Oct. 2, 1951 M. E. FRY 2,569,753

DOMESTIC APPLIANCE

Filed Dec. 27, 1946 4 Sheets-Sheet 1

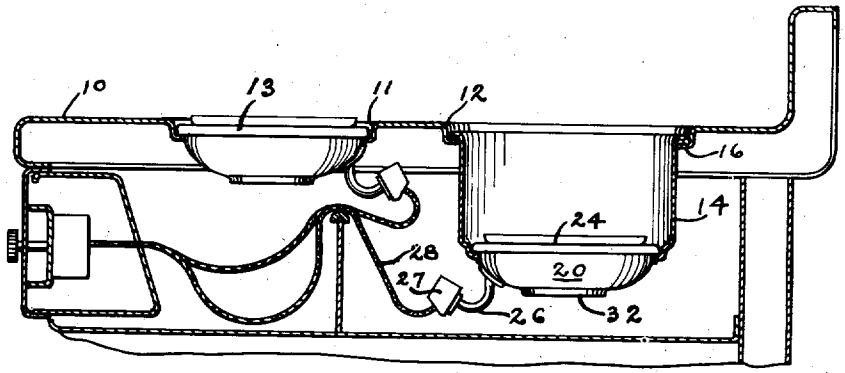


FIG. 1

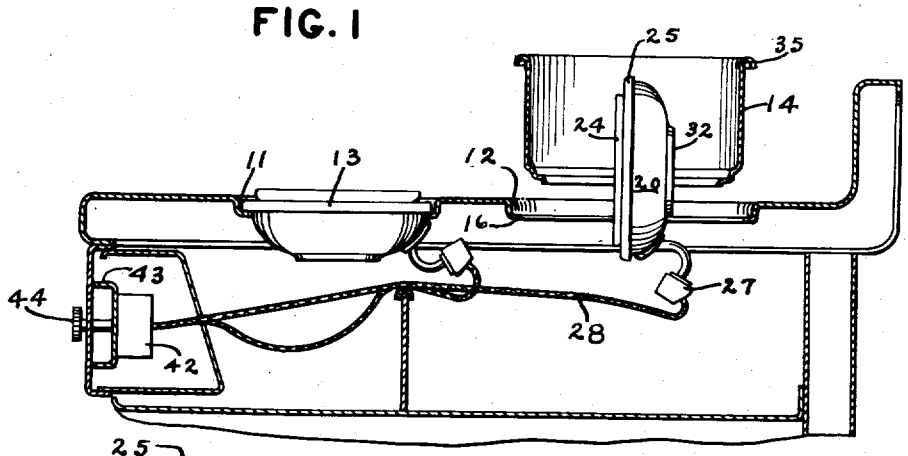


FIG. 2

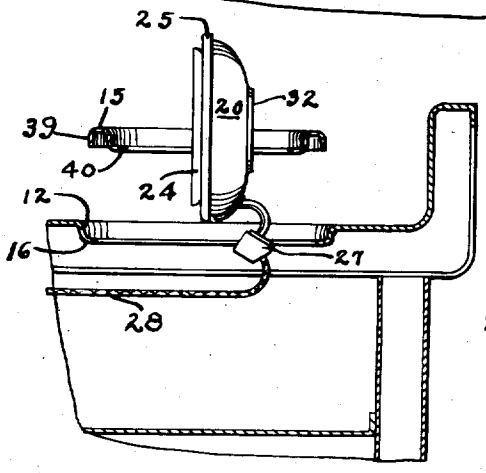


FIG. 3

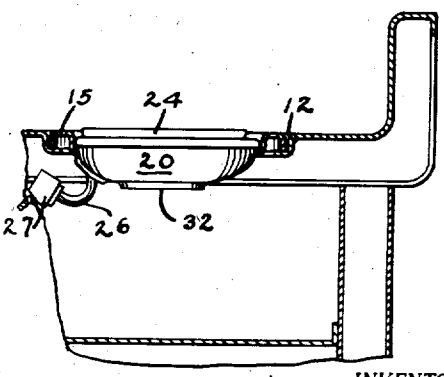


FIG. 4

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DOMESTIC APPLIANCE

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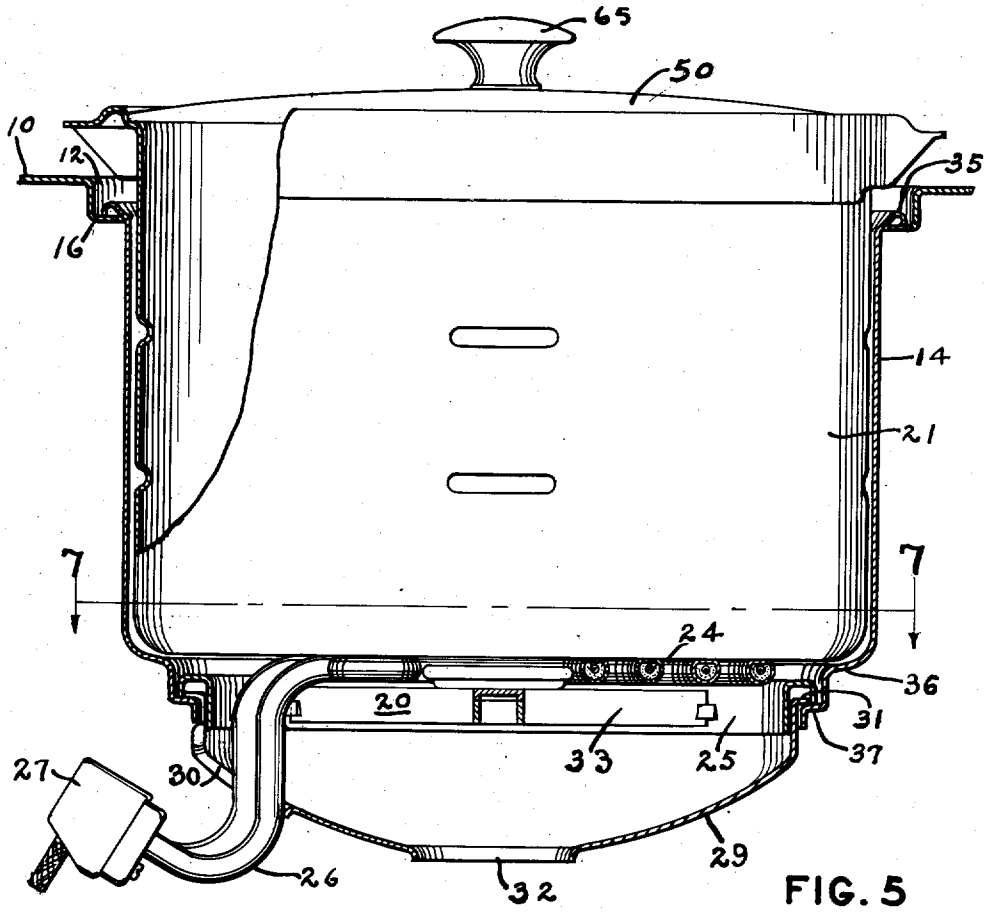


FIG. 5

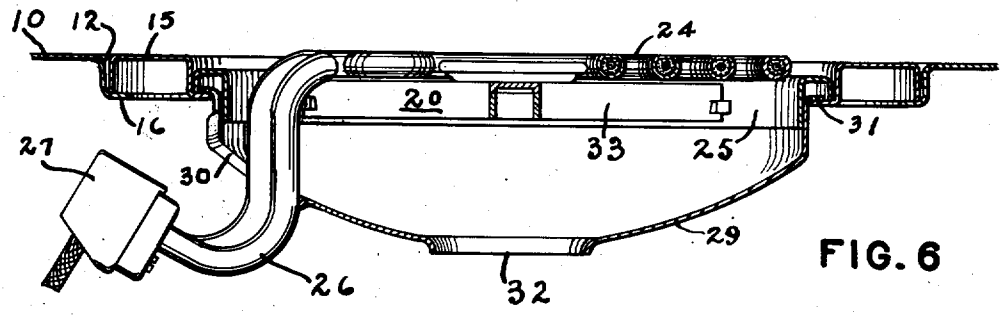


FIG. 6

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DOMESTIC APPLIANCE

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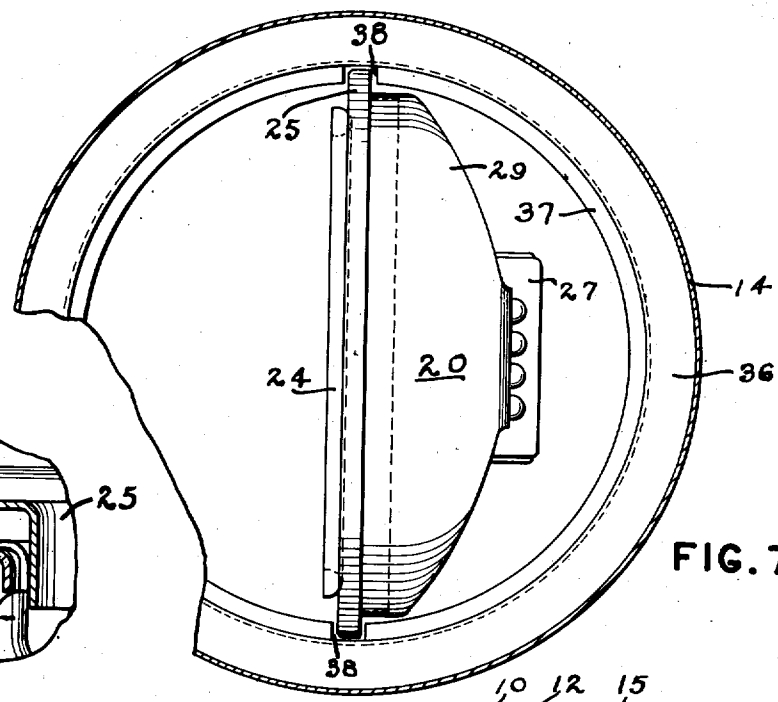


FIG. 7

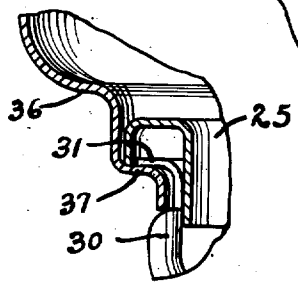


FIG. 8

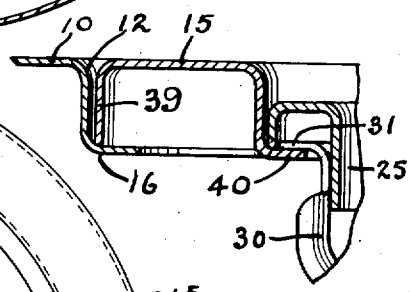


FIG. 10

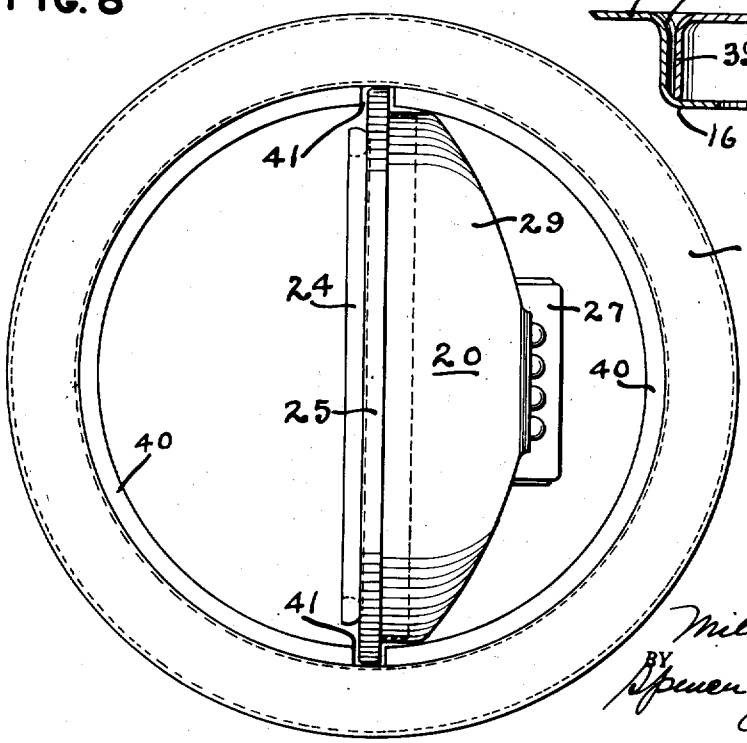


FIG. 9

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DOMESTIC APPLIANCE

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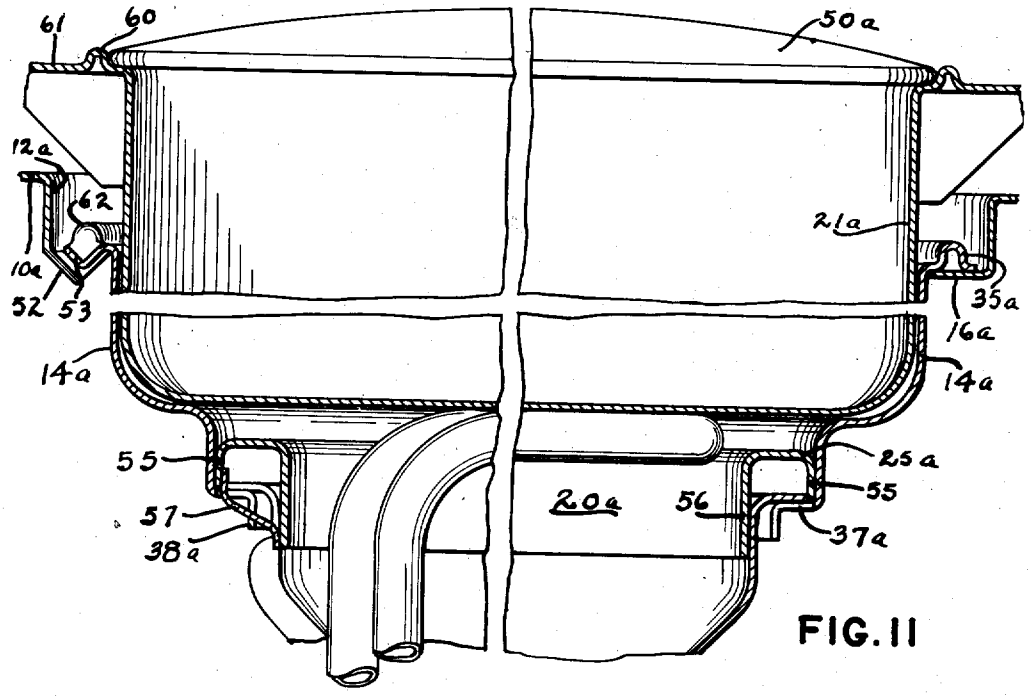


FIG. 11

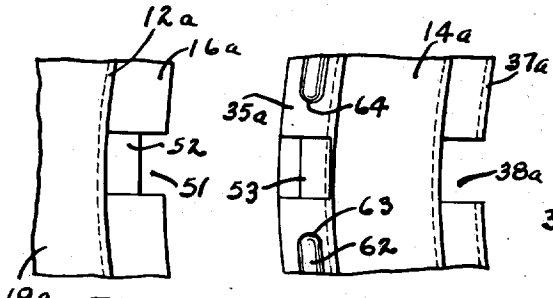


FIG. 12 FIG. 13

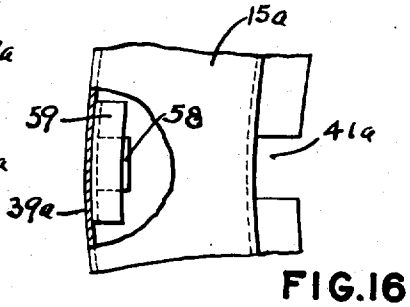


FIG. 16

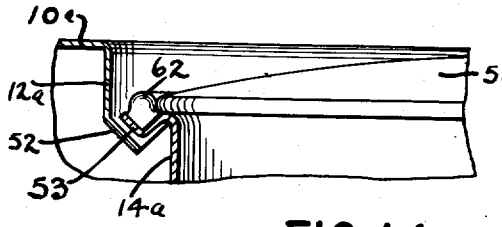


FIG. 14

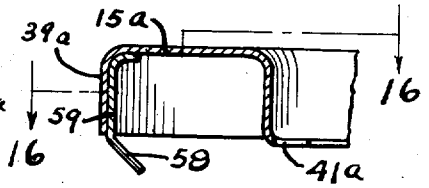


FIG. 15

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Patented Oct. 2, 1951

2,569,753

UNITED STATES PATENT OFFICE

2,569,753

DOMESTIC APPLIANCE

Millard E. Fry, Dayton, Ohio, assignor to General Motors Corporation, Dayton, Ohio, a corporation of Delaware

Application December 27, 1946, Serial No. 718,745

14 Claims. (Cl. 219—35)

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This invention relates to domestic appliances, and more particularly to electric ranges, or the like.

An object of this invention is to provide a range in which a cooking well may be changed or transformed into a top cooking unit.

Another object of this invention is to provide a range in which a top cooking unit may be changed or transformed into a cooking well.

Another object of this invention is to provide a method of changing from a cooking well into a top cooking unit.

Another object of this invention is to provide a method of changing from a top cooking unit into a cooking well.

Another object of this invention is to provide a cooking well sleeve having a construction at the bottom adapted to support a heating unit while said unit is in horizontal position; but permitting removal of said unit through said bottom.

Another object of this invention is to provide a heater supporting ring adapted to support a heating unit substantially in the plane of the cooking top; but permitting removal of said unit downwardly through said ring.

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 form of the present invention is clearly shown.

In the drawings:

Fig. 1 is a vertical cross-sectional view, somewhat diagrammatic, showing a portion of a range with a cooking well therein, according to this invention, together with an auxiliary or companion top cooking unit;

Figs. 2, 3 and 4 are similar to Fig. 1; showing progressive steps in changing from cooking well to top cooking unit;

Fig. 5 is an enlarged vertical cross-sectional view of the cooking well;

Fig. 6 is an enlarged vertical cross-sectional view on the same scale as Fig. 5 showing the top cooking unit;

Fig. 7 is a view along the line 7—7 of Fig. 5;

Fig. 8 is an enlargement of part of Fig. 5;

Fig. 9 is a partial top plan view of Fig. 4, enlarged;

Fig. 10 is an enlargement of part of Fig. 6;

Fig. 11 is a broken, vertical cross-section of a modified well;

Fig. 12 is a top view of part of the cooking top;

Fig. 13 is a top plan view of part of the well;

Fig. 14 is a vertical cross-section of part of the well with utensil removed;

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Fig. 15 is a vertical cross-section of part of the ring to be used in Fig. 11; and

Fig. 16 is a horizontal cross-section along the line 16—16 of Fig. 15.

As herein used, the words "cooking well" are intended to define, more or less broadly, that type of construction wherein a tubular well or sleeve depends from the surface of a cooking top, and is provided with a heating unit at the bottom. The well is sufficiently deep to receive a cooking utensil which substantially fills the well, so that the contents of the utensil are cooked by the heating unit at the bottom of the well, while the utensil is insulated by the sleeve of the well. As an example, a cooking well, of previous construction, is disclosed, in the patent to McCormick, No. 2,217,804, patented October 15, 1940.

As herein used, the words "top cooking unit" are intended to define, more or less broadly, that type of construction wherein a heating unit is provided substantially in the same plane (or slightly above) as that of the surface of the cooking top of the range. Cooking utensils are placed on these top cooking units and generally extend entirely above the top of the range and are not insulated by any structure of the range. A top cooking unit of previous construction is disclosed, for example, in the patent to McCormick, No. 2,320,041, patented May 25, 1943.

In previous construction, the cooking well has been more or less permanently secured in the range, and has required a skilled serviceman to disconnect it from the power lines in the range, and it could not be readily transformed or altered into a top cooking unit. Likewise, the top cooking units previously have been intended to be used permanently only at the top surface of the range, with no provision for transforming them into cooking wells. According to my invention, one or all of the top cooking units of the range may be readily changed or transformed into cooking wells, or vice versa, and this may be readily and quickly accomplished by the daily user of the range, without the aid of a skilled serviceman or electrician. Thus the daily user of the range may quickly and often change from one type to the other, as the daily needs dictate. The flexibility of the range is thus greatly increased.

A range, according to my invention, may include a cooking top 10 provided with a plurality of openings 11, 12, etc. Usually there are four such openings, of various sizes. All of these openings may be provided, if desired, with my interchangeable cooking well and top cooking unit construction. However, for purposes of

illustration, one or more openings 11 are shown with top cooking units 13 of previous construction, such as disclosed in Patent 2,320,041, and only one opening 12 is shown with my interchangeable construction. It is obvious, however, that the units in openings 11 may also be of my novel construction.

The opening 12 is adapted to support, interchangeably, the cooking well sleeve 14, or the ring 15, by means of the depending L-shaped flange 16. The heating unit 20 is made removable from, and insertable in the well sleeve 14 and heater ring 15. When the well sleeve 14 is being used, the heating unit 20 is supported at the bottom of sleeve 14 (Fig. 1) and is adapted to support and heat the cooking utensil 21, within the sleeve 14. When the top cooking unit ring 15 is being used, the heating unit 20 is supported inside the ring 15 with the heating surface substantially at or slightly above the surface of top 10 (Fig. 4) so that cooking utensils may be heated and supported above the top 10.

Conveniently, the heating unit 20 may be of construction substantially as disclosed in Patent No. 2,320,041. Thus it may include one or more tubular sheathed electric heaters 24 with their major portions sinuously arranged with their upper surfaces in a plane slightly above the top of a supporting ring 25, with their ends downwardly directed at 26, and terminating in a connector construction 27 to which the flexible power lines (in the form of a cable 28) are secured. The metal reflector 29 is provided with a cutaway slot 30 removably to receive the ends 26 of the heaters, and has an outwardly directed flange 31, and a drain opening 32. The ring 25 supports a spider construction 33 to which the heaters 24 are welded.

The well sleeve 14 is supported on the flange 16 by means of an outwardly directed flange 35. The lower portion of sleeve 14 is contracted at 36 and is provided with the flange construction 37 which supports the heater ring 25 and flange 31 of reflector 29. Thus the heater unit 20 is supported (while in horizontal position) at the bottom of the cooker well 14.

The well sleeve 14 is removable upwardly through the opening 12, as shown in Fig. 2, and the heating unit 20 is removable downwardly through the bottom of sleeve 14 without disconnecting the power lines 28. For this purpose the power line cable 28 is of sufficient length and flexibility to assume the position shown in Fig. 2, thus permitting the sleeve 14 to be lifted upwardly, and the unit 20 to be tilted to vertical position. The flange 37 is provided with notched construction at 38 to permit the ring 25 and flange 31 to slide downwardly (or upwardly), as shown in Figs. 2 and 7. Thus the well sleeve 14 may be removed from the range in preparation to convert into a top cooking unit (or vice versa), and the heating unit 20 may be removed from or inserted in the sleeve 14 without disconnecting cable 28.

The top cooking unit is formed by inserting the heating unit 20 upwardly (while in vertical position) through the ring 15, as shown in Figs. 3 and 9, then turning the unit 20 to horizontal position and resting the ring 15 and unit 20 on flange 16 as shown in Figs. 4 and 6. The converse operation is performed when it is desired to convert into a cooker well.

The ring 15 is provided with an outer downwardly directed flange 39 adapted to rest on flange 16. The ring 15 also has an inner downwardly and inwardly directed flange 40 adapted

to support the heater ring 25 and reflector flange 31, when they are in horizontal position. To make the heater unit 20 removable from, or insertable in, the ring 15, the flange 40 is provided with a notched construction 41. Thus the heater unit 20 may be removed from, or inserted in, ring 15 without disconnecting the power lines 28.

The power lines 28 are connected to fixed wiring in the range. Thus the bank of heater switches 42 is supported on switch bar 43. Switch knobs 44 operate the switches 42, one of which is connected to cable 28 and controls the heaters 24 in the unit 20, for example, as disclosed in McCormick Patent No. 2,259,258, patented October 14, 1941. Other switches 42 control the remaining heaters of the range. The switches 42 are also connected to lead in power lines plugged into a source of electrical power, as is well understood.

Thus I have provided a construction and method for changing a cooking well into a top cooking unit (or vice versa) without disconnecting the power lines, and without requiring any skilled service men or electricians.

In the practice of my invention, assuming that the cooking well sleeve 14 has been in use, as shown in Figs. 1 and 5, and the user wishes to convert to top cooking unit construction, the well sleeve 14 is lifted upwardly and the heater unit 20 is removed downwardly, as shown in Figs. 2 and 7. The heater unit 20 is then inserted upwardly through ring 15, as shown in Figs. 3 and 9. The heater unit 20 is then turned to horizontal position on the ring 15 and both are then placed on the flange 16, as shown in Figs. 4 and 6. Cooking may then be performed on top of the range on unit 20.

A converse operation is performed when it is desired to convert from the top cooking unit of Figs. 4 and 6 to the cooking well unit of Figs. 1 and 5. Upon completion of this converse operation, cooking may be performed in the compartment formed below the cooking top by the insulating sleeve 14.

The range cooking top 10, the cooking well 14, the adapter ring 15, and the heating unit 20, heretofore described, may be provided with means for preventing the accidental turning of these members about a vertical axis, for example, while being brushed or wiped. Such means are disclosed in Figs. 11 through 16. In addition, the cover 50, for the utensil 21, may be used as the cover of the well 14, when the utensil 21 is removed, as indicated in Figs. 11 and 14.

Various members shown in Figs. 11 through 16, are understood to be similar to corresponding members in Figs. 1 through 10. The same designating numbers have been used, with the suffix "*a*" added, and it is understood that the same construction, mode of operation, and function are present in the various members illustrated in Figs. 11 through 16, that have been previously described with regard to Figs. 1 through 10, with the additional function that means for preventing accidental rotation about a vertical axis have been added.

Thus, referring to Figs. 11 through 16, the cooking top 10*a* is provided with an opening 12*a*, having a depending L-shaped flange 16*a*. At one place on the circumference of the flange 16*a*, a notch 51 is formed by striking down a short portion 52 of the flange 16*a*. This notch 51 receives a corresponding notch 53 formed in the outwardly directed flange 35*a* of the cooking well 14*a*. The notch 53 is formed by striking down a portion of the flange 35*a* in the form of a V-

shaped notch. Thus when the well 14a is placed in the opening 12a, with the notches 51 and 53 superimposed upon each other, the well 14a is locked against accidental rotation about a vertical axis. This prevents the user from imposing dangerous strains on the connecting cables, similar to 28, when the interior of the well 14a is being cleaned by a turning movement of a cleaning cloth or the like.

Likewise the heating unit 20a is locked against turning movement about a vertical axis when the heating unit 20a is properly placed in the well 14a. To this end, the flange construction 37a, at the bottom of well 14a, is provided with two oppositely directed slots, or notched constructions 38a, one of which serves the double purpose of allowing the heating unit 20 to be removed downwardly, as previously described with regard to Figs. 1 through 10, and also to aid in locking the heater unit 20a when it is properly in place at the bottom of the well 14a. The ring 25a, of the heater unit 20a, has an outer, downwardly directed flange 55 and an inner downwardly directed flange 56. These two flanges are bridged by a short metal piece 57, which is adapted to enter one of the notches 38a, and thus lock the heating unit 20a against rotation.

Thus the well 14a is locked against rotation by the notches 52 and 53, and the heater 20a is locked against rotation by the piece 57, which lodges in the notch 38a.

Similarly the adapter ring 15a is provided with means to lock it against rotation, when it is placed in the opening 12a, and it is provided with means for locking the heater unit 20a against similar rotation within the ring 15a. Thus the outer downwardly directed flange 39a, of ring 15a may be provided with a downward and slanting lobe 58 adapted to cooperate with the notch 51 to lock the ring 15a against rotation when it is properly placed in the opening 12a. The lobe 58 conveniently may be made by welding a metal piece 59 on the inside of the flange 39a, the piece 59 having, integrally formed therewith, the lobe 58.

To lock the heater unit 20a inside the ring 15a, the notched construction 41a may be used. The notched construction 41a conveniently may be the same notched construction 41 previously described in Figs. 1 through 10, one notch of which serves the double purpose of allowing the heater unit 20a to be removed downwardly through the ring 15a, and to receive the bridging member 57, thus to lock the heater 20a against rotation within the ring 15a.

The cover 50a, of the utensil 21a may also be used as the cover for the well 14a, when the utensil is removed. This is illustrated in Figs. 11 and 14, wherein the cover 50a rests within the circular bead 60 of the top flange 61 of the utensil 21a, or within the circular bead 62 of the top flange 35a of the well 14a. The circular bead 62 terminates at 63 and 64 to allow the formation of the notch 53; but otherwise may continue completely around the circular flange 35a.

The cover 50a may be provided with a handle (not shown), similar to the handle 65 of the cover 50.

While the form of embodiment of the invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted, as may come within the scope of the claims which follow.

What is claimed is as follows:

1. In combination: a range with a cooking top having a circular opening; a cylindrical cooking well having an outward upper flange resting on the periphery of said opening and having its main cylindrical body depending below said opening a sufficient distance to accommodate a substantial portion of a cooking utensil below said cooking top, said well having an inwardly directed flange at its lower end; a heating unit inside said well resting on said inwardly directed flange and having flexible wiring connected to fixed wiring on said range; said inwardly directed flange being notched to permit said heating unit to be removed through the bottom of said well without disconnecting said flexible wiring and to permit said well to be removed upwardly through said opening.

2. In combination: a range with a cooking top having a circular opening; a cylindrical cooking well having an outward upper flange resting on the periphery of said opening and having its main cylindrical body depending below said opening a sufficient distance to accommodate a substantial portion of a cooking utensil below said cooking top, said well having an inwardly directed flange at its lower end; a heating unit inside said well resting on said inwardly directed flange and having flexible wiring connected to fixed wiring on said range; said heating unit including a heating resistance member supported to provide a flat heating surface and connected to said flexible wiring, together with a circular dish-shaped reflector below said resistance having a central drain opening and a side connector notch to permit said reflector to be removed from said heating unit without disconnecting said flexible wiring; said inwardly directed flange being notched to permit said heating unit to be removed through the bottom of said well without disconnecting said flexible wiring and to permit said well to be removed upwardly through said opening.

3. In combination: a range with a cooking top having an opening; a vertical tubular structure supported from said cooking top and depending below said cooking top a sufficient distance to accommodate a substantial portion of a cooking utensil below said cooking top, said structure having an outward flange at the top to support said structure in said opening and having an inward flange at the bottom; a heating unit resting on said inward flange; flexible wiring connecting said heating unit with fixed wiring on said range; said inward flange being notched so that said unit is supported on said flange when in a horizontal position, but may be removed downwardly through said tubular structure without disconnecting said flexible wiring when said unit is turned from said horizontal position.

4. The method of changing from a cooking well accessible through and depending from an opening in the cooking top of a range and which accommodates a substantial portion of a cooking utensil below said cooking top into a top cooking unit accessible at and substantially at the same plane of said cooking top and which accommodates a cooking utensil entirely above said cooking top, which comprises removing said well through said opening, removing the heating unit of said well through the bottom of said well without disconnecting the power lines which extend from said range to said heating unit, then inserting said heating unit in a supporting ring without disconnecting said power lines, and rest-

ing said supporting ring on the periphery of said opening.

5. The method of changing from a top cooking unit supported on the periphery of an opening of a cooking top of a range and accessible at and substantially at the same plane of said cooking top and which accommodates a cooking utensil entirely above said cooking top into a cooking well accessible through and depending from said opening and which accommodates a substantial portion of a cooking utensil below said cooking top which comprises removing the heating unit from a ring which supports the unit on the periphery of said opening without disconnecting power lines which extend from said heating unit to said range, inserting said heating unit through the bottom of said cooking well without disconnecting said power lines, and then inserting said cooking well into said opening and supporting said well by the periphery of said opening.

6. In combination: a cooking well tubular sleeve having an outwardly directed flange at the top adapted to rest on the periphery of an opening in a cooking top, and having an inwardly directed flange at the bottom adapted to support a heating unit sufficiently below said cooking top to accommodate the major portion of a cooking receptacle within said sleeve and below said cooking top, said inwardly directed flange being notched to permit removal of said heating unit through the bottom of said sleeve.

7. In combination: a cooking well tubular sleeve having an outwardly directed flange at the top adapted to rest on the periphery of an opening in a cooking top, and having an inwardly directed flange at the bottom, a generally flat heating unit resting on said flange and being located sufficiently below said cooking top to accommodate the major portion of a cooking receptacle within said sleeve and below said cooking top, said inwardly directed flange being notched to permit removal of said heating unit through the bottom of said sleeve.

8. In combination: a range with a cooking top having an opening; a tubular cooking well supported from said cooking top, depending below said opening and removable upwardly through said opening, said well accommodating a major portion of a cooking utensil below said cooking top; a heating unit; flexible wiring connecting said heating unit with fixed wiring on said range; and supporting means detachably supporting said heating unit at the lower end of said well to permit said well to be removed from said well without disconnecting said wiring; and including means for locking said heating unit against accidental rotation about a vertical axis.

9. In combination: a range with a cooking top having a circular opening; a cylindrical cooking well having an outward upper flange resting on the periphery of said opening and having its main cylindrical body depending below said opening and having an inwardly directed flange at its lower end, said well accommodating a major portion of a cooking utensil below said cooking top; a heating unit inside said well resting on said inwardly directed flange and having flexible wiring connected to fixed wiring on said range; means to remove said well upwardly through said opening and said heating unit through the bottom of said well without disconnecting said flexible wiring; and means for locking said well against accidental rotation about a vertical axis.

10. In combination: a range with a cooking top having a circular opening; a cylindrical cooking well having an outward upper flange resting on the periphery of said opening and having its main cylindrical body depending below said opening and having an inwardly directed flange at its lower end, said well accommodating a major portion of a cooking utensil below said cooking top; a heating unit inside said well resting on said inwardly directed flange and having flexible wiring connected to fixed wiring on said range; means to remove said well upwardly through said opening and said heating unit through the bottom of said well without disconnecting said flexible wiring; and means for locking said heating unit against accidental rotation about a vertical axis.

11. In combination: a range with a cooking top having a circular opening; a cylindrical cooking well having an outward upper flange resting on the periphery of said opening and having its main cylindrical body depending below said opening and having an inwardly directed flange at its lower end, said well accommodating a major portion of a cooking utensil below said cooking top; a heating unit inside said well resting on said inwardly directed flange and having flexible wiring connected to fixed wiring on said range; means to remove said well upwardly through said opening and said heating unit through the bottom of said well without disconnecting said flexible wiring; means for locking said well against accidental rotation about a vertical axis and means for locking said heating unit against rotation about a vertical axis.

12. In combination: a range with a cooking top having a circular opening; a cylindrical cooking well having an outward upper flange resting on the periphery of said opening and having its main cylindrical body depending below said opening a sufficient distance to accommodate a substantial portion of a cooking utensil below said cooking top, said well having an inwardly directed flange member at its lower end; a heating unit member inside said well resting on said inwardly directed flange member and having flexible wiring connected to fixed wiring on said range; one of said members being notched to permit said heating unit member to be removed through the bottom of said well without disconnecting said flexible wiring and to permit said well to be removed upwardly through said opening.

13. In combination: a range with a cooking top having an opening; a vertical tubular structure supported from said cooking top and depending below said cooking top a sufficient distance to accommodate a substantial portion of a cooking utensil below said cooking top, said structure having an outward flange at the top to support said structure in said opening and having an inward flange member at the bottom; a heating unit member resting on said inward flange member; flexible wiring connecting said heating unit member with fixed wiring on said range; one of said members being shaped so that said unit member is supported on said flange member when in a horizontal position, but may be removed downwardly through said tubular structure without disconnecting said flexible wiring when said unit member is turned from said horizontal position.

14. In combination: a cooking well tubular sleeve having an outwardly directed flange at the top adapted to rest on the periphery of an opening in a cooking top, and having an inwardly directed flange member at the bottom, a general-

ly flat heating unit member resting on said flange member and being located sufficiently below said cooking top to accommodate the major portion of a cooking receptacle within said sleeve and below said cooking top, one of said members being notched to permit removal of said heating unit member through the bottom of said sleeve.

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