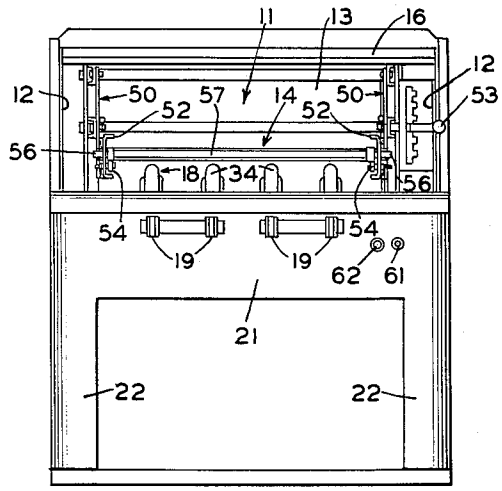
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GAS FIRED COOKING RANGE

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FIG. 1



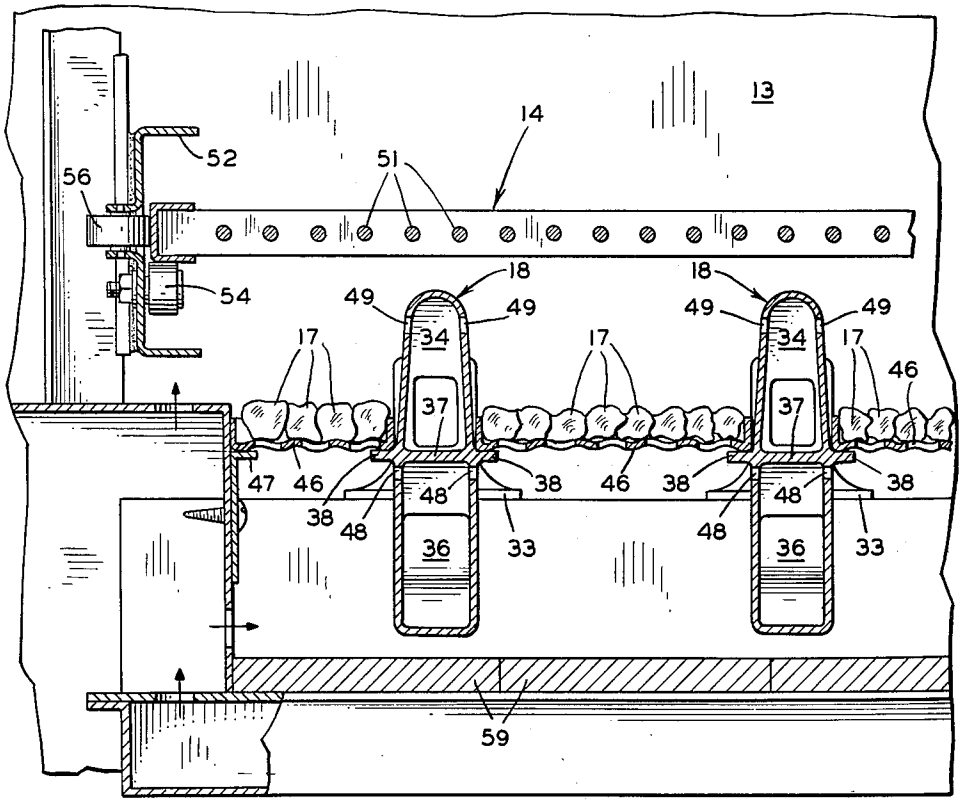


FIG. 2

INVENTORS
ROBERT J. YAGLEY
ELMER A. FISCHER

BY M.R. Marsh
ATTORNEY

May 21, 1963 R. J. YAGLEY ETAL 3,090,373

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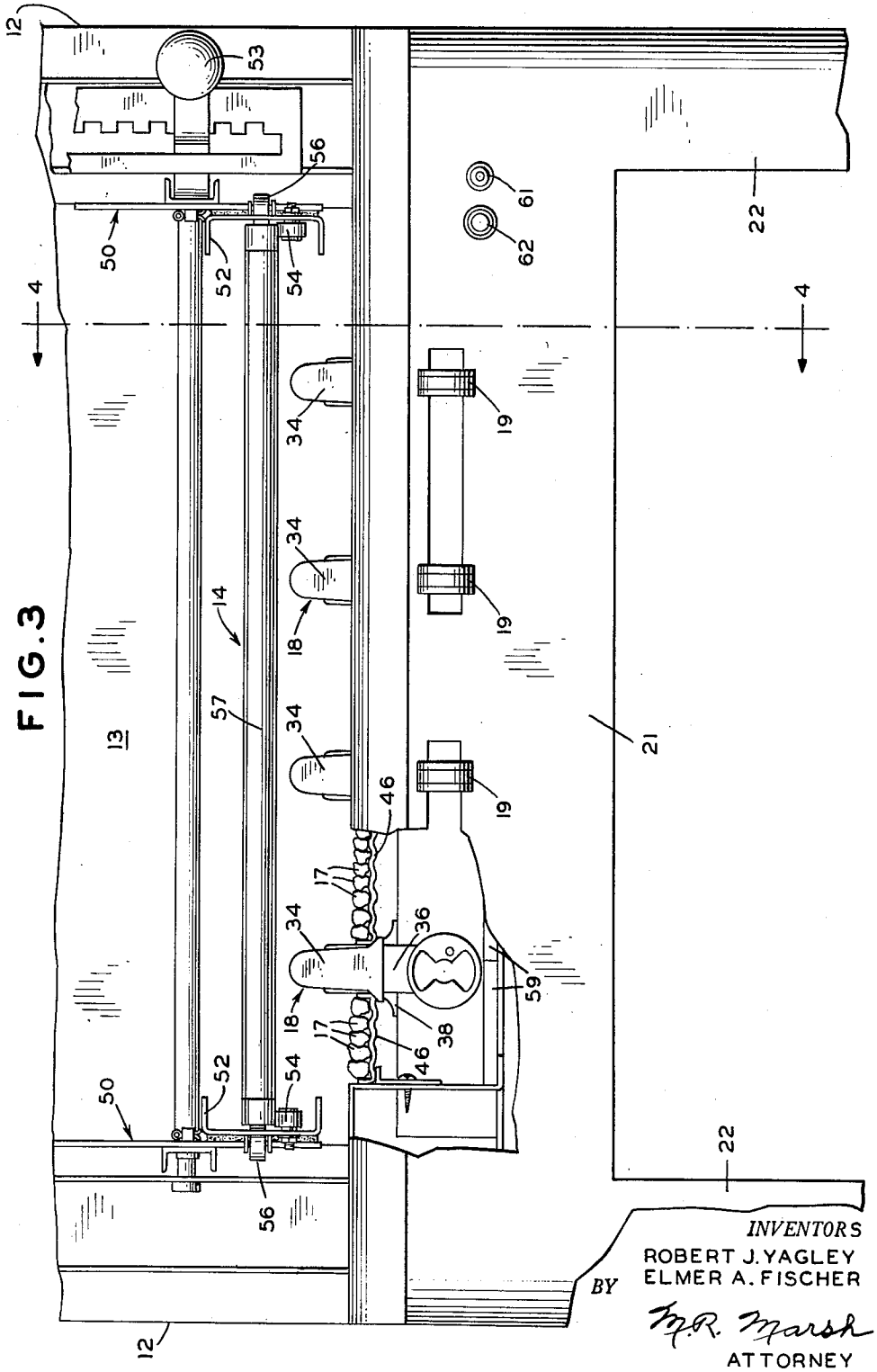


FIG. 3

INVENTORS
ROBERT J. YAGLEY
ELMER A. FISCHER
BY
M. R. Marsh
ATTORNEY

May 21, 1963 R. J. YAGLEY ETAL 3,090,373

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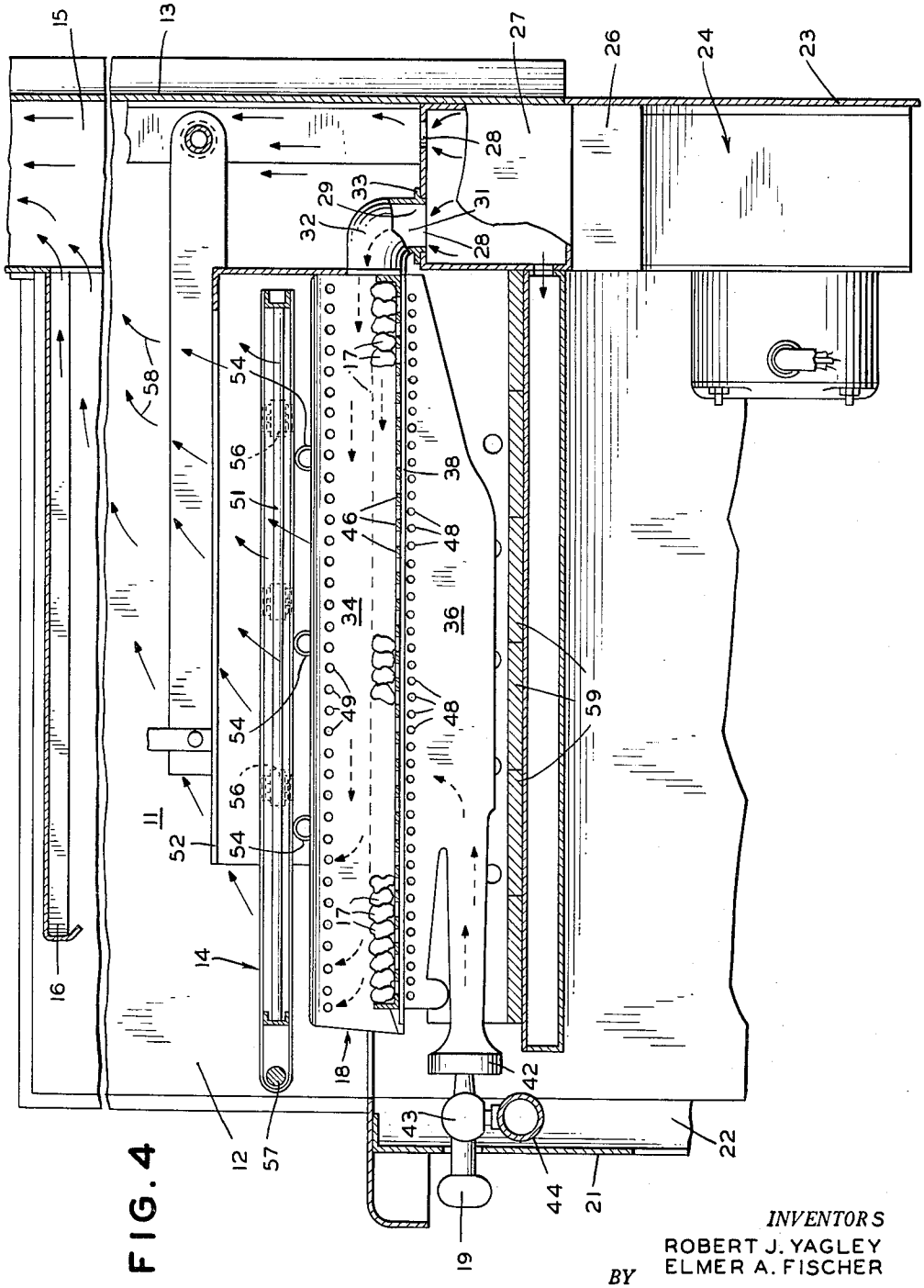


FIG. 4

INVENTORS
ROBERT J. YAGLEY
ELMER A. FISCHER

BY M. R. Marsh
ATTORNEY

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GAS FIRED COOKING RANGE

Robert J. Yagley and Elmer A. Fischer, Hicksville, N.Y., assignors to Welbilt Corporation, Maspeth, N.Y.

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6 Claims. (Cl. 126—41)

The present invention relates generally to gas-fired cooking ranges or stoves and more particularly to the type of cooking ranges or stoves having an open hearth adapted for grilling, roasting, broiling and/or barbecuing meats and the like.

An object of the present invention is to provide an improved gas-fired open-hearth cooking range or stove of the type employed to cook meats or the like on a grill above a bed of glowing or radiant refractory lumps, briquettes or similar articles heated from below by gas flames.

A further object of the invention is to provide an improved gas burner for use in such types of stoves enabling the gas flames to be evenly distributed under the entire bed of briquettes or selected areas thereof.

Another object of the invention is to provide a novel arrangement for introducing a supply of air between the glowing bed of briquettes and the grill to promote incineration of grease and fat drippings from meat on the grill thereabove. In this connection a still further object of the invention is to preheat the combustion promoting air and to distribute the same relatively evenly over the entire bed of briquettes without any blasting effect over any section of the bed.

Still another object of the invention is to provide a burner for distributing the gas under the bed of briquettes to provide a plurality of relatively small individual flames and incorporating therein in a unitary structure means for distributing the combustion promoting air over the bed.

A feature of the burner is the provision of means for preventing the clogging or blocking of the relatively small gas ports by drippings falling on the burner or through the bed of briquettes. Still another feature of the burner is that they provide means for assisting in the support of the bed of briquettes and a separate grate therefor is not required.

Still another feature of the present invention is the provision of means for inducing products of combustion, hot air, flames, etc., rising from the bed of briquettes or meats on the grill thereabove to flow toward the rear of the stove.

The above and further objects, features and advantages of the present invention will be more apparent in the following detailed description of the preferred embodiment wherein reference is made to the accompanying drawings forming a part hereof and in the latter of which:

FIG. 1 is a front elevational view of an open-hearth stove incorporating the features of the present invention;

FIG. 2 is an enlarged vertical sectional view of a section of the stove;

FIG. 3 is an enlarged front elevational view of the stove with a part of the front panel broken away to more clearly show the burner arrangement; and

FIG. 4 is an enlarged vertical sectional view taken substantially on line 4—4 of FIG. 3.

Referring now to the drawings and particularly FIG. 1, the open-hearth stove of the present invention includes a cooking enclosure or chamber 11 having side panels 12 and a back panel 13. Suitably supported in the cooking enclosure 11 is a horizontal grill 14 upon which the food to be cooked is placed. In the preferred embodiment of the invention the grill 14 is arranged to be raised and lowered as well as to be slid in and out of the cooking enclosure.

The enclosure 11 is open at the front and the top is partially closed by a warming shelf 16 to the rear of which is an opening preferably leading to a hood or vent 15, FIG. 4. The base or bottom of the cooking enclosure has a layer of refractory lumps or briquettes 17 or the like, which are separated by a plurality of longitudinally extending so-called burner-air distributors or simply burners 18. In the embodiment of the invention shown in the drawings there are four of these burner-air distributors 18 and each has a respective gas valve control knob on the front panel 21.

The burners 18 and refractory lumps or briquettes 17 comprise what is hereinafter termed the open-hearth of the stove and it is supported by suitable structure at a convenient working height. The supporting structure may include lower side panels 22 as well as a lower back panel 23.

Suitably mounted on the back panel 23 is an electric motor driven blower 24 which has an upwardly extending discharge duct 26. The duct 26 is adapted to convey the discharge from the blower to an air manifold 27. The air manifold 27 as best shown in FIG. 4 is rectangular in cross section and extends transversely along the back of the stove in the general area of the hearth. The air manifold has a series of discharge ports or openings 28 in the upper surface thereof.

Four of the ports in the top front of the manifold 27 are somewhat larger than those along the rear and each of these ports is adapted to receive the downwardly extending end 31 at the rear end 32 of a respective burner-air distributor 18. The ends 31 extending into the ports 28 assist in positioning the units and maintain the openings therein in registry with the ports 28. The ends 32 of the burners 18 have collars 33 which rest upon and are supported by the upper surface of the air manifold 27.

The burners 18 extend the full depth of the hearth and, as best shown in FIG. 2, each burner has two separate chambers extending substantially the full length thereof. These chambers are located one above the other and the upper one identified by reference numeral 34 is called the air chamber while the lower chamber 36 is called the gas chamber. There is no communication between the two chambers 34 and 36 and the burners may be made by any suitable process or a suitable manner, preferably a single casting. The two chambers of a burner are separated by a horizontal section 37 which, for purposes hereinafter pointed out, extend outwardly from the sides to form projections or ledges 38.

The front ends of the gas chambers of the burners 18 terminate in injector sections 42 where gas flowing through valves 43 is mixed with combustion supporting air and discharged into the gas chambers. The valves 43, one for each burner, are controlled by the knobs 19 and regulate the gas flow from the gas manifold 44 suitably supported in the front frame structure of the stove.

Extending between adjacent burners 18 and resting upon the ledges 38 are shallow tray-like members 46 formed of wire or a mesh. Preferably the members are fabricated of "Inconel" or an equivalent material which glows at a relatively low temperature. At the sides of the hearth the members are suitably supported by brackets such as 47 secured to the frame structure. The tray members 46 hold the bed or layer of refractory lumps 17, briquettes or the like which when heated are adapted to glow and simulate glowing charcoal.

Just under the ledges 38 of the burners are a series of relatively small and relatively closely spaced gas ports

48 extending the full length of the burners. The ledges, 38 protect the gas ports 48 and prevent them from being blocked or clogged by unburnt grease or drippings or other substances falling through or from the bed of refractory lumps 17 thereabove.

Along each side of the burners adjacent the tops are a series of air ports 49 leading to the air chamber 34. When the blower 24 is operating air delivered to the burner air chambers 34 is directed outwardly through the ports 49 over the refractory lumps 17.

The grill 14 comprises a rectangular frame with a plurality of spaced apart rods 51 upon which the articles to be cooked are placed. The grill is horizontally positioned and in the preferred embodiment is adapted to be raised and lowered by suitable mechanism indicated generally by reference numeral 50. This mechanism includes a pair of opposed channel members 52 and an operating handle 53. In addition the grill is adapted to slide in and out over the hearth and is guided for this movement by rollers such as 54 and 56 in the channel members 52. A handle 57 is provided at the front of the grill.

From the above-described arrangement, it will be apparent that in the use of the stove one or more of the burners can be employed at a time and suitable pilot lights may be provided for lighting the same. The number of burners employed will depend on what portion of the grill the articles to be cooked covers and when only a part of the grill is covered, say only the central portion for example, only the two central burners will be used. Since each burner has a separated control valve any respective longitudinal section of the hearth can be independently heated.

The flames from the gas issuing from the two rows of ports 48 on the sides of a burner 18 heat the mesh trays 46 and the refractory lumps 17 thereon to cause them to glow and become incandescent. Since the gas, by virtue of the relatively large number of small gas ports 48 is relatively evenly distributed in the areas adjacent an operating burner, the lumps 17 in these adjacent areas are therefore evenly heated.

When an article to be cooked, such as a piece of meat, is placed on the grill 14 over heated and glowing lumps 17 in the hearth, melted grease, fat and the like drip upon the heated lumps 17 where they are ignited and burn. The flames of these drippings impinge upon the meat to additionally heat and cook the same as well as to give the meat an attractive flavor and appearance. Normally the heated air rising from the heated lumps 17 has insufficient oxygen to enable the drippings to be completely burned and/or incinerated and a feature of this invention is the means for providing additional heated air substantially evenly distributed over the glowing lumps. This permits substantially complete burning of the fat drippings which adds to the heat energy for the cooking operation as well as enhancing the flavoring of the meat. This heated air is supplied through the air ports 49 in the upper sides of the burner air chambers which in turn is supplied by air from the blower 24. The gas flames heat the burners 18 which in turn heat the air in the air chambers 34 before it is discharged and thus the air in absorbing some of the heat of the burners tends to keep them cooler than would otherwise be the case.

The air discharged upwardly from the ports 28 along the rear of air manifold 27 induce the heated air, gases and smoke from the hearth toward the rear of the stove and up the flue 15 in the manner indicated by the arrows 58, FIG. 4. Thus these hot gases are directed away from the stove operator.

A layer of fire brick such as 59 may be placed in the bottom of the hearth if desired. A switch 61 for the motor driven blower 24 as well as a pilot lamp 62 is provided on the front panel.

From the above description it can be seen that the present invention provides an open hearth type stove having many advantages and improvements over those previously available. It will also be apparent to those skilled in the art that various modifications and variations of the invention can be made without departing from the scope or essential attributes thereof and it is desired therefore that only such limitation be placed thereon as are imposed by the appended claims.

What is claimed is:

1. In a gas-fired open-hearth type stove, a plurality of spaced apart parallel gas burners extending from one edge of the hearth of said stove to the other and supported at the ends thereof, an air manifold adapted to contain air under pressure extending along the back of said hearth and providing the support for one end of said burners, a plurality of air discharge ports along the top of said manifold, horizontal mesh trays between said burners, beds of refractory lumps supported by said trays, means including said burners for supporting horizontal mesh trays containing beds of refractory lumps between the same, means including said burners for distributing gas along the sides thereof to be burnt in substantially flat horizontal thin and continuous flames the length of said burners and below said lumps to heat the same and means also including said burners for distributing air from said discharge ports of said manifold to form a substantially flat, thin, horizontal wave of air the length of said burners above said lumps and substantially parallel to said flames.

2. The combination set forth in claim 1 and means including said burners for heating the air prior to discharge therefrom.

3. In an open-hearth gas-fired type stove having an open-front cooking enclosure and a hearth including a bed of refractory material heatable to incandescence, mesh trays for supporting said refractory material, a plurality of spaced apart gas burners in said hearth supported at their ends and extending from the front toward the back of said cooking enclosure and in turn supporting said mesh trays for said refractory material, and having respective sections extending above and below said bed of refractory material, means including said burners for distributing gas below said bed from the sides thereof and along the length of said burners to be burnt to heat said refractory material thereabove, an air manifold adapted to contain air under pressure along the rear of said hearth, means including said burners for distributing air from said manifold in a substantially horizontal layer over said refractory material and means including discharge ports along the top of said air manifold whereby air passing therethrough induces gases and products of incineration issuing from said refractory material to the rear of said cooking enclosure.

4. The combination set forth in claim 3 including an open food grill spaced above said hearth and above the air layer discharged from said burners, said air layer assisting in the burning of drippings from food on said grill onto said refractory material.

5. In a gas-fired open-hearth type stove, a plurality of laterally spaced apart parallel gas burners extending from the front to the back of the hearth of the stove and supported at the ends thereof, an open food grill above said hearth, open mesh trays between said burners, beds of non-combustible refractory material lumps supported by said trays between adjacent ones of said burners, said burners each having respective sections extending downwardly below the bottom level of said lumps and upwardly above the top level of said lumps, gas chambers in the sections of said burners below said lumps and air chambers in the sections of said burners above said lumps, gas ports in said gas chambers below said beds for the discharge of gas in a substantially horizontal direction below said lumps and adapted to be burnt for heating the lumps, said lumps when heated supplying heat for

cooking food or the like on the grill above said hearth, air ports in said air chambers above said beds for the discharge of air in a substantially horizontal direction above said lumps and between said hearth and grill for aiding the burning and incineration of drippings from the food on said grill.

6. The combination set forth in claim 5 and including projections on the sides of said burners above said gas ports to support said trays of refractory lumps and to shield said ports from drippings and the like falling through said refractory material lumps.

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