

Sept. 25, 1962

L. C. HANSON
HEATING UNIT

3,056,012

Filed Sept. 14, 1959

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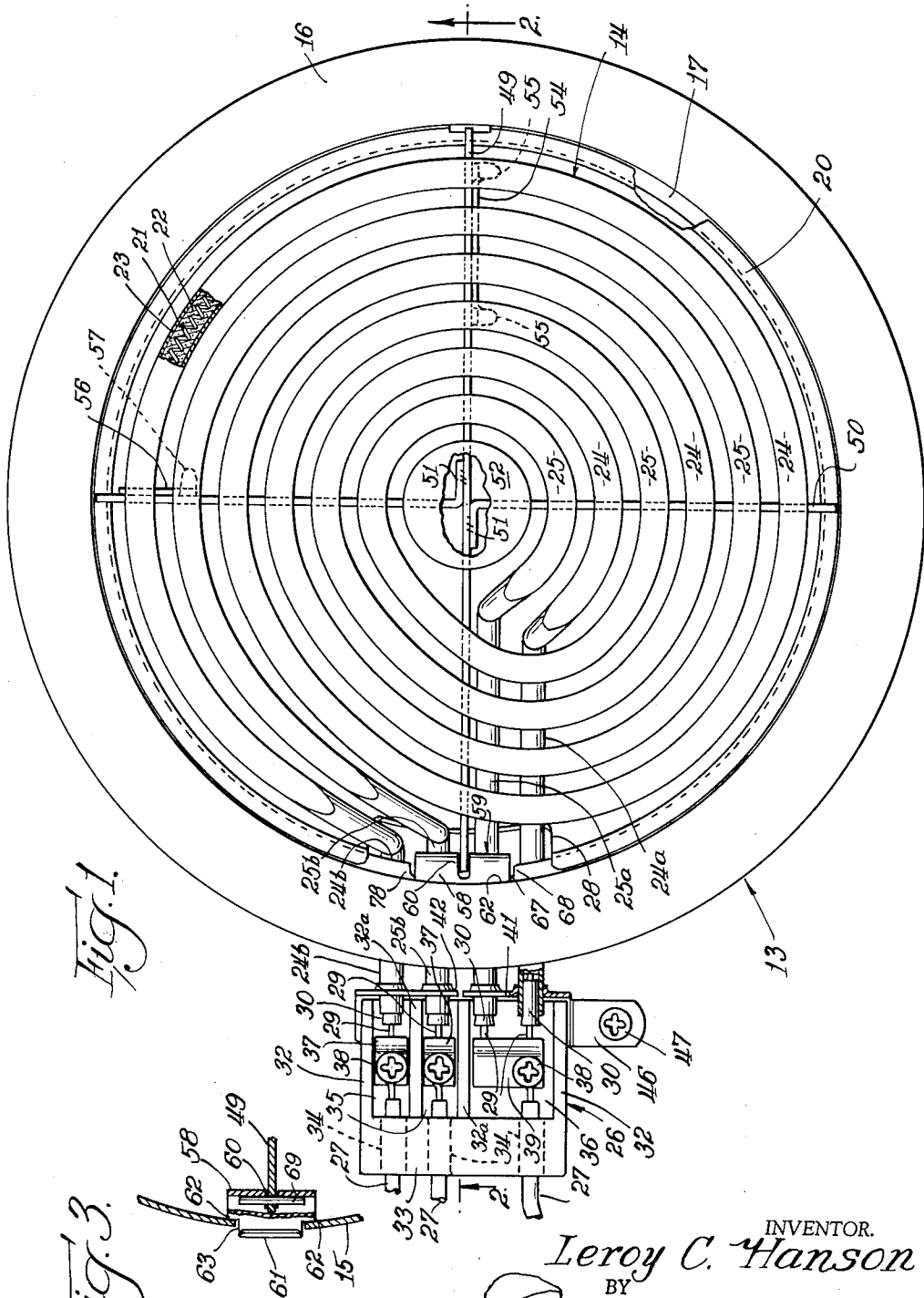


Fig. 1.

Fig. 3.

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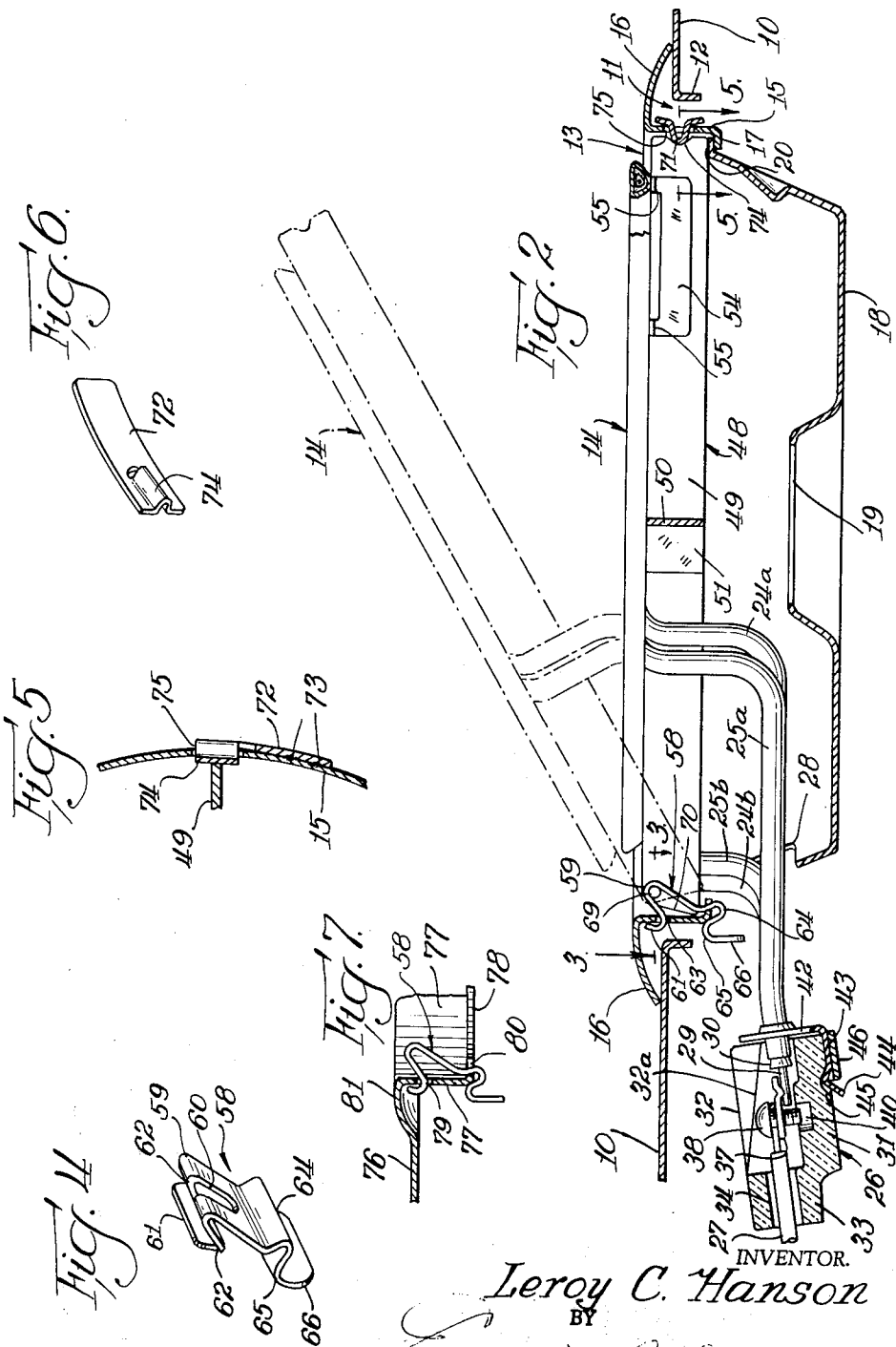
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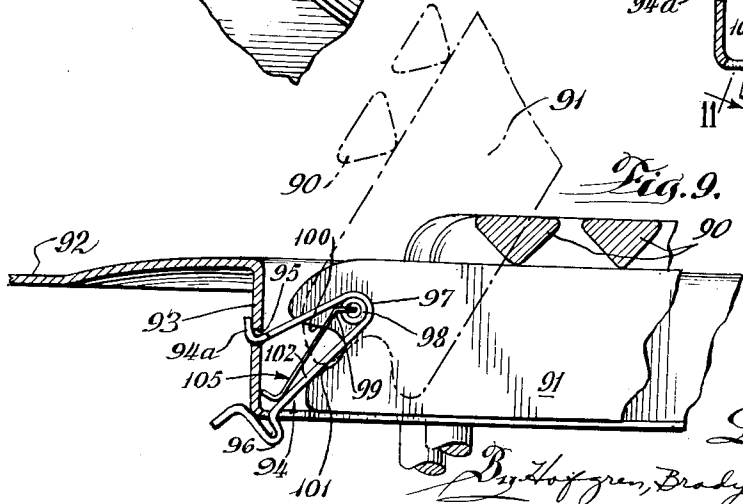
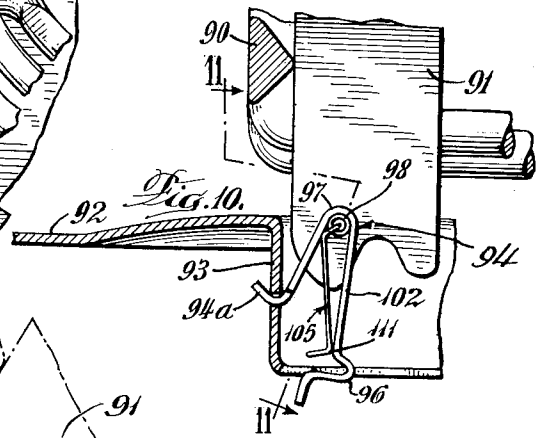
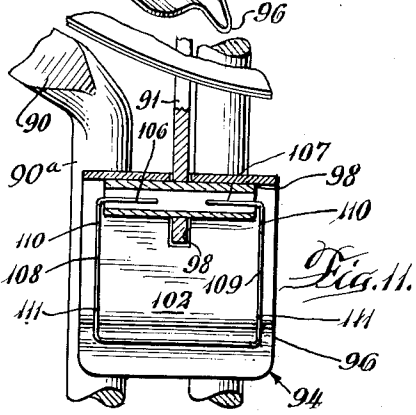
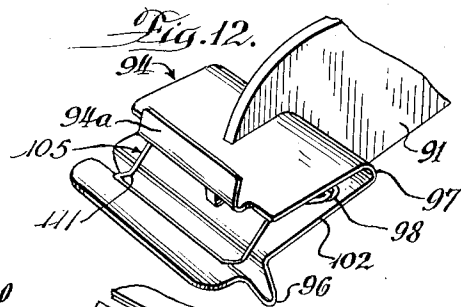
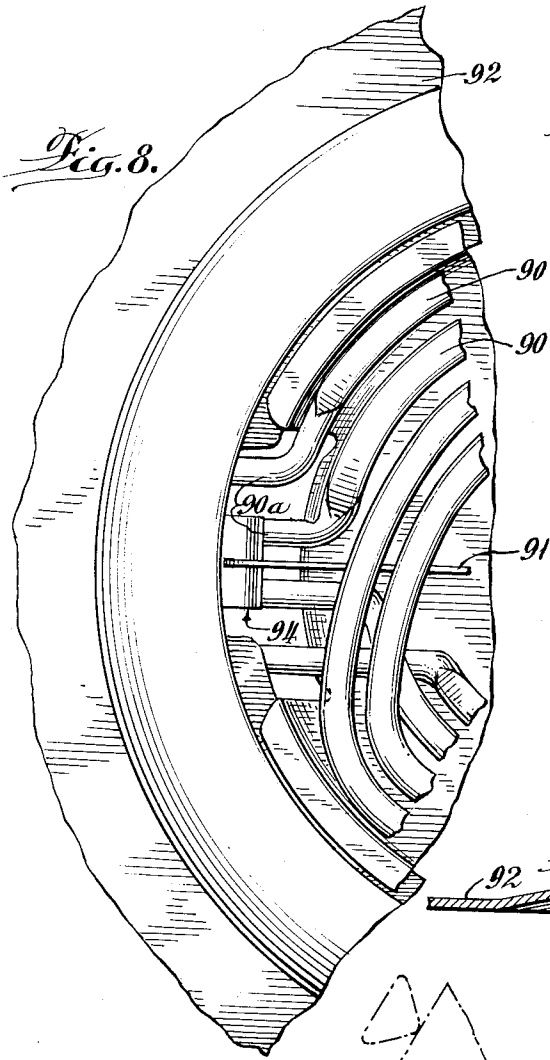
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3 Sheets-Sheet 3



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3,056,012

HEATING UNIT

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 Filed Sept. 14, 1959, Ser. No. 839,977
 16 Claims. (Cl. 219—37)

This invention relates to electric heaters of the type commonly employed for surface heating in electric ranges wherein a heat winding composed of one or more tubes with heating resistors therein is mounted on the range top in a position to support cooking utensils thereon, the invention having reference more particularly to new and improved mounting facilities by which such heaters are installed on the range top in a manner to tilt upwardly from the normal utensil supporting position to an upraised position for convenient cleaning of the underside of the heater and the heat reflector and spillage collecting pan which is customarily provided under such heaters.

This application is a continuation-in-part of Hanson application, Serial No. 772, 869, filed November 10, 1958, now abandoned and assigned to the assignee of this application.

The principal objects of the invention are to provide simplified facilities of greater convenience for mounting such heaters; to insure a positive and reliable hinging of the heater at a place to permit swinging of the heater to an upraised position of free access to the underside thereof; to utilize a quick attachable and detachable hinge which is readily applicable to adapter rings or to the range top itself; to provide a hinge which may be attached and detached by rotation of the heater; to permit convenient access to the place where current supply conductors are connected; and to minimize the cost of manufacture and assembling of the mounting facilities of such heaters, these and other objects being accomplished as pointed out more particularly hereinafter and as shown in the accompanying drawings in which:

FIG. 1 is a top view of an electric heater having mounting facilities in accordance with the present invention;

FIG. 2 is a view of the assembled heater and mounting facilities of FIG. 1, mostly in section on the line 2—2 thereof, and showing a fragmentary portion of a range top to which the heater and mounting facilities are applied;

FIG. 3 is a sectional view on the line 3—3 of FIG. 2 showing the hinge connection of the heater with the mounting ring;

FIG. 4 is a perspective view of the hinge bracket of the hinge connection;

FIG. 5 is a sectional view on the line 5—5 of FIG. 2 showing the latch for holding the heater in the normal cooking position;

FIG. 6 is a perspective view of the latching member of FIG. 5;

FIG. 7 is a fragmentary view of a range top having a skirt portion to which the hinge bracket of FIG. 4 is applicable;

FIG. 8 is a fragmentary top view of a modified heater mounting;

FIG. 9 is a section along line 9—9 of FIG. 8;

FIG. 10 is a view similar to FIG. 9 showing the parts in a different position;

FIG. 11 is a section along line 11—11 of FIG. 10; and

FIG. 12 is a fragmentary perspective of the hinge connection of FIGS. 8—11.

Referring to the drawings, the reference numeral 10 indicates a fragmentary portion of a conventional range top which is provided with an opening 11 for reception of a heating unit assembly therein, the range top being provided with a downturned flange 12 around said opening.

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An adapter ring 13 is employed to support the electric heater, which is indicated as a whole by the reference numeral 14, and the adapter ring has a short substantially cylindrical skirt or sleeve portion 15 extending downwardly in the opening 11 from an annular downturned flange portion 16 thereof which extends outwardly over and rests on the range top for supporting the adapter ring, and the sleeve portion 15 has an returned flange 17 therearound at the lower end providing a ledge on which a pan 18 is supported. This pan 18 serves as a drip collector for spillage which may occur in the cooking operations and also serves as a heat reflector to redirect heat from the heater 14 upwardly to the pan or utensil on the heater, and this pan has a raised center with an opening 19 at the top for air circulation and is provided with an annular flange or rim 20 therearound by which it is removably supported on the ledge 17.

The heater 14 is of conventional tubular sheathed resistor type having a helical coil 21 of resistance wire embedded in compacted electrical insulation 22, such as magnesium oxide powder, in a metal tube 23, and the heater may be composed of one or more of such tubular sheathed heater elements coiled in flat spiral form, two being shown in the drawing and indicated respectively by the reference numerals 24 and 25 with the coils thereof intercalated between one another.

Each heater element 24 and 25 has opposite end portions thereof, hereafter referred to as terminal end portions, bent downwardly from the plane of the coils thereof to a lower level at which the terminal end portions of both heater elements extend outwardly in side-by-side relation to a place underneath the range top 10 where they project into a terminal block 26 of electrical insulating material, such for example as a ceramic, in which connections are made with current supply conductors 27 through which current is suppliable for energizing the resistances 21 of the heater.

In the spirally coiled elements 24 and 25 as shown in the drawing each said element has a long terminal end portion, indicated respectively at 24a and 25a, leading from the respective inner coil thereof, and each said element 24 and 25 has a short terminal portion, indicated respectively at 24b and 25b, leading from the respective outer coil thereof, and these terminal portions extend outwardly underneath the skirt portion 15 of the mounting ring through a wide notch 28 provided in the side wall of the pan 18 for this purpose.

The coiled portions of the elements 24 and 25 constitute the active portion of the heater and are preferably flattened at the top to provide wide flat faces for conductivity of heat to a utensil placed thereon, and in accordance with common practice, the resistances 21 extend throughout the length of the coiled portions and therebeyond have their opposite ends electrically connected to low resistance terminal wires which extend outwardly through the terminal end portions and project from the outer ends thereof as indicated at 29.

It is important that the outer ends of the terminal portions be sealed against entrance of moisture or drippings from the cooking operations; for this purpose the electrical insulation in which the terminal wires 29 are embedded is terminated at a distance from the respective sheath ends of the terminal portions 24a, 24b, 25a and 25b and plugs 30 of compressible heat resistant material, such as Silicone rubber, are provided which encircle the respective terminal wires 29 and are inserted in the sheath ends somewhat in the manner of corks so as to fit snugly therein under such compression around the wire and against the interior of the sheath ends to be securely retained in place.

The terminal block 26 is of one piece construction with a bottom wall 31 having laterally spaced outer walls

32 and intermediate partitions 32a extending upwardly from the bottom wall and defining open top channels to receive the outer ends of the terminal portions 24a, 24b, 25a and 25b therein, as shown in FIGS. 1 and 2, and these channels extend outwardly to an outer end portion 33 of the terminal block which has openings 34 extending therethrough through which the end portions of the current supply conductors 27 extend for connection thereof to the terminal wires 29.

The outer walls 32 and partitions 32a may all be of the same height extending to the top of the block 26, but preferably only the outer walls 32 do so and the partitions 32a decrease in height toward the inner end of the terminal block as indicated in FIG. 2.

In the illustrated heater, each resistance 21 is connected at one end to a common conductor and their other ends are connected to separate conductors and for the purpose of such connection within the terminal block, the latter is provided with three aforesaid channels, two of which are narrow as indicated at 35 and each has a separate terminal portion of the heater 14 projecting therein, whereas the other channel is wide, as indicated at 36, and has two terminal portions of the heater projecting therein, and three aforesaid openings 34 are provided which lead respectively into the three separate channels.

In the illustrated embodiment the two corresponding ends 24b and 25b are paired together in side-by-side relation and extend into separate ones of the channels 35 and have their terminal wires 29 connected therein respectively to two of the current supply conductors 27, and the other two corresponding ends 24a and 25a are paired together in side-by-side relation and both project into the wide channel 36 and have their terminal wires 29 conjointly connected therein to the other one of the three current supply conductors 27.

Each channel 35 has a connector plate 37 therein welded onto the respective terminal wire 29 and provided with a terminal screw 38 threaded therethrough for attachment of the respective current supply conductor 27 thereto, and the channel 36 has a wide connector plate 39 therein which is welded to the two terminal wires 29 which project from the terminal end portions 24a and 25a and this connector has a single terminal screw 38 threaded therethrough for attachment of the other one of the three current supply conductors 27 thereto.

Preferably the bottom wall 31 of the terminal block has a recess 40 under each screw to receive the inner end of the respective screw 38 therein.

Baffle plate means is secured on the terminal end portions 24a, 25a, 24b and 25b, at the inner end of the terminal block 26 to connect the outer ends of the terminal end portions of the heating elements and to prevent grease or other spillage on the coils or terminal portions thereof from reaching the terminal block and the electrical connections therein, and said means comprises two corresponding angular plates 41 and 42 located in close adjoining end-to-end relation, the one 41 of which is secured on the long terminal portions 24a and 25a and the other one 42 of which is secured on the short terminal portions 24b and 25b of the elements 24 and 25, this separate plate arrangement permitting freedom of movement of the opposite ends of the elements 24 and 25 for expansion and contraction of the coils thereof which occurs in the heating and cooling of the heater.

These plates 41 and 42 have the terminal portions of the elements 24 and 25 extending therethrough in a rigidly fixed, leak proof manner, and by reason of the corresponding ends of both elements 24 and 25 being secured to the same plate, these plates hold the elements 24 and 25 in fixed relation to one another with their coils in intercalated coplanar relation to one another.

Each plate 41 and 42 is substantially coextensive with one half of the inner end of the terminal block 26 and is provided at the bottom with an outturned flange 43

on which the inner end of the bottom wall 31 of the terminal block rests so that it is quite closely confined between the said flanges and the end extremities of the terminal portions 24a, 24b, 25a and 25b, and each flange 43 is provided with a spring latch portion 44 having an offset receivable in a notch 45 in the underside of the bottom wall of the terminal block to retain the terminal block in connected relation on the plates 41 and 42. A ground strap 46 is secured to one of the plates 41 or 42 and provided with a terminal screw 47 for attachment of a grounding conductor thereto.

For supporting the heating coils of the elements 24 and 25 a spider is provided which is indicated as a whole by the reference numeral 48 and is receivable freely within the skirt portion 15 of the adapter ring and has radially extending arms arranged so that the outer ends thereof rest on the rim 20 of the pan 18 when the latter is in place in the ledge 17, and the arms of this spider when thus supported have their upper edges lying in a horizontal plane to provide a support for the coils of the heating elements 24 and 25.

A convenient and inexpensive form of spider which is particularly adaptable for the hinging thereof as herein-after described, is shown in the drawing and comprises a strap 49 extending diametrically across the opening of the skirt portion 15 and having two arms 50 of similar strap material secured to the opposite sides of the strap 49 and projecting laterally therefrom at opposite sides of the center thereof, these strap arms 50 having their inner end portions bent laterally as indicated at 51 and spot welded to the center strap 49. Thus the spider is made of conventional stock and with standard cutting and bending equipment.

The heating elements are coiled so as to leave a center opening at the place where the arms 50 are joined to the center strap 49 and a circular plate or cap 52 is secured in any convenient manner to the spider 48 in such center opening and when the heater is in the horizontal heating position, this plate or cap 52 overlies the center opening 19 of the pan.

The coils of the heater 14 are arranged on the spider so they are centered in the opening defined by the skirt portion 15 of the adapted ring and the spider 48 is arranged relatively to the coils so that the center strip 49 of the spider is midway between the outwardly extending terminal end portions of the heating elements with the portions 24a and 25a at one side and the portions 24b and 25b at the other side, and the coils are held on the spider in this relation by two brackets which are secured to the spider and have attaching tabs secured to coils of the heating elements 24 and 25.

One of these brackets, which is indicated at 54, is of a length to reach from the outside coil of the element 24 to the middle coil of the element 25, as shown in FIGS. 1 and 2, and is spot welded to the side of that portion of the center strap remote from the terminal ends of the heater coils and has a laterally extending tab 55 at each end extending respectively along the bottom of said outside coil of the element 24 and along the bottom of the intermediate coil of the element 25 and spot welded thereto.

The other one of said two brackets which is indicated at 56 is spot welded to one of the side straps 50 of the spider, as shown in FIG. 1, and has only one laterally extending tab 57 which extends along the underside of the outer coil of the heater element 25 and is spot welded thereto.

The coils of the heating elements 24 and 25 are flattened at the top as hereinbefore mentioned and are preferably of generally triangular cross section with opposite sides extending inwardly and downwardly, as shown in FIG. 2, from the opposite lateral edges respectively of the top flat face to a central apex portion at the bottom to which the tabs 55 and 57 are welded.

This manner of connection of the heater coils with the

spider assures a permanent attachment thereof to one another and at the same time permits desired freedom of expansion and contraction of the coils.

The spider 48 and coils of the heater are pivoted to swing conjointly from the normal horizontal position within the adapter ring 13 to an upraised position at one side thereof for access to the pan 18 and the underside of the heater for cleaning and particularly simple, convenient, reliable and inexpensive hinging facilities are provided for this purpose.

This is accomplished by a spring clip hinge bracket 58 of plate spring stock bent in the form shown particularly in FIGS. 2 and 4 with a folded portion 59 for reception of a hinge pin therein and centrally slotted at 60 for a purpose hereafter explained, and the upper leg of this folded portion terminates in an upturned end portion 61 of reduced width providing shoulders 62 at the opposite ends thereof, and serving as an attaching tongue for the hinge bracket.

The skirt portion 15 of the adapter ring 13 is provided with a slot 63 near the top of a length to accommodate the tongue 61 with the shoulders 62 abutting against the inner face of the skirt portion beyond the ends of the tongue 61.

The lower leg of the folded portion 59 of the bracket 58 is formed with an auxiliary fold 64 providing a spring latch portion engageable with the lower margin of the skirt portion 15 when the tongue 61 is engaged in the slot 63 and this auxiliary fold 64 terminates at one side in a rounded shoulder 65 with downturned end 66, the shoulder 65 being adapted to facilitate latching engagement of the hinge bracket with the lower edge of the skirt 15 and the downturned end 66 being convenient for manipulation of the latch portion of the hinge bracket for release thereof from the skirt.

Preferably the inturned ledge 17 of the skirt 15 is partially cut away to a reduced width, shown at 67, at the place where the hinge bracket is engaged therewith and leaving shoulders 68 at the opposite ends thereof between which the latch portion of the hinge bracket is confined.

The slot 60 of the hinge bracket 58 is positioned in line with the center strap 49 of the spider 48 so that one end of said strap projects therein when the spider and heater are in the normal horizontal position in the adapter ring 13 and a pin 69 extends through and is fixed centrally in an opening of such end portion of the spider strap 49 and is located in the fold 59 to provide a hinge connection of the spider strap 49 therewith. This hinge pin is preferably of split tube type which is securely retained in the opening of the spider strap 49 but may be removed.

The hinge end portion of the spider strap 49 has an inclined end edge 70 as shown in FIG. 2 to insure clearance for pivotal movement of the spider strap 49, and as the hinge pin 69 is spaced inwardly from the skirt portion 15 of the adapter ring, the spider with the heater thereon is readily tiltable upwardly to an upraised position at one side of the opening of the adapted ring.

Obviously the hinge bracket 58 is readily snapped onto the adapter ring for assembly to the spider and heater therewith by merely inserting the tongue 61 of the hinge bracket 58 through the skirt slot 63 and engaging the latch fold 64 with the lower edge of the skirt and the hinge bracket is thus securely attached to the adapter ring, the hinge bracket however, being readily removable when desired by manipulation of the end portion 66 to release the latch engagement with the lower edge of the skirt 15.

For holding the spider 48 and heater with certainty in the normal horizontal position within the adapter ring 15, the end of the center spider strap 48 remote from the hinge is notched as at 71 and a spring leaf 72 is secured at one end as at 73 to the exterior of the skirt portion 15 of the adapter ring and has a fold 74 at the opposite end which projects through an opening

75 of the skirt 15 and engages in the notch 71 of the spider strap 49.

Thus the fold 74 provides a latch engagement with the spider to hold the latter and the heater in the horizontal utensil supporting position but is releasable by lifting up on the heater and spider assembly in the vicinity of the latch 72.

In some cases it may be desirable to dispense with the adapter ring and mount the reflector pan 18 and heater and spider assembly directly on the range top and for such mounting the range top may be formed with a skirt portion and reflector pan supporting ledge as a part thereof and have the hinge bracket 58 attached directly thereto.

As an example thereof, a portion of such range top is shown at 76 in FIG. 7 having a downturned portion 77, corresponding to the skirt portion 15 of the adapter ring 13, and provided with a ledge 78 around the bottom for supporting the pan 18 and the heater and spider thereon.

This downturned portion 77 is provided with a slot 79 corresponding to the slot 63 of the adapter ring 13 and with a portion of the ledge 78 cut away as at 80 as the ledge 17 of the adapter ring 13 is at 67 so that the hinge bracket 58 snaps onto the downturned portion 77 of the range top of FIG. 7 in exactly the same manner as it does onto the skirt portion 15 of the adapter ring, and the range top 76 may be formed with a raised margin around the range top opening as indicated at 81 in FIG. 7 if desired.

It is to be noted that the one-piece terminal block 26 is advantageous, as the connection of the conductors may be made with one another therein without disassembly of the terminal block, and when the hinge bracket 58 is detached, the terminal block 26 may be merely moved outwardly for exposure thereof through the range top opening and thus accessible for convenient disconnection or connection of conductors in the terminal block.

This accessibility of the terminal block is particularly advantageous when the heater is attached directly to the range top, as in FIG. 7, as access to the terminal block and the connections therein is quite difficult unless the heater is detachable.

A modified mounting clip is illustrated in FIGURES 8-12. The heating elements 90 are mounted on a supporting spider having an arm 91, and have terminal portions 90a connected with a suitable terminal block (not shown). The heating unit is received in an opening in cooking surface 92 defined by depending skirt 93. Mounting clip 94, of spring stock material, has the same general configuration as mounting clip 58, including a tongue 94a received in a slot 95 in the wall of depending skirt portion 93 and a fold 96 which detachably engages the lower edge of the depending skirt. Mounting member 94 has a hinge receiving fold portion 97 which is centrally slotted at 98 to receive the end of spider arm 91. A tubular hinge pin 98 carried in the end of arm 91 is received in fold 97 and provides a pivot for rotation of the supporting spider structure and heating elements 90.

The end of arm 91 is bifurcated providing a pair of spaced surfaces 100 and 101, with the surface 100 above the lower leg 102 of hinge bracket 94 and surface 101 below leg 102. Upon rotation of the heating unit upwardly (counterclockwise) from the position shown in FIGURE 9, surface 100 is brought into engagement with the upper surface of hinge bracket leg 102 and continued rotation of the unit forces the fold 96 of the bracket out of engagement with the lower edge of skirt 93, whereupon the bracket may be disengaged from the supporting surface. The heating unit is preferably movable to the broken line position of FIGURE 9 before engagement of surface 100 with leg 102 occurs, an angle of the order of 60°, to permit cleaning the surface of

a drip pan or the like beneath the heating unit without actually removing the unit.

The unit is replaced in much the same manner as the previously described embodiment, by hooking tongue 94 through slot 95 and swinging the unit and hinge downwardly, surface 101 of supporting arm 91 engaging the undersurface of bracket leg 102 and forcing fold 96 over the lower edge of depending skirt 93.

A spring 105, which urges the supporting structure toward the right as viewed in FIGURES 8 and 9 insures engagement of the latching surface of the heating element support with latching means carried on the supporting surface (FIG. 2). Spring 105 is formed in a modified U-shape, see FIG. 11, with the end portions 106 and 107 of the legs of the U turned inwardly and received within tubular pivot pin 98. The legs 108 and 109 are bent at 110 and 111 generally at right angles to the plane defined by the legs of the spring increasing the resilient characteristics of the spring.

While I have shown and described certain embodiments of my invention, it is to be understood that it is capable of many modifications. Changes therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as disclosed in the appended claims.

I claim:

1. A hinged electrical heating unit assembly including a slotted skirt surrounding and defining a heating unit opening, a coiled heating unit, a frame underlying and supporting the heating unit and having the heating unit attached thereto, said frame including arms radiating outwardly from the center of said unit, a mounting clip on said frame having a first end portion received in said slot, and a second portion resiliently and detachably engaged with an edge of said skirt, and a hinge pin supported by said mounting clip and carried by one end of an arm of said frame.

2. In a hinged type electrical heating unit assembly a skirt surrounding and defining a heating unit opening, a coiled resistance type heating element, a supporting frame joined to said heating element and adapted to be supported by said skirt, a pan supported by said skirt and depending therefrom, said pan having an opening in the side wall thereof, the heating element having end portions passed outwardly through said opening, a hinge clip positioned above said opening, said hinge clip having portions resiliently engageable with said skirt, said clip including a central looped portion, a hinge pin passing through the looped portion of said clip and one end of an arm of said frame, and latch means engageable with the other end of said arm so as to hold said frame and heating element in position.

3. The structure of claim 2, wherein said latching means includes a projection extending through said skirt and biased inwardly into engagement with a recess in the other end of said arm.

4. In a hinged type electrical heating unit assembly, a skirt surrounding and defining a heating unit opening, a coiled resistance heating element supported on a frame and hingedly connected to said skirt, said frame including a first strip member extending from one side of said mounting ring to the other, and additional strip members fixed to said first named member at the center thereof and extending at right angles thereto, some of said members having tabs extending laterally therefrom at the top and welded to said heating element.

5. In a hinged type electrical heating unit assembly, a skirt surrounding and defining a heating unit opening and a pan depending from and supported from said skirt, a coiled resistance type heating element and supporting frame therefor adapted to be supported on said skirt, a hinge pin carried by said frame, and a hinge clip detachably connected to said skirt, said clip having an upper hooked portion inserted in an aperture in the skirt and a lower hooked portion resiliently embracing the lower

portion of said skirt, said clip having a central looped portion receiving said hinge pin.

6. The structure of claim 5 wherein said looped portion of said clip extends upwardly and outwardly from said skirt.

7. In an electric heater mounting: a supporting surface; a frame having the heating unit mounted thereon, said frame having an arm; a mounting clip detachably supported on said supporting surface; and means mounting said arm for rotation of the frame on said clip, said arm having a surface engageable with a surface of said clip on rotation of said frame to detach said clip from said supporting surface.

8. In an electric heater mounting: a supporting surface; a frame having the heating unit mounted thereon, said frame having an arm; a mounting clip detachably supported on said supporting surface; and means mounting said arm for rotation of the frame on said clip, said arm having a surface engageable with the surface of said clip on rotation of said frame through an angle of the order of 60° to detach said clip from said supporting surface.

9. In an electric heater mounting: a supporting surface; a frame having the heating unit mounted thereon, said frame having an arm; a mounting clip having a first leg in engagement with said supporting surface and a second leg in detachable engagement with said supporting surface; and means mounting said arm for rotation of the frame on said clip, said arm having a surface engageable with said second leg on rotation of said frame to detach said clip from said supporting surface.

10. In an electric heater mounting: a supporting surface having a depending skirt; a frame having the heating unit mounted thereon, said frame having an arm; a mounting clip having a first leg in engagement with said supporting surface and a second leg in detachable engagement with the lower edge of said skirt; and means mounting said arm for rotation of the frame on said clip, said arm having a surface engageable with said second leg on rotation of said frame to detach said clip from said skirt.

11. An electric heater mounting of the character described in claim 10, wherein the upper leg of said clip is received in a slot formed in said skirt.

12. In an electric heater mounting: a supporting surface; a frame having the heating unit mounted thereon, said frame having an arm; a mounting clip having first and second legs in detachable engagement with said supporting surface; and means mounting said arm for rotation of the frame on said clip, said arm having a surface engageable with said second leg on rotation of said frame to detach said clip from said supporting surface, said arm having a second surface engageable with the second leg of said clip on rotation of said frame in a direction opposite the first mentioned rotation to effect engagement of said clip with said supporting surface.

13. In a hinge mounted electrical heating unit assembly: a supporting surface having a heating unit opening; a frame having the heating unit mounted thereon and having an arm; a mounting clip on said supporting surface; means mounting said arm for rotation of the frame on said clip, said frame having a latching surface; latching means on said supporting surface for engagement with said latching surface; and spring means carried within said mounting means, urging said latching surface into engagement with said latching means.

14. The electrical heating unit assembly of claim 13, wherein said arm has a hinge pin therethrough received in said mounting clip and said spring means has end portions received in openings in the ends of said hinge pin and a portion engageable with said supporting surface, urging said latching portion into engagement with said latching means.

15. A hinged electrical heating unit assembly including a depending skirt having a slot spaced above its lower

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edge and surrounding and defining an electrical heating unit opening, a coil electrical heating unit, a frame underlying and supporting the heating unit and having the heating unit attached thereto, said frame including arms radiating outwardly from the center of said unit, a mounting clip on said frame having its upper end portion received in said slot, a second end portion in operable contact with said frame whereby downward movement of said frame upon installation forces the lower portion of said mounting clip under the lower edge of said skirt engaging it resiliently and detachably with said skirt, and a hinge pin supported by said mounting clip and carried by one end of an arm of said frame.

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16. The heating unit of claim 15 wherein said mounting clip has an outwardly and upwardly extending looped portion intermediate its ends and within which said hinge pin is supported.

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