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ELECTRICAL COOKING APPLIANCE

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2 Sheets-Sheet 2

Fig. 3

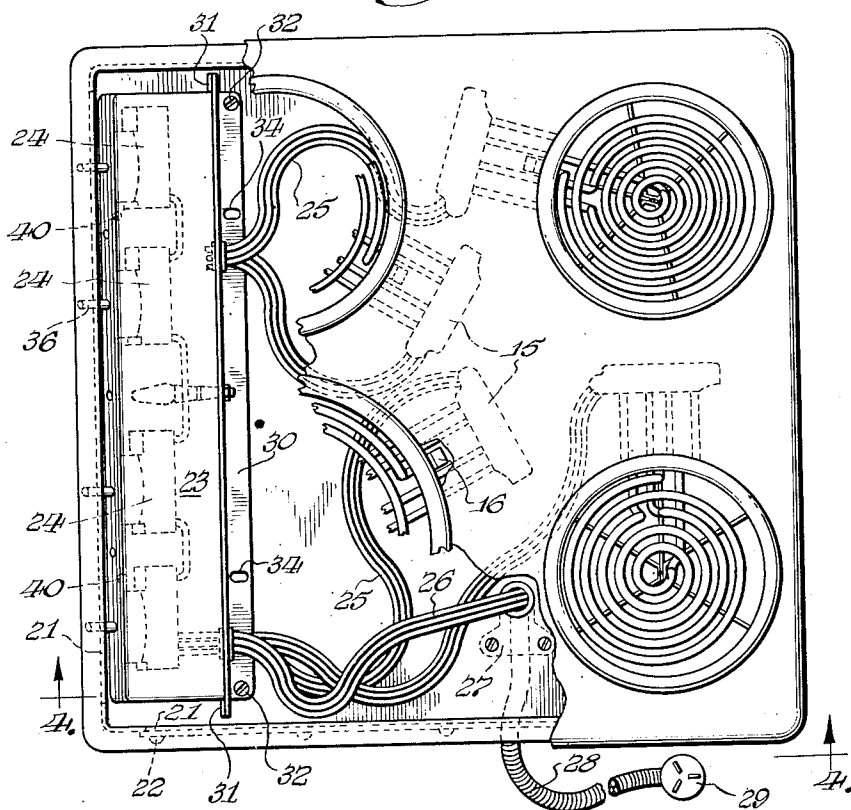
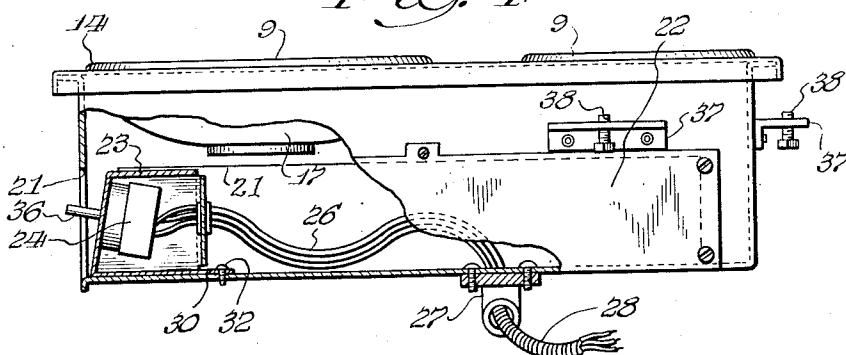


Fig. 4



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ELECTRICAL COOKING APPLIANCE

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7 Claims. (Cl. 219—37)

This invention relates to an electrical cooking appliance of the type adapted to be installed in a kitchen counter or the like.

Cooking appliances of this type may be represented by three broad classes according to the arrangement of the switches for the control of the cooking units. A first class is that in which the control switches are directly carried by the cooking top itself at the front or side portion of the cooking top. A second class has the switches on a front panel fixed to the cooking top in substantially vertical relation thereto; said front panel is usually an integral downwardly extending continuation of the cooking top. The third class provides for separately mounting the switching devices at any convenient location, such as in the front wall of the counter. The switch mounting means of this class is independent of the cooking top. The installation of the first of the classes is simple; the builder provides an opening in the counter top to receive the rough-in box or body of the unit, and the electrician drops the unit in place and makes it secure. This type is the least popular with the user, because the switches are exposed to damage by the cooking pots and are generally "in the way." The second class is acceptable to the user, but requires the builder specially to construct a counter in which the top portion of the front wall of the counter is entirely cut away and the opening formed thereby directly communicates with the much larger opening in the counter top. This weakens the counter, in that the structural continuity of the counter top and of the counter front wall is interrupted. The third class is acceptable both to the user and to the builder. It requires a counter top opening rearwardly of the front edge of the counter and a counter wall opening below the top of the counter, thereby retaining both counter top structural continuity and front wall structural continuity. To the electrician, however, this type has been the least desirable; for certain electrical codes require, as a necessity for an approved listing of the appliance, that all electrical connections, including those from the switches to the associated cooking units, be completed at the factory. It has been impossible, however, for the electrician to install the appliance without disconnecting the internal wiring. Not only may this vitiate the code "listing," but uselessly expends time and labor in disconnecting and reconnecting the wiring.

It is an object of the present invention to provide a prewired cooking appliance of the last described type, which may be installed without disturbing or having to disconnect the factory-made electrical connections.

It is another object of the present invention to provide an electrical cooking appliance having a rough-in box within which is temporarily secured a switch box housing a plurality of switches permanently electrically connected to the cooking units, whereby the switch box and connections are protected against damage during transit and installation, and wherein the switch box may be removed from its temporary securement and installed in final position without having to break the electrical connections.

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In a presently preferred embodiment, the cooking appliance comprises a cooking top and a rough-in box secured thereto. The rough-in box is arranged to drop through the opening in a counter top or the like, and provides an enclosed chamber which houses the electrical connections to the several electrical cooking units hingedly mounted on the cooking top. Temporarily secured within the rough-in box is an enclosed box-like housing containing a switch or control device for each of the cooking units.

The switches are electrically connected by means of flexible conductors to their respective cooking units, and the switches are also electrically connected to a flexible three-wire power lead which passes through a wall of the rough-in box for connection to a suitable external power source. At least one side of the rough-in box has a wall opening arranged snugly to pass the switch housing when after the cooking apparatus has been placed within the counter opening, the switch housing has been released from its temporary securement and moved into final position in which the forward part of the switch housing passes through a previously prepared opening in a wall of the counter. The installation can then be completed merely by rescuring the switch housing, applying a facing panel or escutcheon plate and the switch knobs, and plugging-in the power lead to the conventional electric range outlet fitting which had previously been placed by the electrician in accordance with conventional practice. It is a feature of the invention that apart from the simple task of plugging-in the power lead to the electrical outlet, the installation requires no electrical work whatsoever.

In the accompanying drawings:

Fig. 1 is a top plan view of an installed cooking appliance with one of the cooking units in its raised position, and portions of the cooking top broken away to reveal underlying structure;

Fig. 2 is a fragmentary side elevation of the installed cooking top, showing the accessibility to the interior thereof upon raising one of the forward cooking units;

Fig. 3 is a top plan view of the appliance with a portion of the cooking top broken away to show the temporary securement of the switch housing within the rough-in box; and

Fig. 4 is a side elevation of the appliance in section on lines 4—4 of Fig. 3.

Referring now to Figs. 1 and 2, a conventional kitchen counter or the like 1 is constructed to have a suitable rectangular opening 2 through its top, and a suitable rectangular opening 3 through its front wall adjacent the top. It will be noted that the counter has a front structural element 4, which, of course, may comprise a continuous structural component of the top, and that the front wall has a top structural element 5 which may comprise a continuous structural element of the front wall of the counter. The angular structure formed by the interconnected members 4 and 5 provides substantial strength in the area of the counter immediately in front of the cooking appliance 6.

The cooking appliance 6 comprises a metal cooking top having a suitable plurality of openings 8 to accommodate the cooking unit 9. Each said cooking unit may be of the type disclosed in Vallorani et al. Patent 2,751,487, granted June 19, 1956, for "Spring Hinge for Range Surface Units," and assigned to my present assignee. Such cooking units, now very well known in the art, comprise a pair of tubular sheathed heating elements 10, 11, arranged in flat spiral form on a spider 12 fixed to a trim ring 14 which rests upon the cooking top to maintain the cooking unit in operative position. The respective heating elements terminate in connection blocks 15, Fig. 3, and the units are hinged, as by the hinge 16 specifically disclosed in the said Vallorani et al. patent. Finally, the cooking units include a reflector pan 17, Fig. 4, which is removably carried by the flange 18 formed in

the cooking top. It will be understood that some form of drip catcher (not shown) is usually placed below the reflector pan.

The rough-in box 20 is a sheet metal structure having flange means or equivalent for the securement of the box to the cooking top. An opening 21 is provided in one or more sides of the rough-in box. When more than one side wall opening is provided in the box, all but one of the openings must be fitted with a removable cover plate, such as the plate 22, Fig. 2, in order to satisfy the stringent requirements of the Underwriters' Laboratories Inc. The side wall openings 21 extend to the bottom of the box 20, and are for the purpose of snugly receiving a box-like metal housing 23 for the cooking unit control switches 24. The housing 23 will completely close the opening 21, as presently explained; and since the other openings are covered, the code requirements are met.

An important feature of the invention resides in the fact that all of the switches are factory-wired to the associated cooking units, as by the flexible wiring 25, and that the switches are all factory-connected to the flexible power cable 26 which passes through a conventional fitting 27 in the rough-in box, and continues through the flexible armor 28 to terminate in a conventional three-prong range connection plug 29. This prewiring of switches and units is a prerequisite for listing of the appliance by the Underwriters' Laboratories. Previously it has been necessary for the installer to disconnect the wiring prior to the installation of the cooking appliance; then install the appliance and the switches and rewire the appliance. The present invention makes it unnecessary to disconnect the wiring or do any electrical work other than the simple act of inserting the plug 29 into a wall outlet (not shown). A further feature of the invention is that the prewired switch housing is firmly secured within the rough-in box, whereby the rough-in box provides complete protection for the switch housing during the shipping and preliminary installation of the cooking appliance.

As best shown in Figs. 3 and 4, the switch housing 23 is a completely enclosed sheet metal structure in which the base wall is extended to provide a rear flange 30 and the side walls are extended to form side flanges 31. The length and height of the switch housing are such as to pass with only small clearance through the opening 21, with the side flanges 31 abutting the inner surface of the wall of the rough-in box. Temporary securement of the switch housing is by means of screws 32 which enter tapped holes 33 in the bottom of the rough-in box. The screws are readily accessible for removal. As shown in Fig. 1, the screw holes 33 are below the openings 8 of the cooking top, and the screws may be reached by moving the cooking units upwardly. The flange 30 is provided with elongated openings 34 for the final securement of the switch housing, as later explained.

When the cooking appliance is received at the site of installation, the switch housing 23 is secured within the rough-in box, as above stated. A separate package will contain the cover or escutcheon plate 35 and the switch knobs 35a which are for application to the ends of the switch shafts 36. Assuming that the carpenter or builder has already provided the proper size openings 2 and 3 in the top and front walls of the counter respectively, the electrician merely drops the cooking appliance into place within the opening 2. Then, after properly adjusting and "squaring" the appliance with respect to the front of the counter, he enters the space below the counter top (through the usual cupboard doors or the like, not shown) to firmly secure the appliance in place. Although there are various attachments for making such securement, I have chosen to illustrate the simple angle brackets 37 and screws 38. Obviously when the said screws are made up tight against the bottom of the counter top, the entire structure is drawn downwardly so that the gasket 39 around the periphery of the cooking

top seats snugly against the counter top facing. The electrician then raises the cooking units, whereby access to the screws 32 may be had, and using a screwdriver removes the screws. Then, reaching through the cooking top openings, he manually propels the switch housing 23 through the opening 21 in the rough-in box and, of course, through the counter wall opening 3 which is in registry with said opening 21. The elongated openings 34 in the flange 30 will then come into registry with openings 40 in the base of the rough-in box. The installer then returns the screws 32 through the slotted openings 34 into the openings 40 and makes them fast with the screwdriver, as suggested in Fig. 2. In order to improve the accessibility, the flange 18, particularly in the smaller diameter cooking units, may be interrupted to provide the gaps 41 to accommodate the screwdriver. The elongated slots 34 afford a suitable measure of adjustability for various thicknesses of the front counter wall. When the switch housing has been made fast, the installer places the reflector pans 17 in position, and returns the raised cooking units to their operative position. He then applies the escutcheon plate 35 and makes it fast by means of the concealed attachment screws 42. Finally, he applies the switch knobs 35a, and plugs in the connector 29 to the power outlet (not shown) which has previously been placed in a suitable location within the cabinet. The entire installation is then complete and ready for testing and service.

By providing similar rough-in box openings 21 in the side walls of the box, facilities are afforded for the placement of the switches in other locations. Considering that the cooking top is usually not a square, it is obvious that the switches could not necessarily be located 90° away from the Fig. 1 location merely by rotating the entire cooking top, because the depth of the counter—usually standardized at twenty-five inches—may not accommodate such repositioning of the cooking top. Accordingly, in installations in which it is desired to place the switches in a side location, the installer will merely remove the appropriate side wall plate 22, releases the switch housing from its temporary securement, and moves the switch housing into the new location within the rough-in box. The plate 22 will then be used to cover the opening 21 in the rough-in box vacated by the switch housing. The installation will be completed in the manner above described, it being understood that the rough-in box will have screw holes, such as shown at 42, which will register with the slots 34 and thereby receive the securement screws 32.

While there has been described what is at present considered to be the preferred embodiment of the invention, it will be understood that various modifications may be made therein, and it is intended to cover in the appended claims all such modifications as fall within the scope of the invention.

I claim:

1. An electric cooking appliance for installation in a counter or the like having an opening in its top and through its front wall below the top; comprising an open-topped rough-in box having a shape adapting said box to fit within the opening in said counter top, said box having in a side wall an opening substantially matching the opening in said counter front wall, a cooking top secured to said rough-in box about the upper margin thereof and including means engageable with said counter top to support said rough-in box within said opening with the wall opening of said box in registry with the opening in said counter front wall, said cooking top having a plurality of relatively large openings therein, an electric cooking unit hingedly mounted on said cooking top adjacent each said opening and swingable between an operative position substantially covering said opening and an inoperative position exposing said opening, a switch housing disposed within said rough-in box beneath certain of said cooking top openings, said switch housing being dimensioned to

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pass snugly through said rough-in box wall opening and through said counter wall opening, switches enclosed within said switch housing for the control of said cooking units, permanent electrical connections between said switches and the associated units to be controlled thereby, electrical power leads permanently electrically connected to said switches and extending through a wall of said rough-in box for connection to an external electrical power source, means accessible through said certain cooking top openings for temporarily securing said switch housing to said rough-in box, whereby after placement of said rough-in box within said counter top opening and movement of said certain cooking units to inoperative position, said switch housing can be released from the rough-in box and manually projected through said rough-in box wall opening and said counter wall opening, means accessible through said certain cooking top openings to secure said switch housing to said rough-in box in its projected position, an escutcheon plate having a shape and size to adapt it to overlie the projecting face of said switch housing and to engage the counter wall in covering relation to the opening therein, and means for securing said escutcheon plate to said switch housing.

2. An electric cooking appliance for installation in a counter or the like having an opening in its top and through its front wall below the top; comprising a rough-in box having a shape adapting said box to fit within the opening in said counter top, said box having in at least one side wall an opening substantially matching the opening in said counter front wall, a cooking top secured to said rough-in box and including means to support said rough-in box within said opening with a wall opening of said box in registry with the opening in said counter front wall, said cooking top having openings affording access to the interior of said box, removable means for closing said access openings, a plurality of electric cooking units in said cooking top, a switch housing disposed within said rough-in box beneath said cooking top openings, said switch housing being dimensioned to pass snugly through said rough-in box wall opening and through said counter wall opening registering therewith, switch means in said switch housing for the control of said cooking units, permanent electrical connections between said switches and the associated units to be controlled thereby, electrical power leads permanently electrically connected to said switches and extending through a wall of said rough-in box for connection to an electrical power source, means accessible through said top openings for temporarily securing said switch housing to said rough-in box, whereby after placement of said rough-in box within said counter top opening and exposure of said cooking top openings, said switch housing can be released from the rough-in box and manually projected through said rough-in box opening and said counter wall opening, and means accessible through said cooking top openings to secure said switch housing to said rough-in box in said projected position.

3. An electric cooking appliance for installation in a counter or the like having an opening in its top wholly rearwardly of its front edge and through its front wall wholly below the top of said wall; comprising a rough-in box having a shape adapting said box to fit within the opening in said counter top, said box having in more than one of the side walls thereof an opening substantially matching the opening in said counter front wall, removable means for covering certain of said side wall openings, a cooking top covering said rough-in box, means for supporting said rough-in box within said opening with a selected one of the wall openings of said box in registry with the opening in said counter front wall, said cooking top having a plurality of openings affording access to the interior of said box, at least one electric cooking unit mounted on said cooking top, a switch housing disposed within said rough-in box beneath certain of said cooking top openings, said switch housing being dimensioned

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to pass snugly through said selected rough-in box wall opening and through said counter wall opening, switch means in said switch housing for the control of said cooking unit, permanent electrical connections between said switch means and the cooking unit to be controlled thereby, electrical power leads permanently electrically connected to said switches and extending through a wall of said rough-in box for connection to an electrical power source, means accessible through said cooking top openings for temporarily securing said switch housing to said rough-in box, whereby after placement of said rough-in box within said counter top opening and exposure of the said cooking top openings, said switch housing can be released from the rough-in box and manually projected through said rough-in box opening and said counter wall opening to a position in which said switches are accessible for operation from in front of said counter, means accessible through said cooking top openings to secure said switch housing in its last-named position, an escutcheon plate having a shape and size to adapt it to overlie the projecting face of said switch housing and to engage the counter wall in covering relation to the opening therein, means for securing said escutcheon plate to said switch housing, and means for closing said cooking top openings.

4. An electric cooking appliance for installation in a counter or the like having an opening in its top wholly rearwardly of the front edge thereof and an opening through an upstanding wall of the counter, said last-named opening being intermediate the marginal edges of the wall; comprising a rough-in box adapted to fit relatively snugly within said counter top opening, said box having in more than one of the side walls thereof an opening substantially matching the opening in said counter wall, said openings extending to the bottom of said rough-in box, a cooking top secured to rough-in box and having electric cooking units, means for supporting said rough-in box with a selected one of the wall openings thereof in communication with the opening in said counter wall, said cooking top having a plurality of openings affording access to the interior of said box adjacent said side wall openings, a switch housing disposed within said box and accessible through at least one of said cooking top openings for slidable movement into registry with a selected one of said rough-in box wall openings, said housing being dimensioned to pass snugly through all of said rough-in box wall openings and through the said counter wall opening, switch means disposed wholly within said switch housing for the control of said cooking units, permanent electric connections between said switch means and the cooking units to be controlled thereby, means accessible through said one of said cooking top openings for temporarily securing said switch housing to the base of said rough-in box, whereby after placement of said rough-in box within said counter top opening, said switch housing may be released from said rough-in box and slid through said selected rough-in box wall opening and through the counter wall opening for operation of said switches from in front of said counter, said housing having base flange means engaging with said rough-in box base when said switch housing is in its last-named position, and means accessible through certain of said cooking top openings to secure said base flange to said rough-in box base.

5. An electric cooking appliance for installation in a counter or the like having an opening in its top wholly rearwardly of the front edge thereof and an opening through an upstanding wall of the counter, said wall opening being separated from said top opening by fixed rigid structural elements; said appliance comprising a rough-in box adapted to fit relatively snugly within said counter top opening, said box having in more than one of the side walls thereof an opening substantially matching the opening in said intersecting wall, said openings extending to the bottom of said rough-in box, a cooking

top secured to rough-in box and having electric cooking units, means for supporting said rough-in box with a selected one of the wall openings thereof in communication with the opening in said counter wall, said cooking top having a plurality of openings affording access to the interior of said box adjacent said side wall openings, a switch housing disposed within said box and accessible through at least one of said openings for slidable movement through a selected one of said rough-in box wall openings, said housing being dimensioned to fit snugly within said rough-in box wall openings and extend through the said counter wall opening, switch means disposed wholly within said switch housing for the control of said cooking units, permanent electric connections between said switch means and the cooking units to be controlled thereby, means accessible through certain of said cooking top openings for temporarily securing said switch housing to the base of said rough-in box, whereby after placement of said rough-in box within said counter top opening, said switch housing may be released from said rough-in box and slid through said selected rough-in box wall opening and through the said counter wall opening, and means for securing said switch housing relative to said counter wall.

6. An electric cooking appliance for installation within an opening in a counter top which is disposed wholly within the boundaries of the counter top, comprising a cooking top resting on said counter top over the opening therein, said cooking top having an electric cooking unit disposed within an opening in said cooking top and movable between an operative position closing said opening and an inoperative position exposing the same; a rough-in box disposed within said counter beneath said cooking top and openly facing the same, said rough-in box having an opening in a wall thereof; means for securing said rough-in box in fixed relation to said counter top and said cooking top; a switch housing within said rough-in box, the dimensions of said switch housing enabling it to be moved into said rough-in box wall opening to substantially fill the same; means for releasably securing said switch housing within said rough-in box in a first position relative thereto, said securement means being accessible through said cooking top opening, whereby after installation of said cooking appliance within said counter top, said switch housing may be released from its first position and moved to a second position through said rough-in box

wall opening to project from said rough-in box wall; means for securing said switch housing in its said second position; switch means in said switch housing; and flexible electrical wiring connecting said switch means to said cooking unit, said wiring being sufficiently long to permit the movement of said switch housing and therein contained switch means from said first to second position without disconnection of said wiring from said switch means or said cooking unit.

7. An electric cooking appliance for installation in a counter or the like having an opening in its top wholly rearwardly of its front edge and an opening through a vertical wall wholly below said front edge; comprising a rough-in box adapted to fit snugly within said top counter opening, said box having an open top and having in a side wall an opening substantially matching said counter wall opening and registering therewith when the rough-in box is disposed within said top counter opening, a unitary switch housing temporarily secured within said rough-in box, said switch housing being dimensioned to fit snugly within said rough-in box side wall opening and to extend through said counter wall opening, a cooking top secured to said counter top over said counter top opening and said rough-in box, said cooking top having an electric cooking unit disposed within an opening in said cooking top and movable between an operative position closing said opening and an inoperative position exposing the same for access to the interior of said rough-in box, switch means disposed within said switch housing for control of said cooking unit, flexible electric wiring connecting said switch means and said cooking unit, flexible electric wiring connected to said switch means and adapted for connection to an electric power source, means for temporarily securing said switch housing wholly within said rough-in box whereby said housing may be released after said rough-in box has been secured within said counter top and manually projected through said rough-in box wall opening and said counter wall opening without disconnecting the wiring at said switch means or said cooking unit, and means for securing said switch housing in its said projected position for closing said rough-in box wall opening, said switch housing being always accessible, in its initial and its projected positions, through the said cooking top opening.

No references cited.