G. J. SCHNEIDER.

ELECTRICALLY HEATED INSTRUMENT.

APPLICATION FILED DEC. 11, 1909.

1,103,690.

Patented July 14, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

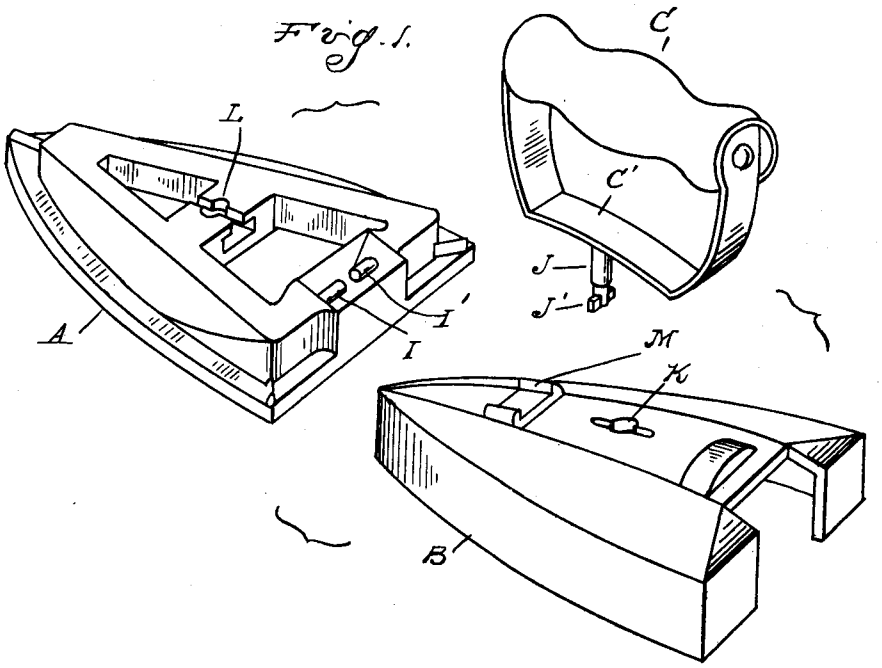
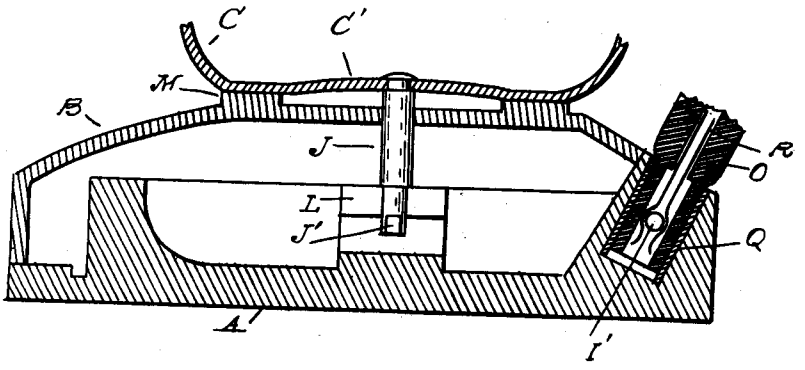



Fig. 2.




Witnesses

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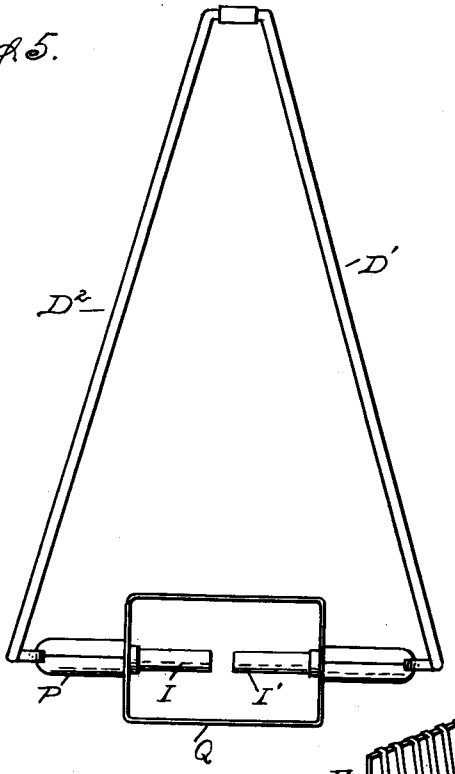
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2 SHEETS—SHEET 2.

Fig. 5.



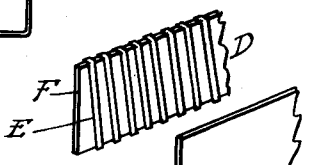




Fig. 3.

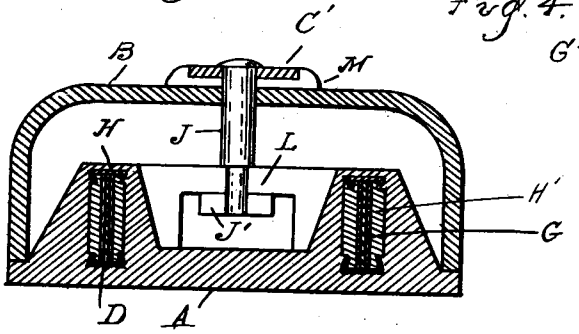
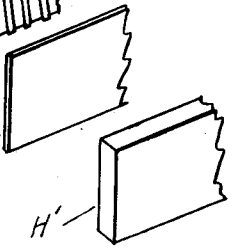



Fig. 4.




Witnesses

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# UNITED STATES PATENT OFFICE.

GEORGE J. SCHNEIDER, OF DETROIT, MICHIGAN, ASSIGNOR TO ACME ELECTRIC HEATER COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

## ELECTRICALLY-HEATED INSTRUMENT.

1,103,690. Specification of Letters Patent. Patented July 14, 1914.

Application filed December 11, 1909. Serial No. 532,646.

*To all whom it may concern:*

Be it known that I, GEORGE J. SCHNEIDER, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Electrically-Heated Instruments, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to electrically-heated instruments, and is more particularly designed for use in connection with electrically-heated sad irons.

It is the object of the invention to simplify the construction, to reduce the cost of manufacture, and to obtain increased durability of the heating element, and the invention consists in various features of construction as hereinafter set forth.

In the drawings—Figure 1 is a perspective view of the sections composing the iron detached; Fig. 2 is a longitudinal section through the iron; Fig. 3 is a cross section thereof; Fig. 4 is a perspective view of a portion of the heating unit and its armor; Fig. 5 is a plan view of the unit before embedded in the cast base.

In the present state of the art, electrically-heated sad irons are usually provided with a base or polishing section, an electrically-heated element secured in heating proximity to said base, a hood section for inclosing this element, and an operating handle attached to the hood. In addition to these parts, there are the electrical connections which usually pass through apertures in the hood, and are connected to the terminals of the heating element. The hood and base sections are generally secured to each other by screws, which must be removed to detach the parts for repair or replacement of the heating element, and, as the screw-threads are often corroded by reason of the heat, this detachment is performed with difficulty.

One of the features of the present invention is the means employed for securing the base, hood and handle sections to each other without the use of screws, and so that they may be instantaneously detached without the use of tools.

Another feature of the invention is the construction of heating unit, and a third feature is the means employed for detachably coupling the electrical connections with the terminals of the element.

As illustrated, A is the base section, B the hood, and C the handle section. The base section consists of a flat plate, to which the electrical heating element is attached preferably in the following manner: D is the element which is preferably composed of a flattened conductor E embracing an insulating core F, and, as shown, wound spirally thereabout. This core and conductor are then surrounded by an armored insulation preferably consisting of a metallic strip G embracing the conductor and core, but insulated therefrom preferably by enameling the inner face of said strip. The core, conductor and insulated armor are pressed into firm contact with each other and the joint in the armor is protected preferably by a cap H covering the same. The whole is then placed in heat conducting contact with the base preferably in a rib integral with the base in which the element is embedded. This may be accomplished either by casting the metal about the element as illustrated in Fig. 3, or by securing it therein in any suitable manner. The element preferably extends around the marginal portion of the base and may be formed in several sections, two sections D′ and D² being preferably arranged upon opposite sides converging toward the point. At the rear end are terminals I, I′ preferably constructed as will be hereinafter described.

The hood section B is adapted to fit over the base upon which it has suitable bearings. The two parts are then attached to each other by a key J, which is preferably formed as the shank of the handle C, and is insertible through an aperture K in the hood. Beneath the hood, and in registration with said aperture K, is a keeper L preferably formed by flanges integral with the base, and slightly spaced from each other. The space between said flanges will admit the key, which has a T-shaped head J′, and by then giving the key a quarter turn said head will lock beneath said flanges and will be held from disengagement. The shank J is riveted or otherwise secured to the metallic strip C′, forming the lower portion of the handle. The arrangement is such that when the handle is at right angles to its normal

position, the head of the key is insertible through the aperture K and into engagement with the keeper, and by then giving the handle a quarter turn, or into position for operation, the sections will be locked. The handle is retained in this position by the engagement of the strip C′ with the keeper M in the hood, which is just sufficient to hold the handle in position, but will permit the turning thereof upon the application of sufficient force.

The terminal connections R pass through an insulator block O in the hood and engage with the terminal contacts I I′. The insulator O may be either permanently attached to the hood or preferably—as shown—it is in the form of a plug insertible through an aperture in the hood. Thus at any time the contact may be broken by merely withdrawing the plug.

With the parts as described, in operation the heat generated in the resistance is directly conducted into the base, and can escape through the hood only by radiation. Thus where the parts are properly proportioned, the iron, when in use, will conduct most of the heat into the work, but, when standing idle, with the current on, the radiation through the hood will prevent overheating. Should it be necessary at any time to replace the element, it is merely necessary to give the handle a quarter turn, after which the sections may be separated, and a new base and element replaced. To stop the heating, the operator may—if desired—withdraw the insulator plug O, which will break connection with the contact I.

To facilitate the construction of the heating element, and the embedding of the same in the base, and also to form a firm anchorage for the terminals and the attachment plug, I preferably employ the following construction: The armored resistance is in the form of a triangular member, having the resistance conductor in the opposite side portions D′ and D² thereof, and the terminals arranged in the rear portion. These terminals—as has been described—are insulated from the armor, but are supported therefrom, and they are preferably arranged in a casing also mounted on the armor and constituting a socket for the attachment plug. As illustrated, the terminals I I′ are arranged in alinement with each other, and are supported in sheet metal sockets P, which are formed integral with a box-like casing Q formed of sheet metal. This casing, with its sockets, is secured to the sheet metal armor, so as to be rigid therewith, and then the whole structure is cast into the base A. After this operation, the box Q will be surrounded with iron, and will form a recess therein for receiving the attachment plug O, while the terminals I I′ will project from opposite sides into this recess. The attachment plug O is provided with suitable contacts, such as R, which are located within recesses in the plug and are adapted to engage with the contacts I I′ when the plug is inserted in the socket Q.

For embedding the armored resistance in the base, I preferably provide metallic strips H′ upon opposite sides of the sheet metal frame, which act as chills, preventing the overheating of the insulation, which is between the armor and the resistance. These chills, which are preferably bars of steel, will be in good heat conducting connection with the metal of the body, and by the solidification of the latter therearound they also perform the function of holding the metallic armor from warping during the contraction of the metal in solidifying.

What I claim as my invention is:

1. In an electrically-heated instrument, a member having a heating element secured thereto, a hood member surrounding said element, a handle, and means for locking said hood and element section by movement of the handle.

2. In an electrically-heated instrument, the combination with a section having a heating element secured thereto, of a hood section surrounding said element, a handle, and means for locking said sections to each other by rotation of said handle.

3. In an electrically-heated instrument, the combination with a section having a heating element secured thereto, a hood section, a handle, a shank on said handle insertible through an aperture in said hood, and a keeper on said element section with which said shank may be engaged.

4. In an electrically-heated instrument, a member having a heating element, a hood for covering said member detachable therefrom, a handle detachable from the hood, and a key for attaching the handle, hood and said member together.

5. In an electrical heater, the combination with a heat distributing body, of a resistor, terminal contacts for said resistor fixedly positioned in relation to said heat distributing body, a hood for covering said heat distributing body apertured in registration with said terminal contacts, and a connector insertible through said aperture into engagement with said contacts.

6. In an electrically-heated instrument, the combination with a section having a resistance conductor mounted thereon, separated terminals for said resistance wholly arranged within the outlines of said section, a hood for surrounding said resistance, and terminal contacts extending through said hood into detachable engagement with said terminal contacts.

7. In an electrically-heated instrument, the combination with a heat distributing member, of a heating resistance secured to

and in heat-conducting contact with said member, terminals directly engaging said heating resistance and wholly arranged within the outlines of said heat-distributing member, said terminals being rigidly positioned by the heat-distributing member, and a contact member detachably engaging said terminals.

8. In an electrically-heated instrument, the combination with a heating resistance, of a heat-distributing member secured in heat-conducting contact with said resistance, terminal contacts for said resistance rigidly positioned by the heat-conducting member and wholly arranged within the boundaries of the heat-distributing member, a hood inclosing said resistance and terminal contacts, and a contact member insertible through an aperture in the hood into engagement with the terminal contacts.

9. In an electrically-heated instrument, the combination with a heating resistance, of a heat-distributing member secured in heat-conducting contact with said resistance, terminal contacts for said heating resistance rigidly positioned by said heat-conducting member and wholly arranged within the outlines of the latter, a hood inclosing said resistance and terminal contacts, a flexible conductor, and a terminal contact plug therefor insertible through an aperture in said hood into engagement with said terminal contacts.

10. In an electrically-heated instrument, a heat-distributing base section, a heating element thereon, a socket formed in the base section within the outer edge thereof, said socket being closed at the bottom and opening upwardly, terminal contacts projecting into said socket, a hood for said base section apertured in alinement with the socket, and an attachment plug insertible through said aperture and into engagement with the socket and the terminal contacts therein.

11. In an electrical heater, a heat distributing body having a work surface, a resistor having separated portions thereof arranged in planes transverse to that of said work surface, the opposite sides of each portion being in heat conducting contact with said heat distributing body, and terminal contacts projecting oppositely from said spaced portions of said resistor and projecting into a recess in said heat distributing body.

12. In an electrically heated instrument, the combination of an insulated heating resistance, an armor therefor, a chill plate adjacent to said armor, and a heat conducting body cast about said chill plate, armor and resistance.

13. In an electrically heated instrument, the combination of an insulated heating resistance, an armor therefor, chill plate upon opposite sides and embracing said armor, and a heat conducting body cast about said chill plates and armor and resistance.

14. In an electrically heated instrument, the combination of an insulated heating resistance, an armor therefor, comprising a chill plate protecting said resistance, and a heated conducting body cast about said resistance and armor.

15. In an electrically heated instrument, the combination with a flat insulated heating resistance, of an armor for said resistance, chill plates on opposite sides of said armor, and a heat conducting body cast about said chill plates, for the purpose described.

16. In an electrical heater, the combination with a heat distributing body having a work surface, of a heating element comprising an armored insulated resistor with flat angling portions in planes transverse to said work surface, and embraced by portions of said heat distributing body, and terminal contacts projecting oppositely from the divergent ends of said portions of the resistor fixedly secured to said body and projecting into a recess therein.

17. In an electrical heater, the combination with a heat distributing body having a work surface, of an insulated armored resistor having separated portions, terminal contacts projecting oppositely from said separated portions, and a mechanical tie between said terminal contacts insulated therefrom and recessed to form a socket for receiving the connector.

18. In an electrical heater, an insulated armored resistor of return bent form having its ends spaced from each other, terminal contacts projecting from said spaced ends in alinement, means for holding said terminal contacts in rigid relation to each other, and a connector laterally engageable with said contacts.

19. In an electrical heater, the combination with a heat distributing body, of a resistor embraced by said body having return bent portions, terminal contacts projecting oppositely from said return bent portions in alinement with each other, a mechanical tie between said terminal contacts insulated therefrom and recessed about the free ends of said contacts, and a connector insertible into said recess and laterally engageable with said contacts.

20. In an electrical heater, an armored resistor having return bent portions, terminal contacts projecting oppositely from the ends of said return bent portions in alinement with each other, and a mechanical tie between said terminal contacts comprising socket portions embracing said contacts and insulated therefrom and a bifurcated central portion forming a recess about the ends of said contacts for receiving the connector.

21. An electrically heated sad iron, com-

prising a body having a work surface on its under side, a resistor having flat divergent portions arranged in planes transverse to that of the work surface and extending from the point of the iron toward the back thereof, terminal contacts projecting oppositely from the rear ends of said resistor in alinement with each other, and a connector laterally engageable with said contacts.

22. An electrically heated sad iron, comprising a body having a work surface on its under side, a resistor having flat divergent portions arranged in planes transverse to the work surface, each portion being embraced on both sides by said body in heat conducting contact therewith, terminal contacts projecting oppositely from the divergent ends of said resistor portions and projecting into a recess in said body, and a connector insertible into said recess into engagement with said terminals.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE J. SCHNEIDER.

Witnesses:

NELLIE KINSELLA,

WESTLEY W. CARNOVSKY.