United States Patent

Helgeson et al.

[15] **3,706,302**

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[54] **CONTINUOUS CLEAN OVEN CONVERSION**

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[73] Assignee: **Raytheon Company**

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[52] **U.S. Cl.**.....**126/19 R**, 126/39 M

[51] **Int. Cl.**.....**F24c 15/16**

[58] **Field of Search**.....126/19 R, 39 M

[56] **References Cited**

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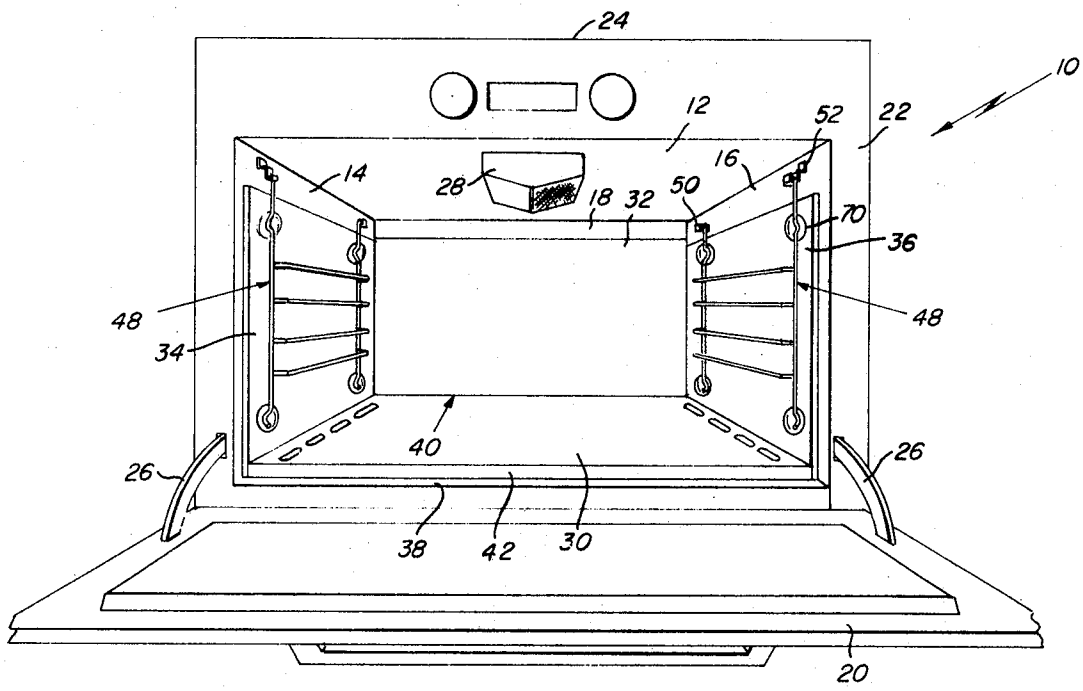
Attorney—Harold A. Murphy

[57] **ABSTRACT**

A continuous clean oven embodying a conventional oven liner having as accessories superimposed removable back, bottom and side panels coated with material which provides continuous clean characteristics, and means for retaining the panels in place.

11 Claims, 6 Drawing Figures



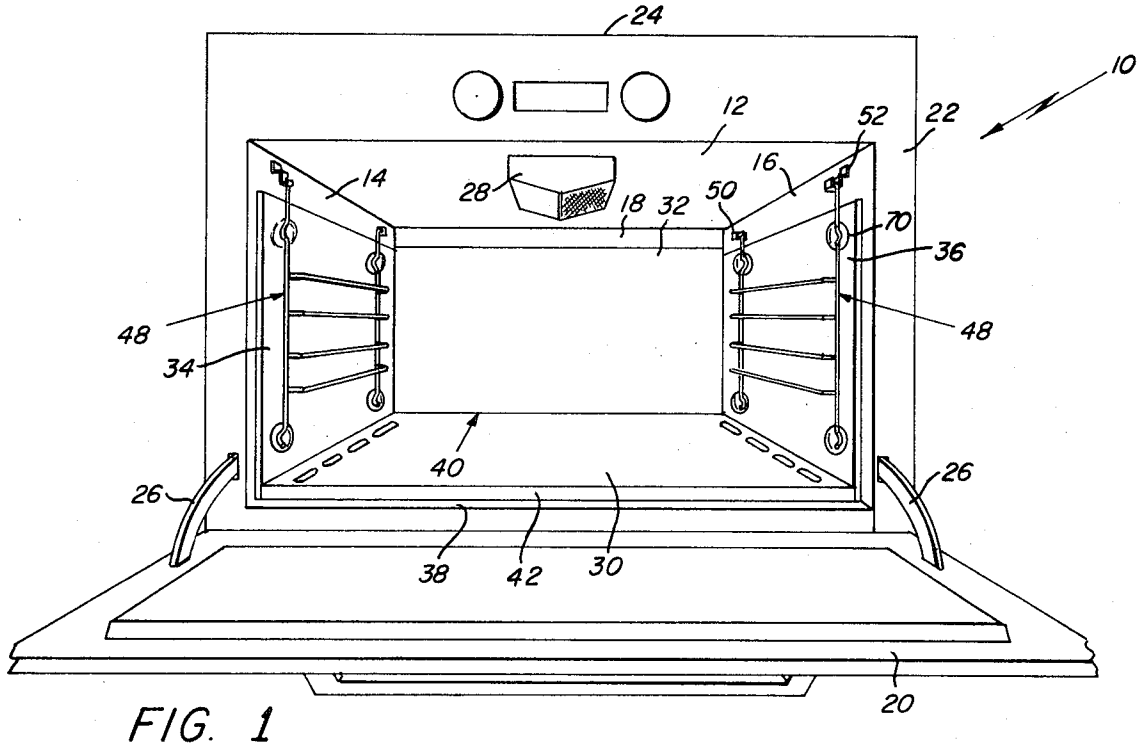

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FIG. 1

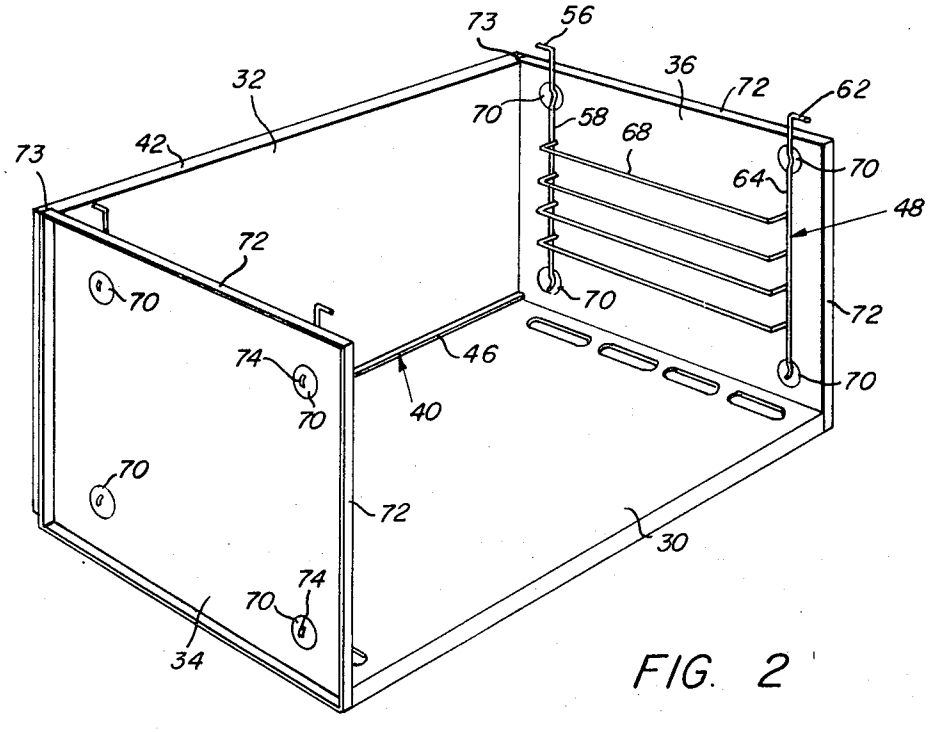
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FIG. 2

FIG. 3

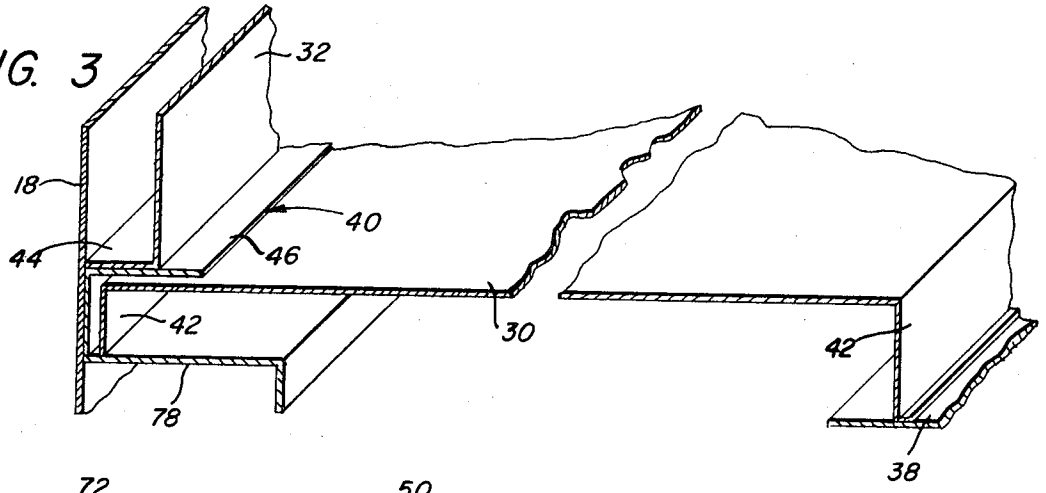


FIG. 5

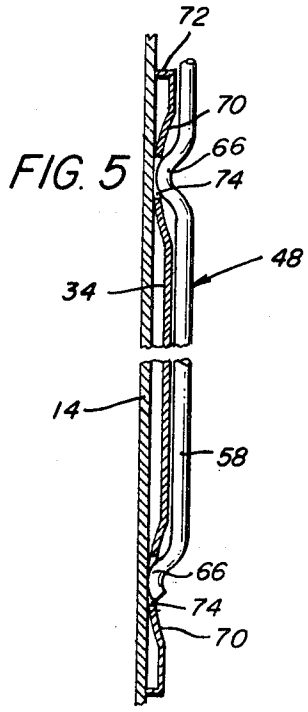
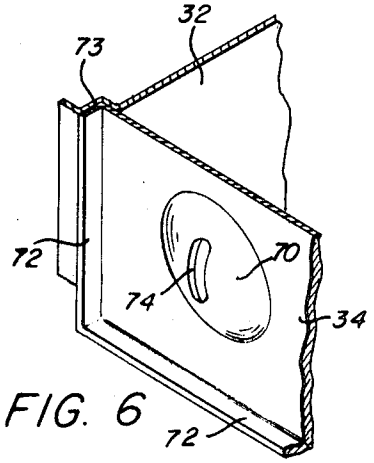


FIG. 6



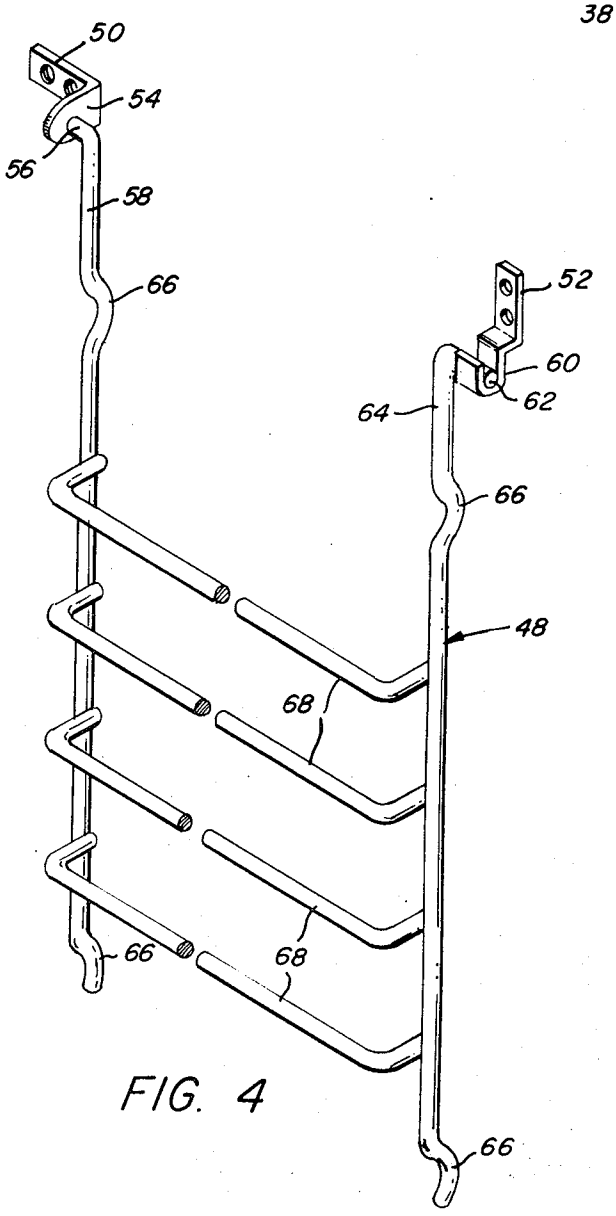


FIG. 4

CONTINUOUS CLEAN OVEN CONVERSION

BACKGROUND OF THE INVENTION

Continuous clean ovens are well known to comprise an oven liner wherein the back, bottom and side walls are all coated with a material which reacts with food soil at elevated temperatures in such a way as to catalytically remove the soil. Such material is usually a catalytic material which will oxidize the food residues on the panel surfaces at normal oven operating temperatures of, for example, 400°–500°F. Such materials are well known and one thereof is disclosed in U.S. Pat. No. 3,266,477 to A. B. Stiles.

Oven liners with continuous clean characteristics are usually provided with fixed panels which thus require that the ovens be provided with the panels at the time they are built. However, ovens are appliances which usually last for many years. Therefore, many times a housewife may own a satisfactorily operating conventional oven while desiring one which has continuous clean characteristics. In such a case she is usually loath to invest in the second oven while the first oven performs efficiently. In other cases a housewife may purchase a new conventional oven but may desire an option to provide the purchased oven with continuous clean possibilities.

SUMMARY OF THE INVENTION

In either of the above cases a solution is provided by the present invention wherein there is provided an accessory kit for converting the conventional oven to a continuous clean oven. The kit embodies a set of back, bottom and side panels coated with continuous clean material which panels are adapted to be removably inserted into the conventional oven so that the oven will operate as a continuous clean oven.

The panels are designed, according to this invention, to interfit in such a manner that proper assembly will be retained while permitting easy removal of the bottom panel whenever desired for servicing of the bottom heating unit without disturbing the side and back panels.

Novel means is also provided for retaining the side panels in place, which means utilizes the oven's rack supports for this purpose.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objectives and advantages of the invention will become apparent from the following description taken in connection with the accompanying drawings, wherein:

FIG. 1 is a front elevational view in perspective of an oven embodying the invention;

FIG. 2 is an isometric view of the continuous clean panel kit of the invention fully assembled;

FIG. 3 is an enlarged sectional view of the bottom panel and its supports;

FIG. 4 is an isometric view of a rack support assembly;

FIG. 5 is a vertical sectional view illustrating a side panel retained in place by a rack support; and

FIG. 6 is an enlarged view of a portion of a side panel.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, and particularly to FIG. 1, there is shown an oven **10** of a type commonly known which may be fueled by any suitable source such as gas or electricity, as desired. It will be understood, however, that this invention may be applied to or incorporated in other ovens such as free-standing ranges, for example, and may comprise either the upper or lower or both ovens in ranges where two ovens are utilized.

Traditionally, ovens include an oven liner comprising a top **12**, side walls **14** and **16**, back wall **18** and a bottom panel which with a door **20** comprise a cooking, baking or broiling compartment. The liner is mounted in a suitable cabinet or body **22** which encompasses the various elements of the oven and provides a decorative outer covering with a pleasing appearance for the kitchen. Located above or at one side of the door **20** may be a control panel **24** containing the various control components such as burner controls, thermostat, clock, etc.

The front of the oven liner is open and is adapted to be closed by the front-opening door **20** which is hinged to the oven cabinet along its bottom edge by a pair of hinge straps **26**.

Heating means is provided in the oven for normal cooking operations and for this purpose a top burner **28** is provided near the top **12** of the liner. Top burner **28** is usually used for broiling, while a second burner (not shown) is located beneath the floor of the liner for baking purposes, as is well known.

Burner **28** is illustrated as a radiant type gas-fueled burner such as, for example, the radiant burner disclosed in U.S. Pat. No. 3,122,197. However, the burners may be conventional blue flame ported gas burners or may be electrical resistance heating elements, if desired, or may be any other type burners fueled by any suitable material and in any suitable manner.

The walls **12**, **14**, **16** and **18**, and door **20**, as well as a removable bottom (not shown) are of metal and when the burner or burners are operated they confine heat within the compartment for the desired cooking function. However, it will be apparent that the bottom as well as the back and side panels become rather easily soiled by food spillage or the like and require manual cleaning, a tedious time-consuming and generally disliked procedure.

With the advent of self-cleaning and continuous cleaning ovens the manual cleaning chore has been reduced or eliminated. However, in most known cases the ovens are of a completely factory-built fixed-panel assembly type.

In accordance with the present invention, a conventional oven may be converted into a continuous clean oven by means of a kit which comprises a number of separate panels which are precoated with the selected continuous cleaning material and which are so constructed and arranged as to be easily inserted into the conventional oven for the purpose.

Referring to FIG. 2, the kit comprises a bottom **30**, a back wall panel **32**, and side or end wall panels **34** and **36**. To insert the panels in the conventional oven, the conventional oven bottom and oven racks are removed.

Removal of the oven bottom clearly exposes a plate **38** which extends across the front of the liner near the base thereof and, also exposes at the rear of the liner, a cross channel **40** which is fixedly secured to the back wall **18** of the liner. The coated back panel **32** is placed in the liner in overlying relation to back wall **18** as shown in FIG. **1**, and has rearwardly extending peripheral flanges **42** along its top, side and bottom edges which retain the panel **32** slightly spaced from wall **18**. Bottom flange **44** is adapted to rest upon the upper plate **46** of channel **40** as shown in FIG. **3**.

On each side wall **14** and **16** a wire rack support **48** is pivotally supported at its upper end by brackets **50** and **52**. The particular pivoting structure may be, for example, as shown in FIG. **4** wherein bracket **50** includes an apertured forwardly extending portion **54** into the aperture of which an angled portion **56** of one side **58** of the support is located. The other bracket **52** includes a forwardly extending portion **60** which has a recess or U-shaped configuration within which rests an angled portion **62** of the second side **64** of the support. Thus the support is efficiently and simply pivotally mounted on the oven side wall and may be easily swung out from the wall or removed from it.

The side portions **58** and **64** of the supports are adapted to be constantly spaced from the respective wall and panel by means of bends **66** therein as shown, and are interconnected by wire runners **68** for the purpose of supporting a rack (not shown) within the oven.

After the back panel **32** has been positioned in the liner as described above, a support **48** is swung outwardly away from its respective side wall **14** or **16** and a coated side panel **34** or **36** is slid into place between the support and the side wall. The side panels are each provided with a flange **72** encircling the entire periphery so as to space the panels slightly from the liner side walls. The rear edge of each side panel is adapted to interfit within a channel or groove **73** formed in the adjacent surface of the back panel as shown in FIGS. **2** and **6**. The front edge is supported upon plate **38** and may be suitably interlocked therewith, if desired, and the remainder of the bottom edge of the side panels rest upon lateral ridges (not shown) formed in the liner walls **14** and **16** or on pins or studs inserted in these side walls.

After both side panels have been located in position, the rack supports **48** are then dropped into their normal positions to prevent the panels from moving. In order to properly achieve this, the panels are provided with small indentations or recesses **70** which are preferably of a depth corresponding to the width of the flange **72** so that the bases of the recesses rest against the adjacent side wall. The recesses **70** are each provided with an aperture **74**, as shown best in FIG. **6**, and the bends **66** in the rack supports are adapted to protrude through the apertures into direct contact with the side walls as illustrated in FIG. **5**. Thus, the rack supports **48** are positioned normally while still functioning to retain the side panels in place, and the side panels in turn, by interfitting with the back panel, assist in holding the back panel in place.

At this time the coated bottom panel **30** may be inserted in the oven liner by inserting its rear edge into channel **40** with its downturned rear flange **42** (FIG. **3**) resting upon the bottom plate **78** of the channel **40** and with its correspondingly downturned front flange **42** resting upon plate **38**. The bottom panel **30** is of a length to interfit within and between the bottom edge portions of the side panels and thus aids in retaining them in place. Thereafter a conventional oven rack may be slid onto the rack supports to complete the structure. In a structure of this type the bottom panel **30** may be easily removed without disturbing the side or back panels.

It will be apparent from the foregoing that all of the objectives of this invention have been achieved by the conversion system described whereby a conventional oven may be easily modified to provide it with continuous cleaning characteristics. The conversion kit of the invention includes panels and novel means for removably positioning the panels so that easy servicing is permitted. It will also be apparent that many modifications in the invention may be made by those skilled in the art without departing from the spirit of the invention as expressed in the accompanying claims. Accordingly, all matter shown and described is to be interpreted as illustrative and not in a limiting sense.

We claim:

1. A continuous clean oven comprising an oven liner having one open end, a top, a bottom, and vertically extending side and back walls defining a compartment, a door closing the open end of the liner, means for heating the compartment to temperatures suitable for baking and broiling, vertically extending back and side panels disposed in overlying relation to respective back and side walls within the liner, the exposed surfaces of said panels and said bottom being provided with a layer of catalytic cleaning material, the height of said side panels being less than the height of the side walls, and means for removably retaining said side panels in position of use within the liner comprising a pair of rack supports each pivotally connected at one end to a respective side wall above the adjacent side panel and depending therefrom over the exposed surface of the side panel and engaging same to aid in retaining the side panels in an upright position, said supports each comprising a pair of spaced vertically extending support members interconnected by runners, and the respective side panels having at least one recess therein which extends toward the underlying side wall opposite each support member, and the support members have bends disposed within said recesses.

2. A continuous clean oven as set forth in claim **1** wherein an aperture is disposed in the bottom of each recess, and the bends in the support members engage the adjacent side wall through respective apertures.

3. A continuous clean oven as set forth in claim **1** wherein said back panel has a vertical groove in each end of its exposed surface and extending throughout its height, and the adjacent edges of said side panels reside in respective grooves whereby the back panel is retained in an upright position.

4. A continuous clean oven as set forth in claim **3** wherein said bottom is of a length to fit between the lower edges of said side panels and aids in retaining the side panels in position of use.

5. Apparatus for converting a conventional oven to a continuous clean oven wherein said conventional oven comprises side and back walls defining a compartment, said apparatus comprising a back panel, a bottom, and

a pair of side panels, said panels and bottom each having on one surface a layer of catalytic cleaning material, said side panels being of a width which is less than the height of the side walls in the conventional oven, and rack supports for retaining the side panels in position of use, said side panels have peripheral flanges extending in a common direction away from the catalytic layer, and recesses which extend in the same direction as said flanges and of a depth substantially equal to the width of the flanges, and said rack supports have bends therein at locations corresponding to the locations of said recesses.

6. Apparatus as set forth in claim 5 wherein apertures are provided in the bottoms of said recesses, and the bends in said rack supports are disposed at locations corresponding to the locations of said apertures.

7. An oven comprising an oven liner having one open end, a top, a bottom, and vertically extending back and side walls defining a compartment, vertically extending back and side panels disposed in spaced overlying relation to respective back and side walls within the liner, spacing means on said panels and contacting the respective adjacent walls for maintaining the spaced relation therebetween, and a pair of cantilever means each connected at the upper end to a respective side wall and depending therefrom over and engaging only the exposed inner surface of the respective side panel and thereby urging the panel toward the adjacent wall.

8. An oven as set forth in claim 7 wherein said cantilever means are each a rack support comprising vertically extending side members and runner members interconnecting the side members.

9. An oven as set forth in claim 7 wherein said spacing means are a plurality of depressions in said side panels.

10. An oven as set forth in claim 9 wherein said cantilever means are each a rack support including vertically extending members, said members having portions disposed within said depressions in the side panels.

11. An oven as set forth in claim 10 wherein the bottom of said depressions have apertures therein, and said portions of the supports extend through respective apertures and engage the adjacent side wall.

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