Feb. 1, 1955 W. M. RUSSELL 2,701,293

ELECTRIC IRON

Filed Oct. 13, 1952 2 Sheets-Sheet 1

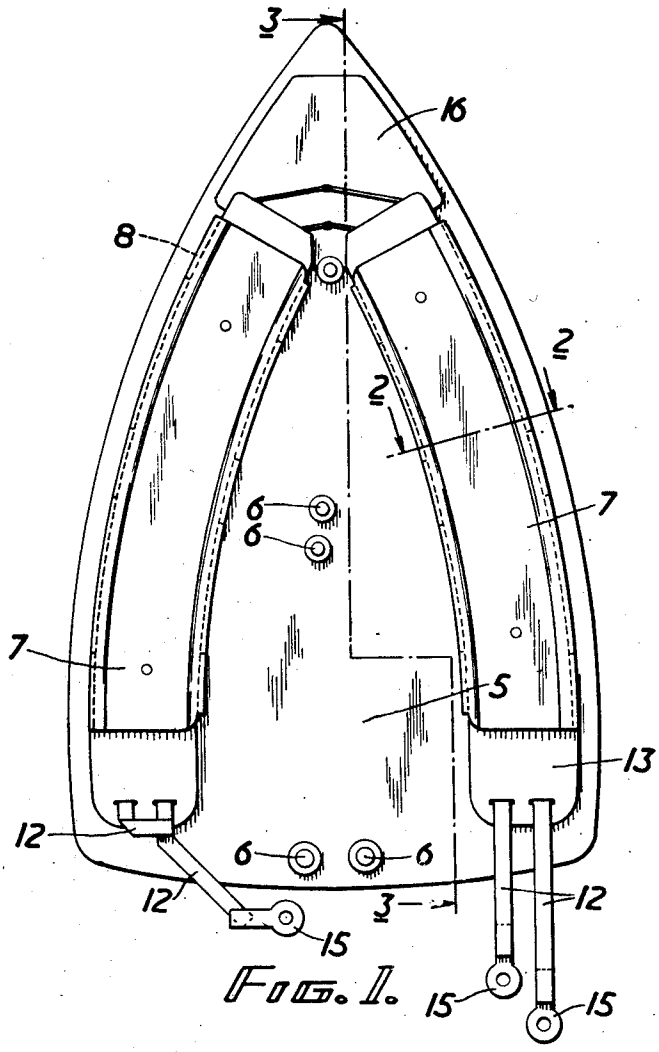


FIG. 1.

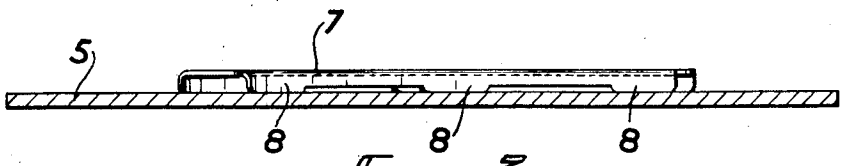


FIG. 3.

Inventor

WILLIAM M. RUSSELL

By Emery, Holcombe & Blair

Attorneys

Feb. 1, 1955 W. M. RUSSELL 2,701,293

ELECTRIC IRON

Filed Oct. 13, 1952 2 Sheets-Sheet 2

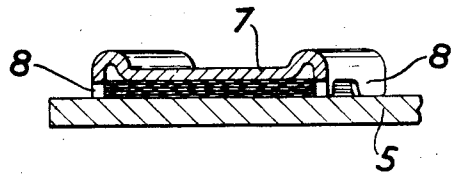


FIG. 2.

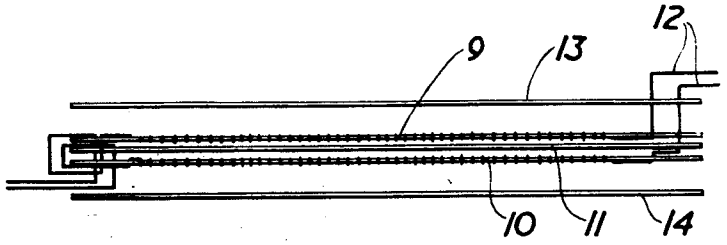


FIG. 4.

Inventor
WILLIAM M. RUSSELL

By Emery, Holcomb & Blair
Attorneys

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2,701,293

ELECTRIC IRON

William Morris Russell, Bromley, England, assignor to Morphy Richards Limited, St. Mary Cray, England, a British company

Application October 13, 1952, Serial No. 314,442

6 Claims. (Cl. 219—25)

This invention relates to electrically heated smoothing irons and provides a new or improved method and means for securing the heater element or elements to the sole plate.

The invention comprises a method of securing an electric heater element to the sole plate of an electric smoothing iron, according to which a deformable clamping member is secured at two opposite sides to the upper surface of the sole plate with an intermediate portion of the clamping member spaced from that surface, the heater element is inserted between the clamping member and the sole plate and the said intermediate portion of the clamping member is pressed towards the sole plate to deform the clamping member and grip the heater element between it and the sole plate.

More specifically, the invention comprises a method of securing to the sole plate of an electric iron an electric heater element in the form of an elongated flat strip, according to which a clamping member in the form of a channel section metal strip has its flanges welded to the upper surface of the sole plate to form an open-ended tunnel, the heater element is inserted in this tunnel, and the roof of the tunnel, constituted by the web of the channel section strip, is pressed towards the sole plate so as partly to collapse the tunnel and clamp the heater element against the upper surface of the sole plate.

The invention also comprises electric smoothing irons having the construction produced by the practice of these methods.

One particular and at present preferred manner of carrying the invention into practice is illustrated by the accompanying drawings, in which:

Figure 1 is a plan view of the sole plate of an electric iron with two pairs of heater elements secured thereto;

Figure 2 is a cross section on an enlarged scale, taken on the line 2—2 of Figure 1;

Figure 3 is a longitudinal section, taken on the line 3—3 of Figure 1, showing the sole plate and a clamping member, before the insertion of the heater elements;

Figure 4 is a side view of one of the two heater element assemblies, showing the parts separated from one another.

The sole plate **5** is cut from flat plate or sheet metal and has the usual approximately triangular form with a nearly straight rear edge and two curved sides meeting at the pointed forward end of the sole plate. Studs **6** projecting from the upper surface of the sole plate serve for securing the control switch, casing and other parts (not illustrated) of the iron, which may be of any desired shape and construction and form no part of the present invention.

For securing the heater elements to the sole plate there are provided two sheet metal clamping members **7**, which are arcuately curved in plan, as shown in Figure 1, and are initially of inverted channel section, as shown in Figure 3. The lower edges of the flanges of these channel section members are formed with projecting lugs **8**, spaced at intervals along the length of the members. The clamping members **7** are positioned parallel to, and spaced somewhat inwardly from, the curved sides of the sole plate, as shown in Figure 1, and the lugs 8 are welded to the upper surface of the sole plate, so that an open-ended tunnel is formed along each side of the sole plate. In the intervals between the lugs **8**, the lower edges of the flanges of the clamping members are held slightly spaced from the upper surface of the sole plate, thereby facilitating the access to and drainage from the interiors

of the tunnels of plating or other solutions used for imparting any desired finish to the sole plate.

Two pairs of heater elements are provided, the two elements of each pair being connected in series, it being intended that one pair of elements only shall be energised when the iron is connected to a high voltage supply and both pairs energised when the supply voltage is low. One element of each pair is accommodated in each of the tunnels formed by the two clamping members **7**. The heater assembly for insertion in one of these tunnels is shown in Figure **4** with the parts spaced apart for clarity.

Each of the heater elements **9**, **10** comprises a coil of resistance wire wound round a flat strip of insulating material which is shaped to follow the curve of one of the tunnels. A similarly shaped strip of insulating material **11** is interposed between the two heater elements. The rear ends of the heater wires are secured to connector strips **12**, which are threaded through slots in the insulating strips, while the forward ends of the wires are themselves threaded through holes in the insulating strips and pulled tight. Two further curved strips of insulating material **13**, **14** are laid above and below the heater elements (the connectors **12** passing through slots in the upper strip **13**) and the assembly of five superimposed strips is inserted in the tunnel formed by one of the clamping members **7**. Either before or after insertion of the heater assemblies, terminal connectors **15** are welded or otherwise secured to the two connector strips **12** of one assembly and to one of the strips of the other assembly, the second strip of that assembly being welded to the first strip.

After the insertion in the tunnels of the heater assemblies, the projecting forward ends of the two heater wires of each assembly are welded to the corresponding wires of the other assembly, so that the two upper and the two lower heater elements are connected in series. A sheet of insulating material **16** is inserted beneath the projecting forward ends of the heater assemblies so as to lie between the exposed portions of the heater wires and the sole plate. With the parts thus positioned, the roofs of the tunnels, constituted by the webs of the channel section members **7**, are pressed towards the sole plate so as partly to collapse the tunnels and clamp the heater element assemblies against the sole plate. The collapsing pressure is applied over the whole length of each tunnel and over the greater part of its width, so that the member **7** is permanently distorted into the form shown in Figure 2. As will be clear from that figure, the central part of the web of member **7** is pressed down to lie parallel to the sole plate, below the level of the roots of the flanges and of the marginal portions of the web, which now lie folded down on the inner sides of the flanges.

I claim the following as my invention:

1. A method of securing an elongated electric heater element to the sole plate of an electric smoothing iron, which comprises securing a deformable clamping member of a width greater than said heater element at two opposite sides to the upper surface of the sole plate with an intermediate portion of the clamping member spaced from that surface, thereafter inserting the heater element lengthwise between the clamping member and the sole plate, and pressing the said intermediate portion of the clamping member towards the sole plate to deform the clamping member and grip the heater element between it and the sole plate.

2. A method of securing to the sole plate of an electric iron an electric heater element in the form of an elongated flat strip, which method comprises welding a clamping member in the form of an inverted channel section metal strip along the lower edges of its flanges to the upper surface of the sole plate to form an open-ended tunnel of which the roof is constituted by the web of said metal strip, inserting the heater element in this tunnel through an open end, and pressing the roof of the tunnel towards the sole plate so as partly to collapse the tunnel and clamp the heater element against the upper surface of the sole plate.

3. A method in accordance with claim 2 in which the channel section strip member is made long enough to ex-

tend over substantially the whole length of the heater element and following the insertion of the heater element the central portion of the web of said strip member, extending over its whole length and the greater part of its width, is pressed down to lie parallel to the sole plate below the level of the marginal portions of the web and the roots of the flanges.

4. A method in accordance with claim 2 in which the flanges of the channel section member are notched along their edges to provide spaces between them and the sole plate at intervals along the length of the channel section member, for aiding in the subsequent finishing treatment of the metal parts of the iron.

5. An electric smoothing iron having a flat sole plate in which a heater element in the form of an elongated flat strip is secured against the upper surface of the sole plate by a metal strip of inverted channel section which encloses the heater element at top and sides over substantially the whole length thereof and has its flanges

secured at their lower edges to the sole plate, the web of the channel section strip being depressed below the folded over upper parts of the flanges to clamp the heater against the sole plate.

6. An electric smoothing iron in accordance with claim 5, in which lugs formed on the lower edges of the flanges of the channel section strip at intervals along their length are welded to the sole plate, the edges of the flanges intermediate the lugs being spaced apart from the sole plate.

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