrically

opposite points on the member 26 are projections 28 drilled and tapped as indicated by the reference numeral 29 to receive screws 30. The screws 30 pass through an integral flange 31 on the elbows 15, or through a separate member (not shown), the object being to draw the rood-shaped member 22 into gaseous tight association with the elbows 15, and to bring the upper edges of the projections 21 into engagement with the peripheral edge of the passages 12 in the ceramic members 11.

In Figure 6 is shown a modified embodiment of my invention and wherein the substantially rectangular base is designated by the reference numeral 32, the passage therein extending around the periphery thereof being designated by the reference numeral 33, and with the perforations about the periphery of the member 32 being designated as 34. In this modification also the upper edge of the base 32 is provided with the spaced upwardly extending projections 35 which have the same function as the upwardly extending projections 21 in the modification above described. Extending inwardly from the corners of the base 32, and lying in the same plane as such member, are tubular arms 36 formed integral with a central upwardly extending tubular portion 37, the interior bore 38 of which engages with the lower end of the elbows 15. In this modification, also, the tubular upwardly extending member 37 has the diametrically disposed projections 39 drilled and tapped as at 40 to receive the screws 30.

The ceramic elements 11 are provided on their under face with downwardly extending conical projections 41 and the body portion of such ceramic elements 11 are provided with a plurality of perforations 42 through which air may pass. The downwardly extending conical projections 41 are heated to incandescence and radiate a maximum volume of heat for broiling purposes. Situated as it is, the burner 13 is exposed to intense heat, but by the provision of the hollow square base 18 or 32 and spaced from the ceramic elements 11 by the upwardly extending projections 21 or 35, there is a constant flow of air through the passage 12 in the ceramic elements 11 completely around the rectangular bases 18 and/or 32 and this flow of air materially assists in maintaining the burner 13 relatively cool. As an example, the ordinary temperature of the burner

13 in the usual prior devices of this type is approximately 1,100°, whereas with my improved device the operating temperature of the burner 13 is approximately 360°.

Whereas I have described my invention by reference to specific forms thereof, it will be understood that many changes and modifications may be made without departing from the spirit of the invention.

I claim:

1. An improved broiler comprising, in combination, a framework, a ceramic broiler element mounted thereon and provided with a plurality of projecting heat radiating points and with a centrally arranged orifice, a gaseous fuel burner secured to the framework and extending through the orifice, said burner having a hollow tubular substantially rectangular base in the form of a hollow square, a plurality of perforations on the peripheral edge of the base to direct gaseous fluid in a direction parallel to the ends of the plurality of heat radiating points, and a plurality of projections arranged in spaced relation on the base for engaging with the ceramic broiler element about the perimeter of the said orifice, whereby the base is maintained out of contact with the broiler element and free circulation of air about the base is permitted.

2. In an improved gaseous fuel burner in combination with a ceramic designed to radiate heat, a base tubular in cross-section and bounding an open area and having a plurality of perforations extending through the exterior sides thereof for affording flow of gaseous fluid from the base in a plane parallel to a face of the ceramic, a hollow member formed integral with the base on one face thereof and having an upwardly extending portion, means on said upwardly extending portion for connecting the burner to a source of fuel supply, and upwardly extending members spaced about the upper peripheral edge of the base for positioning the ceramic with regard to the base, whereby the upper surface of the base is spaced apart from the ceramic to position the plurality of perforations in the exterior sides of the base below the ceramic and the spaces between adjacent upwardly extending members are unobstructed and afford flow of air over and across the top surface of the base.

HENRY NUNN CHRISTMAS.