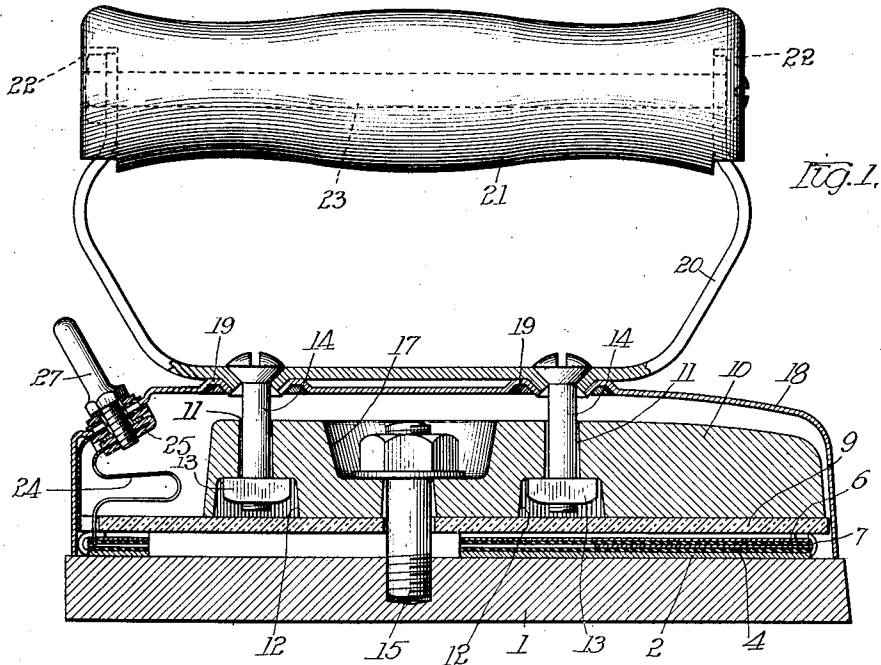
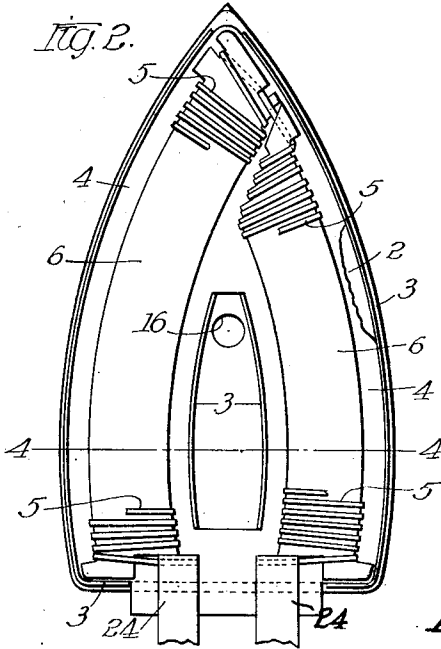
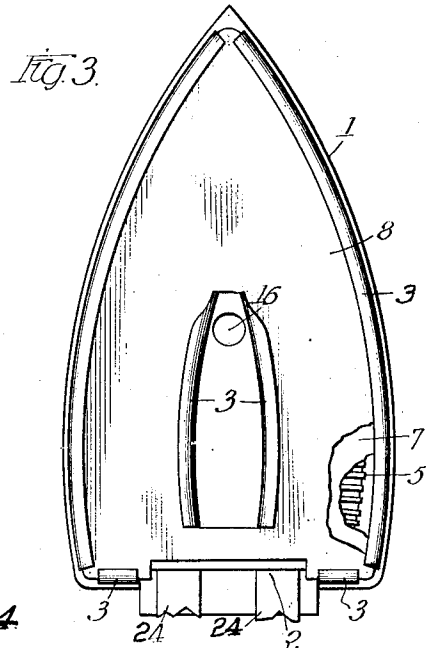
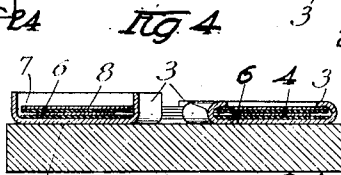


W. S. HADAWAY, JR.
ELECTRIC IRON.
APPLICATION FILED JAN. 6, 1913.

1,150,428.

Patented Aug. 17, 1915.

2 SHEETS—SHEET 1.



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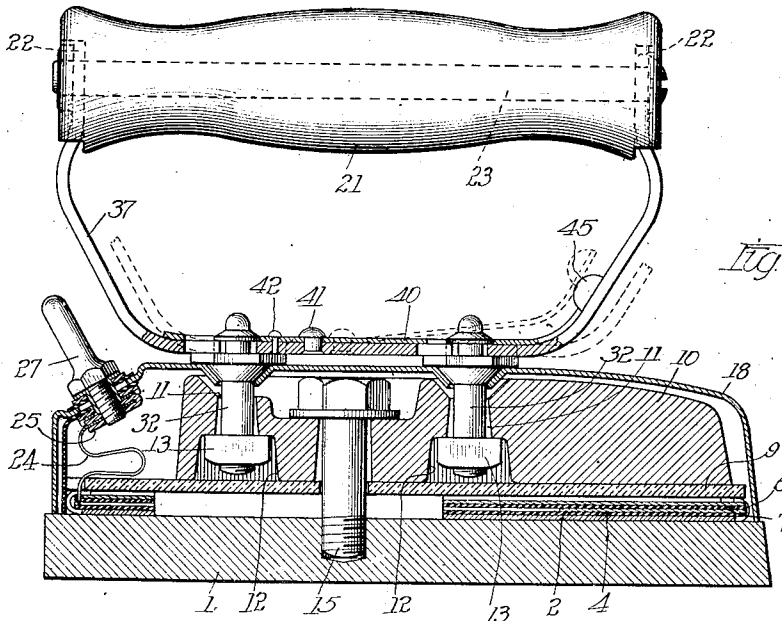


Fig. 5.

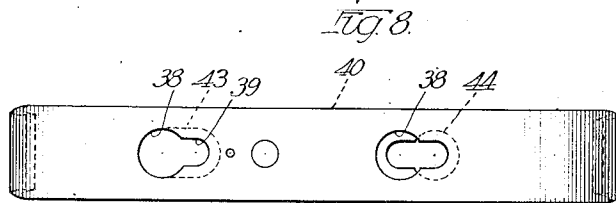


Fig. 8.

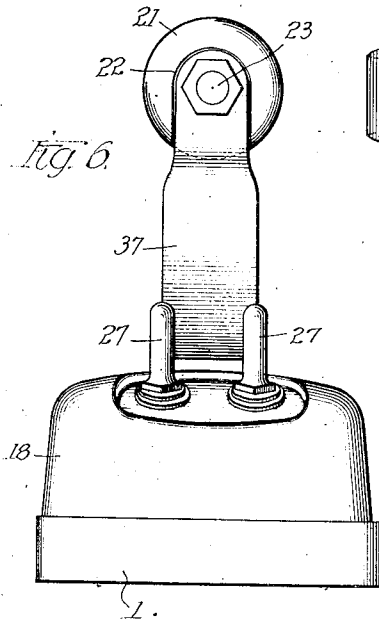


Fig. 6.

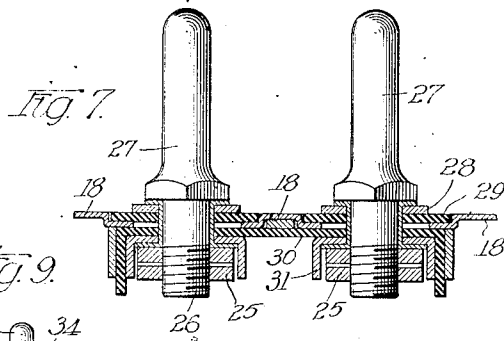
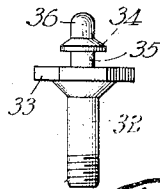


Fig. 7.

Fig. 9.



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UNITED STATES PATENT OFFICE.

WILLIAM S. HADAWAY, JR., OF NEW ROCHELLE, NEW YORK.

ELECTRIC IRON.

1,150,428.

Specification of Letters Patent.

Patented Aug. 17, 1915.

Application filed January 6, 1913. Serial No. 740,365.

To all whom it may concern:

Be it known that I, WILLIAM S. HADAWAY, Jr., a citizen of the United States, residing at New Rochelle, in the county of Westchester and State of New York, have invented new and useful Improvements in Electric Irons, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to improvements in electric irons.

In my co-pending application, Serial No. 647,693, filed September 5, 1911, I have described and claimed an improved construction wherein the base or shoe of the iron and the heating element therefor constitute substantially a unitary or one-piece construction, the resistance elements being held in good thermal contact with the base of the iron by sheet-metal retainers each of which is welded to said shoe.

One object of the present invention is to obtain the very desirable thermal advantage of my prior construction by improved and simplified constructional features which facilitate rapid and economical manufacture. As contributory toward carrying out this first object, I weld to the base of the iron a single metallic retainer instead of a number of strips or plates and by means of said single retainer I hold a resistance of suitable configuration in good conducting relation with substantially the entire area of said base.

Other objects of my invention will be readily inferred from the more detailed description hereinafter given of the various features of improvement.

In the accompanying drawings I have shown two irons which will serve to illustrate the features of the invention.

Figure 1 is a central longitudinal section of the first form of iron referred to. Fig. 2 is a top plan view of the base, showing the resistance mounted thereon with the upper parts removed for the sake of clearness. Fig. 3 is a view similar to Fig. 2 but showing the iron further assembled. Fig. 4 is a sectional elevation on the line 4-4 of Fig. 2. Fig. 5 is a central sectional elevation of the second form of iron. Fig. 6 is an end eleva-

tion thereof. Fig. 7 is a sectional view on an enlarged scale, of the terminals. Fig. 8 is a bottom plan view of part of the handle. Fig. 9 is an elevation on an enlarged scale of one of the studs used in securing the handle and the casing in position.

My improved iron is manufactured as a series of separate independent parts which are thereafter quickly assembled into a completed commercial article. One of these parts is the base or shoe 1, which is made of steel, the bottom of which serves as the heat-radiating surface. To the upper surface of said shoe I secure a sheet metal retainer 2, having substantially the same outline as said shoe and having outer and inner flanges 3, which are preferably struck up or bent up from the metal, as shown in Figs. 2 and 4. Said retainer is spot welded to the base at a large number of points, whereby it is integrally united thereto and is prevented from bending, buckling or springing away from the same when heated, thus maintaining a very efficient thermal contact. The effect of the vertical flanges is to form practically a continuous channel around the periphery of the shoe. In fact, this channel covers nearly the entire upper surface of said shoe, the only portion not covered being that seen through the central opening in Fig. 2, left by striking up the inner flanges. Mica insulation is then placed in the channel to completely cover the bottom thereof, the mica being preferably in the form of a single sheet 4. The resistance element, which is in the form of a ribbon 5, wrapped around two flat curved strips of mica, 6, is then placed in the channel and covered by a second sheet of mica 7. The ends of the mica strips are notched as shown, so as to hold the ribbon thereon and permit said strips to fit together to a certain extent near the toe of the iron. A slotted resistance or other form of flat resistance may be used instead of the wrapped ribbon, if desired. A sheet metal cover or backing 8, (see Fig. 3) is then placed over the mica, and the vertical flanges 3 are bent over to secure the parts in place. The preferred method of assembling is first to bend the flanges at a few points to hold the parts temporarily and then to place the entire base in a power press which automatically

flanges over the rest of the metal and exerts sufficient pressure on the entire structure to give a smooth, finished effect and to clamp the resistance in intimate conducting relation with the shoe.

The next part assembled is the asbestos pad 9, the outline of which conforms in general to the configuration of the base. The pad is relatively thick and prevents the upper parts of the iron from becoming too hot. A cast iron plate 10, or ballast, is then placed over the asbestos pad, the function of this plate being to give the iron the necessary weight. There are two holes 11 through the ballast, the lower ends of which are enlarged to form square recesses 12. At the time the ballast is placed on the asbestos pad, a nut 13 is placed in each of said recesses, whereby screws 14 may thereafter be inserted through the holes 11 and caused to engage said nuts.

The ballast is clamped to the base by a stud 15 which passes downwardly through an opening in said ballast and through the asbestos pad, and is received in a screw-threaded opening 16 in said base. The head of the stud is below the top of the ballast, being received within a recess 17 therein, thus economizing space in a vertical direction.

A suitable ornamental and protecting casing 18 is provided, which is made preferably of pressed steel in a single piece, the outer surface of said casing being nickel-plated or otherwise highly polished. Said casing is secured in place by the screws 14 previously referred to. The same screws also serve to secure the handle to the casing as hereinafter described. Said screws pass through openings in projecting bosses 19 which are pressed outwardly from said cover, as shown in Fig. 1, the metal immediately around said openings being pressed downwardly or counter-sunk. Said cover rests directly against the base 1 and fits down loosely over the outer flanges 3 of the sheet metal resistance container 2. The casing is sufficiently high to provide an air space between the same and the top of the ballast 10. The circuit terminals are secured to the rear of the casing and project through openings therein, this feature being hereinafter described more in detail.

The handle consists of a metallic bracket 20 and a hand grip 21 carried thereby. The handle is held in place by the screws 14, the heads of which fit in counter-sunk recesses formed by pressing the metal of the handle bracket downwardly, thereby forming projecting bosses which fit within the counter-sunk recesses in the bosses 19 on the casing, as clearly shown in Fig. 1. These interfitting bosses serve to locate the position of the handle readily with respect to the casing when the parts are being assembled. They

also provide additional security. Said bosses also serve to elevate the horizontal part of the bracket 20 above the casing, thereby providing an air space acting as a heat insulator to aid in maintaining a cool handle.

The upper extremities of the bracket 20 are reduced in width, whereby they may be received in deep recesses 22 in opposite ends of the hand grip 21, said extremities being secured to said grip by a bolt 23, the head and the nut on said bolt being each received within said recesses, whereby there are no projecting metal parts with which the hand of the operator may come in contact. It will also be noted that the handle is of considerable length, thereby further reducing the liability of the hand of the operator coming in contact with the metal bracket 20, which may be uncomfortably warm, although the temperature thereof is maintained at a minimum in view of the features of design described.

In certain prior irons, attempts have been made to keep the handle cool by mounting it high above the base. Such an arrangement is objectionable as the iron tends to "stub" when pushed forward. In the construction illustrated, the handle is sufficiently low to avoid this tendency to tip, but at the same time it is high enough to give the necessary clearance for the hand. The center of the handle, furthermore, is directly over the center of gravity of the iron, thereby insuring a well balanced iron which may be used for long intervals without tiring the wrist of the operator.

The details of the terminal connections are illustrated in Figs. 1 and 7. The ends of the resistance ribbon 5 terminate at the rear or the heel of the iron as shown in Fig. 2. The ribbon is provided with extensions 24 which may be left integral with the resistance ribbon when the same is cut, or which may be separate strips brazed thereto. The end of each extension is reinforced by a metallic clip 25 bent over and clamped to the same as shown in Figs. 1 and 7. Said clip is screw-threaded and receives a screw-threaded extension 26 on the terminal pin 27, said screw-threaded extension passing loosely through the metallic eyelet 28, which clamps layers of mica 29 and 30 and metallic guides 31 to the casing 18, said eyelet passing through an opening in the casing 18, as clearly shown in Fig. 7. It will thus be seen that the terminals are carried by the casing and may be mounted thereon before said casing is assembled, the metallic extensions 24 being of sufficient length (seen in Fig. 1) to permit the casing to be held at a convenient distance from the base of the iron to enable the operator to screw the terminal extensions 26 into the reinforcements or nuts 25.

The form of iron illustrated in Fig. 5 is

similar to that previously described with respect to the base, the heating element, the asbestos pad, the terminals and the general outline and placing of the casing. Accordingly, the same reference characters have been used in describing parts which correspond to those previously described. In this latter form of iron, however, the handle is detachable, being arranged so that it may be locked to or released from the studs 32 which also secure the casing to the ballast. Said studs, as shown in Fig. 9, have an enlarged shoulder 33 which may be engaged by a wrench, and a smaller round shoulder 34, said shoulders being connected by a cylindrical portion 35 of reduced diameter. The upper extremity of said stud has the form of a rounded pin 36. The handle bracket 37, a bottom view of which is shown in Fig. 8, has two circular openings 38 adapted to fit loosely over the circular shoulders 34 on the studs. An elongated recess 39 extends from said opening 38 and is of sufficient width to receive loosely the reduced stem 35 of said stud. Accordingly, the handle bracket may be fitted down over the two studs and then slid longitudinally a short distance, whereupon said bracket is locked against vertical movement. In order to retain said handle in locked position and prevent accidental return movement thereof, a locking clip 40 of resilient metal is provided, which is secured to bracket 37 by a suitable rivet 41 and a smaller rivet or pin 42, the latter preventing turning. The locking clip has an elongated opening 43 and also a circular opening 44 elongated at one side, as shown partly in full and partly in dotted outline in Fig. 8. The shape of this latter opening in the clip is the same as the shape of the opening 38—39 in the bracket, but it is turned in the opposite direction. When the handle bracket 37 is fitted down over the studs, the locking clip is sprung upwardly, about as shown in Fig. 5. When said bracket is moved rearwardly, however, said clip snaps down with the shoulder 34 received within the opening 44, thereby locking the handle against forward movement, unless said clip is sprung upwardly by hand. As an aid in springing said clip, its extremity is supplied with wings or extensions 45. After said clip is lifted, the handle may be pushed forward and then lifted from said studs. This feature of the detachable handle is convenient where a portable iron is desired which may be packed away in a small space and carried about. For this reason also the iron shown in Fig. 5 is preferably somewhat lighter than that shown in Fig. 1, although, of course, a detachable handle or a permanent handle may be used in either case.

In both forms of iron described above, the heating element is maintained in such close, intimate thermal relation with the steel shoe that it cannot spring away therefrom and impair the thermal efficiency of the iron, even if the parts should be deformed somewhat, due to variations in heat. Furthermore, with the construction illustrated I am enabled to operate at high temperatures, if desired. The steel shoe is a better heat conductor than cast iron and accordingly, heat is conducted rapidly to the working surface when needed. In view of this feature, it is not necessary to provide a large, heavy cast iron plate to act as a heat reservoir. In fact, in the present instance, the ballast plate is intended merely to give the necessary weight to the iron and is insulated from the steel shoe by the asbestos pad, thereby preventing said ballast from becoming excessively hot and keeping the handle hot. With my improved construction, the entire upper part of the iron, as well as the handle, is relatively cool, the heat being conducted from the heating unit to the working surface where it is needed, and not to some other part of the iron where it is simply wasted.

It is to be understood, of course, that the above embodiments of the invention are selected by way of illustration and that various other forms may be devised and various changes made in the two devices illustrated without departing from the spirit of the invention as expressed in the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. In an electric iron, a bottom plate, a sheet metal retainer welded to the upper surface of said plate and conforming to the outline thereof, the outer margins of said retainer being bent inwardly to form clips, additional clips struck up from intermediate parts of said retainer and bent outwardly and a resistance secured to said retainer by said clips.

2. In an electric iron, a steel shoe, a sheet metal retainer of substantially the same outline as said shoe, said retainer being welded to the upper surface of said shoe, a plurality of inwardly bent clips around the outer periphery of said retainer, a plurality of outwardly bent clips struck up from an intermediate part of said retainer, a resistance which substantially covers said retainer, means for insulating said resistance from said retainer, and a metallic plate covering said resistance but insulated therefrom and clamped to said retainer by said clips.

3. An electric iron comprising a bottom plate forming a shoe, a resistor, a ballast plate, a heat insulating pad between said plates, a single securing means for clamping

said plates and pad together, said resistor and said bottom plate being integrally united and therefore held in intimate thermal contact with each other independently
5 of said securing means.

4. An electric iron comprising a weldable bottom plate forming a shoe, a resistor welded to said bottom plate, a ballast plate, a heat insulating pad between said plates, and
10 a single independent securing means for

clamping said ballast plate to said pad and bottom plate.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM S. HADAWAY, JR.

Witnesses:

GEORGE J. MALLON,

W. W. MILLER.