April 4, 1961 R. L. CRISPELL ET AL 2,978,567

DOMESTIC APPLIANCE

Filed May 18, 1959 3 Sheets-Sheet 1

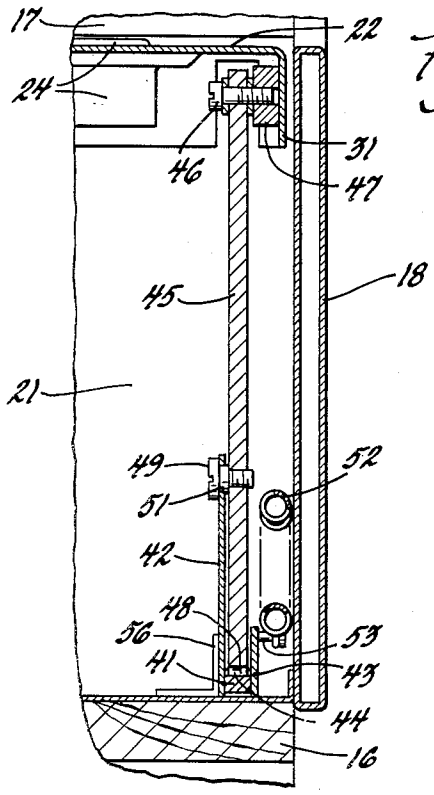



Fig. 5

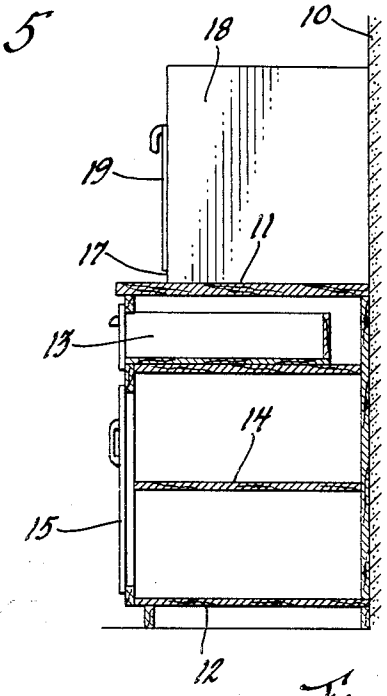



Fig. 2

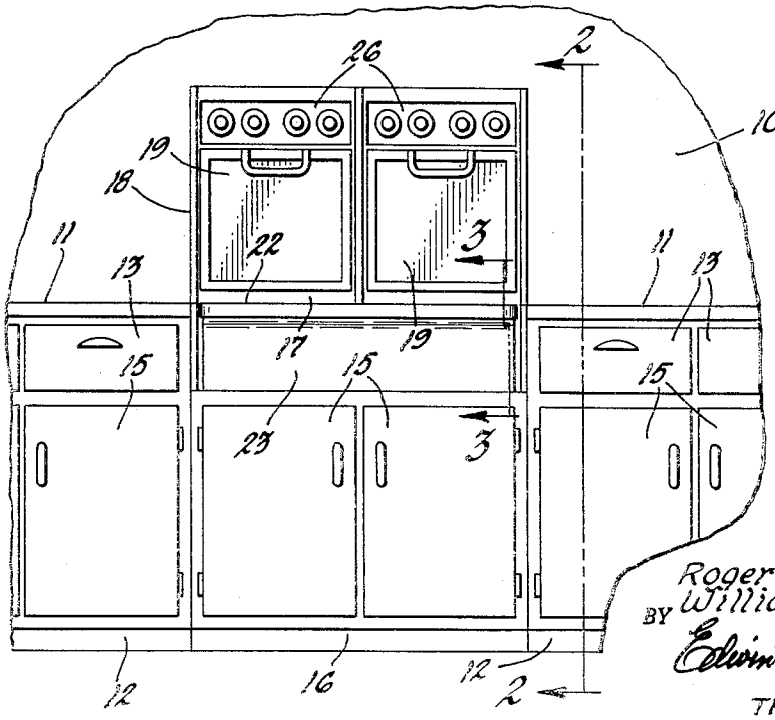



Fig. 1

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DOMESTIC APPLIANCE

Filed May 18, 1959 3 Sheets-Sheet 2

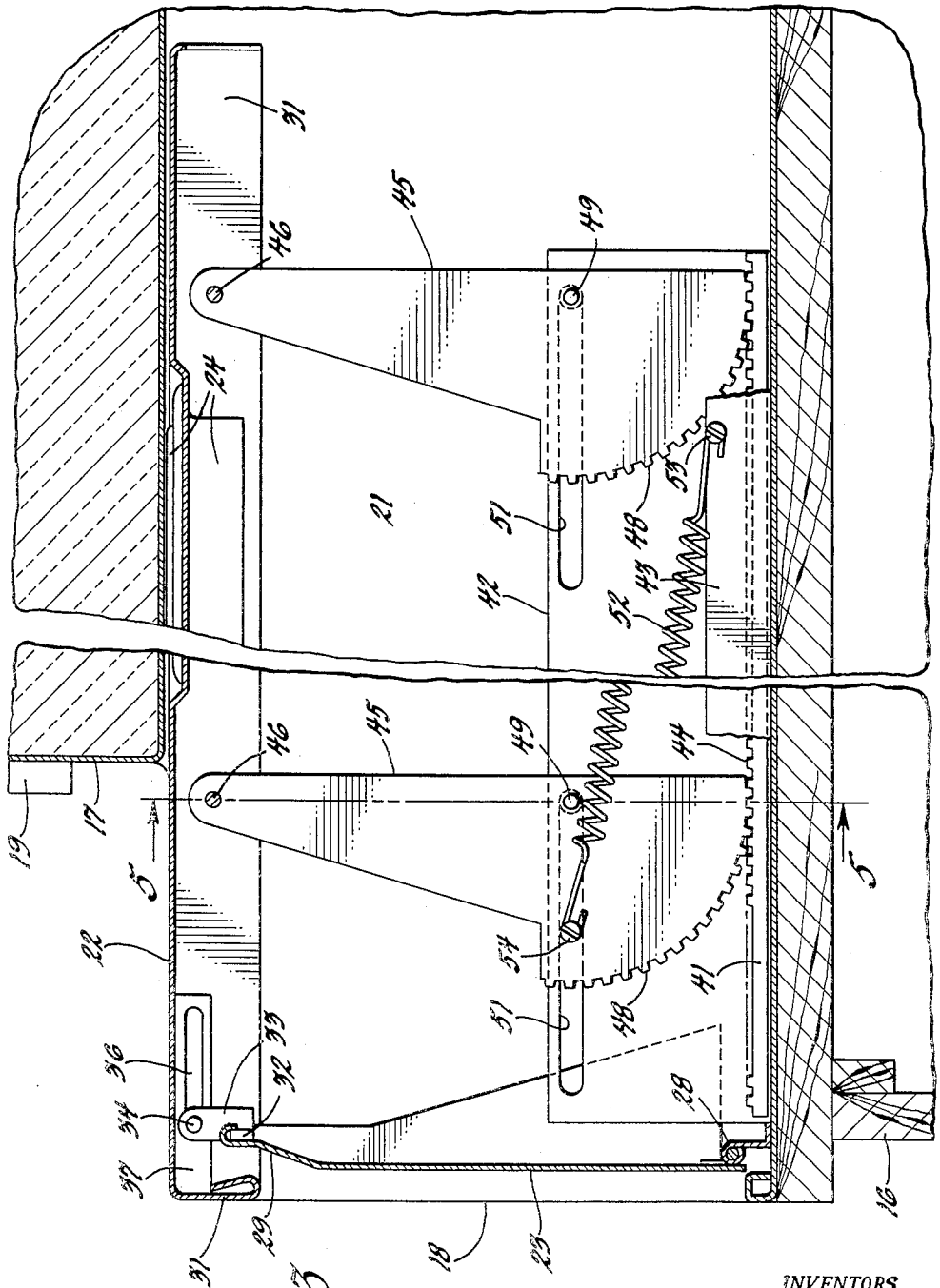



Fig. 3

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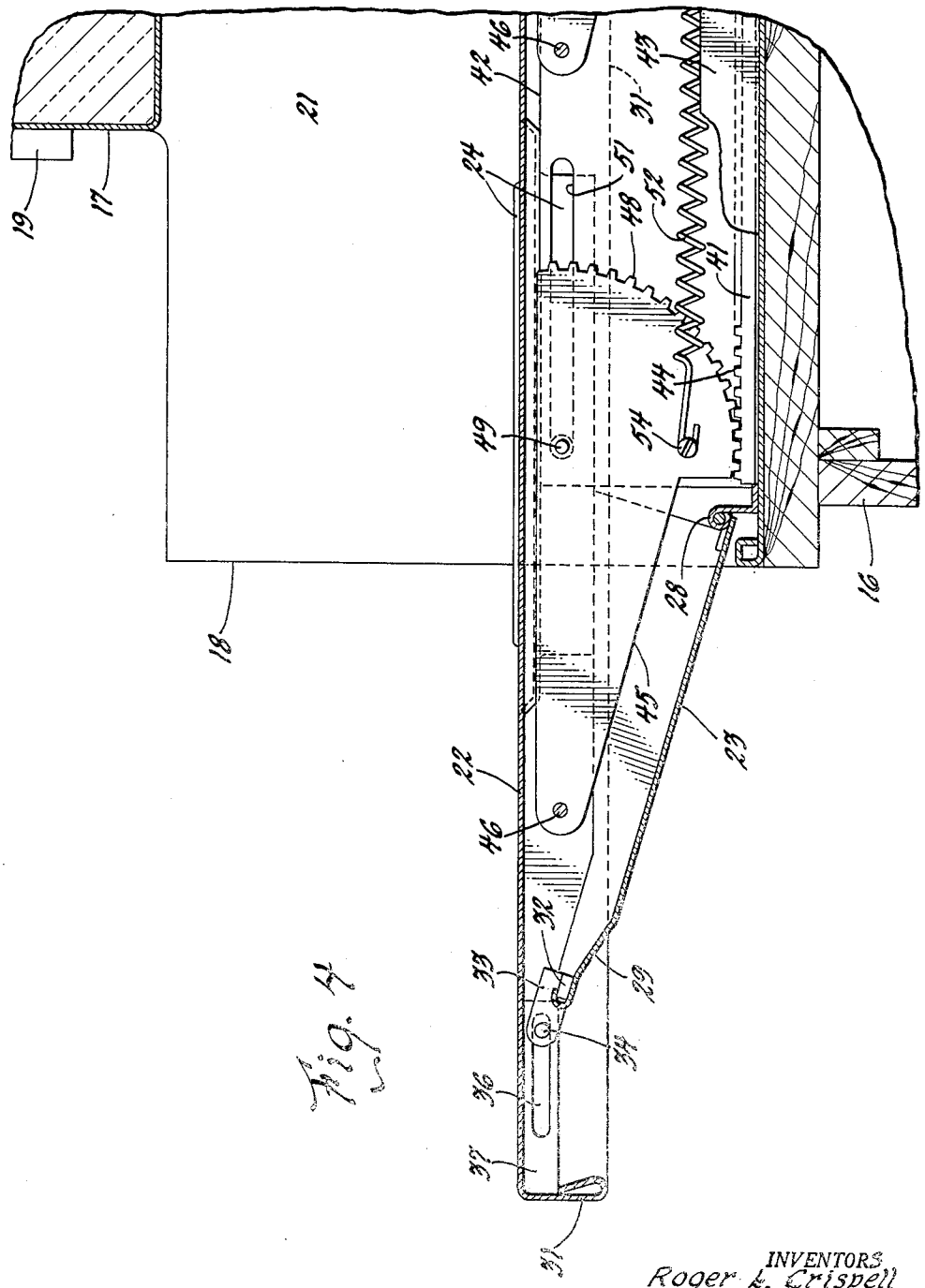



Fig. 1

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2,978,567

# DOMESTIC APPLIANCE

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11 Claims. (Cl. 219—37)

This invention relates to a domestic appliance and more particularly to a movable supporting platform for surface heater units in a unitary cooking range structure which is built into and adapted to cooperate with counter top cabinets and kitchen work ledge surfaces.

So-called fold-back or the like surface heater cooking units have been proposed for use in kitchens to economize in work space therein and for concealing the units when they are not in use. These units are usually separate from and independent of an oven of a combined or unitary range structure, and the space required to swing or fold them presents no problem. However, when such surface heater units are made a part of or are incorporated in a unitary range structure, their location or relationship relative to kitchen counters or work surfaces, the value of the space in the structure, the expense of the overall dimensions of the range structure and interference of such units with the range oven or between the units and doors of the oven create problems that are contemplated by the present invention to be overcome.

An object of this invention is to group or compact concealable surface heater units with a range oven or within a unitary range structure so as to facilitate use of the oven and of the units.

Another object of this invention is to provide in a unitary cooking structure an oven or ovens and a compartment therebelow having movable wall portions, one of which supports and carries surface heater cooking units that are normally concealed in a nonusable position within the structure and are, by moving a movable wall of the compartment, shiftable to the front of the oven to locate them in an exposed usable position forwardly thereof.

A further object of this invention is to provide a unitary range structure having an oven and a compartment therebelow provided with a movable top wall carrying surface heater cooking units normally disposed below the oven and which compartment top wall has a portion thereof projecting beyond the front of the oven to provide a transfer ledge therefor forwardly thereof at a height equal to or flush with a work surface in a kitchen and forming a continuation of this surface on either side of the structure for aiding in shifting articles from one to the other side of the range structure during preparation of foods for a meal, for facilitating basting and seasoning of foods being baked or roasted in the range oven and for assisting in supporting or balancing roasters or the like containers while placing them in or removing them from the oven.

In carrying out the foregoing objects, it is a still further object of this invention to provide means for supporting a movable top wall of a surface heater unit concealing compartment below an oven in a unitary range structure which shifts the heater units and the oven transfer ledge automatically in response to moving the top wall downwardly and forwardly relative to the structure so as to remove the heater units from beneath the oven and to locate the units at a predetermined or desired distance



below the level of a kitchen work surface whereby to facilitate transfer of food products from the work surface into cooking pans, skillets, kettles or the like supportable on the heater units.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings wherein a preferred embodiment of the present invention is clearly shown.

In the drawings:

Figure 1 is a fragmentary view of a kitchen wall, cabinetwork and elevated work surface therein showing a unitary cooking range structure mounted in association therewith and having the present invention embodied in the structure;

Figure 2 is a vertical sectional view taken on the line 2—2 of Figure 1 showing the oven portion of the range structure disposed above and spaced rearwardly of the front of the elevated kitchen work surface;

Figure 3 is an enlarged fragmentary sectional view of the surface heater unit containing compartment of the range structure with its movable top wall in normal position locating the units beneath the range oven;

Figure 4 is a view similar to Figure 3 and shows the surface heater unit compartment top wall shifted forwardly and downwardly of the unitary structure; and

Figure 5 is a vertical fragmentary sectional view taken on the line 5—5 of Figure 3 showing the associated parts of the means cooperating with the movable compartment top wall which causes a simultaneous forward and downward shifting thereof.

Referring to the drawings for illustrating the invention, there is shown in Figure 1 a portion of a wall **10** of a kitchen having an elevated work surface or counter **11** therein and along wall **10** provided with cupboards or cabinets **12** therebelow. Cabinets **12** may be provided with drawers **13** and shelves **14** (see Figure 2) and the shelved portion of the cabinets are closed by doors **15**. A unitary cooking range structure is mounted in the kitchen and located adjacent an elevated work surface or counter **11** or preferably between two such work surfaces. The range structure is preferably mounted directly to wall **10** of the kitchen, in any suitable or conventional manner, and elevated with respect to the kitchen floor with a shorter cabinet **16** located under the structure (see Figures 1 and 3). The unitary cooking range structure comprises a suitable rigid frame (not shown) enclosed by a sheet metal shell provided with double side walls **18** and having an insulated oven compartment **17** or a pair of ovens therein disposed above the work surfaces **11**, normally closed by doors **19**, and a surface heater cooking unit containing compartment **21**, below the oven (see Figure 2), closed at its top by a movable wall **22** and at its front by a wall **23** which has integral in-turned side edges. Top wall **22** of compartment **21** carries or has mounted thereon a plurality of spaced apart electric surface heater units, generally represented by the reference character **24**, which are of any suitable or conventional construction well-known to those skilled in the art. Heater units **24** are mounted in openings provided in a downwardly flanged recessed portion of top wall **22** as is customary in the art. Desirable controls for the electric heating elements (not shown) of the range ovens and for the surface heater units **24** are mounted on a control panel **26** of the range structure, the actuating knobs of which are inset in the front portion thereof. The oven doors **19** may be hingedly secured to the unitary structure but are preferably mounted thereon for vertical movement with respect thereto for facilitating use of the present unitary range structure. It is to be noted that the front portion of top wall **22** of compartment **21**

projects outwardly beyond the oven compartment 17 or ovens of the unitary structure to provide a transfer ledge at the front thereof for the ovens. This transfer ledge is adapted to receive and support condiments or other containers when the oven door or doors 19 are opened for use in seasoning or basting meats or the like being cooked in the ovens and for supporting or balancing roasters or other containers during the act of shifting them from the work surface toward and placing them in the ovens or during removal of such containers from the ovens. The transfer ledge portion of top wall 22 of compartment 21 is flush with or is on the same level with the kitchen work surface or counter 11 and normally forms a continuation thereof for facilitating transfer of articles from work surface 11 into the range ovens. The lower portion of front wall 23 of compartment 21 is pivotally attached, by hinges 28, to the bottom part of the unitary structure. The upper portion of this compartment front wall 23 is bent, as at 29, inwardly of a depending peripheral flange 31 formed on top wall 22 and is spaced therefrom to provide clearance therebetween for the reception of fingers of a person's hand when wall 22 is to be moved. Upper edge of portion 29 of wall 23 is welded or otherwise suitably secured at its sides to a projection 32 on a metal piece 33 which carries a pin 34 extending into an elongated aperture 36 provided in a block 37 rigidly mounted on the underside of wall 22. Thus, front wall 23 of compartment 21 is arranged to be movable and swings relative to top wall 22 when this wall is moved. The movable top wall 22 of compartment 21 has means mounting same on the unitary range structure for supporting it therein. This means is, for the purpose of the present invention, of a character that will be rendered effective automatically in response to movement of wall 22 to shift this wall and, consequently, the front transfer ledge portion thereof and the concealed surface heater units 24 simultaneously a predetermined distance below the level of the work or counter surface 11 and forwardly of the oven compartment 17 in order to locate the heater units 24 in an exposed usable position at the front of the unitary structure.

The mounting means for top wall 22 of the heater unit concealing compartment 21 includes a pair of spaced apart bars 41 welded or otherwise suitably secured between metal plates 42 and 43 (see Figures 3 and 5) so as to provide tracks for lever arms to be presently described. Each bar 41 is provided with rack teeth 44 along at least portions of the length thereof. A pair of spaced apart lever arms 45 at each side of compartment 21 have their one or upper end pivotally attached by pins or studs 46 to a block 47 (see Figure 5) welded or otherwise secured to the downturned flange 31 of wall 22 and the other or lower end of these arms are shaped into the form of a substantially 90° gear segment having teeth 48 thereon. The gear segment ends of lever arms 45 are located intermediate guide plates 42 and 43 with the teeth 48 meshing with the rack teeth 44 on bars 41. Each lever arm 45 is pivoted intermediate its ends by a stud or pin 49 to a plate 42 with the pin 49 projecting into an elongated aperture 51 provided in the plates 42. The one or left-hand end of apertures 51 as viewed in Figure 3 of the drawings forms stops for limiting outward and downward movement of top wall 22 of compartment 21 relative to the unitary range structure. This connection of arms 45 to plates 42 is a slidable one and permits the arms to swing as the teeth 48 thereon are threaded along the rack teeth 44 on bars 41. A counterbalancing coil spring 52 at each side of compartment 21 has its one end secured to a stationary stud or screw 53 on plate 43 and has its other end secured to a stud or screw 54 on the forward one of the pairs of lever arms 45 which screws 54 move with these arms. The bars 41 and track or guide forming plates 42 and 43 are stationarily mounted in compartment 21 by a plurality of suitable brackets or the like 56



(see Figure 5) welded to plates 42 and to the metal bottom of the unitary structure. Vertically disposed lever arms 45 normally support and maintain compartment top wall 22 and heater units 24 in their upper position as shown in Figure 3 of the drawings so as to conceal the units 24 beneath the oven part 17 of the unitary structure and so that this wall is flush both at the front and at the top with the kitchen work surface 11 to provide a continuation thereof across the front of oven part 17 (see Figure 1).

Assume that it is desired to employ one or more of the concealed surface heater units 24 for the purpose of cooking or frying meats or the like in proper receptacles to be placed upon and in contact with the units. A housewife will insert fingers of her hand in the space provided between the front of top wall 22 of compartment 21 and the in-turned upper part 29 of front wall 23, and upon applying a slight pulling force to wall 22, this wall will move forward. Continued forward movement of top wall 22 of compartment 21 causes the teeth 48 on the gear segment end of lever arms 45 to be threaded along the rack teeth 44 on bars 41 within the track formed by the plates 42 and 43. This rotates or swings the lever arms 45 in unison about the slidable pivot pins 49 and moves these pins along the elongated apertures 51 in plate 42 toward the front of compartment 21. The supporting means for compartment top wall 22 is in this manner rendered effective automatically in response to movement of the wall, and the rotation or swinging of lever arms 45 simultaneously shifts the transfer ledge portion and heater units 24 on wall 22 forwardly and downwardly relative to the unitary range structure a predetermined distance below the level of the kitchen work surface 11 as shown in Figure 4 of the drawings. Flange 31 at the back of top wall 22 is cut out (see Figure 5) so that this flange will straddle the rear lever arms 45 when wall 22 is moved forward and down. The weight of the compartment wall 22 and units 24 is counterbalanced by the springs 52 and the shifting movement of wall 22 is limited or restricted by the pins 49 engaging the stop means or front end of apertures 51. As the top wall 22 of compartment 21 and units 24 simultaneously move forward and downward, front compartment wall 23 swings, about hinges 28 and pins 34, to shift or fold same in and out of the way noninterferring position under wall 22. The surface heater units 24 are shifted from beneath the oven compartment or portion 17 of the range structure into an exposed usable position at the front thereof and the lowering of top wall 22 locates same below work surface or counter 11 in a more comfortable position for cooking on the units 24. When it is desired to again conceal the surface heater units beneath oven portion 17 of the unitary structure, the housewife applies an upward force to wall 22 whereupon this force is transmitted to the lever arms 45 to rotate them into a vertical position to thereby simultaneously move compartment top wall 22 upwardly and rearwardly and to also swing the compartment front wall 23 into closed position.

It should be apparent from the foregoing that a unitary cooking range structure of a unique and improved character is provided by this invention. The arrangement for concealing surface heater units in a unitary range structure and the cooperation of the concealing walls with an elevated kitchen work counter or surface not only improves the appearance of a range in association with kitchen cupboards or cabinets but also facilitates the conditioning of food products while being cooked on the surface units. By virtue of the novel impelling means shifting the top wall of the surface heater unit containing compartment in two directions simultaneously, this top wall is positioned at the front of the range structure so that skillets or shallow cooking containers supported on the heater units do not interfere with access to the range oven. An oven and one or more of the

surface heater units can be used for cooking at the same time and the oven door or doors may be opened to inspect foods being baked or roasted in an oven. Thus, there is provided a unitary range structure wherein either the oven portion or the normally concealed surface heater units thereof are available for use independently of one another and/or both portions of the range may be simultaneously used.

While the embodiment of the present invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted.

What is claimed is as follows:

1. In combination, a unitary cooking structure adapted to be mounted in a kitchen adjacent an elevated work surface therein, said structure comprising an oven disposed above said work surface and a compartment below said oven, said compartment having a top wall with a portion thereof projecting beyond the front of said oven to provide a transfer ledge thereat substantially flush with said work surface and forming a continuation thereof on either side of said unitary structure, said compartment top wall carrying at least one surface heater unit normally disposed beneath said oven so as to be concealed thereby, means mounting said compartment top wall on said structure for movement with respect thereto, and said means being rendered effective automatically in response to moving said compartment top wall relative to said structure for simultaneously shifting said transfer ledge and said heater unit a predetermined distance below the level of said work surface and forwardly of said oven whereby to locate the heater unit in an exposed usable position at the front thereof.

2. In combination, a unitary cooking structure adapted to be mounted in a kitchen adjacent an elevated work surface therein, said structure comprising an oven disposed above said work surface and a compartment below said oven, said compartment having a top wall with a portion thereof projecting beyond the front of said oven to provide a transfer ledge thereat substantially flush with said work surface and forming a continuation thereof on either side of said unitary structure, said compartment top wall carrying at least one surface heater unit normally disposed beneath said oven so as to be concealed thereby, means mounting said compartment top wall on said structure for movement with respect thereto, said means including spaced apart opposed bars having rack teeth thereon stationarily secured to said unitary structure and a plurality of lever arms cooperating with said bars, one end of each of said lever arms being in the form of a gear segment provided with teeth meshing with the rack teeth on said bars and the other end of said lever arms being pivotally attached to said compartment top wall, and said means being rendered effective automatically in response to moving said compartment top wall relative to said structure for swinging said lever arms and threading the teeth on said gear segment along the rack teeth on said bars for simultaneously shifting said transfer ledge and said heater unit a predetermined distance below the level of said work surface and forwardly of said oven whereby to locate the heater unit in an exposed usable position at the front thereof.

3. In combination, a unitary cooking structure adapted to be mounted in a kitchen adjacent an elevated work surface therein, said structure comprising an oven disposed above said work surface and a compartment located below said oven, said compartment having a top wall with a portion thereof projecting beyond the front of said oven to provide a transfer ledge thereat, said compartment top wall being movable with respect to said unitary structure and carrying at least one surface heater unit normally disposed beneath said oven, and means responsive to moving said movable compartment top wall relative to said unitary structure for simultaneously shifting said transfer ledge and said heater unit downwardly and forwardly of said oven whereby to locate the heater unit in a usable position at the front thereof.



4. In combination, a unitary cooking structure adapted to be mounted in a kitchen adjacent an elevated work surface therein, said structure comprising an oven disposed above said work surface and a compartment located below said oven, said compartment having a top wall with a portion thereof projecting beyond the front of said oven to provide a transfer ledge thereat, said compartment top wall carrying at least one surface heater unit thereon normally disposed beneath said oven, said compartment top wall being movable forwardly of said unitary structure to remove said heater unit from beneath said oven into an exposed usable position at the front thereof, and means rendered effective by the forward movement of said compartment top wall for lowering said transfer ledge and said heater unit a predetermined distance below said work surface.

5. In combination, a unitary cooking structure adapted to be mounted in a kitchen adjacent an elevated work surface therein, said structure comprising an oven disposed above said work surface and a compartment located below said oven, said compartment having a top wall with a portion thereof projecting beyond the front of said oven to provide a transfer ledge thereat, said compartment top wall being movable with respect to said unitary structure and carrying at least one surface heater unit normally disposed beneath said oven, means responsive to moving said movable compartment top wall relative to said structure for simultaneously lowering said transfer ledge and said heater unit a predetermined distance below said work surface and for shifting the heater unit forwardly from beneath said oven into an exposed usable position at the front thereof, and said means rigidly supporting said compartment top wall from said unitary structure while said heater unit is so shifted.

6. In combination, a unitary cooking structure adapted to be mounted in a kitchen adjacent an elevated work surface therein, said structure comprising an oven disposed above said work surface and a compartment below said oven, said compartment having a top wall with a portion thereof projecting beyond the front of said oven to provide a transfer ledge thereat substantially flush with said work surface and forming a continuation thereof on either side of said unitary structure, said compartment top wall carrying at least one surface heater unit normally disposed beneath said oven so as to be concealed thereby, means mounting said compartment top wall on said structure for movement with respect thereto, said means including spaced apart opposed bars having rack teeth thereon stationarily secured to said unitary structure and a plurality of lever arms cooperating with said bars, one end of each of said lever arms being in the form of a gear segment provided with teeth meshing with the rack teeth on said bars and the other end of said lever arms being pivotally attached to said compartment top wall, said means being rendered effective automatically in response to moving said compartment top wall relative to said structure for swinging said lever arms and threading the teeth on said gear segment along the rack teeth on said bars for simultaneously shifting said transfer ledge and said heater unit a predetermined distance below the level of said work surface and forwardly of said oven whereby to locate the heater unit in an exposed usable position at the front thereof, that portion of said lever arms intermediate their ends upon swinging thereof being engageable with a stop provided on said structure, and the engagement of said stop by said portion of said lever arms limiting the forward movement of said compartment top wall to rigidly support same from said unitary structure while said heater unit is shifted from beneath said oven.

7. In combination, a unitary cooking structure adapted to be mounted in a kitchen adjacent an elevated work surface therein, said structure comprising an oven dis-

posed above said work surface and a compartment located below said oven, said compartment having a top wall with a portion thereof projecting beyond said oven and providing a transfer ledge therefor at the front of said structure, said compartment also having a front wall hingedly connected to said top wall and to a part of said structure, said compartment top wall being movable with respect to said unitary structure and carrying at least one surface heater unit normally disposed beneath said oven, means responsive to moving said movable compartment top wall relative to said unitary structure for simultaneously shifting said transfer ledge and said heater unit downwardly and forwardly of said oven whereby to locate the heater unit in an exposed usable position at the front thereof, and said compartment front wall being swingable under said transfer ledge portion of said compartment top wall upon moving same.

8. In combination, a unitary cooking structure adapted to be mounted in a kitchen adjacent an elevated work surface therein, said structure comprising an oven disposed above said work surface and a compartment located below said oven, said compartment having a top wall with a portion thereof projecting beyond said oven and providing a transfer ledge therefor at the front of said structure, said compartment also having a front wall hingedly connected to said top wall and to a part of said structure, said compartment top wall carrying at least one surface heater unit thereon normally disposed beneath said oven, said compartment top wall being movable forwardly of said unitary structure to remove said heater unit from beneath said oven into an exposed usable position at the front thereof, means rendered effective by the forward movement of said compartment top wall for lowering said transfer ledge and said heater unit a predetermined distance below said work surface, and said compartment front wall being swingable under said transfer ledge portion of said compartment top wall by the shifting movement thereof.

9. In combination, a unitary cooking structure adapted to be mounted in a kitchen adjacent an elevated work surface therein, said structure comprising an oven disposed above said work surface and a compartment located below said oven, said compartment having a top wall with a portion thereof projecting beyond said oven and providing a transfer ledge therefor at the front of said structure, said transfer ledge being flush with said work surface and forming a continuation thereof on either side of said structure, said compartment also having a front wall hingedly connected to said top wall and to a part of said unitary structure, said compartment top wall carrying at least one surface heater unit normally disposed beneath said oven so as to be concealed thereby, means mounting said compartment top wall on said structure for movement with respect thereto, said means being rendered effective automatically in response to moving said compartment top wall relative to said structure for simultaneously shifting said transfer ledge and said heater unit a predetermined distance below the level of said work surface and forwardly of said oven whereby to locate the heater unit in an exposed usable position at the front thereof, and said compartment front wall being swingable under said transfer ledge portion of said compartment top wall during the simultaneous shifting movement thereof by said means.

10. In combination, a unitary cooking structure adapted to be mounted in a kitchen adjacent an elevated work surface therein, said structure comprising an oven disposed above said work surface and a compartment located below said oven, said compartment having a top wall with a portion thereof projecting beyond said oven and providing a transfer ledge therefor at the front of said structure, said transfer ledge being flush with said work surface and forming a continuation thereof on either side of said structure, said compartment also having a front wall hingedly connected to said top wall and to a part of said unitary structure, said compartment top wall carrying at least one surface heater unit normally disposed beneath said oven so as to be concealed thereby, means mounting said compartment top wall on said structure for movement with respect thereto, said means including spaced apart opposed bars having rack teeth thereon stationarily secured to said unitary structure and a plurality of lever arms cooperating with said bars, one end of each of said lever arms being in the form of a gear segment provided with teeth meshing with rack teeth on said bars and the other end of said lever arms being pivotally attached to said compartment top wall, said means being rendered effective automatically in response to moving said compartment top wall relative to said structure for rotating said lever arms and threading the teeth on said gear segment thereof along the rack teeth on said bars for simultaneously shifting said transfer ledge and said heater unit a predetermined distance below the level of said work surface and forwardly of said oven to locate the heater unit in an exposed usable position at the front thereof, and said compartment front wall being swingable under said transfer ledge portion of said compartment top wall during the simultaneous shifting movement thereof by said means.

11. In combination, a unitary structure adapted to be mounted in a kitchen adjacent a work counter therein having an elevated substantially flat upper surface, said structure comprising a compartment provided with a front wall and a top wall, said compartment top wall being disposed in the horizontal plane of the upper surface of said work counter and forming a continuing part thereof over at least a portion of said compartment, said compartment also being provided with a bottom wall disposed below the plane of the upper surface of said work counter, said compartment front wall normally closing the compartment and being connected to said top wall thereof for angular swinging movement relative thereto, said compartment top wall carrying a heater unit and being movable part way out of said structure, means within said compartment responsive to the outward movement of said movable top wall thereof for swinging said front wall and simultaneously shifting said continuing work counter forming part and said heater unit downwardly and forwardly with respect to said structure, and said means stopping the shifting of said compartment top wall at a point intermediate said compartment bottom wall and the upper surface of said work counter to support said heater unit in a usable cooking position lowered below said counter surface.

**References Cited** in the file of this patent

UNITED STATES PATENTS

| | | |
|---|---|---|
| 1,431,953 | Henoch | Oct. 17, 1922 |
| 2,526,476 | Ham | Oct. 17, 1950 |
| 2,882,382 | Woxman | Apr. 14, 1959 |