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ELECTRICALLY HEATED FLATIRON

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2 Sheets-Sheet 1

Fig. 1

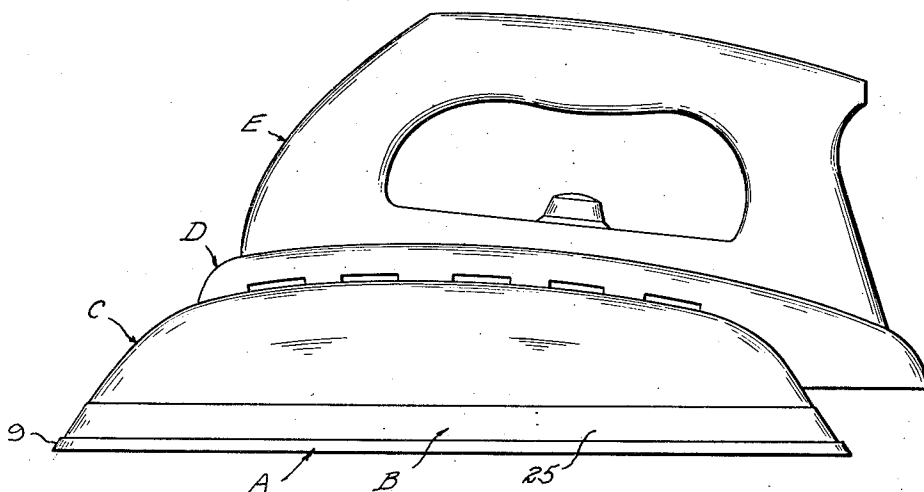
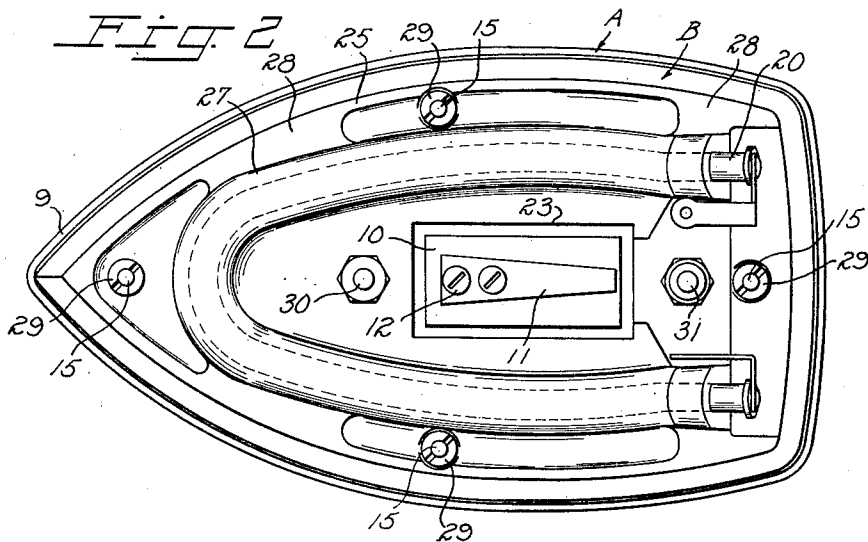


Fig. 2



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ELECTRICALLY HEATED FLATIRON

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The present invention relates to electrically heated flatirons and more particularly to a novel and improved construction of the base portion of an electrically heated flatiron to provide a light weight iron of enhanced appearance having superior operating characteristics and which at the same time may be fabricated and assembled at low cost.

Many attempts have been made heretofore to provide a satisfactory light weight iron. A difficulty encountered in such constructions has been that, when the obvious expedient of utilizing light metals such as aluminum, etc., has been followed, it has been found that such metals, being relatively soft, are unsuitable as an ironing surface in that they are subject to easy and frequent marring and scoring. On the other hand, when relatively hard materials such as cast iron are utilized, which materials normally provide a good ironing surface, it has been found that, when the mass of this metal is reduced to a degree which will provide an appreciable reduction in weight, there results a flatiron which is characterized by poor heat transfer, localized overheating, and warping. Combinations of soft and hard metals have been attempted but such constructions have been generally unsatisfactory due to the difficulties and complications arising in the fabrication and production of the flatiron resulting in a high cost greatly out of proportion to the value of the saving in weight. More importantly, such irons generally have poor performance characteristics, such as warping and buckling of the sole plate, poor heat transfer and distribution, and inferior appearance, particularly after the iron has been in use for a period of time. As a result, a light weight iron has been regarded heretofore in the nature of a specialty which is non-competitive with flatirons of conventional construction either in cost, performance or appearance.

It is an aim of the present invention to provide an electrically heated flatiron which is of relatively light weight and which at the same time has improved heat transfer and distribution characteristics and provides a desired ironing surface comparable to flatirons of conventional construction.

A further object of the invention is to provide a light weight iron of the type referred to which is so constructed and arranged that it may be fabricated and assembled without the requirement of special assembly and fabricating techniques so that the iron may be produced at a low cost comparable to the costs encountered in the

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production of conventional heavy weight flatirons.

Another object of the invention is to provide a light weight flatiron of improved operating characteristics as mentioned above which, in addition, has an enhanced and novel appearance with certain features of the construction apparent to the observer without any need for disassembly of the iron.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereafter set forth and the scope of the application of which will be indicated in the appended claims.

In the drawings—

Figure 1 is a side view of an assembled flatiron embodying the present invention;

Fig. 2 is a plan view of the iron with the superstructure removed;

Fig. 3 is a longitudinal sectional view taken centrally of the base portion of the iron; and

Fig. 4 is a plan view of the sole plate.

Referring to the specific embodiment of the invention shown in the drawings, it will be observed that the base portion of the flatiron comprises a sole plate A and a heat generating and distributing assembly B. These members are secured together as explained more fully hereinafter, and there is mounted thereon a shell or cover C to which is secured a conventional superdeck D and handle E.

The construction of the sole plate A is best shown in Figs. 3 and 4 of the drawings. The sole plate A is constructed of sheet metal such as a steel sheet which may be readily stamped out to provide the desired outline of the iron. A conventional design is shown in the drawings in which the sole plate is provided with a pointed toe, a generally square heel and curved sides. As will be observed, the sole plate A is completely flat throughout and free of any flanges, etc. and therefore may be readily fabricated by simple automatic machinery.

The sole plate A, when stamped to provide the desired contour or periphery, is then beveled at the edge portion 9 to provide an inwardly sloping edge which, when continued upwardly by the remaining portions of the iron, gives the iron a streamlined appearance. Secured to the sole plate A, such as by welding, is a small platform or plate 10 to which is adapted to be affixed a bi-metallic element 11 of

a thermostatically operated switch (not shown). The element 11 may be secured to the plate or platform 10 in any suitable manner such as by the screws 12. The use of the plate or platform 10 insures that the thermostatically operated switch will be directly responsive to the temperature of the ironing surface.

Also secured to the sole plate A, centrally and longitudinally thereof, are a pair of spaced posts 13 which may be fastened to the sole plate A for example by providing the posts with heads 14 which, in turn, are welded to the upper surface of the sole plate. In addition to the posts 13 there are secured to the sole plate A at spaced intervals adjacent the periphery of the plate a plurality of threaded studs 15. As in the case of the posts 13, the threaded studs 15 may be secured to the sole plate A by providing the studs with heads 16 which may be welded to the upper surface of the sole plate.

The completed sole plate, as described, may be given a suitable finishing operation to provide a desired polished ironing surface. The steps utilized will preferably include polishing and buffing the lower surface and edge of the sole plate, following which the lower surface and edge are chrome plated. It will be observed that the fastening of the posts 13 and lugs 15 to the sole plate A is a simple manufacturing operation and that the electro-plating of the sole plate is not complicated by the presence of any electrical elements which normally would have to be blocked off to prevent damage thereto.

The heat generating and distributing assembly B is preferably formed of cast aluminum and comprises a mass of this metal conforming generally in outline to the outline of the sole plate A. The source of heat which preferably is a sheathed heating wire or element 20 surrounded by a suitable electrical insulating material 21 is embedded in the aluminum during the casting operation.

The cast aluminum member B is provided with a circular opening 22 to receive the posts 13 and lugs 15 as well as a rectangular opening 23 to receive the plate or platform 10. In forming the openings 22 and 23, it is desired to provide a clearance around the posts 13, lugs 15 and plate 10 so that no binding will result due to the different rates of expansion of the aluminum member B and the sole plate A, to the latter of which is attached the posts 13, studs 15 and plate 10.

The lower surface 24 of the member B may be accurately machined so that it is perfectly flat and thus will engage in intimate contact with the upper surface of the sole plate A. As will be apparent, the provision of accurately meeting surfaces on the sole plate A and the member B may be readily accomplished by standard manufacturing techniques.

The member B is cast so that it has a peripheral flange 25 of increased thickness. The outer edge of the flange may be machined to provide a smooth inwardly sloping surface which is substantially a continuation of the beveled edge of the sole plate A.

The heating wire or element 20 and insulating material 21 are embedded in a U-shaped raised rib or welt 27 extending along the side margins of the member and across its toe. A plurality of ribs 28 extending between the welt 27 and the flange 25 may be provided to increase the heat transfer and distributing characteristics.

The heat generating and distributing assembly

B is securely attached to the sole plate A by means of nuts 29 which are turned on the threaded studs 15. As will be observed, the studs 15 and openings 22 are so situated that the nuts 29 are disposed between the flange 25, welt 27 and ribs 28 of the aluminum casting and, therefore, do not project above the upper extremities of the assembly B.

The combination of accurately meeting surfaces on the sole plate A and assembly B with the four-point clamping effect of the lugs 15 and nuts 29 insures good thermal contact between the sole plate A and assembly B. As a result, the heat which is generated in the assembly B by the heating wire or element 20 is rapidly and evenly distributed throughout the assembly B and from thence to the sole plate A at substantially all portions thereof, the result being that even heating of the sole plate A and avoidance of localized heating is obtained. Furthermore, because of the close intimate contact between the sole plate A and assembly B, together with the fact that provision is made for the different rates of expansion of the aluminum and the sheet metal sole plate, there will result no buckling or warping of the sole plate which heretofore has frequently been encountered in light weight irons. The absence of any flange on the sole plate A further avoids the problem of warping and buckling and also permits the transfer of heat from the assembly B to the very extremities of the sole plate A.

As a result of the construction shown, the heat generated by the element 20 is rapidly dispersed throughout the highly conductive unit B and because of the location of the rib 27 and the presence of the ribs 28 and flange 25 it will be found that the lower surface of the unit B will be maintained at a substantially even temperature throughout. Substantially all portions of the plate A, including the peripheral portions, are in good heat transferring contact with the unit B so that the plate A is also heated uniformly throughout, the flow of heat being from element 20 through unit B and thence uniformly to plate A without any material lengthwise travel through the plate A. Accordingly, the fact that the plate A has a relatively low heat conductivity is of no moment and the temperature throughout will be substantially constant.

The remaining portions of the iron are entirely supported by the posts 13. As best shown in Fig. 3, the posts 13 are provided with threaded heads 30 and 31, respectively, which are spaced from the sole plate A by suitable separating members such as the sleeves 32. The heads 30 and 31 are adapted to support the thermostatic switch elements, not shown, which cooperate with the bi-metallic element 11 and also support the shell or cover C and the superdeck D and handle E mounted thereon. As a result of this construction, the member B has no function in the completed flatiron except to provide a source of heat and to distribute and transfer the heat to the sole plate in a uniform manner while at the same time imparting rigidity to the sole plate. This construction has the further advantage of reducing the heat transfer to the superstructure and handle of the iron.

It will be noted further that the shell or cover C is so mounted on the posts 13 that its lower edge rests upon the flange 25 of the assembly B and thus exposes the outer periphery of the assembly B as well as the sole plate A. As previously mentioned, the sole plate A is given a

highly polished surface such as a chrome surface which contrasts with the relatively dull surface of the aluminum member B, thus giving the flat-iron a novel and pleasing appearance as well as revealing to the observer, such as a prospective purchaser, that the iron is in fact composed of a plurality of metals, one of which provides a good non-marring ironing surface and the other of which provides the necessary uniform heat transfer and distribution.

The flatiron constructed and arranged as disclosed herein is of extremely light weight, being composed of a minimum of heavy material, and yet at the same time the flatiron is of inexpensive construction primarily because of the ease with which the iron may be fabricated and assembled. At the same time, improved operating characteristics in regard to heat transfer and efficiency, not to mention an improved appearance, is obtained.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

I claim as my invention:

1. In an electrically heated iron, the combination comprising a sole plate formed throughout of flat sheet metal provided with a beveled unflanged edge, a heat generating and distributing assembly comprising an aluminum block having a flat lower surface in intimate contact with the sole plate, a periphery conforming generally in outline to the periphery of the sole plate and extending substantially to said beveled edge of the sole plate and a sheathed heating unit cast within the block and spaced from its lower surface, means for securing the sole plate to the said flat surface of the aluminum block, a sheet metal shell having an edge conforming generally to but smaller than the outline of the aluminum block, and means for positioning the shell above the aluminum block with its edge resting thereon comprising a post secured to the sole plate extending through an opening in the block the peripheral portion of the aluminum block being of greater thickness than the sole plate and the edges of both being exposed below the shell.

2. In an electrically heated iron, the combination comprising a sheet metal sole plate having flat upper and lower surfaces throughout and provided with a beveled unflanged edge, a heat generating and distributing assembly comprising an aluminum block having a flat bottom surface in intimate contact with the flat upper surface of the sole plate, a periphery conforming generally in outline to the periphery of the sole plate and having a peripheral edge portion of increased thickness extending substantially to said beveled edge of the sole plate, and a sheathed heating element cast within a generally U-shaped welt at the surface of the block opposite from its flat bot-

tom surface, said block being provided with ribs extending between said welt and peripheral edge portion, and means for securing the sole plate to the said flat surface of the aluminum block.

3. In an electrically heated iron, the combination comprising a chrome plated sheet steel sole plate having upper and lower flat surfaces throughout and provided with a beveled unflanged edge, a heat generating and distributing assembly comprising an aluminum block of greater thickness than said sole plate having a flat lower surface in intimate contact with the upper flat surface of the sole plate, a periphery conforming generally in outline to the periphery of the sole plate and extending substantially to said beveled edge of the sole plate and a sheathed heating element cast in said block and spaced from said flat surface, said block being formed with an exposed side surface of greater thickness than the sole plate, a sheet metal shell having an edge conforming generally to the outline of the aluminum block, means for securing the sole plate to the said flat surface of the aluminum block, and means for securing the shell on top of the aluminum block thereby exposing the edge portions of the sole plate and aluminum block comprising a pair of posts secured to the sole plate, said aluminum block being provided with openings through which said posts extend and forming a clearance between the posts and the block.

4. In an electrically heated iron, the combination comprising a chrome plated sheet steel sole plate having upper and lower flat surfaces throughout, a heat generating and distributing assembly comprising an aluminum block having a lower flat surface in intimate contact with the upper flat surface of the sole plate and a periphery conforming generally in outline to the periphery of the sole plate, the peripheral portions of the block being of increased thickness to form a peripheral flange of materially greater thickness than the sole plate, a sheathed heating element cast within a generally U-shaped welt at the surface of the block opposite from its said flat surface and ribs extending between the welt and peripheral portions, means for detachably securing the sole plate to the flat surface of the aluminum block, a pair of posts secured to the sole plate, said aluminum block having openings of greater diameter than said posts through which the posts extend, and a sheet metal shell having an edge conforming generally to the outline of the aluminum block mounted on the top of the block by said posts thereby exposing the contrasting edge portions of the aluminum block and chrome plated sheet steel sole plate.

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