Sept. 30, 1930. H. KOCOUREK 1,776,947

ELECTRIC LAUNDRY IRON

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Fig. 1.

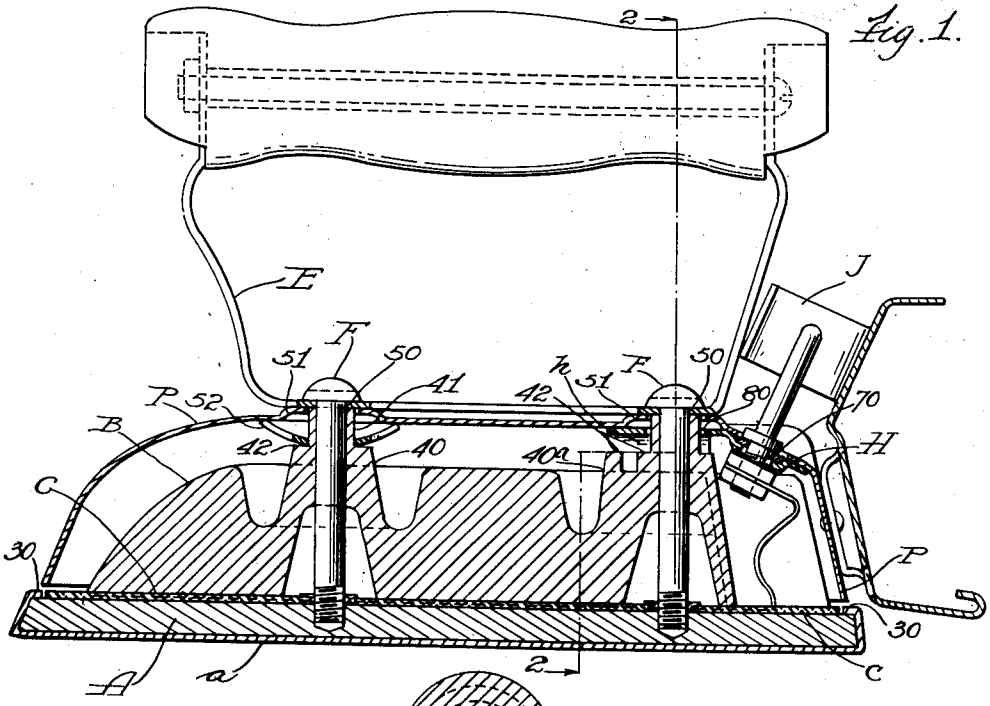
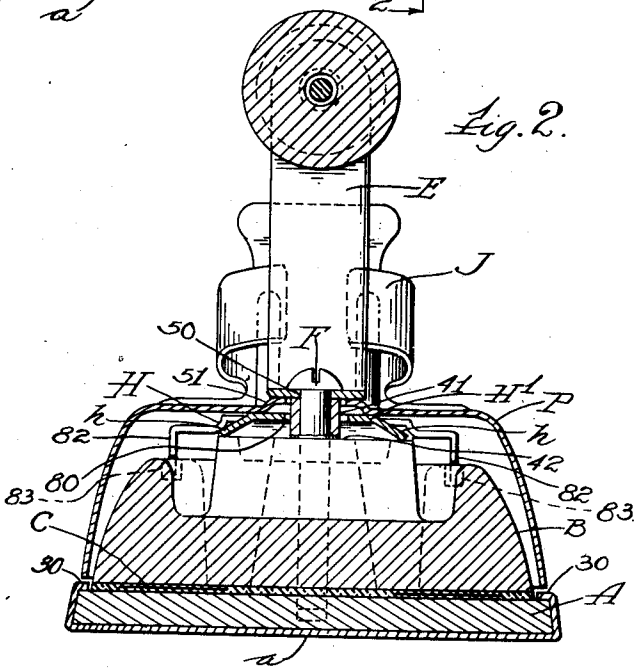


Fig. 2.



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Fig. 3.

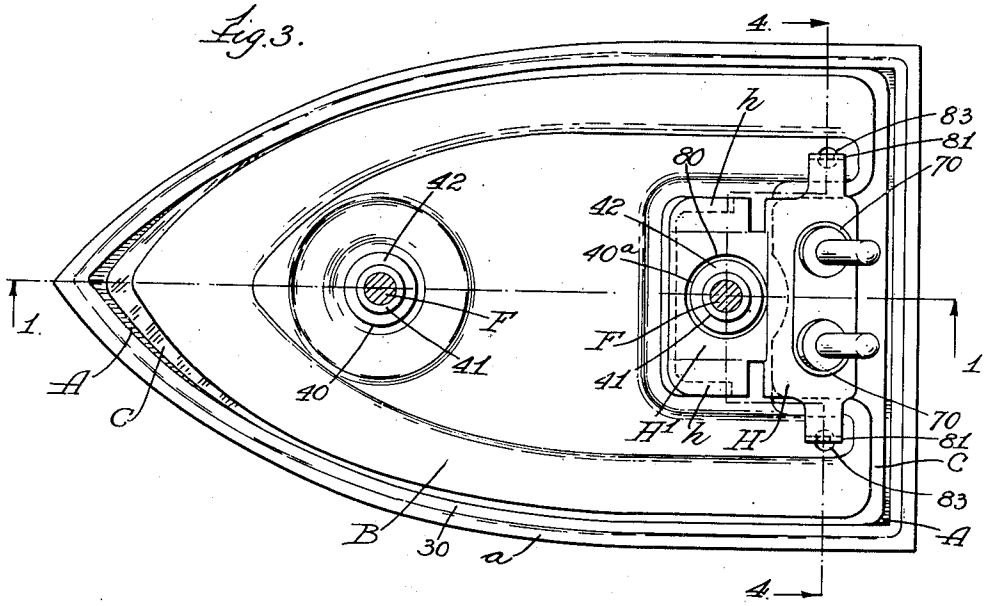
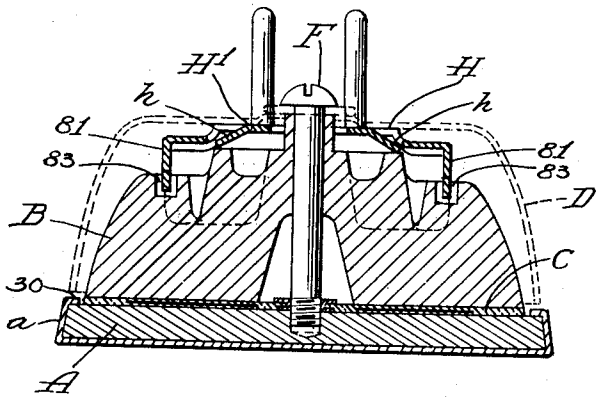


Fig. 4.



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Patented Sept. 30, 1930 1,776,947

UNITED STATES PATENT OFFICE

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ELECTRIC LAUNDRY IRON

Application filed January 21, 1929. Serial No. 333,783.

The purpose of this invention is to provide an improved construction of an electric laundry iron adapted to bind the heating element with limited pressure between the parts which are heated by it, said parts in the customary construction being a sole plate and a heat-storing body member; and also particularly adapting the structure to have an exteriorly enameled shell or enclosing member which shall not be liable to have the enamel chipped and cracked off by the stress from the adjacent part to which it is exposed in securing the parts together. It consists in the elements and features shown and described as indicated in the claims.

In the drawings:

Figure 1 is a longitudinal vertical section of a laundry iron constructed according to this invention, section being taken on the line 1—1 on Figure 3.

Figure 2 is a section at the line 2—2 on Figure 1.

Figure 3 is a top plan view with the shell and handle removed.

Figure 4 is a detail staggered section at the line 4—4 on Figure 3.

One purpose of the invention is to overcome a difficulty experienced in the production and assembly of these irons as heretofore constructed arising from the unavoidable variation in the castings creating liability of imperfectly clamping the heating element between the sole plate and the heat-storing body member which occurs when the cast iron body member happens to be slightly under the calculated thickness, which leaves room for the heating coil to buckle under changes of temperature as it is alternately energized and de-energized, with the result that it is very soon burned through and rendered inoperative.

Another purpose of the invention is to avoid the liability of chipping or cracking of the enamel outer plating or coating of the outer shell which encloses the ponderous body member or heat-storing element and the heating element, which, in the absence of preventing means, results from the positive clamping of the lower edge of the shell onto the sole plate whose margin it overhangs, and the similar hard unyielding stress of the bolt heads, or the binding member under the bolt heads on the upper enameled surface of the shell at the upper side. The liability to cracking enamel due to the first mentioned clamping is experienced at the lower marginal part of the shell from the hard stress of that edge covered with the enamel, on the hard sole plate, but the more serious liability to cracking enamel resulting from the positive clamping of the shell onto the sole plate arises from the tendency of this clamping to spring the shell which is a metal stamping, such springing being liable to crack the enamel at any point in the entire area, even in the absence of hard contact at the point at which the cracking is caused.

The construction as shown in the drawings is calculated to obviate the liability to enamel cracking from either cause. The cracking due to springing, and that due to hard contact of the enameled lower edge of the shell with the sole plate, is obviated by the expedient of suspending the shell on upholding bosses of the body member with the lower edge of the shell out of contact with the sole plate, thus avoiding both the springing which results from clamping it bodily onto the sole plate and the hard contact with the sole plate.

The chipping or cracking of the enamel at the area of hard engagement of the shell by the clamping bolts at its upper side, is avoided by effecting the securement of the shell for suspending it as mentioned, by interposing spring members under the upper side of the shell between the shell and the bosses by which it is thus suspendedly upheld.

Upon considering this construction it will be recognized that the same expedient which avoids clamping the shell positively between

the handle mount,—or any other upper binding member, and the body member, consisting in interposing spring elements between the upwardly facing abutments of the body member and the under side of the shell, serves also to cause the heating unit to be clamped in the same limited or yielding manner and in the same degree between the sole plate and the body member.

Incidentally, in applying this improvement to previous constructions in which the contact posts or pins secured to the opposite extremities of the wire coil of the heating element for engagement by the customary plug for connection with the current source, are insulatedly mounted and carried on a member which is secured for positioning the contact pins suitably in relation to the plug positioning socket, by being clamped between the shell and an upwardly facing abutment of the body member, the contact-pin-carrying member is utilized as the spring member interposed under the shell at the rear clamping bolt.

Referring to the drawings:—A is the sole plate. B is the main ponderous body member or heat-storing body. C is the heating unit consisting of mica sheets enclosing and affording insulating mounting for the heating coil of customary form and construction—not illustrated. P is the interiorly and exteriorly enameled shell enclosing the ponderous heat-storing body member and the heating unit above the sole plate. E is the handle mount which serves as the binding member being secured to the assemblage of previously mentioned parts for securing the handle thereto by the clamping bolts, F, F, which are inserted through bolt holes in said handle mount and extend through the body member, B, at upstanding bosses, 40, 40, thereof, and through the heating unit, for engaging the sole plate into which said bolts are screwed at tapped holes provided therein. As illustrated, the sole plate is of the type consisting of a casting sheathed in a metal stamping, *a*, which affords the working face of the iron and is permanently held to the casting by having its margin clinched over the margin of the casting, as seen at 30.

The heating unit is seated in the recess which is thus formed in the upper surface of the sole plate of the depth of the thickness of the sheet metal of which the stamped sheath, *a*, is made. This feature of the construction is not a part of the present invention, but is mentioned merely to identify the marginal protrusion of the sole plate beyond the heating unit and body member, with the clinched margin, 30, of the sheath member of the sole plate.

The body member, B, has two upwardly facing bosses, 40, 40ª, constituting abutments for upholding the shell, as above described, at the center of which the body member has apertures for the bolts, F, F. These bosses are each reduced at their upper ends as seen at 41, 41, for protruding through the apertures, 50, 50, formed in the shell at the center of upstruck bosses, 51, 51, on which is seated the handle mount, having apertures for the bolts, F, F, which are inserted through the handle mount and through the bolt holes in the body member to reach and be screwed into the sole plate.

At a suitably convenient distance below the upper ends of the bosses, 40, 40ª, they are formed with upwardly facing shoulders, 42, 42, and on these shoulders there are lodged the spring members mentioned. At the forward boss, 40, this spring member is a dished upwardly concave washer, 52, whose diameter is sufficient for seating its periphery upwardly against the lower side of the shell around the recess due to the upstruck boss, 51, and is dished to an extent for more than spanning vertically the distance between the shoulder, 42, and the under surface of the shell when the upper side of the boss, 51, is flush with the upper reduced end of the boss, 40.

In this manner the dished washer is compressed and reacts axially between the shell and the shoulder, 42, of the boss, when the bolt is screwed down so as to bind the handle mount positively against the upper reduced end, 41, of the boss which protrudes through the shell and thereby secure the handle positively to the body member, B, and the sole plate, A.

At the rear boss, 41, the contact-pin-carrying plate, H, which has the contact pins insulatedly secured to it as seen at 70, 70—indicating the insulation,—has a spring arm, H^1, extending forwardly and apertured, as seen at 80, for admitting the upper reduced end of the rear boss, 40ª, so that said spring arm overhangs the upwardly facing shoulder, 42, of said rear boss. And said spring arm has lateral extension, *h*, *h*, at opposite sides of the aperture, 80, said extensions being flexed downwardly for lodging their extremities on the surface of the shoulder, 42, while the central portion around the aperture, 80, is upheld a short distance from the shoulder and tends to uphold the shell so that the top of the boss, 51, is at a like short distance above the upper end of the reduced portion, 41, of said rear boss, 40ª; and the spring arm, H^1, then acts similarly to the dished spring washer, 52, for yieldingly upholding the shell by reacting resiliently between the shell and the shoulder, 42, of said rear boss, 40ª. The parts are dimensioned so that the shell thus upheld by said spring members and thus suspended on the shoulders of the bosses, 40, 40ª, is out of contact at the lower edge with the margin of the sole plate which that edge overhangs.

In order that the contact pin carrier, H,

when held as described by the engagement of the spring end, H^1, between the shell and the boss shoulder shall properly position the contact pins with respect to the plug guide socket, J, which is mounted in the customary manner and position on the shell, D, said contact-pin-carrier has at opposite sides downturned lugs, 81, 81, and the body member, B, has seats, 83, 83, for these lugs, formed by machining,—as by boring a short distance into the upper surface of said body member,—the depth of the bores being accurately gauged from the bottom face of the body member, so that the lugs, 81, being stepped in said seats cause the contact pins to be correctly positioned with respect to the plug socket when the rear bolt is screwed home, compressing the spring arm, H^1, for its designed reaction between the shell and the boss shoulder for cushioning the stress of the binding member,—the handle mount,—on the enameled upper surface of the shell.

I claim:

1. An electric laundry iron comprising in combination a sole plate, a heating element, a ponderous body member, a shell enclosing the heating element and the body member over the sole plate, the sole plate being dimensioned for protruding marginally slightly beyond the body member and the heating element; headed bolts extending through the shell, body member and heating element engaging the sole plate for holding all said parts together, the body member having upwardly facing abutments encompassing the bolt holes of the body, and protruding through the bolt holes of the shell and having within the shell shoulders for upholding the shell out of contact at its lower edge with the protruding margin of the sole plate.

2. The construction defined in claim 1 having spring elements interposed on the upwardly facing shoulders under the shell to afford resilient lodgement for the shell, whereby it is suspended resiliently with the bottom edge out of contact with the sole plate.

3. An electric laundry iron comprising in combination a sole plate, a heating element and a ponderous body member, a shell enclosing the body member and the heating element above the sole plate, the sole plate being dimensioned for protruding marginally slightly beyond the body member and the heating element, the shell being exteriorly enameled and having apertures for bolts, the body member having upwardly facing abutments protruding through said holes; bolts stopped above the shell on said protruding abutments and extending down through the shell, body member and heating element and engaging the sole plate for holding said parts together, spring elements interposed on said abutments under the shell to afford resilient lodgement of the shell on the body member, the parts being dimensioned for suspending the shell on said spring elements out of contact at its lower edge with the protruding margin of the sole plate; whereby the enameled surface of the shell is held in a yielding grasp between the bolt heads and said spring elements, and the enameled lower edge is saved from abrading contact with the sole plate.

4. An electric laundry iron comprising in combination a sole plate, a heating element, a ponderous body member, a shell enclosing the body member and heating element over the sole plate, the sole plate being dimensioned for protruding marginally slightly beyond the body member and heating element, a binding member lodged above the shell, the shell having bolt apertures and headed bolts extending through the binding member, shell, body member and heating elements engaging the sole plate for holding all said parts together, the body member having upwardly facing bosses which protrude through the bolt apertures of the shell and through which the bolt apertures of the body member extend, said bosses having upwardly facing abutments encompassing the bolt apertures of the body member and forming the supports of the shell, the shell being upheld on said abutments out of contact at its lower edge with the protruding margin of the sole plate.

5. An electric laundry iron comprising a sole plate heating element and heat storing body member, and a shell enclosing the heat storing member and the heating element; bolts extending through the shell and body member for engaging the sole plate to hold the parts together; circuit contact pins constituting terminals of the heating circuit of the element; a mount to which the contact pins are insulatedly secured, the body member having an upwardly facing abutment through which one of the bolts extends, said mount having a spring arm extending over said abutment in position to be clamped against the shell and the abutment by the bolt when the latter is screwed home for holding the parts together, the body member being machined to form step bearings for the contact pin mount at a substantial distance from the point at which the spring around the mount is clamped by the bolt, the mount being formed for being stepped on said step bearings, whereby it is positioned by support at these points for holding the contact pins positively positioned for their engagement by a plug for connection with the source of current.

6. The construction defined in claim 1 having spring elements interposed on the upwardly facing abutments under the shell to afford resilient lodgement for the shell, whereby it is suspended resiliently out of

contact of the bottom edge with the sole plate, contact pins for plug connection with a current source constituting terminals of the energizing circuit of the heating element, a mount by which the pins are insulatedly carried, said mount having a spring arm extending over one of the abutments in position to be clamped between the shell and the abutment by the bolts when the latter is screwed home, said spring arm serving at the resilient lodgement of the shell at the abutment.

In testimony whereof, I have hereunto set my hand at Chicago, Illinois, this 17th day of January, 1929.

HENRY KOCOUREK.