July 27, 1943. A. M. DICKIE 2,325,377

FLATIRON

Filed Aug. 21, 1940 2 Sheets-Sheet 1

Fig.1.

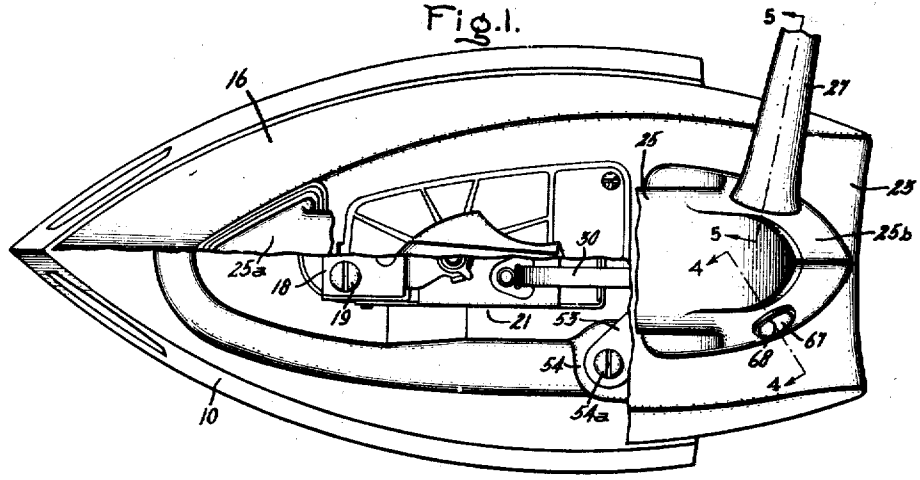


Fig.2.

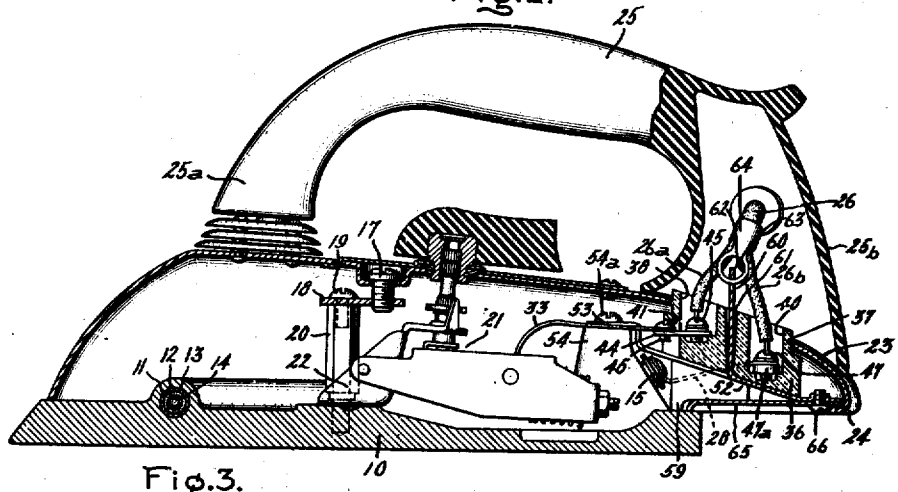
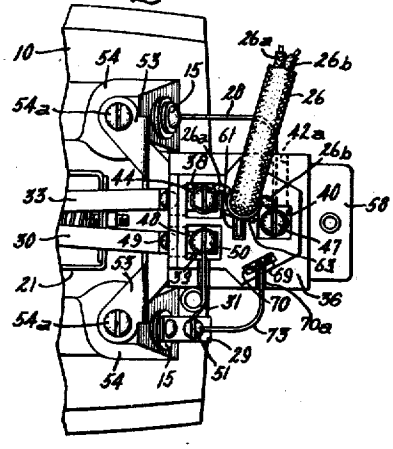


Fig.3.



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Fig.4.

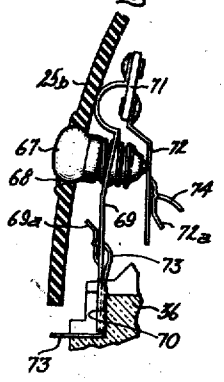


Fig.5.

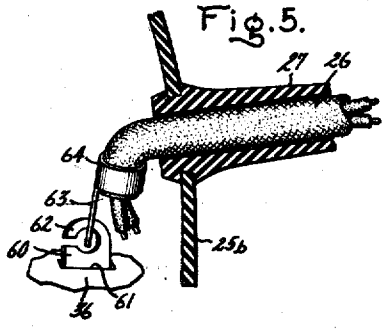


Fig.6.

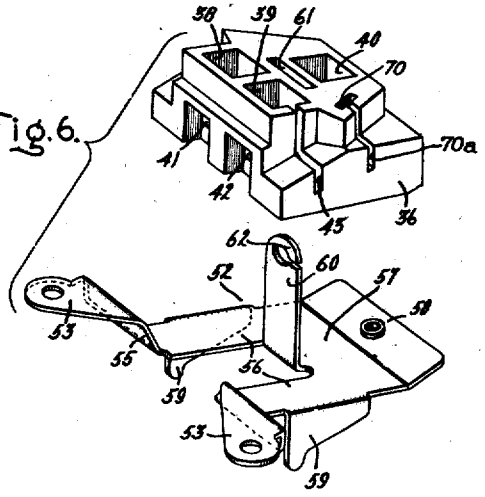
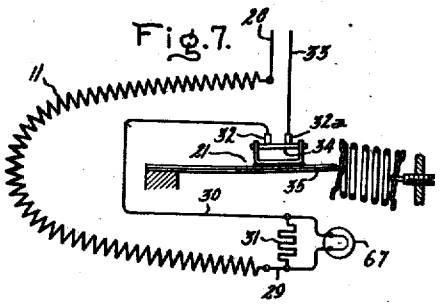


Fig.7.



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FLATIRON

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Application August 21, 1940, Serial No. 353,478

9 Claims. (Cl. 219—25)

This invention relates to flatirons, more particularly to electrically heated flatirons, and it has for its object the provision of improved terminal and heel rest structures in an iron of this character.

This invention is particularly applicable to flatirons having permanently attached electrical supply conductors, and it contemplates an improved terminal structure for effecting permanent electrical connections between the supply conductors and the terminals of the electrical heater of the flatiron which has a simple and inexpensive construction, and one which is mechanically strong and durable.

Moreover, this invention contemplates an improved heel rest construction wherein the heel rest is formed by extending the cover shell of the iron out beyond the rear of the flatiron sole plate. In other words, a single shell functions both as a cover for the sole plate and also as a heel rest. The improved construction provides simple and inexpensive means for closing the opening between the end of the shell and the end of the sole plate.

In accordance with this invention, a suitable electrically insulating terminal member is mounted in the shell, preferably in the heel rest section thereof. The upper wall of this section of the shell is provided with an aperture through which the upper part of the terminal member projects. The terminal member is provided with passageways opening through the top into which the supply conductors are led, and also with other passageways joining the first and into which leads from the heater terminals are directed. Members joining the leads and their respective conductors are housed within the passageways.

Preferably, the supply conductors will be led to the insulating member through the rear handle standard. This standard will be located over the opening in the shell through which the terminal member projects and it is hollow so that the conductors can pass through it to the terminal member.

The terminal member is mounted upon a suitable supporting bracket located within the shell. This bracket functions also as an anchor for the supply conductors.

Another function of this bracket is to support a suitable cover plate for the hollow heel rest extension. This plate is directed between the rear end of the shell and the rear end of the sole plate so as to completely cover the bottom of the extension of the shell forming the heel rest.

A suitable signal lamp is provided for the iron to indicate when it is energized. This lamp is mounted in a suitable supporting bracket which in turn is supported by the terminal member.

For a more complete understanding of this invention, reference should be had to the accompanying drawings in which Fig. 1 is a top plan view of an electrically heated flatiron embodying this invention, parts being broken away so as to illustrate certain details of construction; Fig. 2 is a vertical sectional view taken through the flatiron of Fig. 1; Fig. 3 is a fragmentary plan view of a portion of the flatiron of Figs. 1 and 2 with parts removed so as to illustrate certain details of construction; Figs. 4 and 5 are sectional views taken through the lines 4—4 and 5—5 of Fig. 1 and looking in the directions of the arrows associated with these lines; Fig. 6 is an enlarged expanded perspective view illustrating certain elements of the iron of Figs. 1–5; and Fig. 7 is a diagrammatic representation of the heating element of the iron and certain control means therefor, and also showing an indicating lamp connected in the iron circuit.

Referring to the drawings, this invention has been shown in one form as applied to an electrically heated flatiron comprising a sole plate 10. The sole plate 10 is heated by an electrical heating element 11 which as shown is embedded in the sole plate, and which preferably will be of the sheathed type, such as described in the United States patent to C. C. Abbott No. 1,367,341, dated February 1, 1921. Briefly, this heating element comprises a helical resistance conductor 12 mounted in a metallic sheath 13, and embedded in and supported in spaced relation with reference to the sheath by a compacted mass 14 of heat conducting, electrically insulating material, such as magnesium oxide. The heating element is of substantially U-shape and is provided at its ends with terminals 15.

The sole plate 10 is provided with a cover shell 16, which as shown at the point and sides rests upon the edges of the sole plate, and which is secured to the sole plate by means of a screw 17 which secures the shell directly to a transverse plate 18. The transverse plate 18 is secured to the sole plate by means of a pair of screw members 19 directed through apertures provided for them in the plate and received in threaded engagement in a pair of studs 20, as

shown. The studs 20 in turn are screwed into the sole plate.

The studs 20 also are used to secure a suitable heat responsive control device 21 to the sole plate. This control device may be of any suitable construction, but I prefer to use a control device such as described and claimed in the United States patent to W. J. Ettinger et al. No. 2,061,419, dated November 17, 1936. The base 22 of the thermostat is secured to the sole plate by the studs 20 which are directed through apertures provided for them in the base.

The shell 16 extends outwardly beyond the rear end of the sole plate so as to form a heel rest section 23. The heel rest section 23 terminates in a rolled-in or curved edge 24 which functions to support the iron when it is turned upright from its ironing position.

Mounted upon the shell is a suitable handle 25 which will be formed of any suitable material, but preferably will be made of a molded phenol condensation product. The handle is provided with a forward standard 25a which is secured to the shell at the front, and with a rear standard 25b secured to the shell at the rear, preferably to that portion of the shell which constitutes the heel rest.

The rear standard 25b is hollow, as clearly shown in Fig. 2, and into this hollow standard is introduced a twin supply conductor 26 having a pair of conducting members 26a and 26b. The conductor 26 where it enters the handle is provided with a reenforcing member 27 anchored in any suitable manner to the handle.

The conducting members 26a and 26b of the supply conductor are electrically connected with the terminals 15 of the heating unit through the temperature control device 21 in the following manner. The conductor 26b is connected to a lead 28 that is electrically connected with one terminal 15 of the heating element. From this lead the circuit may be traced through the heating element 11 to a lead 29 connected with the opposite terminal of the heating element. The lead 29 is electrically connected with a lead 30 through a suitable resistance element 31. The lead 30 is connected with a contact 32 (Fig. 7) of the control device 21, while the opposite contact 32a of this control device is connected to a lead 33. The contacts 32 and 32a are arranged to be bridged by the contact 34 which is controlled by the temperature responsive element 35 of the control device 21 in the manner fully described in the abovementioned Ettinger et al. patent to control the energization of the heating element 11 so as to hold a substantially constant preselected temperature in the sole plate. The supply conductor 26a is adapted to be connected to the lead 33. Suitable electrical connection means are interposed between the respective supply conductors 26a and 26b and their leads 33 and 28, and these members are housed in a suitable electrically insulating member or block 36 which is formed of any suitable mechanically strong electrically insulating material, such as porcelain. The block 36 is mounted in the shell 16, preferably so that the major portion of the block lies within the heel rest section of the shell, as clearly shown in Fig. 2. The block 36, as shown, projects upwardly through an aperture 37 provided for it in this section of the shell. The block 36 is provided with three large vertically arranged passageways 38, 39 and 40, with a pair of lateral passageways 41 and 42 communicating with the vertical passageways 38 and 39 respectively, with a similar passageway 42a (Fig. 3) communicating with the vertical passageway 40 and also with a lateral passageway 43 which also communicates with the vertical passageway 39.

The conductor 26a is directed down into the passageway 38, and it is connected with its lead 33 by means of a connection member 44 which lies within the bottom of the passageway 38 and which projects out into the lateral passageway 41, as clearly shown in Figs. 2 and 3. The conductor 26a is electrically connected with the inner end of the connector member 44 by means of a screw 45, and the lead 33, which is directed into the lateral passageway 41, is electrically connected with the outer end of the connector member 44 by means of a screw 46. The other supply conductor 26b is directed down into the vertical passageway 40, and it is electrically connected to the lead 28 by a screw 47 which is provided with a nut 47a that clamps the conductor to the lead, as clearly shown in Fig. 2. The lead 28 is directed to the lower end of the passageway 40 through the lateral passageway 42a. The lead 30 is electrically connected with the resistance element 31 by means of a connector member 48 similar to the connector member 44, which is inserted through the lateral opening 42 so that its inner end lies in the bottom of the vertical passageway 39. As shown, the lead 30 is connected to the outer end of this member by means of a screw 49. The resistance member 31 extends through the lateral opening 43 into the passageway 39 where it is connected to the plate 48 by a screw 50. As shown, the other end of the resistor 31 is connected to the lead 29 by means of a screw 51.

The electrically insulating terminal member 36 is mounted upon a supporting bracket 52. The bracket 52 has in general a U shape. The legs of the U terminate in feet 53 which are arranged to be clamped rigidly to the sole plate 10. As shown, these feet 53 are connected by means of screws 54a to upright bosses 54 provided on the sole plate. At the rear of the bosses the legs are provided with downwardly inclined sections 55 which merge into downwardly inclined sections 56, the latter sections, however, having a much smaller slope than have the sections 55. The sections 56 in turn are connected to a nexus 57 which at its extreme end flattens out into a section 58 which is substantially horizontal when the iron is horizontal. At the sides the bracket is provided with downwardly extending tabs or feet 59 which engage the upper surface of the sole plate, as shown in Fig. 2, so as to stabilize the bracket.

The nexus 57 is provided with an upright finger 60 which is located between the legs 52 and which passes upwardly through a closely fitting slot 61 provided for it in the insulator 36. In other words, the insulator 36 rests upon the inclined sections 56 and the inclined part of the nexus 57 and is prevented from moving laterally with reference to the bracket by the tongue 60 which is directed upwardly through the slot 61.

The bracket 52 in addition to functioning as a support for the insulator 36 also functions as an anchor for the twin supply conductor 26. As shown, the upper end of the tongue 60 is provided with a hook 62. This hook 62 functions to fasten an eyelet 63 which is rigidly secured to the twin supply conductor in any suitable manner as by means of a clamp 64 that grips the insulating covering of the conductor

Furthermore, the bracket 52 functions to support a closure plate 65 which closes the space between the rear edges of the shell 16 and of the sole plate 10. As shown, the cover plate at its forward end rests upon the upper surface of the sole plate and at its rear end is secured to the flat part 58 of the nexus 57 by a screw 66. It is to be understood that the plate 65 extends transversely across the iron so as to completely cover the opening between the rear edges of the sole plate and shell. Also it will be understood that the downwardly extending sections 59 on the bracket engage the upper surface of the closure plate to hold it down against the sole plate. The rear edges of the closure plate 65 and of the part 58 of the bracket are received in the curved-in section 24 of the shell, the plate 65 resting upon the upper surface of this curved section.

A suitable indicating lamp 67 is mounted in the handle standard 25b in an opening 68 provided for it in the wall of this standard, as shown in Figs. 1 and 4. The lamp is mounted in a lamp bracket 69 which has a screw threaded connection with the lamp and which is supported in an upright position in the hollow standard by means of the terminal block 36. For this purpose, the terminal block is provided with a vertical slot 70 into which the lower end of the bracket is slid, as clearly shown in Fig. 4. The upper end of the lamp bracket carries an insulating member 71 and this in turn supports a lamp contact 72. The bracket 69 and the contact 72 are provided with spring clamps 69a and 72a respectively which secure electrical supply leads 73 and 74 for the terminals of the lamp. The supply lead 74 is electrically connected to one side of the resistance element 31 by means of the screw 50. The other lead 73 is electrically connected with the other end of the resistance 31 by means of the screw 51 which connects the resistance to the lead 29. As shown, the lead 73 is brought around the edge of the bracket from the front where it is clamped by the spring 69a to the rear side of the bracket where it is directed downwardly into the slot 70. The lower end of this bracket is curved around the lead as shown in Fig. 3. The lead then is directed forwardly under the lower edge of the bracket and is brought out laterally through an opening 70a communicating with the vertical opening 70. The construction obviates the possibility of the lead touching the shell 16.

It will be observed that the lamp 68 is supplied with a voltage equalling the voltage drop across the resistance 31. It will also be observed by reference to Fig. 7 that when the switch contacts 32 and 32a are closed to energize the iron heater 11, the lamp 67 will be energized, whereas when these contacts are open to deenergize the heater 11, the lamp will be turned off. In this way, the lamp functions as a signal to indicate when the iron is energized.

This invention provides a relatively simple, inexpensive and strong permanent terminal connection means between the conductors of the twin supply conductor and the terminals of the heater. These electrical connections are established in an electrically insulating block 36 which has considerable mechanical strength. This insulating block is mounted upon a rigid supporting bracket 52 which is secured in the iron by means of a pair of screws 54a. This bracket not only functions to support the insulator block 36 but it also anchors the supply conductor 26 by means of the hook 62. It also supports the indicating lamp 67, its bracket 69 and the electrical connections leading to the lamp.

In addition, the bracket functions to hold the closure plate 65 down against the sole plate, and it secures the outer end of this closure plate through the medium of a simple screw fastening device—the screw 66.

While I have shown a particular embodiment of my invention, it will be understood, of course, that I do not wish to be limited thereto since many modifications may be made, and I, therefore, contemplate by the appended claims to cover any such modifications as fall within the true spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. An electrically heated flatiron comprising a sole plate, an electric heating element for said sole plate, a shell covering said sole plate, a hollow heel rest for said iron extending rearwardly from the rear edge of said sole plate, said heel rest being open at the bottom and also opening into the rear of said shell, an electrically insulated terminal block within said hollow heel rest, a supporting bracket having a first portion secured to said sole plate and a second portion extending rearwardly into said hollow heel rest, means securing said insulating block to said second portion so as to hold the block in its upright position in said heel rest, said insulating block also having passageways therethrough, electrical supply conductors for said heating element entering said passageways and electrical leads connected to said heating element also entering said passageways, means within said passageways electrically connecting said electrical leads and conductors together, a cover plate closing said hollow heel rest at the bottom, and means securing said cover plate to said second portion of said bracket.

2. In an electrically heated flatiron having a sole plate, an electrical heating element for said sole plate having terminals, electrical supply leads electrically connected to said terminals and electrical supply conductors for said leads, an electrically insulating block having passageways into which corresponding pairs of said leads and conductors are directed, means in said passageways electrically connecting said corresponding pairs together, a bracket secured to said sole plate upon which said insulating block is mounted, said bracket having an upright finger and said block having a slot receiving said finger so as to hold said block in position on said bracket, and means anchoring said supply conductors to said finger.

3. In an electrically heated flatiron having a sole plate, an electrical heating element for said sole plate having terminals, electrical supply leads attached to said terminals and electrical supply conductors for said leads, a shell for said sole plate, a handle attached to said shell having a hollow section and said shell having an aperture opening into said hollow section, said supply conductors entering said hollow section through an aperture provided for it in said handle, an electrically insulating block in said shell having passageways opening into said shell and up through said aperture in said shell into said hollow section, said leads and conductors entering said passageways and connections in said passageways between said lead and conductors, a bracket in said shell secured to said sole plate supporting said insulating block and having a finger extending upwardly into said hollow section and received in a slot provided for it in said block, a hook on the upper end of said finger and

an eyelet in said hollow section attached to said supply conductors and fastened to said hook so as to anchor said supply conductors to said bracket.

4. In an electrically heated flatiron having a sole plate, an electrical heating element for said sole plate having terminals, electrical supply leads attached to said terminals and electrical supply conductors for said leads, an electrically insulating block having passageways into which corresponding pairs of said leads and conductors are directed, means in said passageways mechanically and electrically connecting said corresponding pairs together, a U-shaped bracket supporting said insulating block, means securing the extremities of the legs of said bracket to said sole plate, and the nexus of said bracket having a finger extending upwardly and received in a closely fitting slot provided for it in said block.

5. In an electrically heated flatiron having a sole plate, an electrical heating element for said sole plate having terminals, electrical supply leads attached to said terminals and electrical supply conductors for said leads, a shell for said sole plate having an opening in its upper wall through which said supply conductors enter the shell, an electrically insulating block having passageways for receiving said conductors respectively, and also having passageways for receiving said leads respectively, means in the respective passageways for connecting the leads and conductors received therein together, an indicating lamp for said iron, a supporting bracket for said lamp, said insulating block being provided with a slot for receiving and supporting said lamp bracket and also with a passageway to said slot for leading an electrical supply lead to said lamp.

6. In a flatiron having a sole plate, a one-piece shell covering said sole plate and having a hollow open-bottomed rearward extension defining a heel rest, the rear end of said shell at the rear of said rest being folded inwardly, a bracket in said shell having a portion resting on and secured to said sole plate and a rearwardly tending portion inclined downwardly into said heel rest so that its rear edge is directly above said folded edge of said shell, a cover plate closing the opening between said rear edge and the rear of said sole plate having one end resting on said sole and its other end extending between said bracket and said folded edge so that said folded edge supports said other end and also said rear edge of said portion of said bracket, means connecting said other end to said bracket, and said bracket having parts extending downwardly from said rearwardly extending portion to engage said one end so as to hold it against said sole plate.

7. In an electrically heated flatiron having a sole plate, an electrical heating element for said sole plate having terminals, electrical supply leads attached to said terminals and electrical supply conductors for said leads, a shell for said sole plate having a section extending rearwardly from said sole plate so as to form an open-bottomed hollow heel rest, the upper wall of said section being provided with an opening, a handle for said shell having a hollow rear standard positioned so that said opening opens into said rear standard, said supply conductors extending through said hollow rear standard and down into said heel rest through said opening, a U-shaped bracket in the rear of said shell having the ends of its legs attached to said sole plate and extending to the rear edge of said shell where the nexus of said bracket is located, said nexus being provided with an upright finger extending upwardly through said aperture, an electrically insulating block mounted on said bracket having a slot receiving and closely fitting said finger, and also provided with passageways receiving said conductors and leads, means in said passageways connecting said conductors and leads, and a closure plate for the open bottom of said heel rest attached to said nexus.

8. In an electrically heated flatiron having a sole plate, an electrical heating element for said sole plate having terminals, electrical supply leads attached to said terminals and electrical supply conductors for said leads, a shell for said sole plate having a section extending rearwardly from said sole plate so as to form an open-bottomed hollow heel rest, the upper wall of said section being provided with an opening, a handle for said shell having a hollow rear standard positioned so that said opening opens into said rear standard, said supply conductors extending through said hollow rear standard and down into said heel rest through said opening, a U-shaped bracket in the rear of said shell having the ends of its legs attached to said sole plate and extending to the rear edge of said shell where the nexus of said bracket is located, said nexus being provided with an upright finger extending upwardly through said aperture, an electrically insulating block mounted on said bracket having a slot receiving and closely fitting said finger, and also provided with passageways receiving said conductors and leads, means in said passageways connecting said conductors and leads, a closure plate for the open bottom of said heel rest attached to said nexus, a hook on the upper end of said finger, and an eyelet in said hollow standard attached to said supply conductors and fastened to said hook.

9. In an electrically heated flatiron having a sole plate, an electrical heating element for said sole plate having terminals, electrical supply leads electrically connected to said terminals and electrical supply conductors for said leads, a shell for said sole plate, a handle attached to said shell having a hollow section and said shell having an aperture opening into said hollow section, said supply conductors entering said hollow section through an aperture provided for it in said handle, an electrically insulating block in said shell having passageways opening into said shell and up through said aperture in said shell into said hollow section, said leads and conductors entering said passageways and connections in said passageways between said lead and conductors, a bracket in said shell secured to said sole plate supporting said insulating block and having a finger extending upwardly into said hollow section and received in a slot provided for it in said block, and means securing said supply conductors to said finger so as to anchor them thereto.

ALEXANDER M. DICKIE.

CERTIFICATE OF CORRECTION.

Patent No. 2,325,377. July 27, 1943.

ALEXANDER M. DICKIE.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, second column, line 75, after the word "conductor" insert a period: page 4, first column, line 43, claim 6, for "tending" read --extending--; line 48, after "sole" insert --plate--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 14th day of September, A. D. 1943.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.