

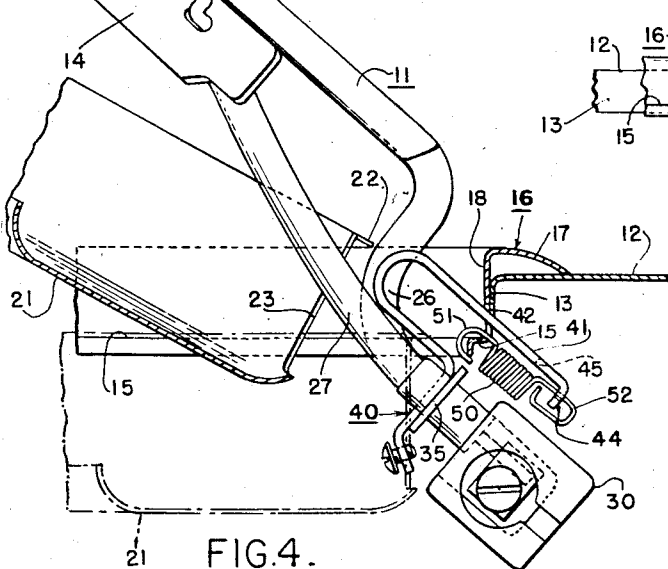
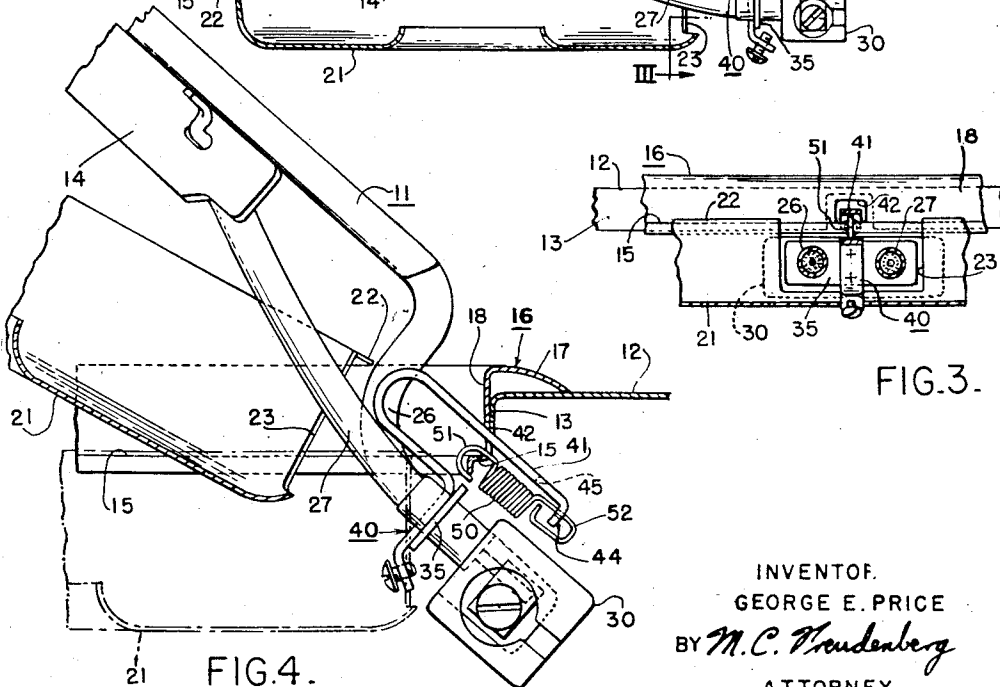
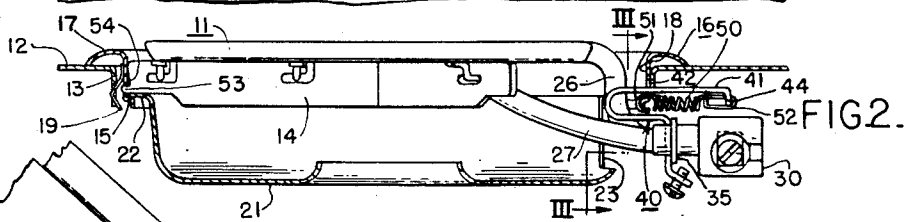
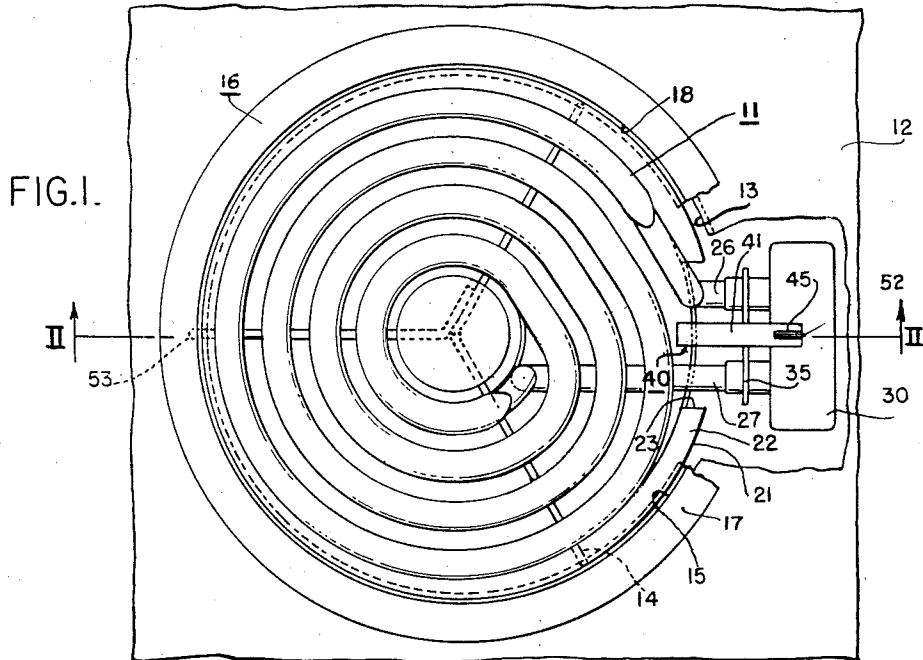
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2,839,655

ELECTRIC HEATER APPARATUS

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ELECTRIC HEATER APPARATUS

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4 Claims. (Cl. 219—37)

This invention relates to a heating unit structure of a type having application to a cooking platform of a domestic electric range and has for an object to provide improved means for tiltably supporting and locking the heating unit in the platform.

It is an object of this invention to simplify the locking means for preventing accidental detachment of a tiltably supported heating unit from a mounting platform when the unit is tilted to gain access to a drip pan therebeneath, particularly where the unit has electrical connections fixed thereto.

It is a further object of this invention to improve the construction and reduce the cost of a permanently wired tiltably electric heater unit in a range of the like.

The invention accomplishes the above objects and, as shown and described hereinafter, is applied to a sheathed electrical resistance heating element that is coiled to form a flat heating surface and is supported in an opening in a platform by means of a supporting ring. The ring comprises a flange overlying the platform and has a vertical cylindrical wall depending within the platform opening. The heater is supported on a ledge projecting inwardly from a lower portion of this wall. Attached to the heater and extending horizontally to one side thereof is a metal bar which extends outwardly through an aperture in the vertical wall of the ring. This bar forms a swivel connection for tiltably supporting the heater so that the latter may be tilted to clean or remove a drip pan located beneath the heater. A helically coiled tension spring is connected between the ring and the outer end of the bar at the outside of the ring. When the heater is disposed in the ring with its heating surface horizontal, this spring biases a portion of the heater into latching engagement with the opposite side of the ring. The heater may be manually unlatched from the ring by moving it against the spring bias whereupon the heater may be pivoted on the bar. The spring forms an interfering means or lock to prevent the bar from being withdrawn from the aperture in the ring, thus preventing accidental or inadvertent separation of the heater from the platform. With this arrangement, the user is unable to manipulate the heater so as to impart any damaging stresses to the electrical leads that may be permanently attached to the heater terminals. This construction also prevents the heater from being accidentally dropped through the opening in the platform when the drip pan is removed.

These and other objects are effected by the invention as will be apparent from the following description and claims taken in connection with the accompanying drawings, forming a part of this application, in which:

Fig. 1 is a plan view of a surface heating unit supported in a heater platform;

Fig. 2 is a vertical section taken on line II—II of Fig. 1;

Fig. 3 is a vertical section taken on line III—III of Fig. 2, but showing a portion of the drip pan; and

Fig. 4 is an enlarged vertical section similar to Fig. 2

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but with the heater pivoted from its normal horizontal position.

Referring to Figs. 1 and 2 of the drawings, an electrical heater unit 11 is shown supported in a platform 12 defining a cooking surface of a conventional domestic range. The heater 11 is located in an opening in the platform bounded by a wall 13 depending therefrom. The heater 11 comprises a spirally coiled tubular sheath containing a resistance element which is electrically insulated therefrom by a granular insulating material in a manner well known in the art. The heater 11 comprises a three legged supporting spider 14 of the type described and claimed in Patent No. 2,725,426 of Paul M. Weyrick assigned to the assignee of the present invention. The ends of the spider legs are supported upon a ledge 15 formed integrally with a ring 16 located within the platform opening. The ring 16 has a supporting flange 17 overlying the edge of the platform opening and a depending vertical wall 18 extending within the opening from which wall the ledge extends inwardly. The ring is biased to the right, as seen in Figs. 1 and 2, by means of a leaf spring 19 which snaps into a notch in the vertical wall 13 of the platform. This spring 19 acts as a detent in the notch to prevent the left side of the ring as seen in Figs. 1 and 2 from freely rising out of the platform opening.

Located beneath the heating element is a drip pan 21 having a peripheral horizontally or outwardly extending flange 22 resting on the ledge 15. The legs of the spider 14 may rest upon the flange 22 so as to be supported by the ledge 15. The drip pan is cut away, as shown at 23 in the drawings to accommodate the terminal end portions 26 and 27 of the heater sheath which extend downwardly and horizontally to the side of the heater beneath the ring 16 and platform 12. Extending from each of the heater end portions 26 and 27 is a terminal member for making electrical connections to the resistance element of the heater, these terminal members being enclosed and protected by an electrically insulating terminal block 30. A drip shield 35 is attached to the end portions of the heater at a point located beneath the ring 16 and/or platform 12 to prevent drippage from flowing along the heater sheath and reaching the terminal block 30 and the electrical connections therein. This drip shield 35 is formed by a flat metal plate having a pair of openings through which the end portions 26 and 27 of the heater sheath extend, these end portions being rigidly attached thereto as by staking.

A metal strip member 40 is attached to the heater by welding or otherwise rigidly securing it to the drip shield 35 at a point between the heater end portions 26 and 27. A lower extension of the strip member 40 carries a screw for making an electrical ground connection to the heater 11. This strip member 40 is bent to extend forwardly from the drip shield 35 toward the center of the heater, thence upwardly and rearwardly with a portion thereof forming a flat bar 41 extending above the drip shield 35 and horizontally through an aperture 42 in the vertical wall 13 of the ring 16 at a point diametrically opposite the leaf spring 19. The end of the bar 41 located at the outside of the ring 16 is bent downwardly to form a spring anchor and abutment 44 to be referred to hereinafter. The depending wall 13 of the platform is cut away adjacent the opening 42 in the ring 16 to accommodate the bar 41. Since the bar 41 extends beneath the platform it prevents the lifting of the adjacent side of the ring from the platform opening.

A helically coiled spring 50 is connected between the outer end of the bar 41 and the ring 16 to bias the heater to the left, as seen in Figs. 1 and 2. The spring has a loop 51 at one end extending through the opening 42 in the ring 16 and encircling the ledge 15. The other end

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of the spring is formed with an elongated loop 52, the longer dimension of which extends in the direction of the axis of the helically coiled portion of the spring. The outer end of the bar 41 and a portion of the abutment 44 are formed with a slot 45 to permit the elongated loop 52 to encircle a portion of the abutment 44. When the spring is tensioned to bias the heater to the left, as shown in Fig. 2, the portion of the abutment 44 encircled by the spring rests in the outer end of the elongated loop 52. In this position, a tab 53 on one leg of the spider diametrically opposite the terminal portion of the heater 11 is biased into an opening 54 in the ring 16 to latch the heater in its horizontal position.

When the heater is manually moved to the position shown in Fig. 4, the tension of the spring may be relaxed and the portion of the abutment 44 encircled by the elongated loop 52 may slide within this loop to the end thereof nearest the coiled portion of the spring 50, thereby permitting some movement of the bar 41 through the opening in the ring. However, the extent of this movement is limited by the engagement of the abutment with the other end of the loop whereupon the helically coiled portion of the spring may be compressed between the portion of the ring 16 encircled by the loop 51 and the abutment 44. The ring opening 42 through which the bar 41 extends is of such size or so proportioned as to permit insertion of the bar therethrough before the spring 50 is attached to the abutment 44 and also to permit horizontal and limited pivotal movement of the bar therein, but preventing substantial transverse movement of said bar. The spring is so disposed when attached to the ring 16 and to the bar 41 as to block or interfere with the removal of the bar from the ring opening 42.

This invention as described above permits the heater 11 to be tilted in the platform opening in order to gain access to the drip pan 21 and to service the electric connections for the heater. However, the heater 11 cannot be completely removed from the platform opening without detaching the spring 50. Thus, permanent electrical connections to the heater terminals are protected from abuse and the heater is secured to the platform so that it cannot accidentally be dropped through the platform opening when the drip pan 21 is removed.

While the invention has been shown in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof.

What is claimed is:

1. An electric heater structure comprising a platform having an opening therein, a wall depending from said platform at one side of said opening, an electric heater supported in said platform opening, said depending wall having an aperture therein, a horizontal bar attached to said heater and extending from one side thereof through said aperture to form a swiveling connection between said heater and said wall, latching means at the opposite side of said platform opening engageable with a portion of said heater for retaining the latter in a horizontal position in the platform opening and spring means connected between the outer end of said bar and said wall for biasing said heater horizontally into latching engagement with said latching means, said spring means being so constructed and arranged as to prevent withdrawal of said bar from said aperture.

2. An electric heater structure comprising a generally horizontal platform having an opening therein and a depending wall at the edge of said opening, said wall having an aperture formed therein, an inwardly extending ledge carried by said vertical wall, a sheathed electric resistance heater coiled to form a flat heating surface, supporting means attached to said heater and having outwardly projecting portions supported by said ledge, said heater having a pair of terminal portions extending beneath and to one side of said structure, electrical terminal members carried by said terminal portions for making electrical

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connections to said heater, a metal bar fastened to said heater and extending horizontally above said terminal portions, the outer end of said bar being formed with a spring anchoring abutment, a helical tension spring having a loop at each end thereof, one of said loops being attached to said wall, the other of said loops being elongated in the direction of the axis of said spring and encircling a portion of said abutment, the aperture in said wall being proportioned to permit insertion of the bar therethrough and also permitting tilting movement of the bar while preventing substantial transverse movement of the bar within the aperture, said spring being disposed relative said wall and abutment for preventing withdrawal of said bar from the aperture in said wall, said spider having a portion at the side of said heater diametrically opposite the bar held in latched engagement with said wall by the tension force of said spring for securing the heater in a horizontal position.

3. An electric heater structure comprising a platform having an opening therein, a heater supporting ring carried by said platform, said ring having a flange overlying the periphery of said opening and a vertical wall depending from said flange within said opening, said wall having an aperture therein at one side of said ring, a sheathed electric resistance heater coiled to form a flat heating surface, supporting means attached to said heater and having outwardly projecting portions supported by said wall, means for making electrical connections to said heater, a metal bar fastened to said heater and extending through the aperture in said vertical wall of said ring at one side of said platform opening, the end of said bar outside of said ring being formed with a spring anchoring means, a spring fastened to said ring and to said anchoring means for biasing said heater toward the side of said ring opposite the aperture therein, the aperture in said ring member being of such size and shape as to permit insertion of the bar therethrough and permitting tilting movement, but preventing substantial transverse movement of said bar therein, said spring being so disposed when attached to said ring and to said anchoring means as to interfere with the withdrawal of said bar from the ring aperture, said heater supporting means having a latching portion at the side of said heater opposite the bar engageable with said ring and held in latched engagement therewith by the biasing force of said spring, said bar extending beneath a portion of said platform to retain one side of said ring in the platform opening, the other side of said ring being provided with means for securing it to said platform.

4. An electric heater structure comprising a generally horizontal supporting platform having an opening therein, a heater supporting ring carried by said platform, said ring having a flange overlying the periphery of said opening, a vertical wall depending from said flange within said opening and an inwardly extending ledge carried by said vertical wall, a sheathed electric resistance heater coiled to form a flat heating surface, a supporting spider attached to said heater and having outwardly projecting portions supported by said ledge, said heater having a pair of terminal portions extending beneath and to the side of said structure, electrical terminal members carried by said end portions for making electrical connections to said heater, a metal plate having a pair of openings through which said terminal portions extend, said plate being rigidly attached to said end portions and forming a shield to prevent the flow of drippage along said end portions to said terminal members, a metal member fastened to said plate between said end portions, said metal member being bent to extend from said plate toward the center of said heating surface, thence upwardly and then horizontally to form a bar extending in the direction away from the center of said heating surface above said plate in spaced relationship thereto, said ring having an opening in the vertical wall thereof through

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which said bar extends, the end of said bar being formed with a spring anchoring abutment and a helical tension spring having a loop at each end thereof, one of said loops being attached to said ring, the other of said loops being elongated in the direction of the axis of said spring and encircling a portion of said abutment, the opening in said ring member being of such size as to permit insertion of said bar therethrough and permitting tilting movement but preventing substantial transverse movement of said bar therein, said spring being so disposed when attached to said ring and to said strip member as to interfere with the withdrawal of said bar from the opening in the ring, said spider having a portion at the side of said heater

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diametrically opposite the bar held in locked engagement with said ring by the tension force of said spring, said bar extending beneath a portion of said platform to retain one side of said ring in the platform opening, said ring being provided with means at the side opposite the opening therein for securing it to said platform.

References Cited in the file of this patent

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