May 6, 1969 E. MENG ET AL 3,443,064

ELECTRICAL HEATING UNIT ASSEMBLY

Filed June 20, 1966 Sheet 1 of 2

Fig-1

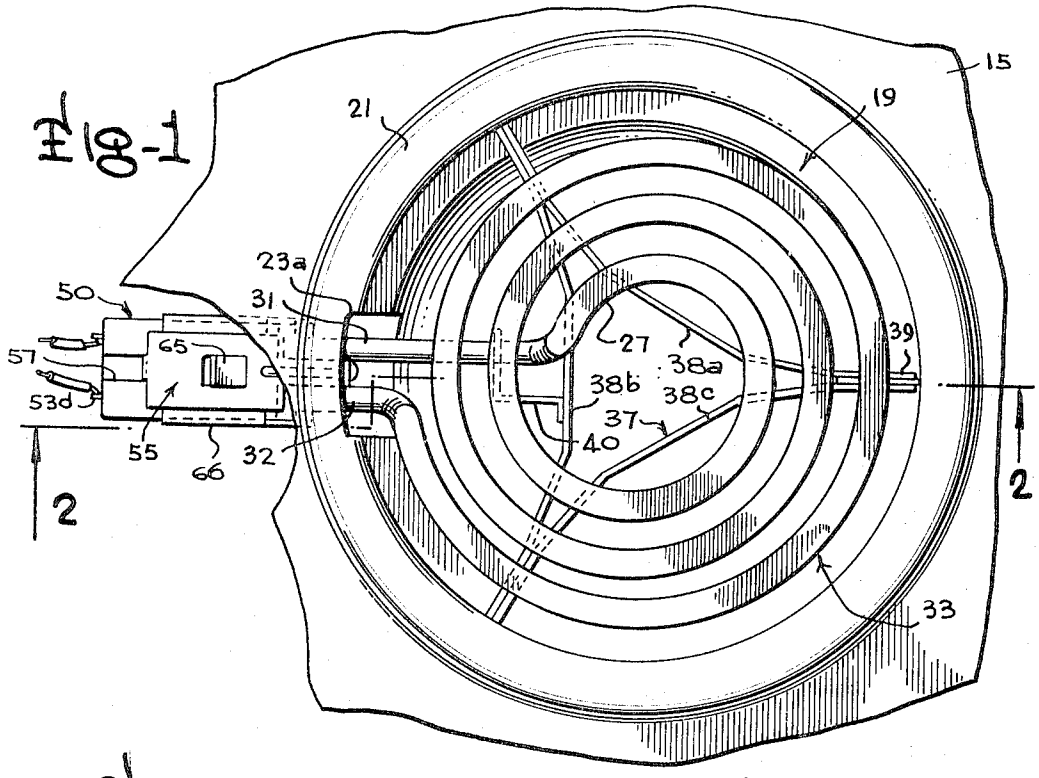
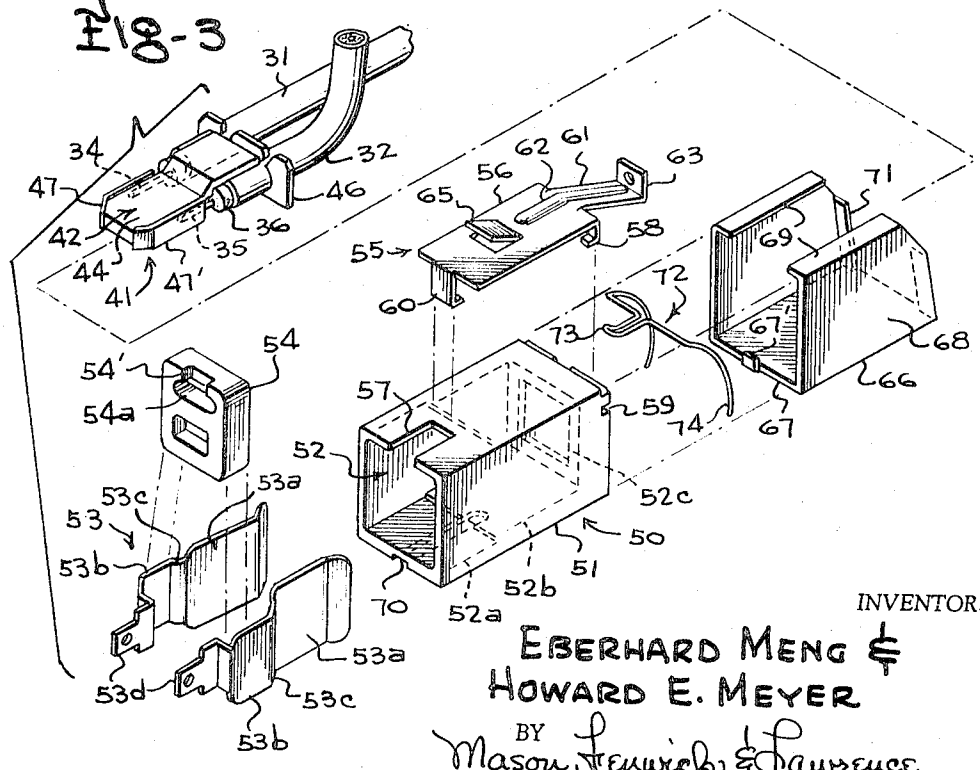


Fig-3



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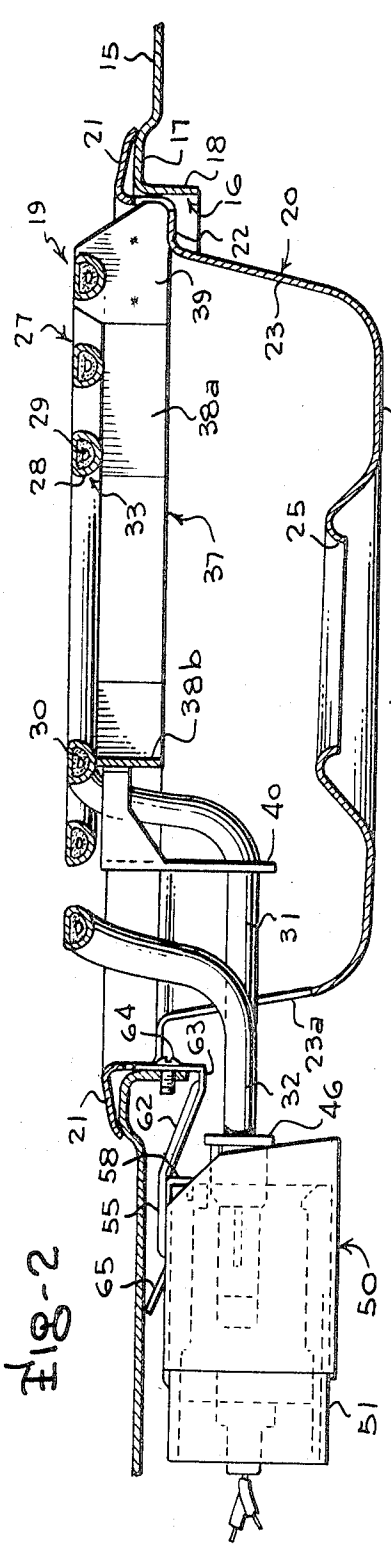


FIG 8-2

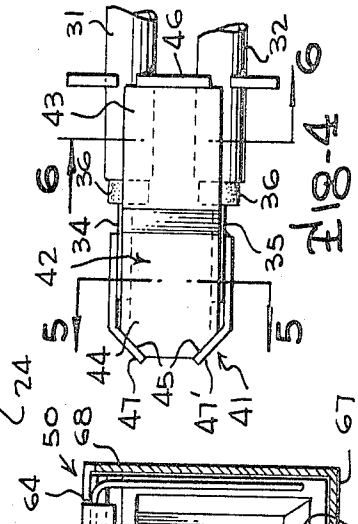


FIG 8-4

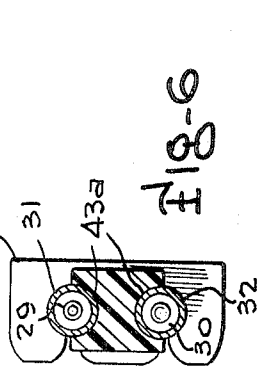


FIG 8-6

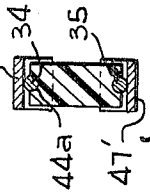


FIG 8-5

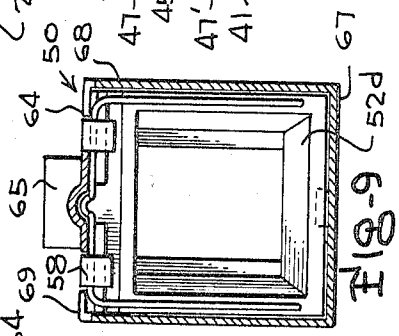


FIG 8-9

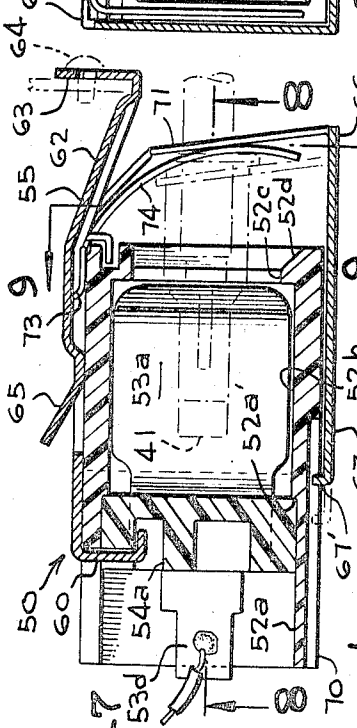


FIG 8-7

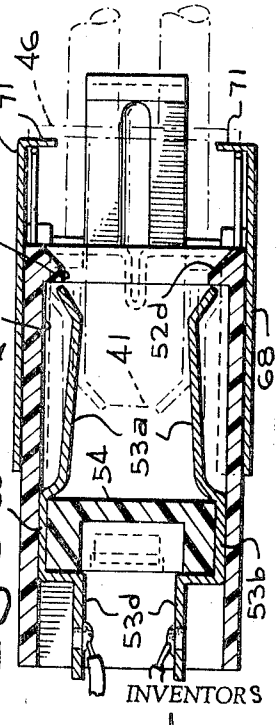


FIG 8-8

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United States Patent Office

3,443,064

Patented May 6, 1969

3,443,064

ELECTRICAL HEATING UNIT ASSEMBLY

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Filed June 20, 1966, Ser. No. 558,793

Int. Cl. H05b 3/08, 3/68

U.S. Cl. 219—451 10 Claims

ABSTRACT OF THE DISCLOSURE

An electric heating unit assembly of the type commonly employed for surface heating in electric range tops and the like, having one or more tubular heating elements adapted to support cooling utensils thereon. The heating unit assembly is removably supported in an opening in the range top by a stationary electrical connector means in the form of a single male connector probe, which probe is removably received in a companion female connector socket.

The present invention relates in general to an electrical heating unit assembly of the type commonly employed for surface heating in electric range tops and the like, having one or more tubular heating elements adapted to support cooking utensils thereon, wherein the heating element assembly is removably supported in an opening in the range top and is releasably coupled with stationary electrical connector means in the range, and more particularly to electrical heating unit assemblies of this type wherein the terminal end portions of the tubular heating element are arranged in the form of a single male connector probe to be removably received in a companion female connector socket provided in the range.

Heretofore, many surface type electric heating units have been provided for electric range tops, wherein the heating unit is removable from and electrically disconnectable with respect to the electric range. Such units have customarily employed either a single tubular sheathed heating element or a pair of such heating elements, having spirally coiled portions forming the heat generating region thereof and a pair, or two pairs, of terminal end portions extending in laterally spaced side-by-side relation located generally below the coiled portion and projecting beyond the periphery of the coil. In such an arrangement, the pair of terminal end portions, or the four terminal end portions, customarily aligned in side-by-side relation, provide two or four separate spaced electrical contacts which must be inserted into engagement with a corresponding number of stationary electrical supply contacts provided in the stove, usually by insertion through a corresponding number of openings or between closely spaced sets of contacts blades with respect to which the terminal end portions must be precisely directed to effect proper electrical contact with the stationary contacts. It will be apparent that with such an arrangement, it is very difficult to accurately position and locate the terminal end portions in proper relation to the stationary contact members and the possibility of bending or deforming the free standing contact members on the ends of the heating element or elements is great. It will be apparent that slight twisting or rotation of the electrical heating element from its proper orientation will make it exceedingly difficult to properly insert the terminal end portion into electrical contact with their companion stationary contact members.

An object of the present invention, therefore, is to provide a novel electrical heating unit assembly of the surface type for use with electric ranges and the like, which is of the tubular sheathed heating element type having a pair of terminal end portions arranged in such a manner as to define a single male probe type connector for releasable insertion into a companion stationary connector in the range, to facilitate attachment and detachment of the heating element assembly from the range.

Another object of the present invention is the provision of a novel surface type electric heating unit assembly for electric range tops, constructed to simplify and facilitate greater convenience in mounting of such heating units.

Another object of the present invention is the provision of a novel surface type electric heating unit assembly having a single male type probe construction for the terminal end portions of the heating element arranged to insure a positive and reliable releasible connection of the electrical heating element with electrical supply contacts in the range.

Other objects, advantages, and capabilities of the invention will become apparent from the following detailed description taken in conjunction with the accompanying drawings illustrating a preferred embodiment of the invention.

In the drawings:

FIGURE 1 is a top plan view of an electric heater assembly having mounting facilities in accordance with the present invention, and showing a fragmentary portion of an adjoining range top;

FIGURE 2 is a section view of the assembled heating unit and the adjoining mounting facilities of the range, taken along the line 2—2 of FIGURE 1;

FIGURE 3 is a fragmentary perspective view of the probe portions of the surface heating unit assembly and a fragmentary exploded perspective view of the stationary connector socket means of the range for receiving the probe;

FIGURE 4 is a fragmentary enlarged top plan view of the probe portion of the heating unit assembly;

FIGURES 5 and 6 are vertical transverse section views of the probe portion, taken along the lines 5—5 and 6—6 respectively of FIGURE 4;

FIGURE 7 is a vertical longitudinal section view, to enlarged scale, of the connector socket means; and

FIGURES 8 and 9 are longitudinal and transverse section views, respectively, of the connector means, taken along the lines 8—8 and 9—9 of FIGURE 7.

Referring to the drawings, wherein the like reference characters designate corresponding parts throughout the several figures, the reference numeral 15 indicates a fragmentary portion of a conventional range top which is provided with an opening 16 bounded by a raised bead portion 17 and a downturned cylindrical flange 18, for reception of an electrical heating unit assembly therein, indicated generally by the reference character 19. In the embodiment herein illustrated the electrical heating unit is to be supported in the opening 16 on a removable reflector pan 20, having an outwardly projecting annular top flange 21 at the top thereof to rest on the raised bead 17 of the range top 15, and serve, if desired, as an ornamental trim ring. The reflector pan is shaped to provide an annular shoulder 22 spaced slightly below the annular top flange 21 providing a horizontal support surface, below which extends frusto-conical sidewall 23 and a bottom 24 having a raised center with an opening 25 for air circulation, or for projection of an automatic heat sensing element or the like therethrough.

The heating unit portion 26 of the heating unit assembly 19, which is to be removably supported on the reflector pan 20, includes a heating element 27 of conventional tubular sheathed resistor type having a metallic tubular sheath 28 and a helical coil 29 of resistor wire embedded in compacted electrical insulation 30 within the sheath 28. The heating element 27 may be composed of one or more of such tubular sheathed heating elements

coiled in flat spiral form, one being shown in the drawings. The heating element **27** has opposite end portions, hereinafter indicated by reference characters **31, 32**, which are bent downwardly from the plane of the spirally coiled portions **33**, forming the heat generating portions of the heating element, to a lower level at which the terminal end portions extend out wardly in side-by-side relation to a point underneath the range top **15** for connection to a stationary connector socket means to be later described. A suitable opening **23***a* is provided in the sidewall **23** of the reflector pan, through which the terminal end portions **31, 32** may project. The coiled portion of the heating element constitutes the active portion of the heater and is preferably flat at the top to provide wide flat faces for conductivity of heat to a utensil placed thereon. In accordance with common practice, the helical coil **29** of resistance wire extends throghout the length of the coiled portions **33** of the heating element and therebeyond, and has its opposite ends electrically connected to low resistance terminal wires or pins **34, 35** which extend outwardly through the terminal end portions **31, 32**. As is customary in this art, the outer ends of the terminal portions are sealed against entrance of moisture by providing suitable plugs **36**, for example of compressible heat resistant material, which encircle the respective terminal wires **34, 35** and are inserted in the sheath ends so as to fit snugly therein under compression around the wire and against the interior of the sheathed ends to be securely retained in place.

The coiled portion **33** of the heating element **27** is suitably supported on a spider assembly **37**, formed for example of three metallic strap members **38***a*, **38***b* and **38***c* arranged in a generally triangular pattern with their outer end portions welded together as indicated in the drawing. The outermost convolution of the heating element coil portion **33** may be secured to the spider assembly **37**, for example by means of a holding bracket **39** welded to and between the outermost ends of the spider strip members **38***a*, **38***c*, at a location opposite the terminal end portions, the bracket having a portion which rises above the upper edge of the spider legs and has a concave recess therein adapted to receive the outermost convolution of the heating element and be crimped about the same to securely hold the heating element. The terminal end portions of the heating element may also be stabilized relative to the spider assembly in the region where the terminal end portions curve downwardly from the plane of the coiled portion **33** by means of a depending supporting bracket **40** which is secured to the crosswise leg **38***b* of the spider assembly and depends downwardly to bear against the terminal end portions of the heating element.

The two terminal end portions **31, 32** of the tubular sheathed heating element **27** are formed into a single probe **41** for insertion into the stationary terminal socket of the assembly by means of a probe mounting block **42**, shown more clearly in FIGURE 3, formed of a suitable molded phenolic material, for example to provide an enlarged portion **43** having a pair of elongated semi-symmetrical or concave grooves **43***a* in the opposite lateral sides of the enlarged portion **43** conforming to confronting portions of the ends of sheath **28**, and having a constricted portion **44** over the inner end portion thereof of substantially rectangular cross-section also provided with smaller concave recesses conforming to confronting portions of the terminal wires **34, 35**. The block **42** also has bevels **45** at the corners of the leading edge of the mounting block **42**. As shown in FIGURE 3 and FIGURES 4 and 5, the end portions of the terminal end portions **31, 32** of the tubular sheath forming the heating element, are seated snugly in the concave grooves **43***a* provided in the lateral edges of the enlarged mounting block portion **43**, and are held rigidly in nested relation in these grooves by suitable means, as for example by the cross-brace bracket **46**, which is of rigid metaillic strap material having a pair of apertures therein of suitable size to accommodate the tubular sheath **28**, and which is crimped about the tubular sheath of the heating element to rigidly hold the same in laterally spaced condition seated in the grooves **43***a*. The terminal wires **34, 35** then project on beyond the ends of the terminal end portions of the tubular sheath into the concave lateral recesses **44***a* of the relieved lateral portions defined by the more constricted mounting block portion **44**. These terminal wires **34, 35** have small elongated metallic contact plates **47, 47'** welded thereto and bent as illustrated in FIGURE 4 to conform to he bevels **45** on the constricted leading edge of the mounting block **42** so as to provide inwardly convergent contact portions at the leading edges of the contact plates. This, it will be apparent, thereby forms a rigid single probe assembly **41** wherein the two terminal end portions **31, 32** of the heating element are rigidly held together in a single probe arangement with the contact plates **47, 47'** of the terminal wires rigidly held in exposed condition laterally and forwardly adjacent the leading edge of the probe.

The stationary terminal socket assembly is more clearly shown in FIGURES 3, 7, 8 and 9, and is designated generally by the reference character **50**. The stationary socket assembly **50** is designed to define a single socket opening toward the range top opening **16** to readily receive the probe assembly **41** of the heating unit in a manner to substantially automatically guide the probe into electrical contacting engagement with stationary electrical supply contacts connected to a suitable electrical supply source to insure proper mating of the two units, and provides for automatic electrical grounding of the sheath before the probe contact plates **47, 47'** are inserted a sufficient distance to engage the corresponding contact blades of the socket assembly. The socket assembly **50** comprises a main housing block **51** having a bore **52** of generally rectangular cross-section extending entirely therethrough, the bore **52** having an enlarged portion **52***a* near the rearmost end of the block **51**, and outwardly divergent surfaces **52***d* at the entrance end of the block **51**.

Fitted within the bore **52** of the mounting block **51** are a pair of contact blade members **53** which are the mirror images of each other viewed from the top. The contact blade members **53** have enlarged, substantially flat active contact portions **53***a* adapted to lie in the constricted intermediate portion **52***b* of bore **52** rearwardly of the constriction **52***c* therein, to the rear of which is an outwardly offset portion **53***b* connected to the portion **53***a* by an outwardly flaring transition **53***c* conforming to, and adapted to be seated against, the transition surface or shoulder **52***a'* between the bore portions **52***a*, and **52***b*. Behind this outwardly offset portion **53***b* of each of the pair of contact blades **53** are apertured connector tab portions **53***d* which may project partially therein from the rear end of the housing **51** and are adapted to be connected to the electrical supply leads of the range. The pair of contact blades **53** are to be held in the bore **52** of the housing block by means of an insert block **54**, which like the housing block **51** may be of molded phenolic material. The insert block **54** is substantially in the shape of a rectangular solid having a cross-section, when viewed from the rear of the housing block **51**, which corresponds to the cross-section of the enlarged bore portion **52***a* and is adapted to seat in this bore portion **52***a* between the outwardly offset portions **53***b* of the contact blades and against the transition shoulder **52***a'* of the bore **52** to hold the contact blades **53** within the bore **52** and permit the portions **53***a* thereof to be resiliently inclined slightly inwardly of the confronting bore walls along somewhat convergent paths. The insert block **54** may have one or more wells or recesses formed therein so as to reduce the weight and quantity of the material of the insert block **54**.

This subassembly of housing block **51**, contact blades **53**, and insert block **54** are held in assembled relation by a metallic mounting bracket **55**. The mounting bracket **55** has a substantially rectangular body portion **56** of a

length corresponding to the distance between the front or entrance edge of the housing **51** and the forwardmost edge of the groove or slot **57** in the top wall of the housing **51**. The rectangular body portion **56** of the mounting bracket **55** has at its forward edge a pair of laterally spaced depending hook formations **58** having rearwardly projecting lips at their free edges to be inserted into a forwardly opening groove **59** in the forward edge of the housing **51**, while the rearmost edge of the mounting bracket body portion **56** has a depending bendable hook shaped tab **60** adapted to extend downwardly through the slot **57** in the top wall of the housing **51** and through a notch **54'** in the insert block **54** with the lip at the lower free edge of the tab **60** extending into the recess **54***a* in the rear wall of the insert block underneath the upper bounding wall thereof, the recess **54***a* being deeper than the notch **54'**. By virtue of the forward hook formations **58** and the rear tab **60** on the mounting bracket, which securely hold the housing block therebetween, and hold the insert block **54** tightly jambed up against the transition surfaces or shoulders **52***a'* of the bore **52**, the housing block and contact blade subassembly is securely held in assembled position. This subassembly may in turn be supported from the stove or range top **15** by the forwardly projecting integral extension **61** of the mounting bracket which may have a reenforcing longitudinal rib **62** formed along the major portion thereof by bending and have an upwardly projecting apertured flange **63** at its forwardmost end to be disposed in inwardly overlapping relation to the downturned flange **18** of the range top **15** and secured in that position by a self-tapping screw **64** or other well known fastening means. The upwardly inclined bendable tab **65** is arranged at the proper angle to abut the underside of the range top **15** when the mounting bracket is assembled to the downturned flange **18** by screw **64**, so as to hold the housing block **51** in a generally horizontal position, the angle of the tab **65** being adjusted at will to suit the particular spacing or conditions occurring in these range units.

Slidably supported on the forwardmost portion of the housing **51** facing the opening **16** is a probe guiding sleeve **66** of substantially channel shaped thin metallic material having a bottom wall **67**, parallel side walls **68**, and inwardly directed top flanges **69** of suitable dimensions to nest over and slide on the exterior surface of the housing block **51**. The rearmost edge of the bottom wall **67** of the sleeve **66** has an upwardly directed tab **67'** which tracks in the elongated groove **70** in the bottom of the housing **51** to limit the forwardmost movement of the guide sleeve **66** toward the heating unit assembly in the opening **16**. The entrance or front end of the sleeve **66** is provided with inwardly directed front flanges **71** disposed in a slightly upwardly inclining plane from the bottom wall **67** of the guide sleeve **66** and having their innermost edges spaced apart a distance just slightly greater than the transverse width of the probe assembly **41**. The flanges **71** terminate a selected distance below the plane of the upper edges of the sidewalls **68**, and extend over a sufficient region to be engaged by the outermost lateral edge portions of the cross-brace bracket **46** when the probe assembly **41** is initially inserted into the opening defined by the space between the edges of the flanges **71**. The probe guide sleeve **66** is continuously biased to the forwardmost limit position determined by tab **67'** and the forwardmost edge of the groove **70** in the housing **51**, by means of a biasing spring **72** of generally yoke shaped configuration having an upper portion to be received and held between the body portions **56** of mounting bracket **55** and the upper wall of the housing block **51**, specifically in the kerf formed in the forward upper edge thereof.

The curved extension **73** of the spring **72** lies between the mounting bracket **55** and the top of the housing block **51** to maintain the orientation of the spring, and the depending arcuately curved legs **74** extend downwardly to engagement with the flanges **71** to urge the probe guide sleeve **66** to its forwardmost position. This biasing spring **72** also serves as the electrical grounding path for the sheath of the electrical heating element as its legs are in continuous engagement with the flanges **71** of the guide sleeve **66**, which is contacted by the metallic cross-brace bracket **46** connected to the sheath of the heating element, and its upper portion is in contact with the mounting bracket **55** which in turn is held in engagement with the range tope **15** by means of the screw **64**.

To assemble the above described heating unit assembly in the stove opening **16**, the reflector pan **20** is disposed in the opening **16** in the range top **15** in the usual manner with the top annular flange **21** thereof resting on the raised bead **17** of the range top. The single probe asembly **41** defined by the terminal end portions **31**, **32** of the heating element in the probe mounting block **42** are then guided through the opening **23***a* provided in the side **23** of the pan **20** to pass the leading end portion of the probe assembly **41** between the inner edges of the flanges **71** of the probe guide sleeve **66** until the lateral edges of the cross-brace bracket **46** engage the flanges **71** of the guide sleeve **66**. At the time of initial contact of the cross-brace bracket **46** with the flanges **71**, the leading edge of the probe asembly **41** is substantially aligned with the constricted neck **52***c* of the housing block bore **52**. Further inward movement of the probe into the bore **52**, with some concurrent downward tilting of the portion of the heating element adjacent the holding bracket **39** will force the guide sleeve **66** rearwardly along the housing block **51** until the outermost edge of holding bracket **39** is aligned vertically with the cylindrical wall portion of pan **20** between flange **21** and shoulder **22**. At this position, the contact plates **47**, **47'** of the probe assembly have been moved into secure contact with the flat active blade portions **53***a* of contact blades **53** to establish electrical contact with the supply leads connected to portions **53***d* of the blades **53**. The spider assembly **37** is moved to nested position within the reflector pan **20**, with its lower edges resting on the shoulder **22**, and is releasably held in this position, as by providing a slight nose or protuberance on the holding bracket **39** which is seated in an indentation, or under a bead, formed in the adjoining portions of the reflector pan, or if desired by simple frictional engagement of the radially outer edges of the holding bracket or the spider legs with confronting surfaces of the pan. Removal of the heating unit from the pan is readily accomplished simply by reversing the above-described movement. It will be appreciated that during each of the assembly and removal procedures, the resiliently biased guide sleeve **66** maintains contact with the cross-brace bracket **46** and thus keeps the heating element sheath in electrically grounded condition through spring **72**, mounting bracket **55** and range top **15**, throughout the entire period the contact plates **47**, **47'** or any part of the probe are engaging or near the contact blades **53**, to thereby protect the operator against accidental shock.

While only one form of the present invention has been particularly shown and descirbed, it will be apparent that various modifications may be made within the spirit and scope of the invention, and it is desired, therefore, that only such limitations be placed on the invention as are imposed by the prior art and set forth in the appended claims.

What is claimed is:

1. In an electric range heating unit asembly for a range top having a heating element aperture, a removable heating unit comprising an elongated electric heating element including an internal resistance unit and a surrounding sheath, said heating element having a coiled intermediate heat generating portion providing plural convolutions lying in a common plane to be supported generally horizontally in the range top and terminal end portions extending from respective ends of the intermediate portion and lying in spaced side by side relation flanking a com-

mon reference axis in a plane spaced below and paralleling said common plane, releasable electrical connector socket means to be supported by the range top adjacent said aperture having a cavity opening toward the same provided with a pair of internal spaced contacts, said heating unit having probe means forming a single connector probe with said pair of terminal end portions for removable insertion into said socket means cavity for electrical connection of the heating element with said contacts, said probe means including a solid insulative body having a leading end facing away from said coiled portion and adjoining oppositely facing sides to span the distance between said terminal end portions, said sides including side portions paralleling said reference axis and extending between confronting end portions of the sheath, a pair of laterally spaced electrical contact members of said terminal end portions electrically connected to opposite ends of said resistance unit and defining a pair of oppositely facing planiform contact surfaces fixed against the opposite sides of said body adjoining said leading end to engage and establish electrical communication with respective ones of said contacts, and means rigidly holding said sheath end portions firmly against the confronting sides of said body to support the sheath end portions in spaced relation paralleling said reference axis.

2. A heating unit assembly as defined in claim 1, wherein said terminal end portions of said heating element include elongated terminal wire members connected to said resistance unit and projecting from the ends of said sheath along said sides of said body in flanking relation to the body, and said contact members comprising thin metallic plate members secured to respective ones of said terminal wires with said planiform contact surfaces thereof arranged in parallel vertical planes.

3. A heating unit assembly as defined in claim 2, wherein said plate members comprise angular plate members having a first corresponding pair of planiform panels disposed in parallel vertical planes alongside said sides of said body and a second corresponding pair of inwardly convergent planiform panels joining said first panels at said leading edge and converging in a leading direction therefrom.

4. In an electric range heating unit assembly for a range top having a heating element aperture, a removable heating unit comprising an elongated electric heating element including an internal resistance unit and a surrounding sheath, said heating element having a coiled intermediate heat generating portion providing plural convolutions lying in a common plane to be supported generally horizontally in the range top and terminal end portions extending from respective ends of the intermediate portion and lying in spaced side by side relation flanking a common reference axis in a plane spaced below and paralleling said common plane, releasable electrical connector socket means to be supported by the range top adjacent said aperture having a cavity opening toward the same provided with a pair of internal spaced contacts, said heating unit having probe means forming a single connector probe with said pair of terminal end portions for removable insertion into said socket means cavity for electrical connection of the heating element with said contacts, said probe means including a solid insulative body having a leading end facing away from said coiled portion and adjoining oppositely facing sides to span the distance between said terminal end portions and abut the ends of said sheath, a pair of laterally spaced electrical contact members of said terminal end portions electrically connected to opposite ends of said resistance unit and defining a pair of oppositely facing planiform contact surfaces on the opposite sides of said body adjoining said leading end to engage and establish electrical communication with respective ones of said contacts, said probe means body comprising an elongated block member having a first narrower portion and a second wider portion, the oppositely facing lateral surfaces of said wider portion having outwardly opening substantially semi-cylindrical recesses therein complementary to confronting end portions of said sheath to receive the same in nested relation therein, means for rigidly holding said sheath end portions firmly seated in said recesses, said narrower portion having lateral surfaces lying in parallel vertical planes and having a transverse vertical leading edge connected to said lateral surfaces by angular bevel surfaces, and said contact members being disposed in overlying conforming relation to respective ones of said lateral surfaces and an associated bevel surface.

5. In an electric range heating unit assembly for a range top having a heating element aperture, a removable heating unit comprising an elongated electric heating element including an internal resistance unit and a surrounding sheath, said heating element having a coiled intermediate heat generating portion providing plural convolutions lying in a common plane to be supported generally horizontally in the range top and terminal end portions extending from respective ends of the intermediate portion and lying in spaced side by side relation flanking a common reference axis in a plane spaced below and paralleling said common plane, releasable electrical connector socket means to be supported by the range top adjacent said aperture having a cavity opening toward the same provided with a pair of internal spaced contacts, said heating unit having probe means forming a single connector probe with said pair of terminal end portions for removable insertion into said socket means cavity for electrical connection of the heating element with said contacts, said probe means including a solid insulative body having a leading end facing away from said coiled portion and adjoining oppositely facing sides to span the distance between said terminal end portions and abut the ends of said sheath, a pair of laterally spaced electrical contact members of said terminal end portions electrically connected to opposite ends of said resistance unit and defining a pair of oppositely facing planiform contact surfaces on the opposite sides of said body adjoining said leading end to engage and establish electrical communication with respective ones of said contacts, said connector socket means comprising a hollow insulative block of rectangular tubular cross-section supported adjacent said range aperture having an elongated bore defining said cavity arranged along a substantially horizontal probe insertion axis, and a pair of contact blade members in said bore forming said contacts having inwardly facing planiform surface portions disposed in substantially parallel planes defining lateral bounding surfaces of said cavity adjacent an entrance end thereof to receive said probe means therebetween and establish electrical contact therewith.

6. A heating unit assembly as defined in claim 5, wherein said terminal end portions of said heating element include elongated terminal wire members connected to said resistance unit and projecting from the ends of said sheath along said sides of said body in flanking relation to the body, and said contact members comprising thin metallic plate members secured to respective ones of said terminal wires with said planiform contact surfaces thereof arranged in parallel vertical planes.

7. A heating unit assembly as defined in claim 6, wherein said plate members comprise angular plate members having a first corresponding pair of planiform panels disposed in parallel vertical planes alongside said sides of said body and a second corresponding pair of inwardly converging planiform panels joining said first panel at said leading edge and converging in a leading direction therefrom, and said contact blade members in said bore substantially fully covering the height of the lateral internal surfaces bounding said bore adjacent said entrance end and being resiliently biased to a slightly narrower spacing than the transverse distance between the oppositely facing contact surfaces of said probe means.

8. A heating unit assembly as defined in claim 7 where-

in said connector socket means further includes a metallic guide sleeve member telescopically supported for sliding movement on the entrance end portion of said hollow block, said guide sleeve member having inwardly directed lateral flanges projecting from opposite sides thereof at an entrance end of the sleeve member partially overlapping said entrance end of said block, resilient means urging said sleve member to a projected position disposing said flanges a selected distance from said entrance end toward said opening means, means establishing an electrical grounding path from said sleeve member to said range, and electrically conductive projection means connected to said sheath at both of said terminal end portions and spaced from the leading end of said probe means a distance slightly less than the spacing between said flanges and the nearest edges of said blade members to engage said flanges and ground the sheath during inserting movement of the probe means, said flanges lying in a plane which is slightly upwardly divergent relative to the vertical center avis of said opening means.

9. A heating unit assembly as defined in claim **5** wherein said connector socket means further includes a metallic guide sleeve member telescopically supported for sliding movement on the entrance end portion of said hollow block, said guide sleeve member having inwardly directed lateral flanges projecting from opposite sides thereof at an entrance end of the sleeve member partially overlapping said entrance end of said block, resilient means urging said sleeve member to a projected position disposing said flanges a selected distance from said entrance end toward said opening means, means establishing an electrical grounding path from said sleeve member to said range, and electrically conductive projection means connected to said sheath at both of said terminal end portions and spaced from the leading end of said probe means a distance slightly less than the spacing between said

flanges and the nearest edges of said blade members to engage said flanges and ground the sheath during inserting movement of the probe means.

10. A heating unit assembly as defined in claim **6** wherein said connector socket means further includes a metallic guide sleeve member telescopically supported for sliding movement on the entrance end portion of said hollow block, said guide sleeve member having inwardly directed laterial flanges projecting from opposite sides thereof at an entrance end of the sleeve member partially overlapping said entrance end of said block, resilient means urging said sleeve member to a projected position disposing said flanges a selected distance from said entrance end toward said opening means, means establishing an electrical grounding path from said sleeve member to said range, and electrically conductive projection means connected to said sheath at both of said terminal end portions and spaced from the leading end of said probe means a distance slightly less than the spacing between said flanges and the nearest edges of said blade members to engage said flanges and ground the sheath during inserting movement of the probe means.

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U.S. Cl. X.R.

219—541