Feb. 22, 1955 D. W. SCOFIELD ET AL 2,702,848

OVEN GRIDDLE

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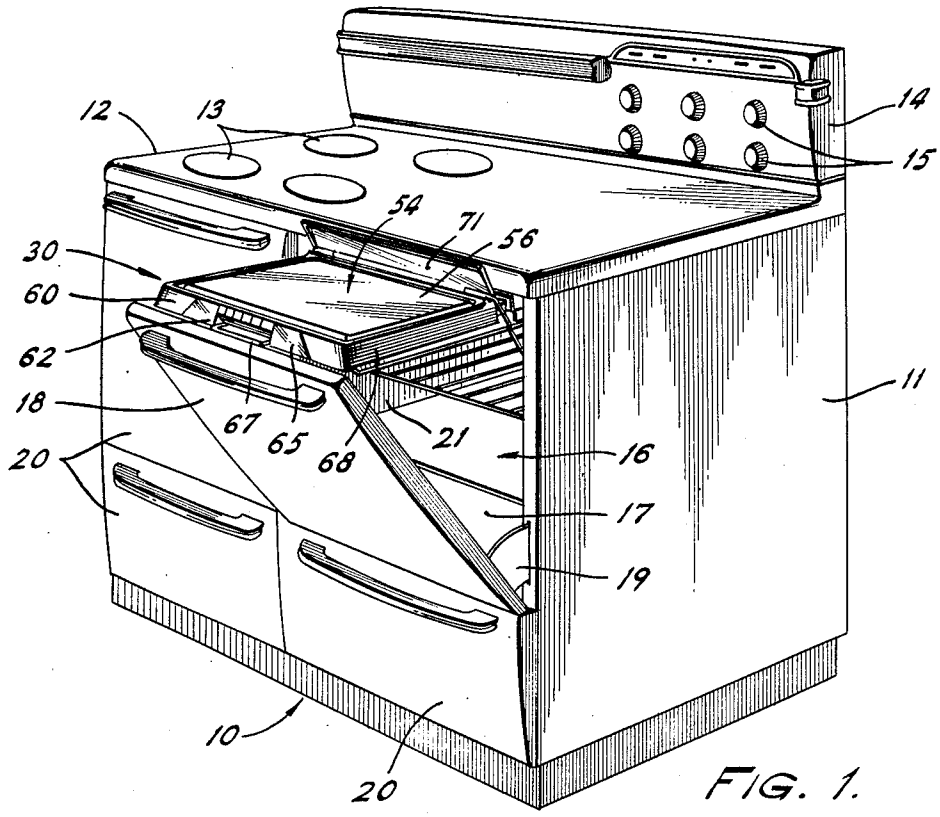


FIG. 1.

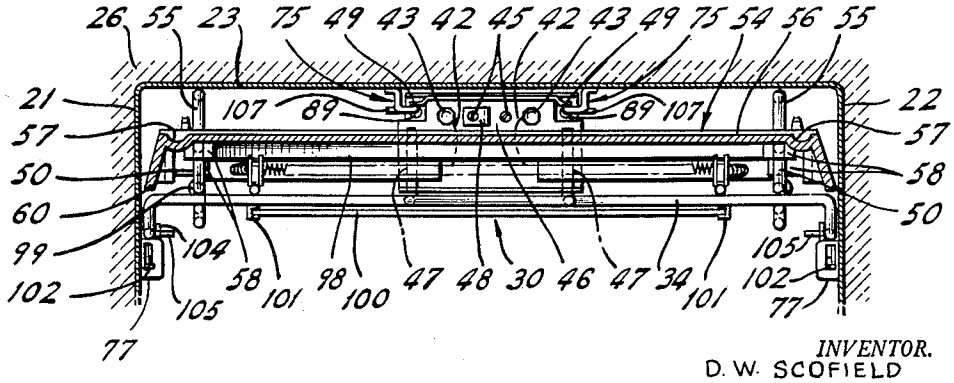


FIG. 5.

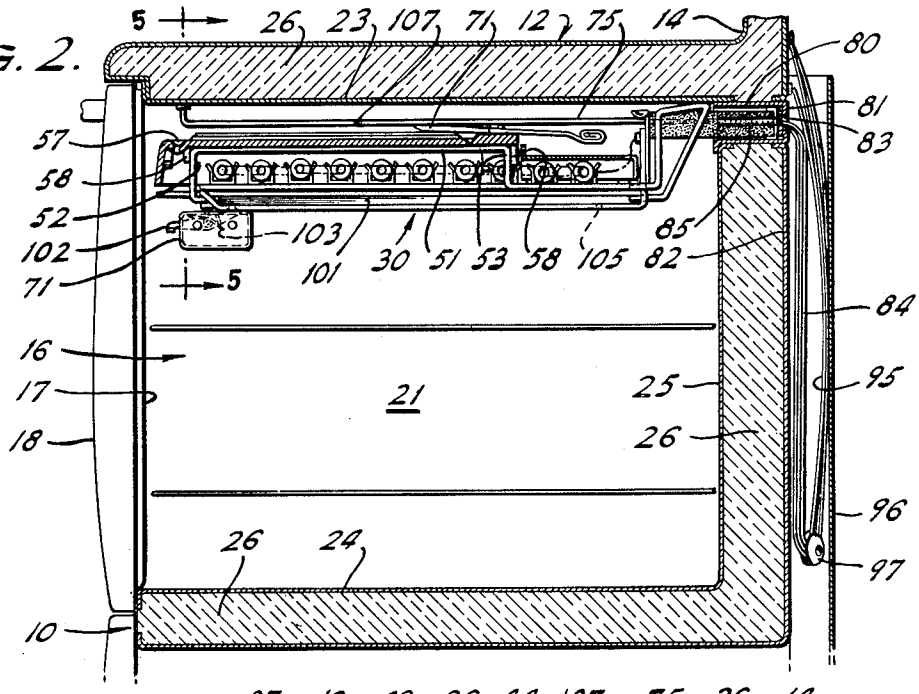
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OVEN GRIDDLE

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FIG. 2.



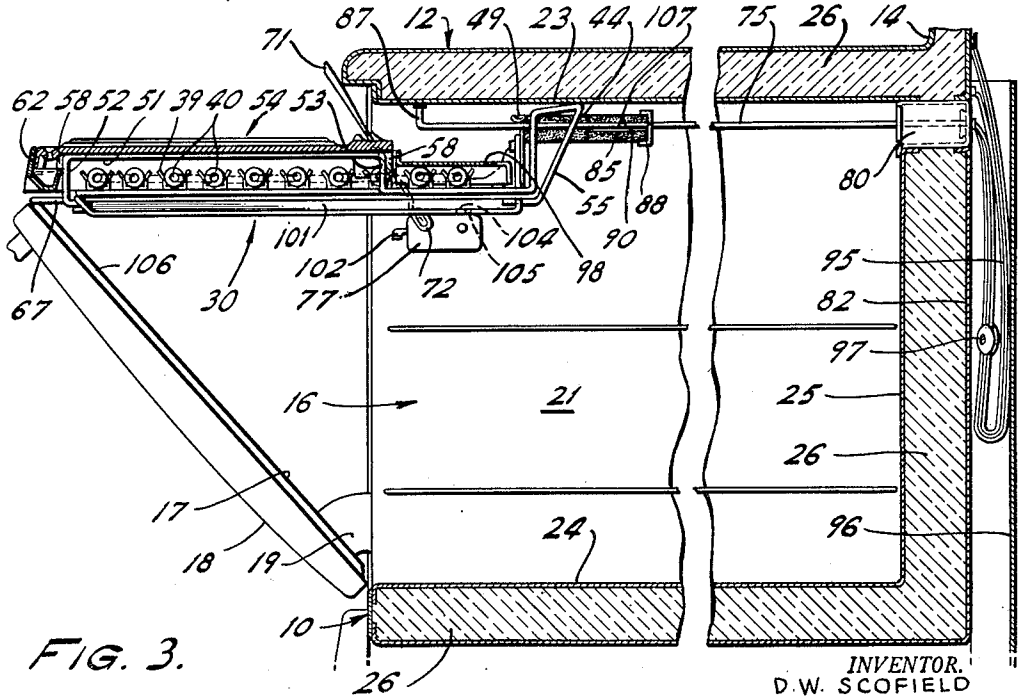


FIG. 3.

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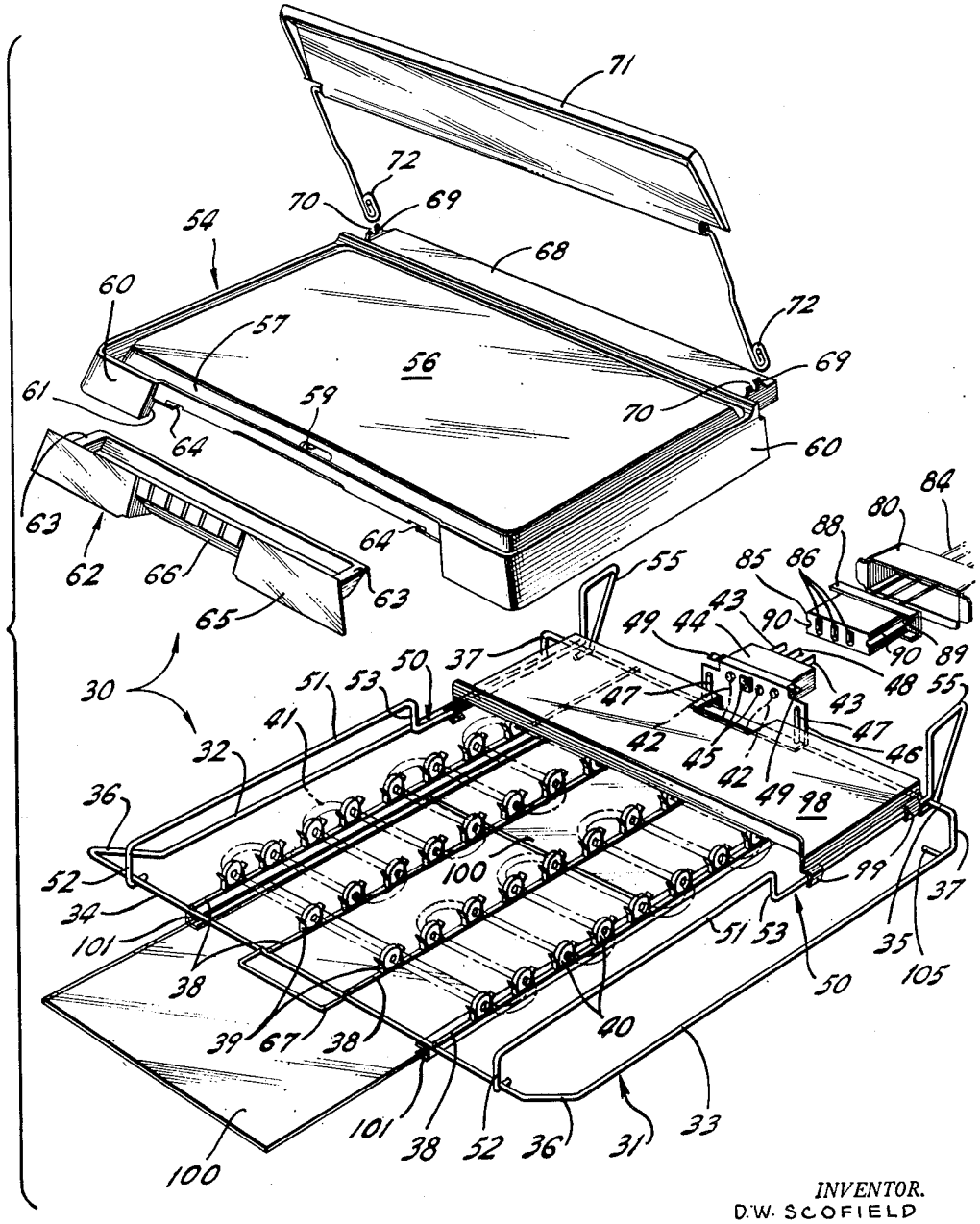
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FIG. 4.



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OVEN GRIDDLE

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Application November 9, 1950, Serial No. 194,796

7 Claims. (Cl. 219—37)

The invention hereinafter described and claimed has to do with cooking ranges. More specifically it relates to ranges of the type including an oven having broiling facilities therein.

While not limited thereto in its broadest aspect, the invention is more particularly adapted for use in ranges wherein the oven is electrically heated. Accordingly, and by way of example, the following description and accompanying drawings disclose the invention associated with a domestic type electric cooking range.

The primary object of the invention is to increase the usefulness of such a range by providing in its oven a combined cooking griddle plate and broiler heat unit which is movable between a retracted position within the oven and an advanced position at the front and adjacent to the top surface of the range.

Another, and important object of the invention is the provision of such a combined unitary structure in which all the elements thereof are mutually cooperative when in either position.

A further object of the invention is to provide such a device characterized by unusual simplicity both constructionally and operationally.

To these general ends the cooking griddle plate, as is illustrated in the accompanying drawings, is operatively associated with the broiler heat unit and is positioned within the oven of a typical domestic electric range, adjacent the top wall thereof.

While the griddle plate may be constructed so as to be independently movable, without departing from the spirit of the invention, preferably, and as illustrated, it is carried by the broiler heat unit and is slidable therewith between a retracted position within the oven and an advanced position partially projecting therefrom. When in the said retracted position the griddle plate lies between the heat unit and the top wall of the oven in a stored position in which its bottom surface serves as a heat reflector during broiling operations. When the heat unit is moved forwardly into its advanced position, the griddle plate moves with it into position for cooking purposes.

Flexible electric wiring for supplying energy to the heating coil carried by the unit is detachably connected thereto so that the coil may be energized in either position, or be completely disconnected therefrom if it is desired to remove the unit from the oven.

The foregoing, together with other objects and constructional features of the invention will best be understood by making reference to the following detailed description considered in the light of the accompanying drawings.

For convenience in describing the invention, hereinafter the griddle plate will be more simply referred to as the "griddle," and the combined griddle plate and broiler heat unit will be designated the "griddle-unit."

In the drawings:

Figure 1 is a perspective view of a domestic type electric range showing the griddle-unit in its advanced position partially projecting from the oven in a position adjacent the range top;

Figure 2 is a transverse cross-sectional view through the oven of the range showing the griddle-unit partially in section and in its retracted position adjacent the top wall of the oven;

Figure 3 is a view similar to Figure 2, but showing the griddle-unit in its advanced position;

Figure 4 is an exploded perspective view of the griddle-unit shown removed from the oven and illustrating the constructional details of this exemplary embodiment; and

Figure 5 is a fragmentary sectional view taken along line 5—5 of Figure 2.

With reference to the drawings, and more particularly to Figure 1 thereof, the numeral 10 designates an electric cooking range comprising a body portion **11** and a top cooking surface **12**. The usual surface burners **13** are positioned on the cooking top which is provided along its rear edge with the customary splash-guard **14** upon which are mounted the control elements **15** for the various heat units.

The body of the range houses an oven **16** having a front opening **17** provided with an insulated door **18** which is pivotally mounted at its bottom edge as by hinges **19**. Also housed in the body of the range are other compartments as indicated by closure members **20** which may be in the form of hinged doors or drawer fronts. Neither the number nor the construction of these other compartments is important to the invention, being shown only for convenience in illustrating a typical cooking range.

Referring now to Figures 2, 3, and 5 it may be seen that the oven is formed by opposed side walls **21** and **22**, top and bottom walls **23** and **24**, respectively, and end or back wall **25**. Suitable insulation **26** fills the space between the oven walls and the walls of the range body.

In particular accordance with the illustrated embodiment of the present invention, there is shown, slidably mounted adjacent top wall **23** of the oven, the griddle-unit, indicated generally by the numeral **30**.

The broiler heat unit, per se, as seen more clearly in Figure 4, comprises a substantially rectangular frame member **31** including side rails **32** and **33**, front rail **34** and rear rail **35**. Front rail **34** is spaced slightly above the plane of side rails **32** and **33** as by upwardly angled front portions **36** thereof. Similarly the rear rail **35** is spaced slightly above the side rails in substantially the same horizontal plane as the front rail by short upwardly turned vertical rod portions **37**. It is understood, of course, that the frame may comprise separate rod or wire segments welded or otherwise suitably joined, or alternatively and preferably, said frame may be formed from a single heavy gauge rod bent to the shape described.

Spanning the frame from front to rear and approximately equally spaced from each other are four rods **38**, the front ends of which are welded to front rail **34**, while their other extremities are welded to rear rail **35**. Mounted upon rods **38** by suitable means such as clips **39** is a plurality of insulating bushings or grommets **40** through which the heating coil **41** is threaded and thereby supported in a substantially horizontal plane on frame **31**. It will be noted that, for convenience in illustrating other structure, the two centrally positioned rods along with their clips and grommets have been omitted in Figure 5.

Ends **42** of the heating coil are connected to the outer two (identified by the numerals **43**) of three contact making elements or prongs carried by a terminal plug **44**. Bolts **45** secure the plug to a metal bracket **46** welded or otherwise suitably attached to vertically positioned rods **47** carried by rear frame rail **35**.

The center prong **48** is the ground contact element and has its inner end secured in intimate contact with metal bracket **46** as by one of the bolts **45** which secure the terminal plug thereto, thus grounding frame **31**. Bracket **46** also is provided with oppositely extending arm portions **49**, the purpose of which will be explained hereinafter.

Also spanning frame **31** in a direction paralleling side rails **32** and **33** and adjacent thereto is a pair of rods **50**, the ends of which are secured to front and rear frame rails **34** and **35**. The forward portion **51** of each of these rods is raised above the plane of rails **34** and **35** by short vertical rod sections **52** at the front and **53** at the rear.

These raised portions provide the means by which griddle **54** is supported upon frame **31**. At the rear of each rod **50** there is formed a triangularly shaped loop **55**, the purpose of which will be more clearly understood as the description proceeds.

Griddle **54** comprises a generally rectangular structure, preferably—but not necessarily—cast from aluminum or some other suitable metal of high heat conductivity. Included in its structure is a flat cooking surface **56** surrounded by a grease trough **57**. The bottom of the trough, as seen in Figure 5, extends below the underside of cooking surface **56**, and it will be noted that the transverse dimension of said underside is substantially equal to the dimension between the outer sides of spaced rods **50**, whereby sidewise displacement of the griddle when it is mounted on said rods, is prevented by the grease trough. Shifting of the griddle relative to frame **31** in fore and aft directions is prevented by short flanges **58** which depend from the underside of the griddle in positions cooperating therewith, see Figures 2 and 3, to straddle raised portions **51** of rods **50** in abutting relationship with vertical sections **52** and **53** thereof.

Now referring back to Figure 4, grease trough **57** slopes from the rear of cooking surface **56** downwardly around the sides and front thereof to a drain hole **59** midway between the sides of the griddle. The sides and front of the griddle include a depending flange **60** which is interrupted in the front, as shown at **61**, thereby to provide space for removably positioning a grease tray **62** beneath hole **59**. The tray is slidably mounted for easy removal by flanges **63** on opposite side edges thereof, and mating slots **64** formed at opposite ends of the interrupted center portion of flange **60**. Detent or other suitable means, not shown, may be provided to prevent accidental displacement of the tray from the griddle.

The tray also has a depending front flange **65** complementing griddle flange **60** and cooperating therewith to provide a decorative front for the griddle. The tray flange is recessed in its central area **66** to provide access to a handle **67** secured to and projecting forwardly from the central area of the front frame rail **34**.

Along the rear edge of the griddle there is provided a flat portion **68** having at each side edge thereof an upstanding flange **69** formed with a groove **70** therein. The pair of grooves provide means for pivotally supporting a splashguard **71** on the griddle. Rigidly depending from the splashguard on opposite sides thereof are counterbalance elements **72** having a combined weight slightly exceeding that of the splashguard thereby normally urging the latter to a vertical position. So as not to interfere with the illustration of other features shown in Figure 5, the splashguard has been omitted from this figure.

With reference to Figures 2, 3, and 5 it can be seen that the griddle-unit is mounted in the top of the oven by means of a pair of slide rails **75** adjacent to the top wall of the oven, and a pair of support elements **77** attached to the side walls of the oven one on each side adjacent the front opening thereof.

In the upper part of oven end wall **25** there is fitted a hollow housing member **80** which projects rearwardly through insulation **26** and terminates in an end wall **81** at the back wall **82** of the range. End wall **81** includes a flanged aperture **83** through which energy supply wires **84** lead into a terminal jack **85** and make contact with prongs **43** and **48** of plug **44**, the latter being received into the jack through apertures **86** in its front wall; see Figure 4. The manner in which contact is made between the prongs and wires within the jack is conventional and therefore need neither be shown nor described herein.

Support of frame **31** on slide rails **75** is by means of the outwardly projecting arms **49** which overlie and rest upon the rails in slidable relation therewith. As seen more clearly in Figure 5, the forward ends of rods **75** are turned outwardly in opposite directions then upwardly and are secured to the underside of the top wall **23** near the front of the oven. The offset thus formed provides clearance for arms **49** to be slid on and off of the rails at will. From this offset the rods extend rearwardly in a substantially horizontal path through the oven and housing **80** and have their other ends fixed to end wall **81** of the latter. On its rear wall, terminal jack **85** includes a metallic plate **88** through which rods **75** pass, by way of apertures **89**, thus to slidably support the jack upon the rods. The side walls of the jack are provided with longitudinal grooves **90** which hug the inner sides of rods **75**

to hold the jack in a horizontal position in registry with plug **44**.

Energy supply wires **84** are of the conventional flexible armour and insulation covered type, and so that sufficient length is provided to accommodate movement of the unit from its retracted to its advanced position, a large loop **95** thereof extends down the back wall of the range. A suitable housing **96** secured to the range back wall **82** prevents entanglement of the wires with adjacent structures. A weight **97**, fixed to the wires, assures orderly retraction of the wire into the housing when the unit is returned to its retracted position within the oven.

When in retracted position, as shown in Figure 2, terminal jack **85** is completely within housing **80** which, in cross-sectional area, is only slightly more than equal to that of the jack (see Figure 4), whereby the contact elements in the jack are somewhat protected from the heat of the oven. Abutment of the rear wall **88** of jack **85** against the end wall **82** of housing **80** terminates retraction of the unit and determines the best position for the heat unit when used for broiling purposes. When in this retracted position the forward portions of side rails **32** and **33** are resting on support elements **77**, and griddle splashguard **71**, being confined between slide rails **75** and surface **56** of the griddle, is pivoted forwardly over the cooking surface of the griddle.

When the griddle-unit is in use for broiling purposes, the bottom surface of the griddle, as mentioned before, is designed to serve as a heat reflector. Because, as a matter of design, the griddle does not cover all of the heat coils **41**, and so that the said heat reflection will be substantially uniform over the whole broiling area, a bright metal cover plate **98** has been positioned over the uncovered heat coils in close proximity thereto, see Figure 4. The plate is secured to the lower rear portion of rods **50** by finger elements **99** formed integrally with the depending side flanges of the plate. To substantially complete enclosure of the coils, plate **98** is provided with a depending rear and upturned forward flanges which assist in concentrating the heat beneath the griddle and said plate.

Additionally, if desired, frame **31** may be provided with a pair of heat shock resistant infrared transmissive plates **100** suspended from the frame by means of channels **101**. These elements, per se, do not comprise an important part of the present invention, being the subject matter of Patent #2,511,790, issued to Donald W. Scofield, and assigned to the assignee of the present invention. As described hereinafter, however, these plates enhance the operation of the apparatus of the present invention, but it should be distinctly understood that operation of the griddle-unit without these plates is highly satisfactory and that use thereof is optional.

When it is desired to use the griddle, oven door **18** is opened sufficiently to permit grasping of handle **67** in order to pull the griddle-unit forward to its advanced position as shown in Figure 3. This position may be determined by any suitable means, but the present illustrative embodiment includes stop means comprising a lever **102** pivotally mounted within the front support elements **77**. A spring **103**, see Figure 2, biases the inner end **104** of the lever upwardly into the path of short rods **105**, more clearly seen in Figure 5, projecting inwardly from the inner side of and adjacent the rear of side rails **32** and **33**.

With the griddle in this advanced position it will be noted that the top of loop **55** is contacting the top wall of the oven thereby to overcome any tendency for tilting or counterclockwise pivotation of the griddle-unit, about element **77** as a center, particularly when items to be cooked are placed upon the griddle. Also resisting such movement is the arrangement of terminal jack **85** on slide rails **75**. To provide additional support for the unit the door has been arranged with a conventional stop, not shown, to hold it in a position wherein its top edge is adjacent the front of frame **31** and in which position, as shown in Figure 3, handle **67** rests upon the bumped out portion **106** formed in the inner panel of the door.

By reason of the increased clearance over the rear edge of the griddle, when in advanced position, weights **72** have rotated the griddle splashguard upwardly against the forward edge of the range top thereby to protect it against splashing grease.

It should now be clear, that the griddle, when in its advanced position, may be removed from the heat unit

by simply raising it sufficiently for flanges 58 and 60 to clear rods 50.

When it is desired to remove the heat-unit from the oven, the forwardly projecting arms of lever 102 are pressed upwardly, thus depressing ends 104 to permit stop rods 105 to pass over them. Disconnection of plug 44 from jack 81 is effected by short outwardly projecting rods 107 which are secured to the slide rails in the path of movement of the jack end plate 83. During withdrawal of the griddle-unit, plate 83 contacts rods 107 which hold the jack against further forward movement. Continued forward movement of the unit withdraws prongs 43 and 49 from the now stationary jack, thereby freeing the unit for complete withdrawal from the oven.

To replace the griddle-unit within the oven, it is merely necessary to align the arms 49 with slide rails 75 and push the unit completely within the oven. Stop rods 105 automatically depress levers 102 and pass over them. Because of the necessary tightness of fit between the prongs of the plug and the contact elements in the jack, it will be found that the jack is moved into its completely retracted position within housing 80 before sufficient resistance is met to permit complete engagement of the prongs therewith. Retraction of the griddle-unit automatically causes splashguard 71 to pivot forwardly, as shown in Figure 3.

When the griddle-unit is in its advanced position, as shown in Figures 1 and 3, it can be understood that the heating coil normally would be exposed to air circulation through the space therebeneath and thus lose some of its effectiveness in heating the griddle. Plates 100 are effective to remedy this condition by shielding the coils from such air.

Having now completely described an exemplary embodiment of the invention it is clear that it provides an exceedingly useful addition to cooking ranges, and one which may be incorporated in the range without altering the exterior appearance thereof. Importantly, the invention provides a griddle plate and broiler heat unit combined in such a manner as to make them mutually cooperative when used in either mode of operation.

We claim:

1. An oven comprising a top wall, a bottom wall, opposite side walls, and an end wall, all defining an open front cooking compartment, a door for closing the opening, a heating unit positioned within said compartment, means mounting said unit for movement between a fully retracted position within said compartment and an advanced position partially extending out of said front opening, stop means for limiting the outward movement of said unit, manual means for rendering said stop means inoperable to permit complete withdrawal of said unit from said compartment, means on said unit for engaging the said door, whereby said door partially supports said unit when the latter is in advanced position, abutment means extending upwardly from the rear of said unit and adapted to cooperate with the top wall of said oven to prevent tipping of said unit when in advanced position, a heating element carried by said unit, a griddle plate, means on said unit for removably supporting said griddle plate thereon in a position closely overlying said element to receive heat therefrom for cooking purposes, means for supplying energy to said element when in either retracted or advanced position, and means for disconnecting said last mentioned means when said unit is completely withdrawn from said compartment.

2. Cooking apparatus comprising, in combination: an oven having an access opening in one side wall thereof; a combined cooking griddle and broiling unit assembly disposed adjacent to the upper portion of said oven, said assembly including a heating element normally exposed within the oven and including downwardly facing portions normally operable at red heat and utilized for broiling purposes within the oven, said assembly further including a substantially imperforate griddle plate overlying said heating element and adapted, under one condition of operation, to receive and cook food directly upon its upper surface, said plate being of considerable thickness and presenting sufficient thermal mass to achieve, in response to energization of the underlying heating element, relatively even heating of its upper surface; means mounting said assembly within said oven for movement between a retracted position in which the assembly is disposed within said oven and said heating element serves as a broiler with said plate constituting a shield member therefor, and an advanced position in which the assembly projects from said oven and the upper surface of said plate is exposed for use as a cooking griddle; and means for supplying heating energy to said element in either position of the assembly.

3. Cooking apparatus in accordance with claim 2, and further characterized in that said plate is readily removable from association with said heating element to accommodate cleaning thereof.

4. Cooking apparatus comprising, in combination; an oven having an access opening in one side wall thereof; a broiling unit assembly disposed within the upper portion of said oven, said assembly including framing, and a heating element normally exposed within said oven and utilized for boiling purposes therein, and means supporting said element on said assembly framing; a planar substantially imperforate griddle plate removably supported upon said assembly adjacent said heating element and adapted to receive and cook food directly upon its upper surface, said plate being of considerable thickness and presenting sufficient thermal mass to achieve, in response to energization of the underlying heating element, relatively even heating of its upper surface; means mounting said assembly and griddle plate within said oven for movement between a retracted position disposed within said oven and in which position the said heating element serves as a broiler with said overlying griddle plate constituting a shield member therefor, and an advanced position projecting from said oven and in which position the upper surface of said griddle plate is exposed for use as a cooking griddle; and means for supplying heating energy to said element in either position of the assembly.

5. Cooking apparatus in accordance with claim 4, and in which said framing includes front, rear, and opposed side rails, means spanning opposed rails to support said heating element thereon, and means for removably supporting said griddle plate on said rails in a position closely overlying said heating element.

6. Cooking apparatus in accordance with claim 4, wherein said framing is provided with a terminal plug through which said element may be energized, and wherein said oven is provided with a socket member adapted to receive the said terminal plug and to move therewith when said assembly is moved between its retracted and advanced positions, said socket member being provided with a supply cable extending through the back wall of said oven to a source of electrical energy.

7. Cooking apparatus in accordance with claim 4, and further including means suspended from the underside of said framing and cooperating with said griddle plate substantially to enclose said element to prevent passage of cool air in contact therewith when said assembly is disposed in the said advanced position, said means being heat transmissive to provide for the stated heating of the oven.

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