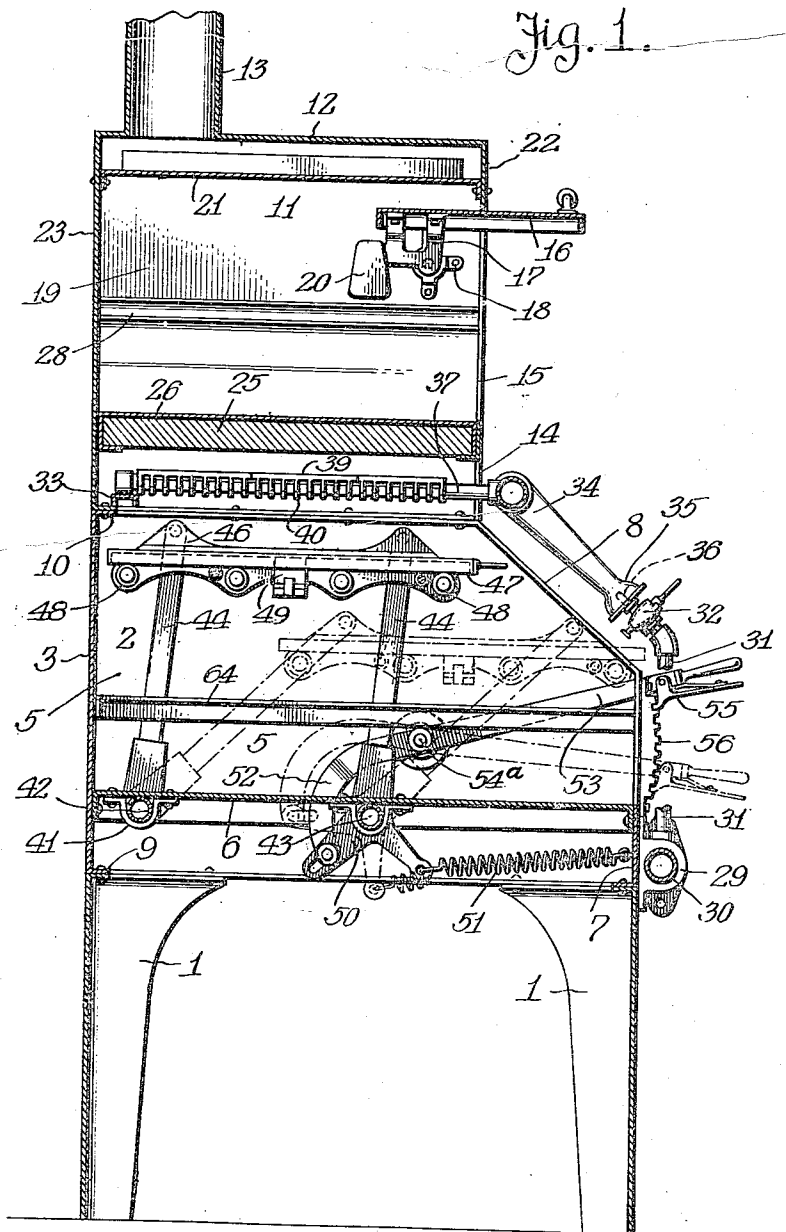


H. C. MAUL.
HOTEL BROILER.
APPLICATION FILED AUG. 8, 1919.

1,425,501.

Patented Aug. 8, 1922.
4 SHEETS—SHEET 1.



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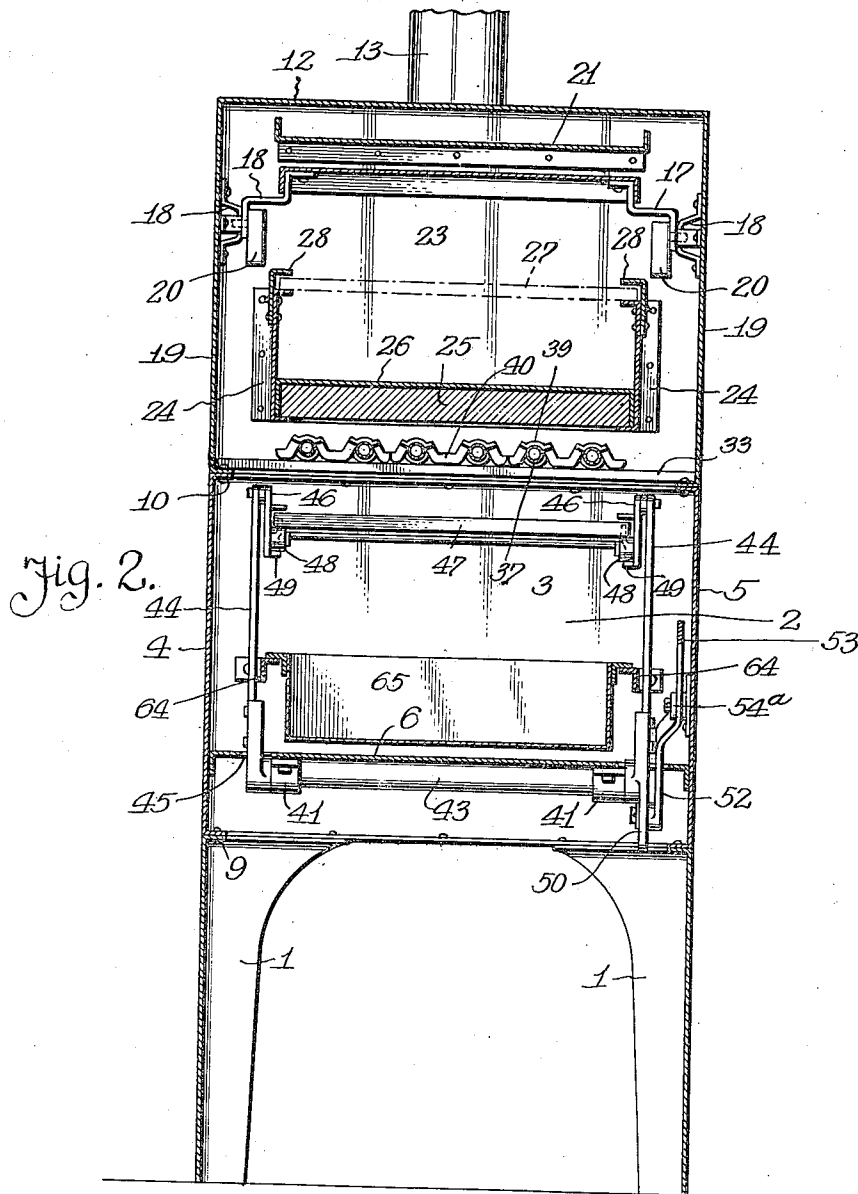
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4 SHEETS—SHEET 2.



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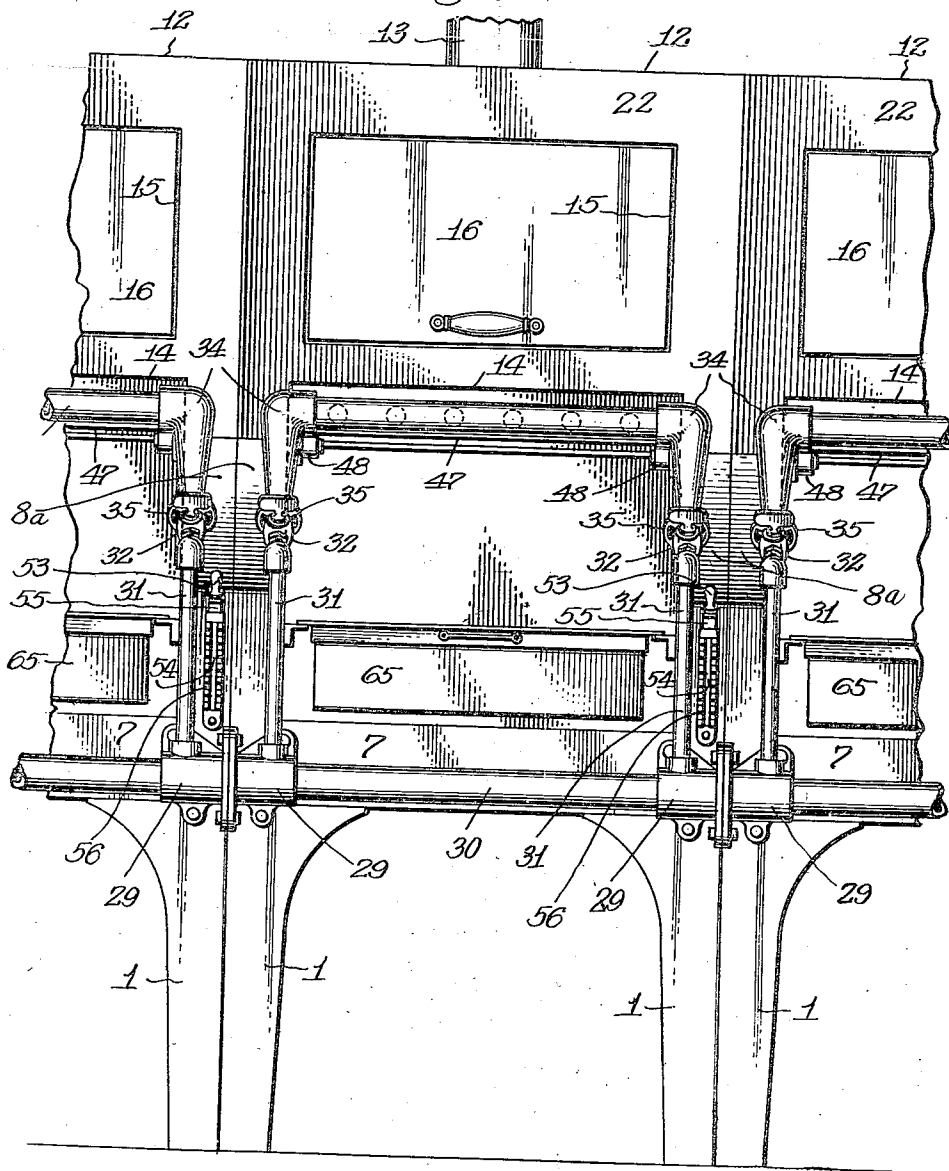
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Fig. 3.



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4 SHEETS—SHEET 4.

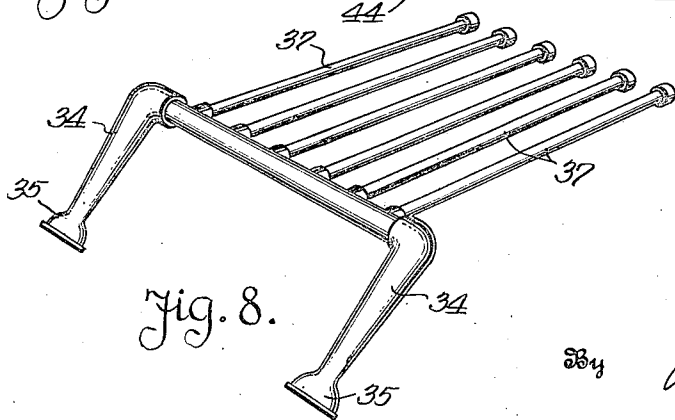
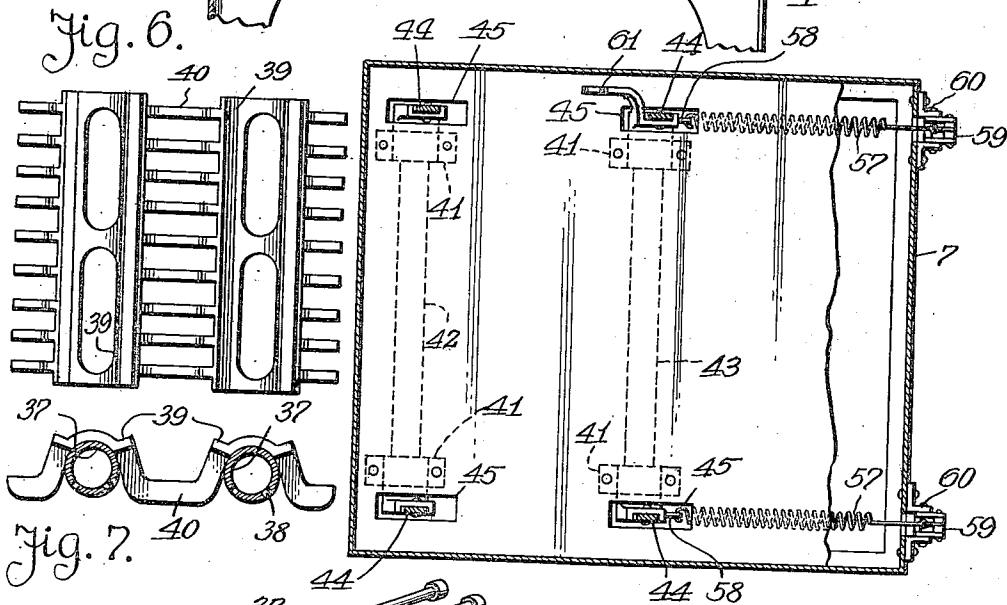
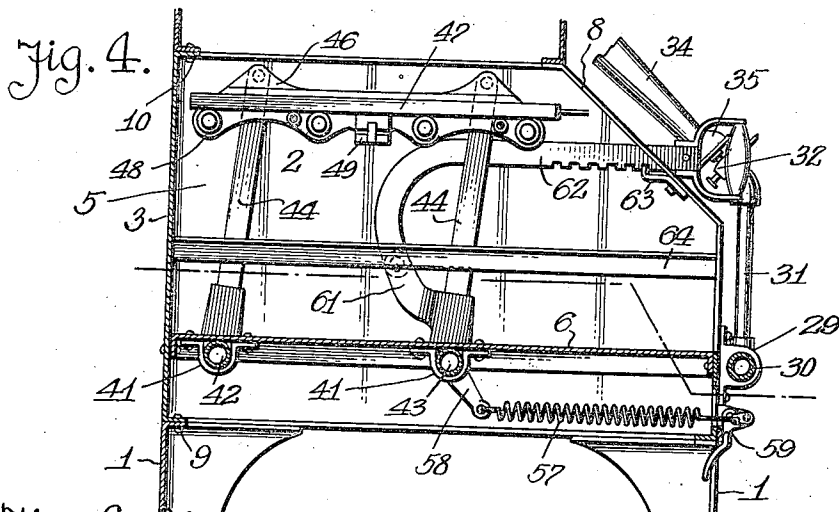


Fig. 5.

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UNITED STATES PATENT OFFICE.

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HOTEL BROILER.

1,425,501.

Specification of Letters Patent.

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Application filed August 8, 1919. Serial No. 316,098.

To all whom it may concern:

Be it known that I, HENRY C. MAUL, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Hotel Broilers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention may be considered an improvement in connection with the gas broiler disclosed by my Patent No. 1,091,943, granted March 31, 1914, also my patent on piping for gas ranges, No. 1,088,789, granted March 3, 1914, the patents being directed to cooking ranges that may be used as individual units or in a battery. The first mentioned patent discloses a gas broiler including a broiling rack or grid which may at all times be held in a horizontal plane, and which may be projected forwardly when desired, or raised and lowered with respect to the burner flame, provision being made for manually manipulating the rack and for affording a counterpoise therefor, so that the movement of the rack will be steady at all points in its travel. The last mentioned patent includes a novel piping so that a plurality of cooking ranges may be arranged in battery formation and the necessary independent connections made for the burners of the cooking top and the burners for an oven, with proper controlling devices for each range unit.

The present invention may be characterized in the following particulars.

First, the gas broiler, has a novel detachable or removable burner structure that may be easily, quickly and bodily removed from the range, so that the burners may be readily cleaned. Associated with the burners are removable heat retainers or flame spreading devices, which may be removed with the burner unit, taken off of the burners, and thoroughly cleaned. With such a burner unit it is possible to maintain the range in perfect working order and thus insure a high degree of cooking efficiency at all times.

Second, the broiling rack or grid is of novel construction and is supported so that it may be safely and easily shifted without any jarring or sudden action. A counterpoise for the broiling rack or grid insures a perfect balance of the same, so that with little effort a cook or operator of the range

may raise and lower the grid. As an incidental feature, provision is made so that the counterpoise may be regulated, and in either instance, there is that nicety of adjustment which permits of broiling being expeditiously and properly performed.

Third, the range includes an oven or warming compartment so disposed that the broiler burner unit may be utilized as a source of heat for the oven, and provision is made for a proper ventilation of the oven and accessibility thereto.

Fourth, the constructive arrangement of parts is such as to provide a compact structure either as a unit or in battery formation, and this is of utmost importance for hotel kitchens. The general design of the range, particularly the oven compartment relative to the boiler compartment, permits of the movable broiler rack or grid being placed in a loading or unloading position still within the area of the range structure, and those controlling devices essential for the range are closely assembled thereabouts convenient to the cook or operator of the range, and thus providing a built in or self contained structure which materially facilitates the work of a cook or chef.

Further features of my invention together with the advantages derived therefrom, will hereinafter appear as the nature of the invention is better understood, and reference will now be had to the drawings, wherein

Figure 1 is a vertical cross sectional view of the broiler range, showing the broiler grid in an active cooking position by full lines and in a partially lowered position by dot and dash lines;

Fig. 2 is a vertical longitudinal sectional view of the boiler range;

Fig. 3 is a front elevation of the same in battery formation;

Fig. 4 is a vertical cross sectional view of a portion of a broiler range illustrating another form of operating mechanism for the movable broiler grid;

Fig. 5 is a horizontal sectional view of the same;

Fig. 6 is a plan of one of the heat retainers or flame spreaders;

Fig. 7 is an end view of the same as supported by burners, and

Fig. 8 is a perspective view of the detachable burner unit.

The range as now constructed and thoroughly tested comprises legs 1 representing suitable supporting means for a broiler compartment 2 which is set on the legs and
 5 riveted or otherwise connected thereto. The broiler compartment 2 is formed by a rear wall 3, side walls 4 and 5, and a set in or raised bottom wall 6, said bottom wall being set above the lower edges of the walls
 10 3, 4 and 5 so as to provide clearance for a portion of the movable grid operating mechanism and the counterpoise therefor.

The broiler compartment 2 also has a front wall 7, the lower portion of which
 15 is vertically disposed and the upper portion at an inclination, with these portions cut away to provide a large front opening 8 so that access may be had to the broiler compartment. The front wall 7 forms a frame
 20 around the opening 8 and this front wall and the walls 3, 4 and 5 have the upper and lower edges thereof inturned or flanged so as to provide supporting ledges 9 and 10, the former resting on the legs 1 of the range.

Mounted on the upper ledges 10 of the broiler compartment and suitably connected thereto is an oven compartment 11 substantially rectangular and having the top
 25 wall 12 thereof provided with a suitable exhaust flue or pipe 13 adapted to communicate with the atmosphere. In horizontal section the oven compartment 11 is of less area than the broiler compartment 2, and the oven compartment is there-
 30 fore set in from the front of the broiler compartment, thus providing plenty of clearance at the opening 8 so that a cook or chef may readily place foodstuff in the broiler compartment and at the same time have access
 35 to the oven compartment 11.

The oven compartment 11 has a front wall provided with a longitudinal burner opening 14 and a door opening 15, said door opening being closed by a pivoted door 16 supported by brackets 17 pivotally held by bearings 18 on the side walls 19 of the oven compartment. Each of the brackets 17 is provided with a weight or counterpoise 20 so
 45 disposed as to maintain the door either in a closed position or in an open position, the latter being defined by the door 16 contacting with the upper edge of the door opening 15. In this position, as clearly shown in Fig. 1, the door 16 is horizontal
 50 providing access to the oven compartment, without the door 16 interfering with operations in front of the range or adjoining ranges which would be prohibitive if hinged doors were used on the oven compartments
 55 when the ranges have battery formation.

In the upper part of the oven compartment 11 is a deflector or baffle 21 supported by the front and rear walls 22 and 23 respectively of the oven compartment, and
 60 said baffle is disposed below the exhaust flue

or pipe 13 so that heat products cannot immediately escape from the oven compartment. The front and rear walls of the oven also cooperate with brackets 24 in supporting a fixed heat retainer and shield 25
 70 within the lower part of the oven compartment, said heat container or shield being in the form of a brick or vitreous body which has its lower face exposed and its upper face covered by a metallic face 26 which permits
 75 of a shield being used as a permanent shelf or support within the oven compartment. The brackets 24 are in spaced relation to the side walls 19 of the oven so that heated air or burned gases may pass outwardly
 80 from beneath the heat retainer 25 and upwardly between the brackets 24 and the side walls of the oven without necessarily contacting with foodstuffs or dishes placed
 85 on the plate 26. Besides the brick 25 serving as a heat retainer it also serves as an insulator for preventing the plate 26 from being warped or distorted, and a detachable shelf 27 may be placed above the plate 26
 90 and supported by guides 28 at the upper edges of the brackets 24. Since the door pivots are located at the side walls of the oven compartment, as clearly shown in Fig. 2, there is sufficient clearance for dishes or
 95 utensils on the detachable shelf 27, and it is in this connection that the oven is primarily intended for warming purposes, either for dishes or utensils or foodstuff previously cooked in the broiler compartment 2.

Considering the broiler burner and its supporting means the front wall 7 has connections 29 for a longitudinally disposed gas supply pipe 30 and the connections 29 are
 100 of such construction as to abut and be connected to similar connections on an adjoining range, when ranges are placed in battery formation, as clearly brought out in Fig. 3, and specifically referred to in my Patent
 105 No. 1,088,789. The connections 29 have upright pipes 31 at the sides of the opening 8, and the upper ends of said pipes are provided with valves or gas cocks 32 disposed in parallelism with the inclined portions of
 110 the front wall 7. These valves or cocks are adapted to cooperate with a longitudinal bracket 33, at the rear wall 23 of the oven compartment 11, in supporting a removable burner unit adapted to simultaneously
 115 serve the oven and broiler compartments 11 and 2. The burner unit is best shown in Fig. 8 and comprises a substantially inverted U-shaped hollow frame or manifold 34 which has its ends terminating in air mixers 35 adapted to fit on the nipples or
 120 jets 36 of the valves 32 and properly position and support the ends of the manifold 34 relative to the front wall of the broiler compartment. The manifold 34 is shaped to clear the opening 8, as clearly shown in Fig. 130

3, and said manifold has a plurality of parallel burners 37 adapted to have the rear closed ends thereof rest on the longitudinal bracket 33, at the juncture of the oven and broiler compartments. The burners 37 extend through the opening 14 of the oven and by reason of being disposed at an obtuse angle to the plane of the manifold, said burners are supported in a horizontal plane below the shelf 26 within the oven and at the open upper end of the broiler compartment 2. The burners 37 have the lower walls thereof provided with gas outlet openings or orifices 38 as best shown in Fig. 7, so as to provide diverging flames from each burner when the gas is ignited, and by closely assembling the burners there will be a horizontal flame or fire bed between the oven and broiler compartments so that the downwardly projecting flames may broil foodstuffs within the broiler compartment and heat radiating from the burners enter the oven compartment for warming purposes.

On the burners 37 are assembled detachable heat radiators or flame spreading devices, each comprising slotted burner members 39 provided with fins or bars 40, some of which connect the burner members so that the members will be held in sets. Each burner member is somewhat convexo-concave so as to rest or bear on the upper wall of the burner, and the fins or bars extend downwardly and outwardly from said burner members so as to cooperate with said members in embracing the burners, thus preventing lateral displacement of each set of burner members. The lateral portions of the fins or bars 40 are in a plane with the lower walls of the burners 37 and will tend to deflect and disseminate the flames maintained by the burners, besides serving as heat retainers. The burner members can be easily and quickly assembled on the burners and as readily removed, and this may be accomplished, with the burner unit bodily removed from the broiler compartment or as the burner unit is placed in or removed from said broiler compartment.

By reference to Fig. 1 it will be observed that there is sufficient clearance at the lower part of the oven compartment to permit of the burner unit being pushed inwardly to remove the air mixers or ends of the manifold 34 from the jets or nipples of the valves 32, and then the burner unit may be bodily withdrawn. It is therefore possible to thoroughly clean the burners, as well as the member supported thereby, and with the burners supporting the burner members as shown in Figs. 1 and 2, an even and constant heat is assured at the juncture of the oven and broiler compartment.

The bottom wall 6 of the broiler compartment 2 has straps or bearings 41 for tubu-

lar rock shafts 42 and 43 with the ends thereof provided with upwardly extending arms 44 which extend through slots 45 in the bottom wall 6. The shafts are two in number and consequently there are two sets of arms 44 and suspended between the upper ends of the sets of arms is a grid holder 46 for a movable grid 47. The grid 47 is movably supported on anti-frictional rollers 48 carried by the holder 46 and accidental displacement of the grid is prevented by a locking device 49, carried by the holder 46 and extending into the grid 47. After the grid 47 is placed in the holder, the locking device 49 may be installed and said locking device will limit the movement of said grid on its suspended holder.

One end of the rock shaft 43 has a bell crank 50. One of the arms of said bell crank is connected by a coiled retractile spring 51 to the front wall 7 of the broiler compartment. As shown in Fig. 1, the spring 51 is under tension, but the tension thereof may be increased when the shaft 43 is rocked. The other end of the bell crank 50 is slotted and connected to the curved inner offset end 52 of an operating lever 53, said operating lever being pivotally supported by a bearing 54^a on the side wall 5 of the broiler compartment. The lever 53 extends through a slot 54^a in the front wall 7 of the broiler compartment and is provided with a pivoted locking pawl 55 which normally engages a rack 56 on the front wall 7 at the side of the opening 8. The locking pawl 55 holds the lever 53 against accidental adjustment, but when the locking pawl is manually shifted out of engagement with the rack 56, the outer end or handle of the lever 53 may be raised and lowered so that the inner end 52 of said lever will impart a rocking movement to the shaft 43, which being articulated with the shaft 41, through the medium of the sets of arms and the suspended holder 46, causes said shafts to rock in synchronism and raise and lower the grid 47. As shown in Fig. 1, the grid is supported in a horizontal plane beneath the burner unit, and by lowering the outer end of the lever 53 the grid may be shifted downwardly and outwardly; a lowered position being shown by dot and dash lines in Fig. 1. As the grid is lowered the weight of the same, plus that of the suspended holder 46 and the food stuffs which may be on the grid, is sufficient to carry the grid to its lowermost position, without any great effort on the part of the operator of the lever 53. As previously pointed out the spring 51 is under tension and as the grid 47 is lowered the tension of said spring is increased and is sufficient to prevent a sudden or jarring descent of the grid. The lever 53 may be locked in a lowered position and the grid 47 may be

shifted so that foodstuffs may be easily removed from the grid or placed thereon, this being accomplished at the opening 8 without any interference by controlling devices about said opening. When the operating lever 53 is raised, the retractile force of the spring 51 assists in this respect, so that the grid, whether loaded or unloaded, is balanced by a smooth and even movement in the broiler compartment. The spring 51 represents a resilient or automatic counterpoise for the grid, and by reference to Figs. 4 and 5 of the drawings, it will be observed that two springs 57 are employed and provision made for increasing or decreasing the tension of each spring. With this form of my invention, the rock shaft 43 has a crank 58 at each end thereof connected by the springs 57 to pivoted levers 59 supported by brackets 60 on the front wall 7 of the broiler compartment. The pivoted levers 59 are shaped so that when in a lowered position the springs 57 are under greater tension than when the levers are swung to a raised position, and it is through the medium of such tension regulating means that the counterpoise may be made more or less sensitive.

It is possible to use a simplified form of operating lever, as shown in Fig. 4, wherein one of the arms 44 has a rearward extension 61 to which is pivotally connected the curved inner end of an operating lever or rack bar 62 that is shiftable in the inclined portion of the front wall 7 and movable into and out of engagement with a fixed keeper 63, carried by the inner side of the wall 7. The operating lever or rack bar 62 may be raised out of engagement with the keeper 63 and shifted to raise and lower the grid.

The front wall 7 and the rear wall 3 of the broiler compartment 2 are connected by supports or brackets 64 on which may be placed a drip pan or utensil 65, and the location of this pan or utensil does not interfere with the movable grid 47 or the raising and lowering mechanism therefor.

What I claim is:—

1. A cooking range having uninterrupted side walls so that ranges may be placed in contact side by side, a front inclined wall provided with an opening, a burner unit for the cooking range and entirely in front of said range, said unit comprising an inverted U-shaped manifold adapted to be supported in a plane parallel to said front inclined wall and receive gas at either end thereof, said manifold extending along the upper and side edges of the front wall opening, and a plurality of burners carried by the top of said manifold and disposed in a plane at an obtuse angle to the plane of said manifold.

2. A cooking range as in claim 1, and demountable heat retaining members astraddle

solely supported on said burners and extending between said burners.

3. A cooking range having uninterrupted side walls so that ranges may be placed in contact side by side, a front inclined wall provided with an opening, a grid at all times within the range and adapted to be lowered to expose the front portion thereof at the wall opening, and a burner unit above the grid and bodily removable from the opening of the front inclined wall of the range and having a portion thereof supported at the rear wall of the range and a portion thereof disposed in parallelism, with the front inclined wall and at the top and sides of the opening thereof.

4. In a range, the combination of a broiler compartment having a front inclined wall provided with an opening, a burner at the top of said compartment, and a manifold for said burner forming a frame about the top and sides of the front opening of said broiler compartment so that said frame and opening will provide clearance for the removal of matter vertically from the front end of the broiler compartments.

5. The combination set forth in claim 4, and a grid located below the burner and movable into and out of the opening of the broiler compartment.

6. In a range, the combination of a broiler compartment having an inclined front wall provided with an opening, said opening permitting of matter being vertically removed from the front end of the broiler compartment, an oven compartment on said broiler compartment communicating therewith, a burner having its rear ends supported at the juncture of said compartments, gas valves at the lower edge of the inclined front wall of the broiler compartment, and means at the sides and top of the opening of the broiler compartment providing clearance for the opening and connecting said burner to said gas valve.

7. In a gas range, a broiler compartment having a front wall opening, an oven compartment on said broiler compartment communicating therewith, a removable burner unit at the juncture of said compartments, a manifold for said burner unit, a grid beneath said burner unit, a holder for said grid, means operatable through the broiler compartment front wall for moving said holder, and a counterpoise below said broiler compartment for the grid and holder therein.

8. In a gas range, a broiler compartment having an inclined front wall provided with an opening, an oven compartment on said broiler compartment communicating therewith, heat supplying means at the juncture of said compartments and bodily removable from the front of the range, a grid movable to and from said heat supplying means and

shiftable towards the front of said range to be exposed so that matter may be removed vertically from the grid through the wall opening, and covered heat retaining means in said oven compartment above said heat supplying means and affording a shelf.

9. The combination with a broiler having a front wall, a burner having a manifold, and a grid movable to and from the burner, of supporting means for the grid comprising rock shafts, arms at the ends thereof, a holder suspended from said arms and supporting said grid, operating means for said grid supporting means extending through the front wall of the broiler and adapted to swing a grid under the manifold, and a counterpoise for said supporting means and said grid.

10. The combination set forth in claim 9 wherein the counterpoise is in the form of a tension device that may have its tension regulated at the front wall of a broiler.

11. The combination of a burner, a manifold for the burner, a grid, operating means adapted for swinging said grid under said manifold, means disposed to resist the swinging movement of said grid, and means adapted to vary the resistance of said means.

12. In a broiler having a front wall, and side walls adapted to abut similar walls of other broilers for a battery formation, the combination of burners, a gas supply pipe with flanged joint connections in the planes of the broiler side walls, a burner manifold having its air mixers and gas valves below the plane of the burners, the burners and manifold being removable as one unit from the front wall of the broiler, means for storing and deflecting heat in the broiler, a grid below the burners, operable through the front wall of the broiler and adapted to be raised and lowered and shifted towards the front of the broiler, means limiting the forward movement of the grid, and means for counterpoising the weight of said grid.

13. The combination set forth in claim 12 and an oven compartment above said burners, a heat retaining shelf, and a counterpoised door.

In testimony whereof I affix my signature in the presence of two witnesses.

HENRY C. MAUL.

Witnesses:

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CONRAD W. STORK.