

May 25, 1937.

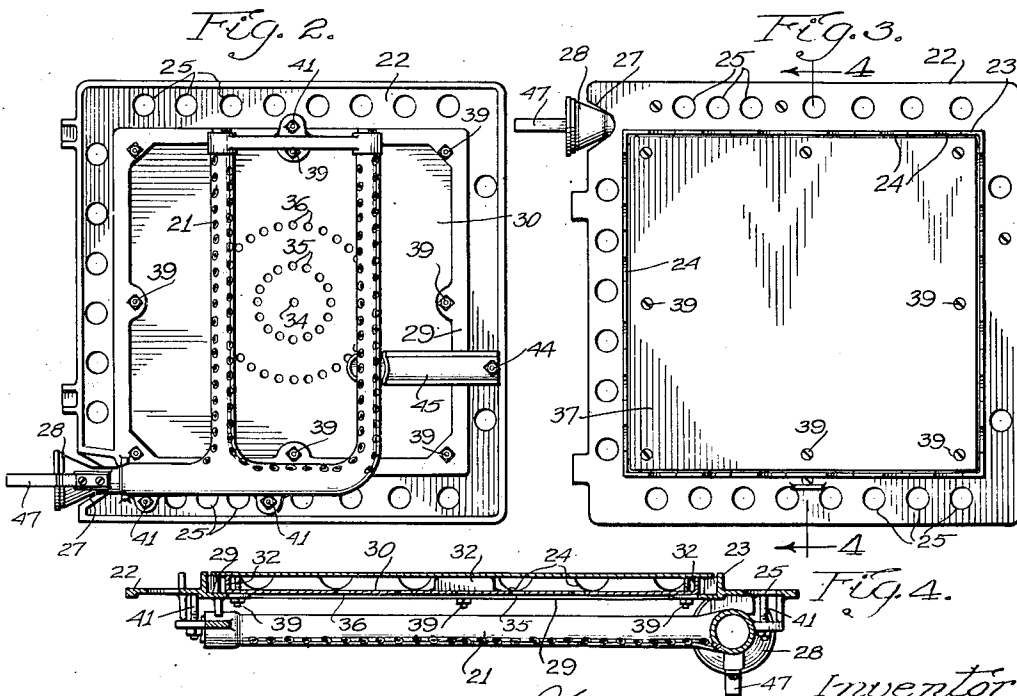
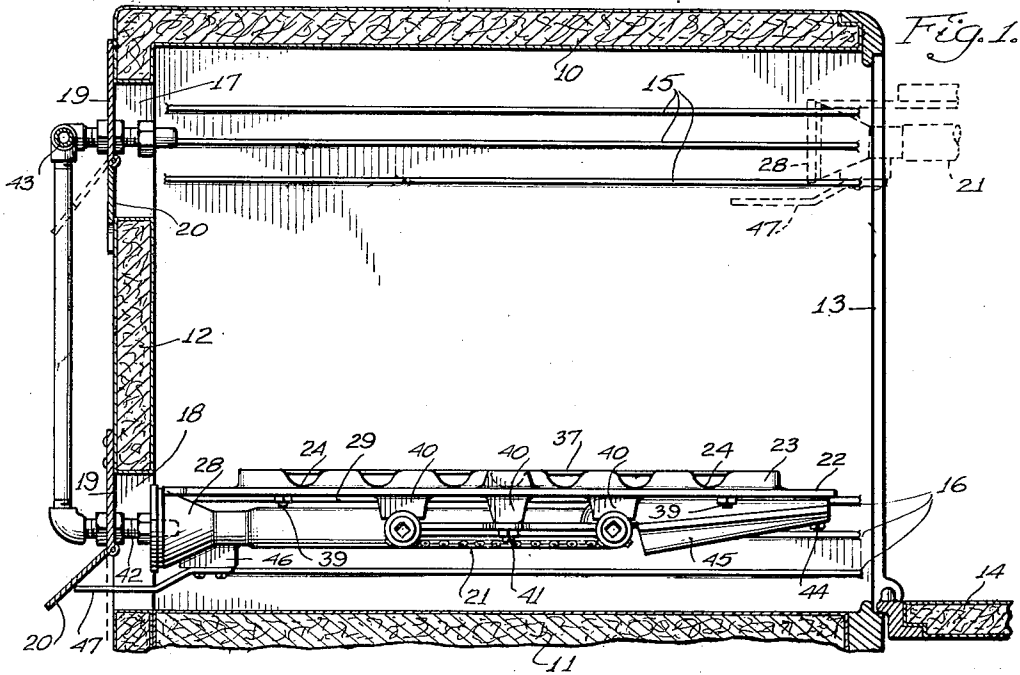
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2,081,560

BURNER PLATE FOR STOVE OVENS

Filed Nov. 4, 1935

2 Sheets-Sheet 1



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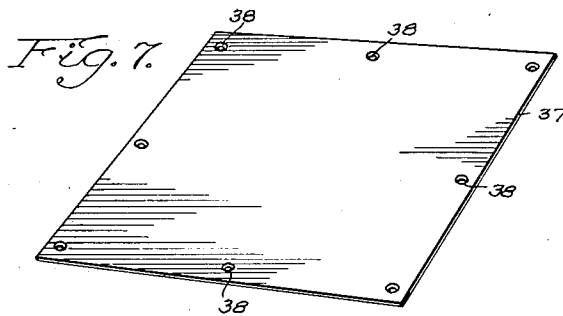
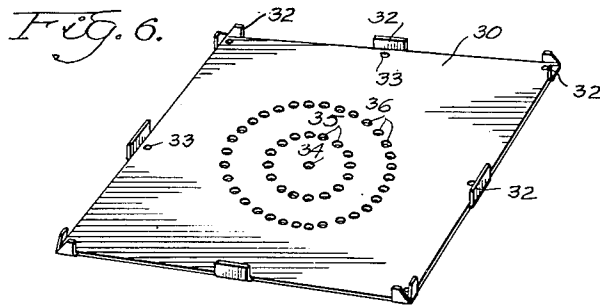
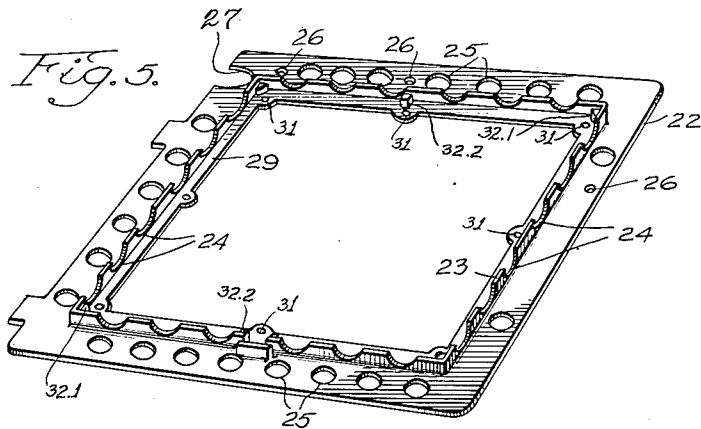
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,081,560

BURNER PLATE FOR STOVE OVENS

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5 Claims. (Cl. 126—36)

This invention relates to combination coal and gas ranges of that type which are equipped with oven gas burners which are removably mounted in the oven so that the latter can be used with either coal or gas as the heating agent, and the present invention is concerned with a new and improved composite burner plate for such ovens. An early form of such device consists of a plain rectangular sheet metal plate removably supported on the side ledges of the oven walls and having a burner mounted on its under side. This device was impractical because the intense heat of the burner soon warped the plate so severely that it became useless as a support for the cooking pots and pans. In a later development of this idea, the single plate was replaced by a double plate with an air space between the twin plates, but this too would not stand the heat to which it was subjected without warping out of shape.

Experiments with oven burner plates of this type convinced me that to remedy the faults above noted provision must be made for an adequate circulation of air through and around the plate itself to hold the heat absorbed by the plate down to a non-warping point, and hence the object of the present invention has been to provide an oven burner plate or grid having structural and ventilation features adequate to prevent any deformation of the plate or grid itself and any consequent displacement of the burner attached thereto under the heat to which it is subjected.

One practical and successful embodiment of the invention is illustrated in the drawings accompanying this specification, it being understood that many of the structural details may be varied within the spirit and purview of the invention and within the scope of the claims; and in the said drawings—

Fig. 1 is a vertical front to rear section of the oven, with its door in opened position, showing my improved burner plate in side elevation therein.

Fig. 2 is a bottom plan view of the burner plate.

Fig. 3 is a top plan view of the same.

Fig. 4 is a vertical section on the line 4—4 of Fig. 3.

Figs. 5, 6 and 7 are isolated perspective views of the three principal elements of the structure, Fig. 5 showing the cast iron frame, Fig. 6 showing the bottom plate, and Fig. 7 showing the top plate.

Fig. 1 shows in vertical section a conventional

form of oven having insulated top, bottom and rear walls 10, 11 and 12 respectively, front opening 13, and hinged oven door 14. On the side walls of the oven are the usual upper and lower groups of ledges 15 and 16 which, in the case of a coal range support removable shelves for the baking pots, pans, etc., and which, when the oven is heated by gas, form supports for the gas burner plates. In this figure my improved burner plate is shown mounted on the uppermost ledge of the lower group 16. In the rear wall 12 are upper and lower openings 17 and 18 which, when the oven is heated by solid fuel such as coal or wood, are closed by fixed plates 19 spanning the upper portion of the openings and hinged plates or shutters 20 spanning the lower portion of the openings. When the oven is heated by gas, as illustrated in Fig. 1, the shutters 20 are automatically opened to admit secondary air to the gas burner, by means hereinafter described.

Describing now my improved ventilated burner plate, this is a composite structure comprising, in addition to the burner 21, three principal associated parts or members as follows.

22 designates as an entirety a rectangular cast iron frame, shown in isolated perspective in Fig. 5. On the top surface of this frame between its outer and inner edges is a low vertical ridge or flange 23 formed with spaced notches or scallops 24. The portion of the frame lying outside the ridge 23 has air vent holes 25 and bolt holes 26 and a notch 27 to accommodate the usual burner mixer cone 28; and the portion of the frame lying inwardly of the ridge 23 is slightly countersunk and forms a ledge 29 to support the bottom plate 30 (Fig. 6), and has bolt holes 31. The bottom plate 30 is formed with upstanding spacing lugs 32, at its edges, and with bolt holes 33 that register with the bolt holes 31 of the frame 22. The bottom plate 30 is also formed with numerous spaced holes in its central portion, herein shown as consisting of a central hole 34 and two or more concentric rows 35 and 36 of holes surrounding the central hole 34. This bottom plate 30 is seated on the ledge 29, as shown in Figs. 2 and 4.

A plain rectangular top plate 37 (Figs. 3 and 7) is seated on the spacing lugs 32 of the bottom plate, and on lugs 32.1 and 32.2 cast on the frame 22, and lies snugly within the top portion of the ridge or flange 23 of the frame, as shown in Figs. 1 and 3. This top plate 37 is formed with countersunk marginal holes 38 that register with the holes 33 of the bottom plate and the holes 31 of the frame ledge 29. Through these register-

ing holes extend bolts 39 by which the top and bottom plates and the frame are all securely locked together.

To lugs such as 40 (Fig. 1) on the under side of the frame 22 is secured by bolts 41 the burner 21, with its mixer cone 28 partly occupying the notch 27 of the frame and registering with one of the nozzles 42 of the gas supply pipe 43 at the rear of the oven. To the under side of the frame 22 is attached as by a bolt 44 (Figs. 1 and 2) a lighter tube 45 extending from one limb of the burner to the outer edge of the frame 22 to facilitate the lighting of the burner from the open end of the oven. Also, attached to a lug 46 on the under side of the mixer nozzle 28 is a finger 47 which, as the burner plate is slid into the oven to final position strikes and opens the shutter 20 thereby admitting a supply of secondary air to the burner.

From the foregoing it will be apparent that when the burner is ignited a considerable portion of the burner gases impinging on the bottom plate 30 will pass through the holes 34, 35 and 36 in the latter into the box-like space or chamber 25 between the top and bottom plates, whence it is free to escape radially through the lateral notches 24 in the ridge or flange 23 of the bottom plate. Thus the highly heated gases liberated within the oven are not trapped between the two plates but can circulate freely throughout the oven space. With the burner located on the lower support 16 food to be baked may be deposited on the top plate 37 of the burner, which top plate does not become excessively heated on account of the free circulation of the oven gases beneath it. When the burner plate is to be employed for broiling, it is applied to the upper supports 15 in the same manner as to the lower supports, and in such position it serves as a broiler for steaks, chops and the like.

Practical tests with this burner plate have proved that the faults of warping and other deformation of the plate by the intense heat of the burner have been successfully overcome, the parts of the structure retaining their original forms and relative positions. Marginal vent holes 25 in the frame member permit circulation of the oven gases between the oven spaces above and below the burner plate, and this feature also contributes to maintaining the temperature of the structure at such a point that the parts thereof will not be injured.

I claim:

1. A composite burner plate for ovens, comprising a rectangular frame adapted to be slidably supported on the ledges of the oven walls, said frame having an upstanding ridge thereon inwardly set from its outer edges and formed with transverse vent openings, an apertured bottom plate mounted on said frame within said ridge, an imperforate top plate overlying said bottom plate, spacing lugs between said plates which so position said top plate that said transverse vent openings serve to vent the space defined by said top and said bottom plates, and a burner attached to said frame and underlying said bottom plate.

2. A composite burner plate for ovens, comprising a rectangular frame adapted to be slidably supported on the ledges of the oven walls, said frame having an upstanding ridge thereon inwardly set from its outer edges and formed with transverse vent openings and a ledge which extends inwardly of said ridge, an apertured bottom plate seated on said ledge, an imperforate top plate overlying said bottom plate, spacing lugs between said plates which so position said top plate that said transverse vent openings serve to vent the space defined by said top and said bottom plates, and a burner attached to said frame and underlying said bottom plate.

3. A composite burner plate for ovens, comprising a rectangular cast iron frame adapted to be slidably supported at opposite edges thereof on the ledges of the oven walls, said frame having an upstanding ridge thereon parallel with and inwardly set from its outer edges and scalloped to form transverse vent openings, vent holes through the portions thereof lying outside said ridge, and a countersunk ledge inwardly of said ridge, a bottom plate seated on said ledge and formed with a central group of holes and with upstanding marginal spacing lugs, a flat imperforate top plate seated on said lugs with its top surface substantially flush with the top edge of said ridge, bolts uniting said frame and top and bottom plates, and a burner attached to said frame and underlying said bottom plate.

4. In a removable burner plate structure of the class described, a frame having the general form of a hollow rectangle, a generally flat, imperforate top plate, a flat bottom plate having a plurality of apertures formed centrally therein, means for supporting said plates upon said frame in spaced, superposed relation whereby a box-like space is enclosed between said plates, said frame having an upstanding ridge thereon which is adapted to generally enclose the sides of said box-like space, said ridge being provided with a plurality of openings which define vents along the sides of said box-like space, and a burner supported upon said frame and underlying said bottom plate.

5. In a removable burner plate structure of the class described, a frame having the general form of a hollow rectangle, a generally flat imperforate top plate, a flat bottom plate having a plurality of apertures formed generally centrally therein, means for supporting said plates upon said frame in spaced superposed relation whereby a box-like space is enclosed between said plates, said frame having an upstanding ridge thereon which is set inwardly from the outer edges thereof and which is adapted to generally enclose the sides of said box-like space, said ridge being provided with a plurality of openings which define vents along the sides of said box-like space, and a burner supported upon said frame and underlying said bottom plate, the portions of said frame lying between said ridge and the outer edges thereof being provided with a plurality of spaced vent holes or openings.

WALTER F. ROGERS.