

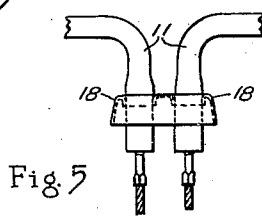
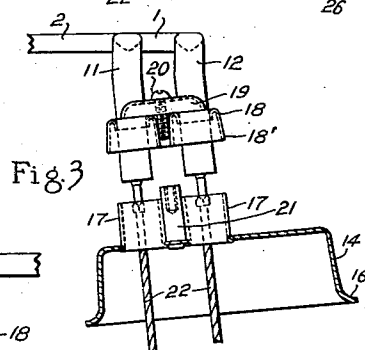
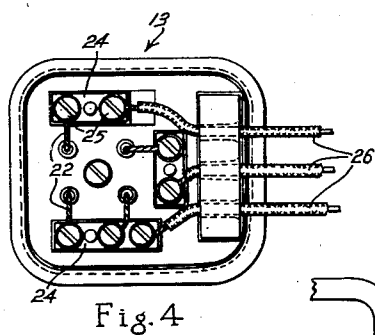
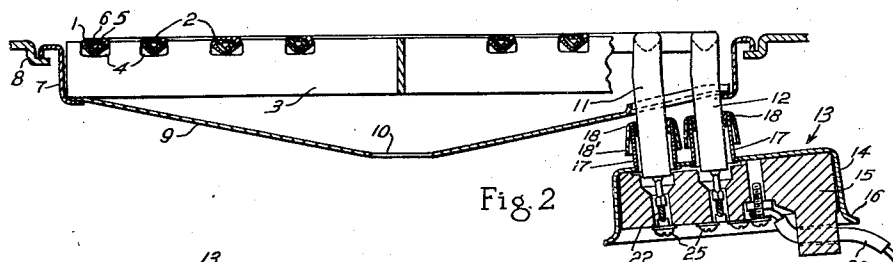
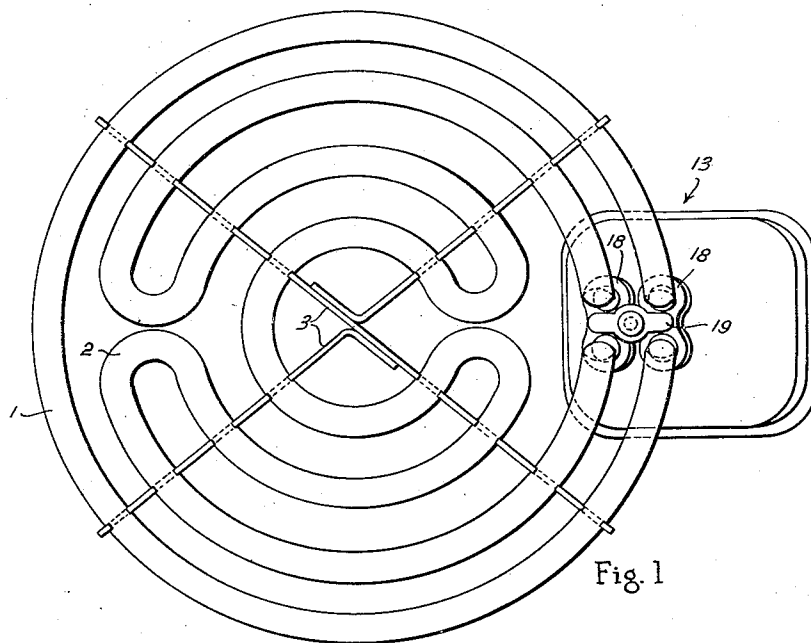
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2,370,767

ELECTRIC BOILING PLATE

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ELECTRIC BOILING PLATE

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3 Claims. (Cl. 219-37)

This invention relates to boiling plates for electric stoves and more particularly to the radiant light weight type of boiling plate consisting of one or several (generally two) tubular heating elements bent into suitable shape and supported on a light frame and having a heat reflector in the form of a sheet metal dish mounted beneath the tube elements.

Presently available boiling plates of the type referred to have their elements permanently fixed into the terminal box (if any) as by brazing, pressing or kneading the metal of the terminal box around the tube elements, at the points where they enter the box, in order to provide a water-tight joint between the tubes and terminal box. It will be apparent that such a boiling plate does not permit the replacement of a burnt out tube without the risk of seriously damaging the remaining good tube, as well as the terminal box, porcelain block and other parts. In any case, the replacement of the burnt out tube cannot be effected in the field, but the whole boiling plate must be removed to a repair shop. In many instances, the entire plate must be discarded.

Moreover, frequent burn-outs at the tube terminals of presently available boiling plates occur due to inadequate protection of such terminals and their related parts by the terminal box.

An object of the invention is to provide a tubular element boiling plate of such design that, should one of the heating tubes burn out, it may be easily removed in the field and replaced with a new tube without damage to other parts of the plate.

Another object is to provide a terminal box for the tube terminals of a boiling plate of such design that over-boiling liquids coming into contact with the box will not reach the terminals and thereby damage the electrical insulation thereof.

A further object is to provide a boiling plate of such design that the reflector dish may be easily removed for cleaning purposes.

The invention will be described with reference to the accompanying drawing in which,

Figure 1 is a plan view of a boiling plate in accordance with the invention,

Figure 2 is a sectional elevation,

Figure 3 is an elevation of the tube terminals and related parts in separated condition,

Figure 4 is a bottom plan view of the terminal box, and

Figure 5 is a further elevational detail view of the tube terminals.

Referring to the drawing, the boiling plate includes tubular heating elements 1 and 2 bent

into suitable shape as shown in Figure 1 and mounted in position on a spider frame 3 having suitable retaining notches 4 therein to receive the tubes. The tubes contain the usual electrical elements 5 surrounded by insulation 6. The spider frame is carried by an annular support 7 mounted in the main frame 8. A heat reflector dish 9, having a central hole 10, is arranged below the spider frame and is also carried by the support 7.

The ends of the tubular elements are bent downwardly as at 11 and 12 for attachment to the terminal box, generally indicated at 13.

The terminal box comprises a light weight metal casing 14, open at the bottom to receive a porcelain terminal block 15. The side walls of the casing are slightly outwardly flared and have a prominent outwardly flared lip portion 16 extending below the lower surface of the porcelain block. The top wall of the casing is provided with four holes having upwardly extending nipples 17 permanently fixed therein and adapted to receive the four ends 11 and 12 of the tubular elements. Each of the ends 11 and 12 have a small drip cap 18 of inverted cup shape permanently attached thereto, as by brazing, to provide a water tight joint between the cap and tube. It will be observed that the caps seat upon the upper edges of the nipples and have a deep outwardly flared skirt portion 18' adapted to shed drips and avoid the possibility of the latter reaching the seating surfaces. The caps have been shown as being formed in pairs, one for each pair of tube ends, but it will be understood that individual caps may be employed. The tube ends and terminal box casing are securely assembled together by means of a clamp 19 extending across the top of both pairs of caps and having an assembly screw 20 engaging a connecting post 21 permanently fixed to the casing. It will be observed that tightening of the screw 20 causes a solid seating contact of the caps 18 with the nipples 17. Terminal wires 22 of the tubular elements enter recesses 23 in the porcelain block and are connected to the terminal strips 24 on the lower face of the block by terminal screws 25. The strips are connected to the three wires 26 of the power supply.

It will be apparent that, should it be necessary to replace a tubular element, it is only necessary to unscrew the assembly screw 20 and the two terminal screws 25 of the tube to be replaced. The tube ends are then free for withdrawal from the terminal box and the entire element readily removed from place in the plate. A new tubular

element is then inserted and its ends conveniently assembled in the terminal box as previously described. The entire operation of removing a burnt out tube and inserting a new tubular element may therefore be performed in the field in a period of three or four minutes.

It will also be observed that drips from over-boiling liquids reaching the tube ends and the terminal box will be readily shed by the long flared skirted portions of the caps 18 and the flared side wall and depending lip of the terminal casing, thus preventing such drips from coming into contact with the electrical terminals or wires. As is well known, this is a frequent occurrence in present day boiling plates and is a source of much trouble.

It will be understood that many variations in the structure described may be effected without departing from the spirit of the invention. Thus, for the sake of economy, the ends of one of the tubular elements may be permanently fixed, as by brazing, to the terminal box while the ends of the other element may be removably secured thereto in accordance with the invention. In this case, the ends of the inner tubular element would usually be fixed in place while the ends of the outer element would be removably secured in place, since normally the inner element has a much longer life than the outer element. The reason for such longer life is that the inner element is much longer and has a greater loading than the outer element in order to provide rapid boiling under medium load. This inner element will therefore have a much heavier heating wire. The uneven length of life is further aggravated by the fact that the outer tube must have about 20% higher loading per unit length than the inner tube in order to attain the same temperature on both tubes. The result will generally be that the inner tube, although it is used more than the outer tube, will last perhaps two or three times as long as the outer one. In most cases of burn-outs in this type of plate, therefore, it is the outer tube which must be replaced. In any event, in the embodiment of the invention just referred to, one would permanently fix the tubular element of normally longer life and removably mount the other element in position.

I claim:

1. In a boiling plate for an electric stove having a frame and a three wire power supply, means supporting the plate in the frame, a plurality of substantially tubular heating elements in the plate, a terminal box remote from said supporting means for connecting the elements to the power supply, said terminal box having a casing, and

means for fastening the ends of the elements to the casing including means for fastening the ends of at least one of the elements for detachment from the casing independently of the other element ends, said latter means comprising a plurality of tubular members carried by the box and each adapted to receive an element end, each end of said one element having a seating portion fixed thereto and adapted to seat on the end of a respective tubular member, and means holding said seating portions in seated engagement on said tubular members comprising a plate engaging the seating portions and having a screwthreaded connection with the terminal box.

2. In a boiling plate for an electric stove having a frame and a three wire power supply, means supporting the plate in the frame, a plurality of substantially tubular heating elements in the plate, a terminal box including a casing remote from said supporting means for connecting the elements to the power supply, said casing having openings receiving the ends of the elements, nipples loosely encircling said ends and each having a liquid tight connection with the edge of a respective opening, an inverted cup-shaped cap fixed in liquid tight engagement to the ends of each element and having seating engagement with a respective pair of nipples, said cap having a depending outwardly flared wall encircling a respective pair of nipples, and means holding the caps in seating engagement on the nipples comprising a plate engaging the tops of the caps and having a screw-threaded connection with the terminal box.

3. In a boiling plate for an electric stove having a frame and a three wire power supply, means supporting the plate in the frame, a pair of substantially tubular heating elements in the plate having downwardly extending ends, a terminal box including a casing remote from said supporting means for connecting the elements to the power supply, said casing having openings receiving said ends, tubular members loosely encircling said ends and each having a liquid tight connection with the edge of a respective opening, a cap fixed in liquid tight engagement to the ends of each element and having seating engagement with the pair of ends of respective tubular members, the cap on the ends of one element being separate from the cap on the ends of the other element, and means holding the caps in firm seating engagement with the ends of the tubular members comprising a plate engaging the tops of the caps and having a screwthreaded connection with the terminal box.

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