

(No Model.)

3 Sheets—Sheet 1.

# J. GIBBONS, Jr. GAS BROILER.

No. 594,394.

Patented Nov. 30, 1897.

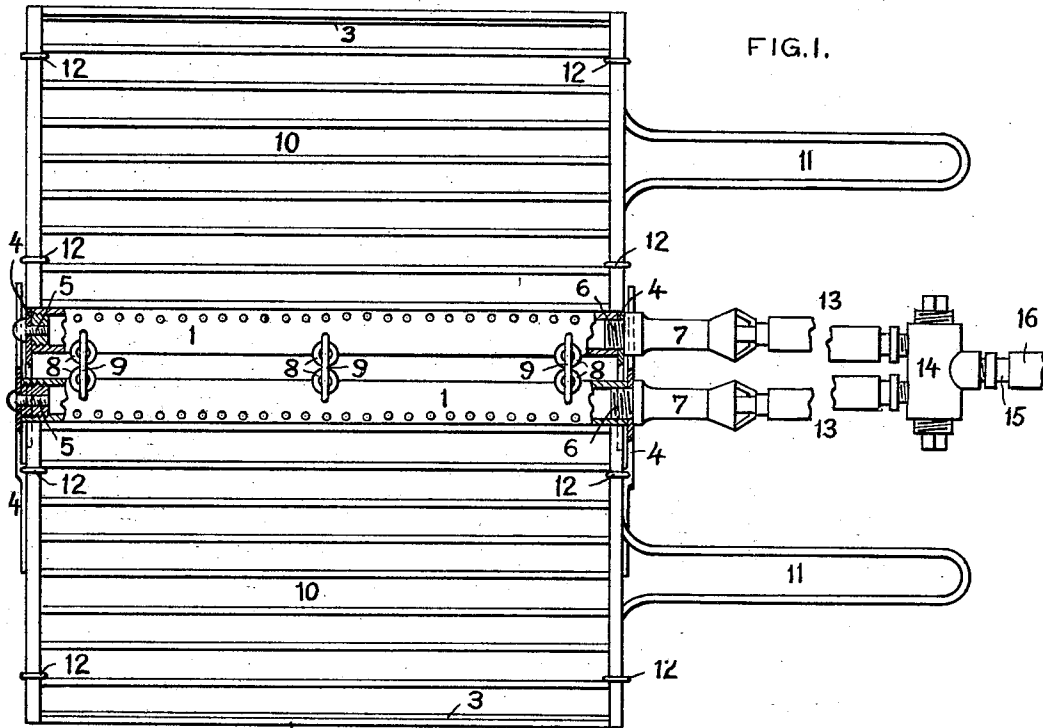


FIG. 1.

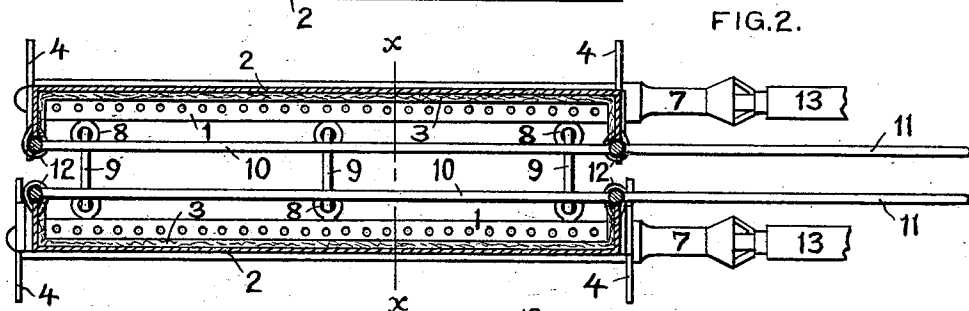
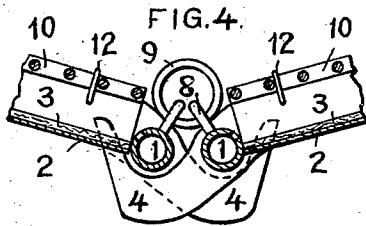


FIG. 2.



WITNESSES:

*Donn Twitchell*  
*Robert V. Smith*

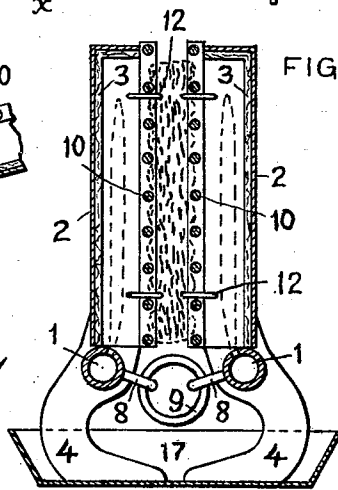
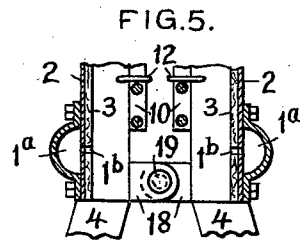


FIG. 3.



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(No Model.)

3 Sheets—Sheet 2.

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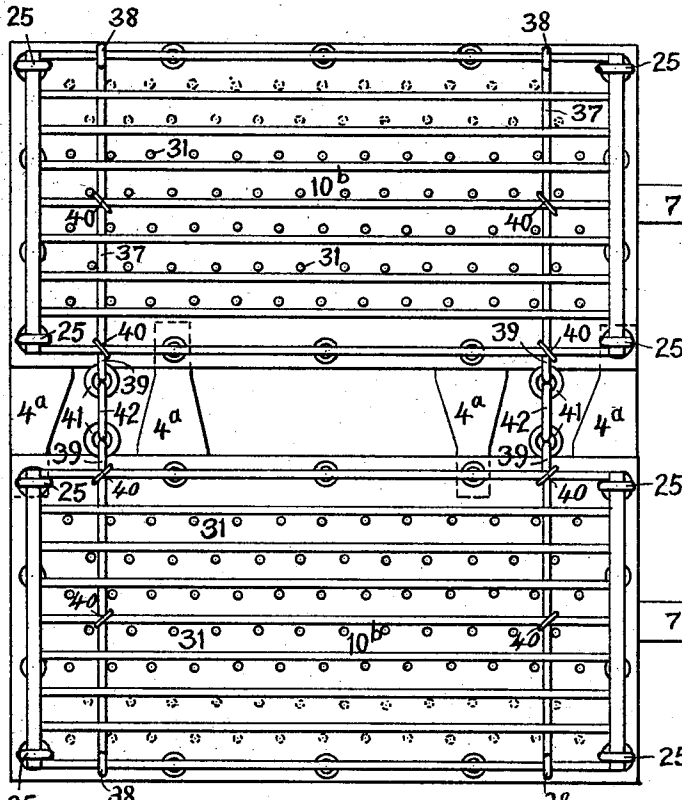
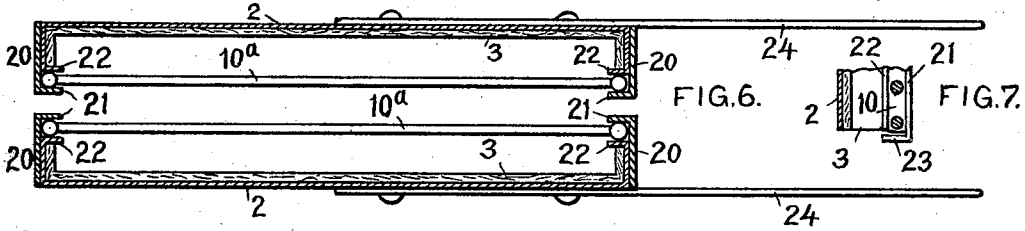


FIG. 8.

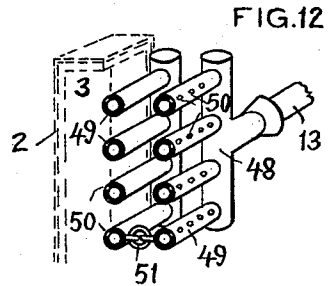
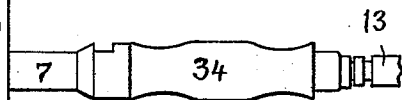


FIG. 12.

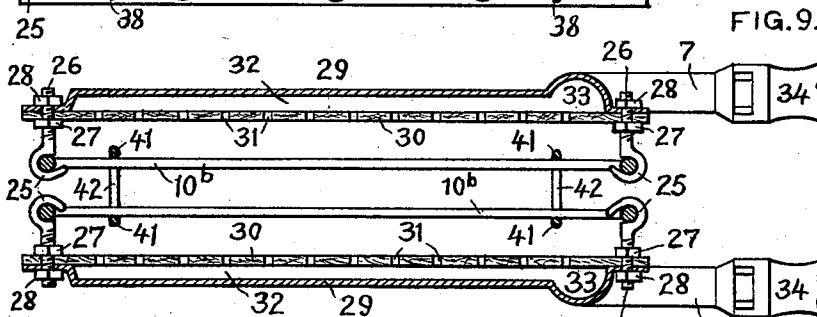


FIG. 9.

FIG. 10.

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*Donna Turzheff*  
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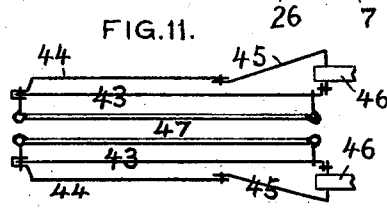


FIG. 11.

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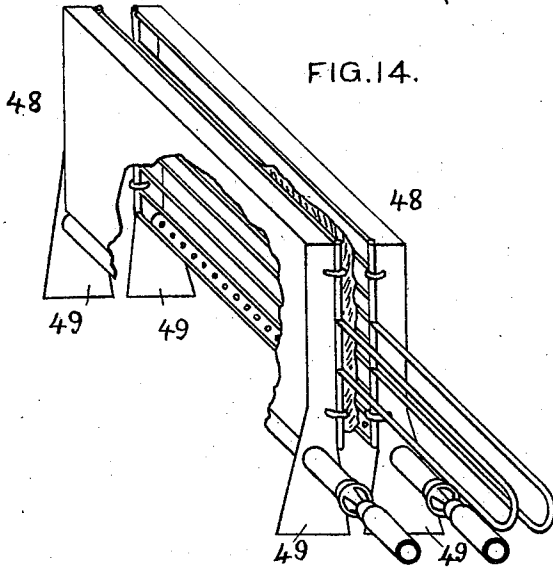
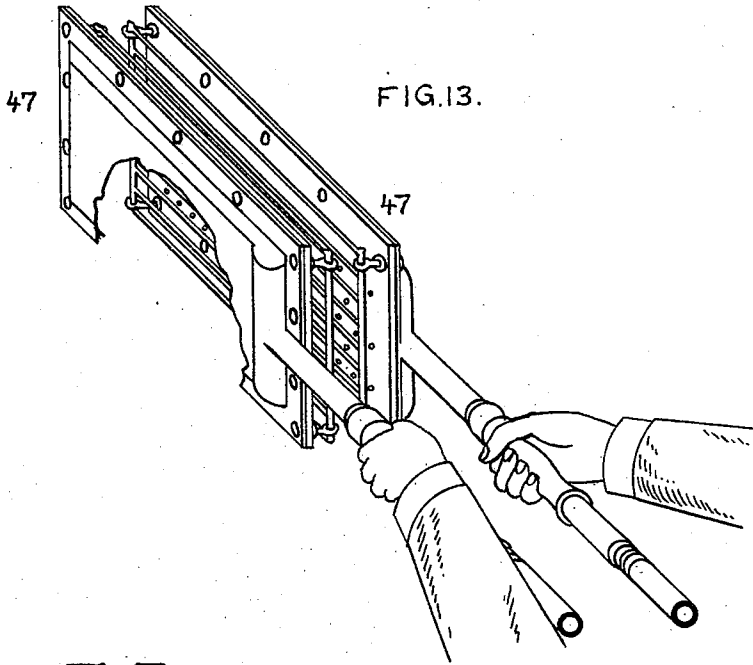
(No Model.)

3 Sheets—Sheet 3.

J. GIBBONS, Jr.  
GAS BROILER.

No. 594,394.

Patented Nov. 30, 1897.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JAMES GIBBONS, JR., OF JERSEY CITY, NEW JERSEY.

## GAS-BROILER.

SPECIFICATION forming part of Letters Patent No. 594,394, dated November 30, 1897.

Application filed May 27, 1896. Serial No. 593,215. (No model.)

### *To all whom it may concern:*

Be it known that I, JAMES GIBBONS, Jr., a citizen of the United States, residing at Jersey City, Hudson county, in the State of New Jersey, have invented certain new and useful Improvements in Gas-Broilers, of which the following is a specification.

The object of my invention is to provide an improved broiler of simple, inexpensive, and durable construction, and which may be sold at a low price and is most efficient in operation and is adapted for convenient use in the hands of any person of ordinary intelligence for broiling meats, fish, or other edibles or for toasting bread or other substances, and preferably at both sides at once, all with economy of time, labor, and fuel.

The invention will first be described, and then will be particularly defined in claims hereinafter set forth.

Reference is made to the accompanying drawings, forming part of this specification, and in which similar numerals indicate corresponding parts in the several views.

Figure 1 is a plan view of a light broiler shown open and with parts broken away and in section. Fig. 2 is a sectional plan view of this broiler closed as when in use. Fig. 3 is a vertical sectional end view of the broiler, taken on a line *xx* in Fig. 2 and illustrating the operation. Fig. 4 is a detail sectional end view with the fire-walls opened. Fig. 5 is a detail sectional end view showing modifications of the fire-wall burners and the hinges. Fig. 6 is a sectional plan view sufficiently illustrating a preferred construction having removable grids and with handles on the fire-walls. Fig. 7 is a detail showing the retainer for the removable grids. Fig. 8 is a plan view of an open broiler made largely of cast-iron and embodying novel features of the invention. Fig. 9 is a sectional plan view thereof. Fig. 10 is a detail showing a modified hinge for the fire-walls. Fig. 11 is a diagrammatic plan view of a broiler quite like that shown in Figs. 8 and 9, but made mainly of sheet metal. Fig. 12 is a partial broken perspective view of a broiler, sufficiently showing another modification; and Figs. 13 and 14 illustrate other modified broilers having unhinged fire-walls and hereinafter described.

In the following description I use the term

“fire-wall” to designate any arrangement of burners or flame-apertures or any approved source of heat adapted to present a wall or area of flame or heat to the meat, fish, or other substances to be broiled. I may use two such opposing and relatively-adjustable fire-walls for broiling a substance held between them on both sides at once, and these two fire-walls may be hinged together or not, or I may use but one such fire-wall for broiling a substance on only one side at a time. Various auxiliary appliances are combined with or form part of the complete fire-wall in a preferred embodiment of the invention and as fully explained in this specification.

I first refer to Figs. 1 to 4 of the drawings, in which the two opposing fire-walls are each composed of a longitudinal tubular burner 1, sustained below a casing 2, preferably made of sheet metal and preferably having a lining 3 of suitable refractory material, such as asbestos, covering its inner face and top and end flanges. These flanges confine the heat and deflect it laterally to the substance being broiled. The lining 3 may be applied as sheet asbestos or as asbestos fiber held by a suitable silica cement. In this broiler the burner 1 is sustained at opposite ends by or from the casing-legs 4 4, the plugged back end of the burner being held by a screw 5 entering it through the back leg while the front end of the burner is engaged by a screw-nipple 6 on the burner mixing-tube 7, said nipple passing through the front leg. The legs 4 4 of each pair on the opposite fire-wall casings 2 2 may pass alongside each other to allow both fire-walls to open flat or nearly so. The legs are suitably formed to allow each fire-wall section or half of the broiler to stand independently in vertical plane and to allow the walls to be adjusted nearer to or farther from each other to accommodate substances of different thicknesses held or clamped between them to be broiled.

I prefer to hinge the two fire-walls together to allow them to be opened and closed on the hinge-joint. This hinging may be accomplished in various ways. One preferred method consists in fitting opposite pairs of screw-eyes 8 8 in the two opposing burner-tubes 1 1 and connecting these eyes by a ring 9, three of these rings being preferably used to

make them serve also as a detent, preventing dropping of the substance being broiled from between the fire-walls. This flexible hinge-joint allows necessary range of adjustment  
5 of the vertical fire-walls toward and away from each other to accommodate between them substances of different thicknesses.

The two opposing and relatively-adjustable fire-walls preferably have attached means for  
10 clamping between them the substance to be broiled. One such clamping means consists of two grids, one held at the inner face of each fire-wall casing 2. In Figs. 1 to 4 of the drawings these grids 10 10 have ordinary skeleton  
15 form and are provided with handles 11 11, by which the fire-walls may be opened and closed at pleasure, as the grids are here fastened to the fire-wall casings 2 2 by wires 12, preferably two at each end of each grid. The grids  
20 may be held or attached to the fire-wall casings in various ways, as hereinafter more fully explained.

Each mixing-tube 7 has the usual air-inlet opening and a gas-nipple, and to each nipple  
25 is connected a flexible gas-tube 13. The two tubes 13 may connect with independent gas-supply pipes; but I prefer to connect both tubes to one coupling 14, having a nipple 15, receiving a flexible supply-pipe 16, leading  
30 from a gas-fixture or other source of supplying fluid fuel. The tubes 13 are partly broken away in the drawings.

The operation is very simple and effective. The gas is turned on and the burners 1 1 are  
35 lighted and the meat, fish, bread, or other substance to be broiled or toasted is laid upon one of the grids 10, and the opened fire-walls are then closed or folded toward each other on the hinges 8 9 until the substance is  
40 clamped between the two grids. The broiler is now stood upon its legs 4, whereby the opposing fire-walls are sustained in vertical planes, and the flames from the opposite burners 1 1 rise within the asbestos-lined casings 2 3 at opposite sides or faces of the substance and broil both sides of it at once, while retaining all the nutritious juices and, as  
45 will be understood from Fig. 3 of the drawings, wherein the broiling substance and also the burner-flames are indicated by dotted lines. The fat-drippings fall into a pan 17, in which the broiler may be supported, or they may drop into any suitable receptacle placed below the grid. A few minutes only  
50 is required for the broiling or toasting operation, and when this is completed the broiler fire-walls are unfolded or opened on the hinges 8 9, and the cooked substance is removed, whereupon another substance may be  
60 clamped between the grids to be broiled.

Any number of substances may be broiled or toasted successively without extinguishing the flames at the fire-walls. Should the relatively-adjustable opposing fire-walls not be  
65 hinged together, they will simply be pressed toward each other to clamp between the grids the substance to be broiled. It will be seen

that the back plate, whether it have inturned edge flanges or not, deflects the hot combustion products of the burner toward the meat  
70 or substance being broiled. In fact the opposite walls of each combustion-chamber are formed at one side by the back plate 2 and at the other side by the substance being broiled.

Fig. 5 of the drawings shows a modification  
75 in which the burners, instead of being tubes sustained by the fire-wall legs are semitubular chambers 1 1<sup>a</sup>, fixed to and along the backs of the casings 2, which have apertures 1<sup>b</sup>, through which the burners flame into the  
80 casings behind the grids 10 10. This view also shows how the two opposite fire-walls may be directly hinged together by means of pairs of lugs 18, fixed to the casing 2 and coupled by a pivot 19.  
85

Figs. 6 and 7 of the drawings illustrate how additional plates 20 are fixed to the end flanges of the fire-wall casings 2. These plates 20 have  
90 in bent flanges 21, between which and in bent flanges 22 on the parts 2 are formed grooved guides or slideways in which the ends of the grids 10<sup>a</sup> 10<sup>a</sup> enter until stopped by bent portions 23 on either the flanges 21 or 22. In  
95 this construction the grids are almost instantly detached from the fire-walls by withdrawing them upward or by simply inverting the broiler, which causes the grids to fall from their guides to permit convenient cleaning of the parts or for other purposes. In  
100 this construction also the handles 24 24, by which the broiler is opened or closed or otherwise manipulated, are rigidly fastened to the fire-wall casings 2 instead of to the grids themselves. Any method of hinging these  
105 sheet-metal casings (shown in Fig. 6) may be adopted, or these fire-walls may remain unhinged and be effective in cooking substances held or clamped between them.

The modified broiler shown in Figs. 8 and 9 of the drawings illustrates how the grids 10<sup>b</sup>  
110 10<sup>b</sup> may be made readily detachable from the fire-wall casings, which in this construction are made as large flat burner-bodies. I may also make the grids bodily adjustable flatwise, so as to readily be movable either closer to or  
115 farther from the areas of flame from the fire-wall burners. I accomplish these desirable results by attaching the grids 10<sup>b</sup> to their respective burner fire-walls by couplings having  
120 hook-heads 25 and stems 26, adapted for adjustment in the burner-walls. I prefer to screw-thread the coupling-stems which pass through the fire-wall flanges and to provide said stems with two nuts 27 28, bearing on  
125 opposite faces of the flanges. By removing the outer nuts 28 the grids are made readily detachable, and by adjusting the nuts along the hook-couplings the grids may be set at  
130 any desired distance from the flame areas of the fire-walls. The fire-walls here shown are each formed of an outside recessed cast-metal casing-plate 29, to the raised margin of which is screwed, riveted, or otherwise fastened an asbestos plate 30, having numerous flame-ap-

ertures 31, arranged quite closely together over all or most of its area, as indicated by the full and dotted lines. A mixing-chamber 32 is thus formed behind the flame-plate 30; and this chamber preferably has a transverse enlargement 33 at the back end of the fire-wall and with which the mixing-tube 7 communicates. The broiler-handles 34 34 are in this case made of wood and are slipped over long metal nipples, which connect the mixing-tubes 7 with the gas-nipples to which the flexible fuel-supply tubes 13 are coupled. The asbestos flame-plate 30 may be substituted by a perforated sheet-metal plate.

The fire-walls of the broiler shown in Figs. 8 and 9 of the drawings have legs 4<sup>a</sup>, adapted to support the walls independently in vertical plane and opposite each other when in use, whether said walls be hinged together or not. I prefer, however, to hinge these fire-walls to each other. This may be done by providing the fire-wall back plates 29 with lugs 35 and pivoting the lugs in pairs by hinged pins 36, as shown in Fig. 10 of the drawings, but I prefer to hinge the fire-walls together in manner shown in Figs. 8 and 9, wherein the hinges connect with the two fire-wall grids 10<sup>b</sup>. These hinges are specially designed to strengthen rather than to weaken the grids, and comprise a pair of wire rods 37, having an eye 38 at one end surrounding, preferably, the top bar of the grid and provided at the other end with an eye 39 and held to the grid-bars by twisted-wire couplings 40, preferably two, one being at the center of the hinge-rod 37 and the other next its eye 39. The two eyes 39 of each pair of hinge-rods engage rings 41, and the two rings 41 are coupled with a main hinge-ring 42. Either two or three of these rod-eye and ring hinges may be used.

Fig. 11 of the drawings shows a modified broiler designed on the same general plan as the one shown in Figs. 8 and 9, but having fire-walls made mainly of sheet metal and preferably in three parts. The front perforated flame-plate 43 is seamed to the outer rear casing-plate 44, and the front end plate 45, which is bent to form an enlarged mixing-chamber, is riveted to the edges of the plates 43 44 and is entered by the mixing-tube or pipe 46, supplying the fuel which flames from the apertures of the plates 43 directly toward the grids 47 of the opposing fire-walls. These sheet-metal fire-walls may be hinged together in any approved manner.

Fig. 12 of the drawings shows how a broiler embodying some of the principles of my invention may be made with two opposing and vertically-ranging grid-shaped burners each comprising a front mixing-tube 48 to which the gas-supply pipe 13 is connected, and a series of flame-tubes 49, preferably branching off to the rear from the tube 48, and having flame-apertures 50 at their outer faces. This allows the substance to be broiled or toasted to be clamped directly between the opposing

inner faces of the flame-tubes 49, which themselves constitute the grids, and without interfering with the flames issuing from the apertures 50, and rising at the outside of the tubes 49 to simultaneously broil or toast both sides at once of the substance clamped between the two grid-burners. The tubular grid fire-walls of this broiler may be fitted at the outside with asbestos-lined casings 2 3, as indicated by dotted lines at the left hand, and these fire-walls may also be hinged together in any suitable manner, as shown by the front ring and eye-hinge 51. The location of the apertures 50 directs the fire-wall flames outward and upward, and therefore allows sufficiently free escape of combustion products laterally from around the tubes 49 to prevent choking of the flames. This broiler, therefore, operates well when used with the fire-walls disposed edgewise in about vertical planes. It will be seen that this broiler embodies in its construction two opposing fire-walls adjustable relatively to each other, each fire-wall having its own source of heat and a substance-holding grid device, the latter in this instance being the inner parts or faces of the burner-tubes 49. Further features of the invention are realized in the hinging of the two grid-burners together and in providing them with a back plate 2, forming a chamber for free circulation of hot products and air behind the burner grid device.

In view of the aforesaid description of the operation of one preferred form of broiler shown in Figs. 1 to 4 of the drawings it is unnecessary to describe in detail the working of the modified forms of broiler shown in Figs. 5 to 12, inclusive, as their operation is substantially the same in quickly and perfectly broiling or toasting to any desired degree any substance held or clamped between the opposing fire-walls.

In Fig. 13 of the drawings is shown a portable broiler comprising two fire-walls 47 47 very much like those shown in Figs. 1, 2, 3, and 4, but not hinged together and not having special legs or parts by which they may be supported edgewise in vertical plane. This modified broiler is used by simply placing the substance to be cooked upon the grid of one fire-wall and laying the other fire-wall or its grid upon the substance and then pressing the opposing fire-walls toward each other to hold the substance between them and within the influence of the heat areas of the fire-walls.

In Fig. 14 of the drawings the unhinged but relatively-adjustable fire-walls 48 48 are substantially like those shown in Fig. 13, but have legs or parts 49, adapted to sustain them edgewise in vertical planes. The substance to be cooked is held between these fire-walls 48 48 by simply pushing or pressing them toward each other while they stand upright on their legs 49. This is less tiresome to the operator than holding the entire weight of

the broiler and contents in the hands, as required by the broiler shown in Fig. 13 of the drawings.

I specially mention one important feature of my improved hand-operative gas-broiler, which consists in hinging the opposing fire-walls together and preferably at or along their bottom or top edges, which allows the broiler-walls to close and open upward and downward like a book or to the right and left hand, and permits connection of the gas-supply pipes at either end of the fire-walls and does not allow the opening and closing of said walls to interfere with the gas-supply connections.

A further important feature consists in providing the fire-walls with handles which project, preferably, rearward, like the handles of an ordinary gridiron, thereby facilitating the most easy and convenient handling of the broiler while in operation. It will be understood, however, that the handles may be applied to the grid-carrying fire-walls in any preferred manner, promoting most convenient hand manipulation of the broiler, the rearwardly-projecting handles probably being most advantageous in use.

The most readily-detachable grids fitted in slideways and shown in Figs. 6 and 7 of the drawings are now preferred in practice, because in broiling fish or other substance which would tenaciously stick to the grids the grids can be lifted bodily by a fork or otherwise from the fire-walls with the cooked fish between them, and the fish can then be pressed inward to loosen it from the grid-bars and allow it to be taken out whole and in the most presentable condition. This would be difficult if not impossible to do were the grids so attached to the fire-walls as to require opening or separation of the fire-walls to give access to the broiled fish, which in that case would be quite likely to be torn asunder and spoiled for service by reason of its sticking fast to the opening grids.

I am not aware that any one has heretofore combined in one light, portable, hand-manipulated broiler device a fire-wall giving out a broad area of flame or heat and a grid device adapted to sustain a substance to be broiled within the influence of the flame or heat area of the fire-wall and arranged to provide behind the grid a chamber for free circulation of hot products and air. I also am not aware that any one has heretofore combined two such opposing and relatively-adjustable fire-walls each having its own source of heat and a grid device and adapted to hold or clamp between them the substance to be broiled, whether said opposing and relatively-adjustable grid-carrying fire-walls are hinged together or not, and whether they have parts supporting them vertically edgewise or are simply provided with any suitable handles by which they may be pressed upon the substance held between them to be broiled.

In the present state of the heating art the use of gaseous fuel is very economical and

generally more convenient in a light hand-manipulated broiler apparatus. Hence I have in the aforesaid description more particularly explained my improved broiler as fitted with gas heating appliances for the fire-walls. If electrical heating were now more practically and economically developed than gas-heating, I would of course utilize electrical appliances for heating the fire-walls of the broiler, and I would connect the electric-current-supply wires or mediums at the ends of the fire-walls substantially as the gas-supply pipes are attached. The term "gas-broiler" used in this specification is therefore to be considered as including a broiler apparatus having fire-walls heated by gas, electricity, or other agent assuring sufficiently-high temperature of the fire-walls to broil or toast any edible substance held within the influence of the heat areas of said walls.

I do not claim as my invention certain features of construction shown in Fig. 12 of the drawings and comprising, first, a gas-broiler consisting of fuel-tubes and adapted to hold a substance to be broiled upon the obverse side and to confine the flames to the reverse side of said broiler, and, second, a gas-broiler consisting of fuel-tubes the obverse sides of which constitute a support for a substance to be broiled and the reverse sides of which are provided with gas-discharge openings that are adapted to deliver the gas away from the substance.

I claim as my invention—

1. A broiler comprising two opposing fire-walls each having its own source of heat and an attached substance-holding grid device.

2. A broiler comprising two opposing fire-walls adjustable relatively to each other, each fire-wall having its own source of heat and a substance-holding grid device.

3. A broiler comprising two opposing fire-walls adjustable relatively to each other, each fire-wall having its own source of heat and a substance-holding grid device and a handle.

4. A broiler comprising two opposing fire-walls adjustable relatively to each other, each fire-wall having its own source of heat and a substance-holding grid device and parts adapted to support the fire-wall and grid edgewise in vertical planes.

5. A broiler comprising two opposing fire-walls adjustable relatively to each other, each fire-wall having its own source of heat and a substance-holding grid device and a back plate forming a chamber for combustion products behind the grid.

6. A broiler comprising two fire-walls hinged together, each fire-wall having its own source of heat and a substance-holding grid device.

7. A broiler comprising two fire-walls hinged together, each fire-wall having its own source of heat and a substance-holding grid device and a handle.

8. A broiler comprising two fire-walls

hinged together and opening and closing to the right and left hand, each fire-wall having its own source of heat and a substance-holding grid device and a rearwardly-projecting

5 handle.

9. A broiler comprising two fire - walls hinged together, each fire-wall having its own source of heat and a substance-holding grid device and parts adapted to support the fire-wall and grid edgewise in vertical planes.

10. A broiler comprising two fire - walls hinged together, each fire-wall having its own source of heat and a substance-holding grid device and a back plate forming a chamber

15 for combustion products behind the grid.

11. A broiler comprising two opposing and relatively-adjustable fire-walls each having a burner face-plate provided over the whole or part of its area with perforations through

20 which the burner flames; said fire-walls each also having a grid device sustained at a distance from the perforated flame-plate and forming between said plate and the substance on the grid a chamber for free circulation of

25 hot products and air.

12. A broiler comprising two opposing and relatively-adjustable fire-walls, each having its own source of heat, and a readily-detachable substance-holding grid device.

13. A portable-broiler fire-wall having its own source of heat and provided with a support adapted to sustain a substance to be broiled at that side or face of the fire-wall at which the heat area is produced.

14. A portable-broiler fire-wall having its own source of heat and a handle and a substance-holding grid device providing a combustion-product chamber behind the grid.

15. A portable-broiler fire-wall having its own source of heat, a substance-holding grid device and a back plate providing a combustion-chamber between said plate and the grid.

16. A portable-broiler fire-wall having a burner face-plate provided over the whole or part of its area with perforations through or at which the burner flames; said fire-wall also having a grid device sustained at a distance from the perforated flame-plate and forming between said plate and the substance on the grid a chamber for free circulation of

50 hot products and air.

17. A portable-broiler fire-wall having its own source of heat and provided with a readily-detachable substance-holding grid device.

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Witnesses:

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ARTHUR W. SMITH.