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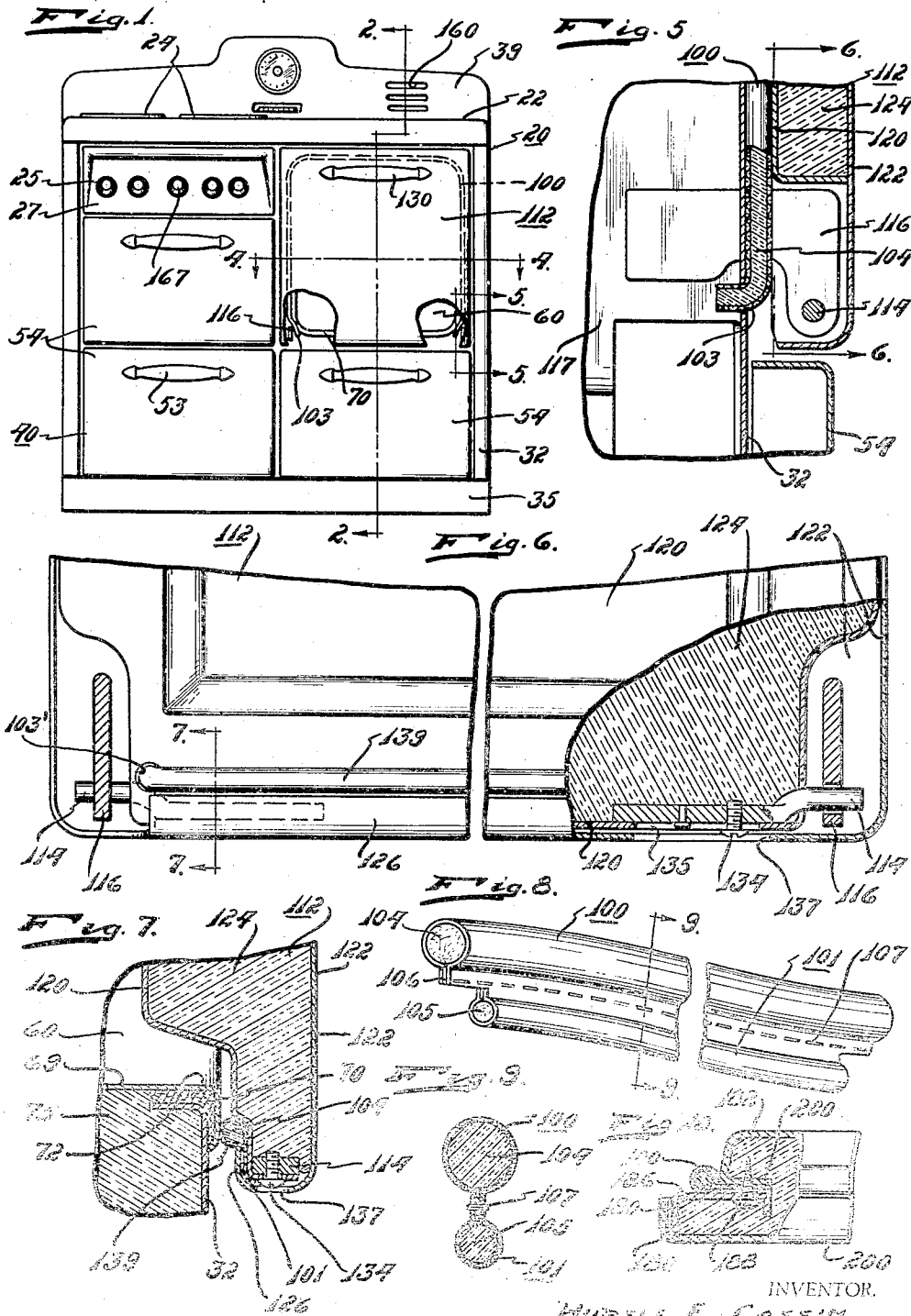
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2,408,295

RANGE APPARATUS

Filed Aug. 10, 1942

4 Sheets-Sheet 1



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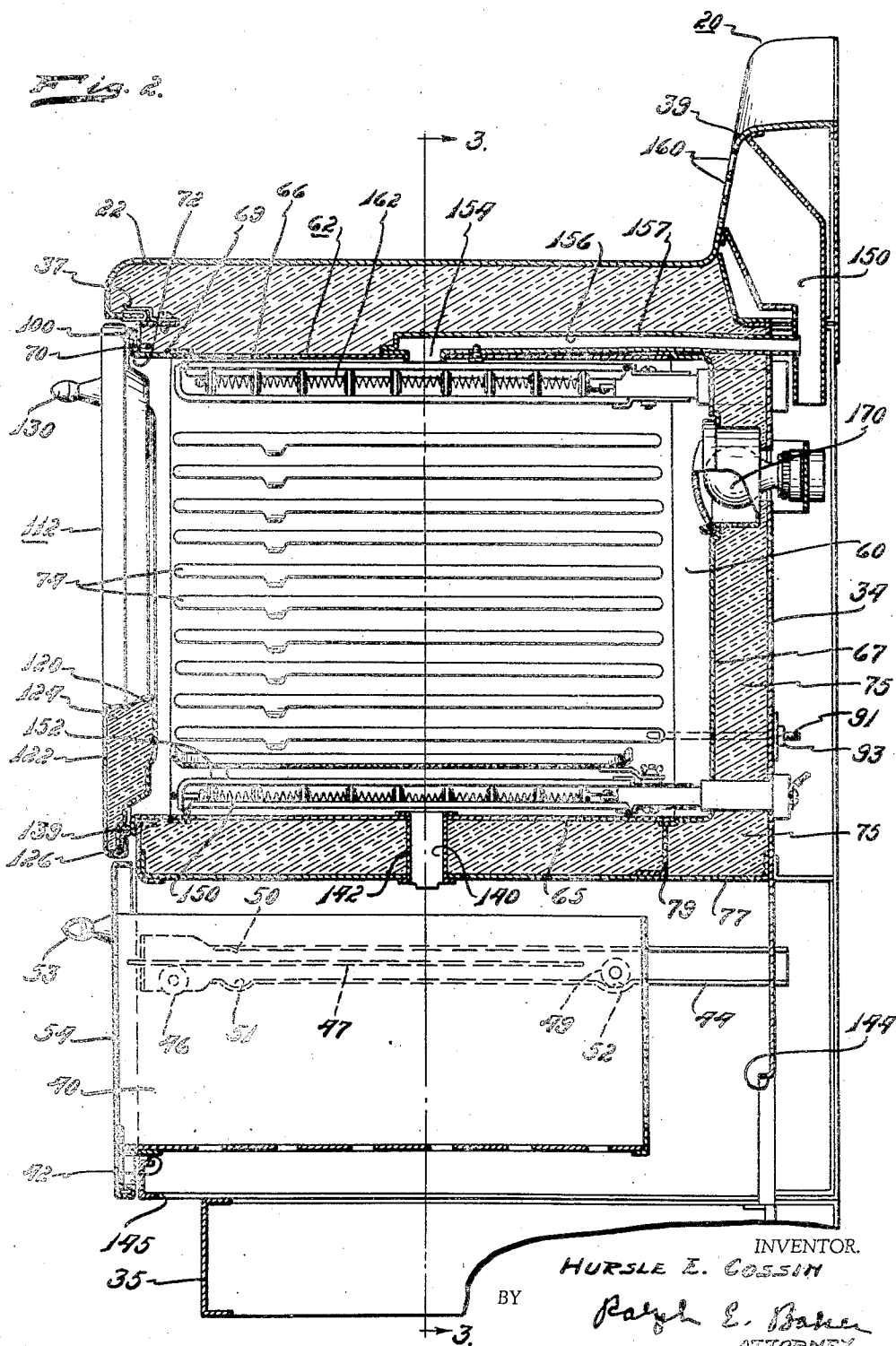
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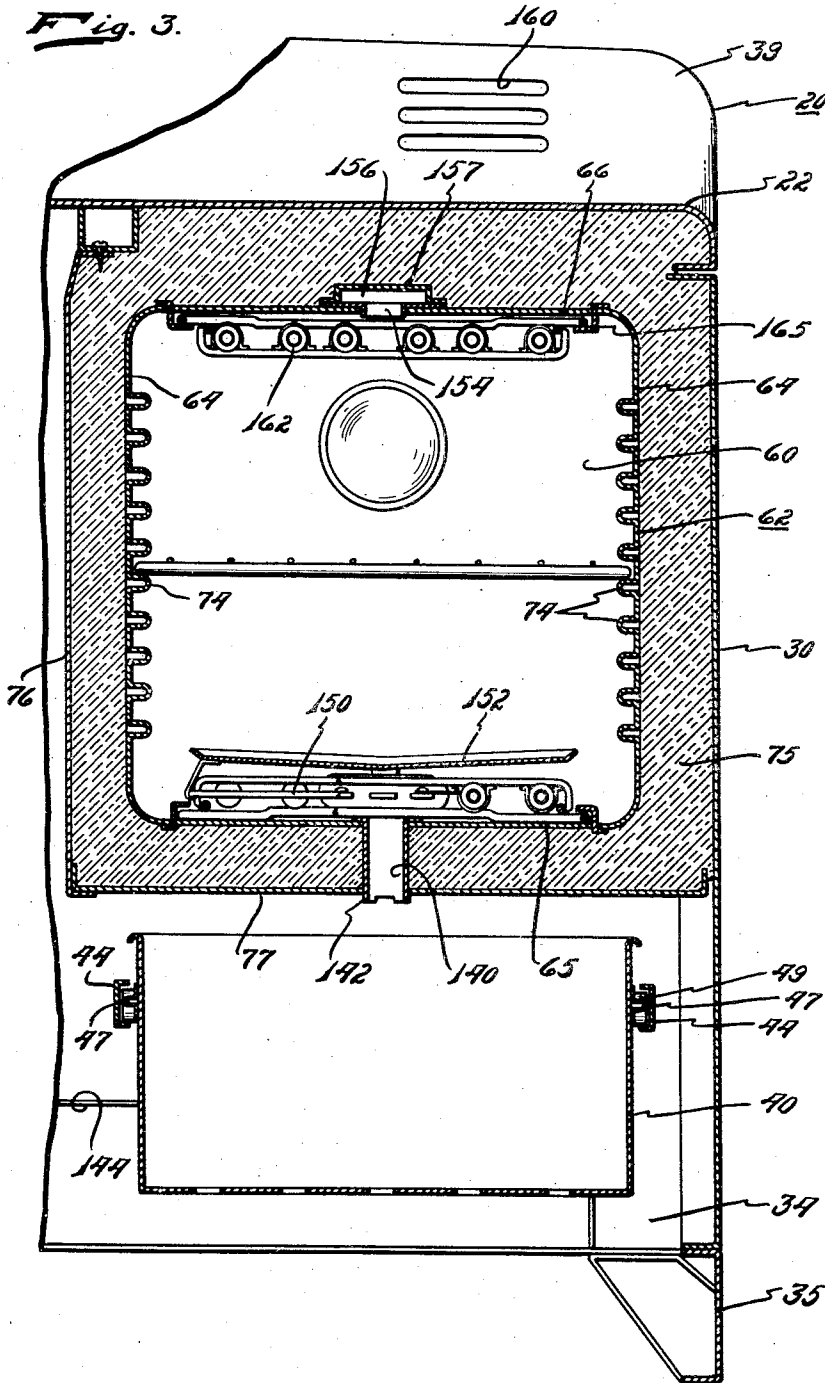
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Fig. 3.



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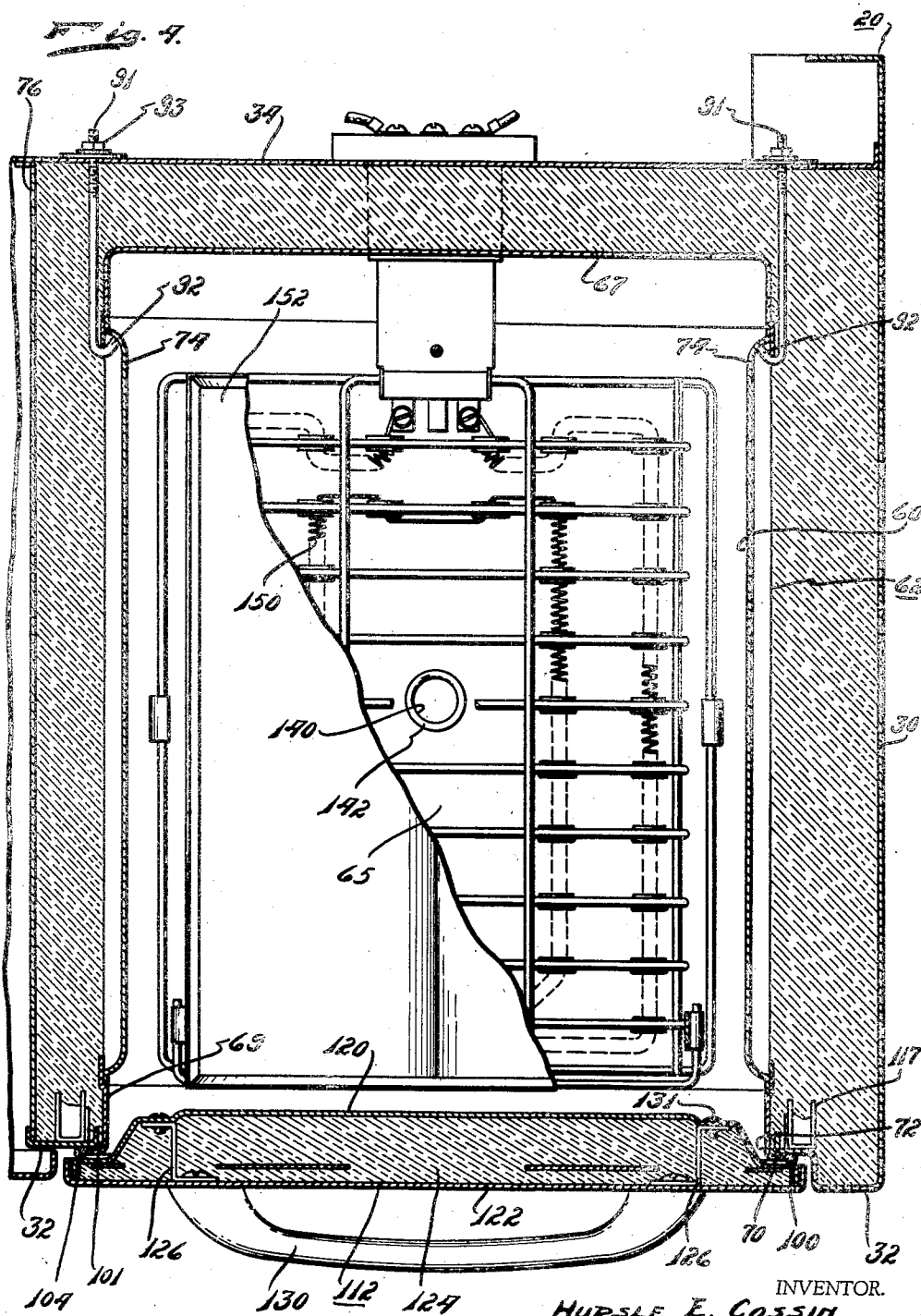
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4 Sheets-Sheet 4



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2,408,295

RANGE APPARATUS

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1 Claim. (Cl. 219—35)

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The present invention relates to ranges.

An object of the present invention is to provide a range oven with an air tight seal about the door opening.

Another object of the present invention is to locate in an oven an air inlet and an air outlet passage whereby the incoming air is heated and uniformly distributed to all portions of the oven chamber while the steam or vapors arising in the use of the oven is uniformly exhausted through the outlet passage to the atmosphere causing little or no variation in the temperature in any portion of the oven with any other portion.

Another object of the present invention is to centrally locate the air inlet and air outlet in direct opposition to each other in the bottom and top walls respectively.

Another object of the present invention is a means for directing all air drawn from the atmosphere over heating coils before circulating in the oven chamber proper.

Another object is to provide in a range a drawer and an improved sliding arrangement therefor.

The invention itself, however, both as to its organization and its method of operation, together with additional objects and advantages thereof, will best be understood from the following description of specific embodiments when read in conjunction with the accompanying drawings, in which:

Fig. 1 is a front elevational view of a range with parts broken away and embodying the present invention;

Fig. 2 is a cross sectional view taken along line 2—2 of Fig. 1;

Fig. 3 is a fragmentary cross sectional view taken along line 3—3 of Fig. 2;

Fig. 4 is a cross sectional view taken along line 4—4 of Fig. 1;

Fig. 5 is a cross sectional view taken along line 5—5 of Fig. 1;

Fig. 6 is a view with parts broken away and parts shown in section taken along line 6—6 of Fig. 5;

Fig. 7 is a cross sectional view taken along line 7—7 of Fig. 6;

Fig. 8 is a fragmentary perspective view of the oven door gasket used in the present invention;

Fig. 9 is a cross sectional view taken along line 9—9 of Fig. 8; and

Fig. 10 is a fragmentary view of a modified form of door construction.

Shown in the drawings is a range 20 having a table top 22 in which is inset electrical surface

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heating elements 24. Each of the heating elements is controlled by a respective manually operated switch 25 interposed in the electrical circuit to the heating element. The switches 25 are mounted on the panel 27 of the range.

The range 20 is constructed with side walls 30, front wall 32 and rear wall 34. The side walls 30 and front wall 32 are stamped and formed from a single sheet of metal, with the rear wall secured between and to the side walls. The top and side walls extend beyond the rear wall to provide a recess for terminal blocks, outlets and the like to be affixed upon the rear wall. The range is supported on a base member 35 which is secured by weld to the side walls 30. The top marginal edge of the front and side walls are bent at right angles to provide a rest for the table top 22 which is secured thereto by clips 37 to the front wall and by bolt and nut (not shown) to the side walls. The table top is provided with an upwardly extending back portion 39.

Slidably mounted within the range 20 are a plurality of drawers 40 which slide outwardly through openings 42 formed in the front wall 32. Each of the drawers is mounted on respective U-shaped tracks 44 extending parallel along opposite sides of each drawer. The tracks are secured to front wall 32 and extend through a slot in the rear wall. A roller 46 is bearinging at the forward end of each of the tracks upon which is adapted to ride a respective rail 47 secured longitudinally along a side wall of the drawer to support the forward end of the drawer. The rear portion of the drawer is slidably supported by 35 rollers 49 secured to each of the side walls of the drawer and adapted to ride in a respective track 44. Drawer stops are provided by tongues 50 extending into the track 44 to engage roller 49 to check the outward movement or opening of the drawer. A depression 51 is formed in the track for the roller 44 to drop into and hold the drawer in open position. A similar depression 52 serves to hold the drawer in closed position. A suitable handle 53 is secured to the front panel 54 of each drawer.

Positioned within the range 20 is an oven 60 formed by a liner 62 comprising said walls 64, bottom wall 65, top wall 66, rear wall 67 and a forward sleeve extension 69. The top, sides and bottom wall are formed as a sleeve with the rear wall secured thereto by weld. The sleeve extension 69 is secured by weld to the opposite end. The extension 69 is marginally flanged outwardly, as at 70, to engage the front wall 32 immediately about the opening 72 formed therein.

Shelf supports are provided in the oven 60 by channelling the side walls 64 forming a plurality of parallel longitudinally extending ledges 74.

The walls of the oven liner 62 are in spaced relation to the side walls 30, rear wall 34 and the table top 22 for the insertion of suitable high temperature heat resisting insulation 75, such as "Fiberglas" or the like. Similar insulation is packed in the space along the bottom and opposite side wall of the oven formed by a vertical partitioned wall 76 and a horizontally extending partitioned wall 77. The partitioned walls 76 and 77 extend from front to rear wall of the range. An L-shaped member 79 is secured to the partitioned wall 77 upon which is adapted to partially rest the oven liner 62.

The liner 62 is assembled into the range by insertion through the front wall opening 72. It is secured by bolts 91 having hooked ends 92 engaging over an edge of the rear wall 67 of the liner. The edge extends over the hollowed portion formed in the making of the shelf supports to permit engagement of the hooks over the overlapping edge. The opposite end of the bolts extend through the rear wall 34 for threading of a nut 93 to draw or pull the liner inwardly until the flange 70 binds against the front wall 32. Preceding the binding of flange 70 against the front wall the section 101 of gasket 100 is inserted to be clampingly held therebetween. The gasket is adapted to seal against the face of door 112 to prevent air entering into the oven chamber. The gasket is preferably formed in one length to extend peripherally to the door opening 102 immediately adjacent the top, and immediately adjacent the sides. The ends of the gasket are inserted into openings 103 in the front wall to prevent fraying or unravelling of the end edges.

The gasket comprises cords 104 and 105 bound together in parallel relation by tape 106 whose ends are stitched together intermediate the cords 104 and 105 by thread 107. The cords 104 and 105 are preferably formed of asbestos, or "Fiberglas," though other suitable high temperature insulation material may be used. The tape is preferably woven from "Fiberglas," though it likewise may be formed of other suitable high temperature heat resisting material, or of material to produce equal results which has been treated, or been suitably coated, to withstand high temperatures. The gasket after fabrication may if desired be suitably coated with high temperature heat resisting paint, enamel or the like.

The cord 105 of the gasket is smaller in diameter to the cord 104 to serve as the locking bead 101 when it is inserted between the flange 70 and front wall 32. The bead section 104 is adapted to extend peripherally adjacent the edge of the flange 70 to seal against the door 112.

Oven door 112 closing the opening 102 is swingably mounted on pins 114 bearing in lugs 116 which project beyond the face of the front wall 32. The lugs 116 extend through openings in the front wall being attached to brackets 117 affixed to rear side of the front wall.

The door 112 comprises an inner pan 120 and an outer pan 122 between which is packed suitable heat insulation material 124. The inner pan is set within the outer pan. The pans are secured together by flanging upwardly the bottom edge of the outer pan (see Fig. 7), as at 126, forming a pocket or channel into which is

inserted the bottom edge of the inner door pan. The pans are then secured together adjacent the top by a Z-shaped bracket 126 which is secured to the outer pan by screws passing there-through in securing the door handle 130 to the bracket. Screws 131 secure the inner pan to the bracket.

Recesses are formed in the door into which project the lugs 116. Pivot pins 114 bearing in the lugs 116 are secured to the inner pan by screws 134 which project through slots 135 formed in the inner pan to permit sliding adjustment of pin. Slots 137 are cut in the bottom edge of the outer pan to permit access to the screws 134.

A gasket or seal 139 similar in construction to described gasket 100 extends along the inner face of the door immediately adjacent its bottom edge. The gasket is secured by inserting the tail or locking bead section 101 between the flange 126 and the inner pan 120. The gasket is adapted to seal against the flange 70 immediately adjacent the bottom of the opening 101. The gasket 139 sealing against the oven flange along the bottom of the door opening and the gasket 100 sealing against the face of the door along the other three sides, forms an air-tight seal around the door preventing air entering into the oven chamber or heated air in the oven escaping about the periphery of the door.

During the use of the oven, as for baking, a certain amount of air must be drawn into the oven to replace that drawn off in the venting of cooking steam or vapors. To control and direct the inlet of air of room temperature into the oven in manner so as to prevent cold areas in the oven chamber there is provided a passage 140 which communicates from the drawer compartment centrally into the oven chamber. The passage is provided with a lining 142, and positioned so that it is geometrically centered in the bottom wall 65 of the oven. Air is drawn into the drawer compartment through opening 144 in the rear wall 34, and through opening 145 formed by inseting the front portion of the base member 35 from the front wall 32. The bottom of the drawer 49 is perforated to permit free circulation of air upwardly from the floor to the passage 140.

Positioned over the passage 140 and resting on the bottom wall of the oven is an electrical heating coil or element 150. A baffle 152 is set directly over the heating coil sloped to direct the air upwardly towards the side walls of the oven chamber. The baffle also permits the heated air to pass forwardly to and upwardly along the face of the door and rearwardly to and upwardly along the rear wall of the oven chamber. The heating coil and baffle are centered over the inlet passage 140 so that a distribution of heated air is directed to all portions of the chamber, in that the air must first pass over some portion of the heating coils 150 before passing around the baffle to enter the oven chamber proper.

Directly over the inlet passage 140 in the top wall of the oven chamber is a vent outlet 154 communicating with a laterally directed passage 156 formed by duct 157. The passage 156 communicates with a vertical passage flue or chimney 150 which is opened at both ends to the atmosphere. The top outlet is through the grill opening 160 in the back 39 of the table top 22. The passage 156 enters at an intermediate point between the inlet and outlet of the passageway 150 so that as the air rises in the passageway or chimney 150, it tends to draw steam or vapors from

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the oven chamber through the passage 156. Entering the passage 150, from the passage 156, the steam or vapor mixes with the colder column of rising air to reduce its temperature before discharging through the grill opening 160 to the atmosphere.

A second heating element 162 is suspended from hooks 165 from the top wall 66 of the oven liner. The element 162 is used for broiling and pre-heating of the oven. The lower element 150 10 is used for heating of the oven during the baking process. Both elements are connected to a manually set thermostatic switch 167 mounted on the panel 27.

A suitable light bulb 170 is mounted in a glass front casing secured in an opening in the rear wall 67 of the oven chamber for illuminating the chamber. A suitable switch (not shown) operable by the opening and closing of the oven door is interposed in the electrical circuit to the light bulb to provide illumination when the door is in open position.

In the present arrangement the oven chamber is uniformly heated throughout. Cold areas are eliminated as all air drawn into the oven must flow across the heating coils before passing around the baffle and entering the baking or oven chamber proper. The air inlet being centrally positioned beneath the heating coils and baffle that the distribution of air is uniform to all parts of the oven chamber. By centrally locating the vent opening in opposed relation to the inlet opening there is a uniform withdrawal of steam and vapors from the chamber. The possibilities of steam becoming entrapped in any portion of the chamber is reduced to a minimum and reducing the possibilities of any portion of the chamber becoming overheated. By evenly withdrawing the vapors from the oven chamber a uniform humidity is obtained throughout.

In Fig. 10 there is shown a modified form of door construction wherein 180 is the outer front panel and 182 the rear panel. Panels 180 and

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182 are secured together by U-shaped channel members 186 and screws 188. The channel member 186 includes leg 190 which is secured to the side wall of panel 180, preferably in the same manner as panel 120 is secured to panel 122 as disclosed in Fig. 7. Screws 188 extend through channel member 186 and flange 202 of panel 182. Screws 188 also extend through gasket 100 and lock the gasket between flange 202 and member 186. The channel member 186 and gasket extend entirely about the periphery of the door forming a seal for the oven and thus dispensing with a gasket on the cabinet proper.

While I have described the preferred form of my invention, I do not wish to limit myself to the precise detail as shown but wish to avail myself of such variations and modifications as may come within the scope of the appended claim.

I claim:

20 In a range having an inner and an outer casing with heat insulation therebetween, said inner casing having side, top and bottom walls for forming an oven chamber, said inner casing forming an access opening to said chamber, a 25 movable door for closing said opening, sealing means for sealing said door to said casings about said access opening, said oven bottom wall having an air intake passage disposed centrally thereof, an electrical heating element positioned 30 over said passage and supported adjacent the bottom wall of said oven, a baffle positioned directly over said heating element and sloping upwardly toward the side walls of the oven chamber, said heating element and baffle being centered over said inlet passage so that a distribution 35 of heated air is directed toward and upwardly along the face of said door and side walls, said oven top wall being provided with a vent outlet disposed in the central area thereof and a horizontally disposed heating element suspended 40 from said oven top wall and coextensive with the major portion of the central area of the top wall.

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