March 29, 1932. B. J. SALMON 1,851,685

HEATING AND SUPPORTING MEANS FOR ELECTRIC IRONS

Filed June 7, 1929 2 Sheets-Sheet 1

Fig. 1.

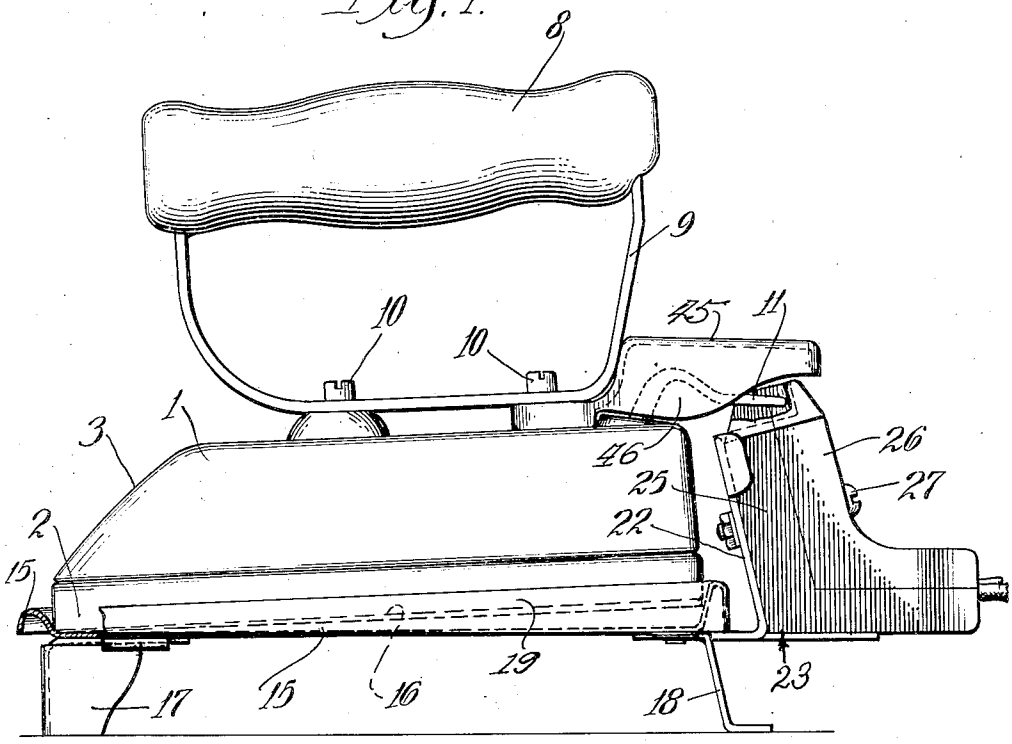

Fig. 2.

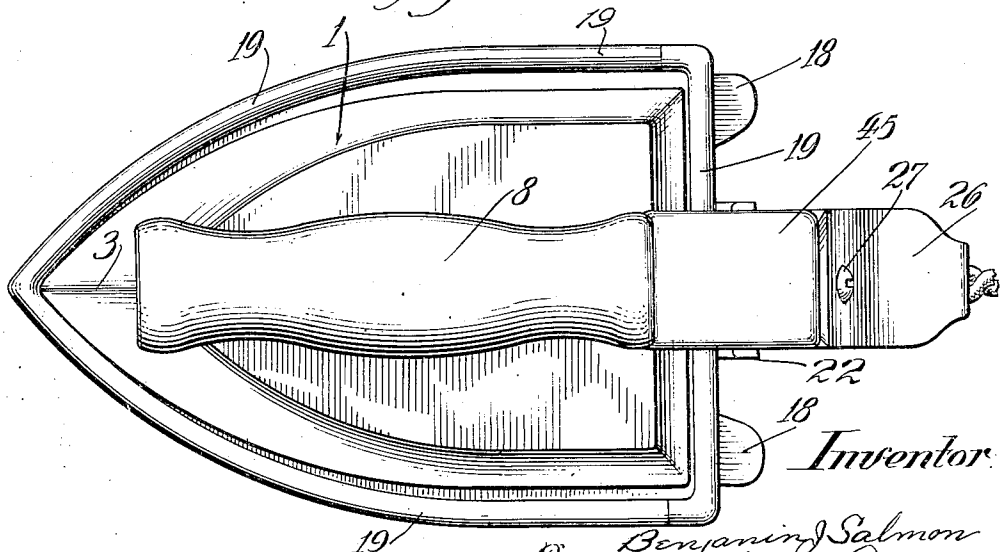

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Fig. 3.

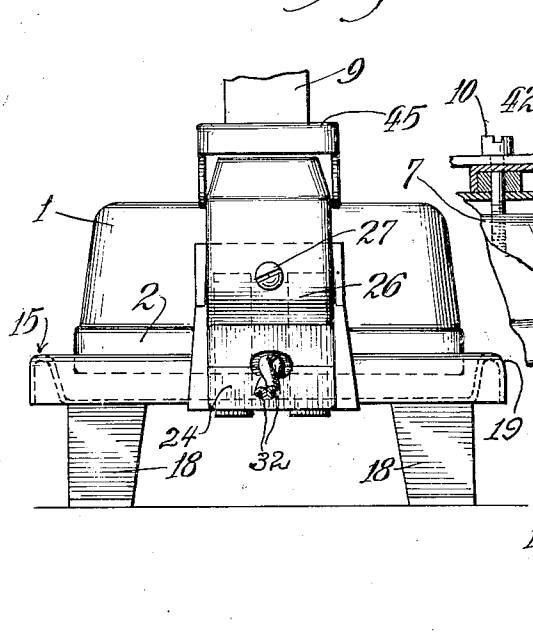
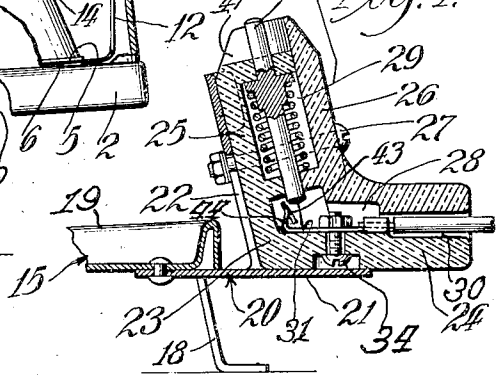


Fig. 4.



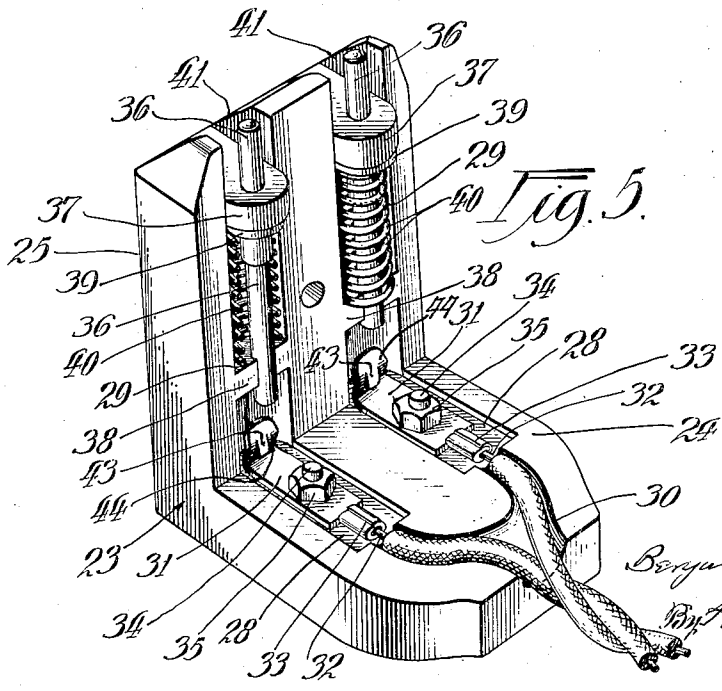
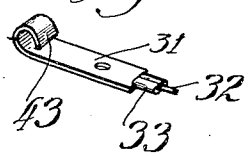


Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE

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HEATING AND SUPPORTING MEANS FOR ELECTRIC IRONS

Application filed June 7, 1929. Serial No. 369,136.

This invention relates to that class of heating and supporting means for electric irons, and irons provided therewith, comprising a stand provided with electric contacts supported thereon and adapted to be connected with electric wires leading to a source of electric supply, and having movable connecting means on said stand and normally out of engagement with said contacts, adapted to be engaged by contacts located on the iron and pressed by the weight of the iron into circuit-closing engagement with said first-mentioned contacts.

The principal object of the invention is to provide an improved, simple, economical and efficient heating and supporting means for electric irons.

A further object of the invention is to provide an improved heating and supporting means for electric irons comprising a stand provided with electric contacts thereon adapted to be connected with a source of electric supply, and having movable connecting means on said stand and normally out of engagement with said contacts and adapted to be engaged by contacts located on the iron and pressed by the weight of the iron into circuit-closing engagement with said first-mentioned contacts; and means for preventing arcing between said movable connecting means or spring-pressed contacts on the stand and the contacts on the iron, and also including means for preventing arcing between the main contact faces of the movable or spring-pressed contacts and the stationary contacts on the stand.

Other and further objects of the invention will appear from the following description and claims, and from an inspection of the accompanying drawings which are made a part hereof.

The invention consists in the features, combinations, details of construction and arrangement of parts herein described and claimed.

In the accompanying drawings:

Figure 1 is a view in side elevation of an electric iron and stand provided with heating means constructed and adapted to operate in accordance with my invention;

Fig. 2 is a plan view of the device shown in Fig. 1;

Fig. 3 is an end view in elevation of the device shown in Fig. 1;

Fig. 4 is a view in detail partly in vertical section showing the rear portion of the iron with its heating and electric connections, and the rear portion of the stand with its electric connections, with parts of the iron and stand broken away and omitted;

Fig. 5 is an enlarged detail view in perspective showing the fixed and movable electric contacts in their normal position in the insulating supporting member which is attached to the rear end of the iron supporting stand, with the top covering member of insulating material removed; and

Fig. 6 is a modified form of stationary flat-topped metallic contact member having an integral curved spring contact finger the yielding contact end of which extends downward at an incline over and in spaced-apart relation to the top flat contact surface, so that the spring contact engages the movable contact plunger concurrently with and immediately preceding and following the contact and breaking of contact between the abutting contact faces at the bottom ends of the plungers, to prevent arcing between the abutting surfaces.

In constructing an improved heating and supporting means for electric irons, and irons provided therewith, in accordance with my invention, I provide an electric iron 1 having a base 2, a hollow cover or body portion 3 adapted to be removably secured upon said base and forming a heating chamber 4 within the hollow body thus formed. An electric heating element 5 comprising the usual coil 6 of flat electrically conductive wire wound around the usual core of mica or other suitable insulating material, and between upper and lower sheets of mica or equivalent insulating material is mounted within the heating chamber 4 between an inner clamping member or liner 7 and the inner top surface of the base 2 of the iron, said liner or clamping member 7 being formed of cast metal or other suitable heavy material adapted to hold the electric heating element in position and to

provide the desired weight. A handle 8 of wood or other suitable material supported at its opposite ends upon the upright arms of an approximately U-shaped frame or handle portion 9, is rigidly secured to the iron by means of connecting screws 10 which extend through suitable openings in the metallic frame or handle portion 9 and are anchored in threaded engagement with the inner liner or clamping member 7.

Fixed to and projecting rearward beyond the upper rear end portion of the body of the iron is a pair of metallic conductor arms or contact members 11, the inner ends of which extend through suitable openings in the top wall of the hollow body portion 3 and are connected with the adjacent perforated end portions or terminals 12 of the inner electric heating element or coil 6 by means of screw-threaded nuts 13 interposed between the terminals 12 respectively and the upper wall of the hollow body portion 3 and nuts 14 in screw-threaded engagement with the inner ends of said contact members 11 respectively and in engagement with the opposite sides of the corresponding terminals 12 respectively. (See Fig. 4.)

An iron-supporting stand 15 is provided, which is formed, by preference of sheet metal and comprises an approximately flat top 16 supported upon legs 17 and 18 which may be attached to or formed integrally with said top. An upwardly projecting marginal flange 19 is formed by stamping or bending the margin of the metallic top portion of the stand along both of the curved side margins and the straight rear end margin-so as to provide an up-standing marginal guard around the entire margin of the stand which is of substantially the shape of the margin of the iron at its base. The flange 19 is thus adapted to entirely surround the base of the iron and forms a protective guard for the same.

Secured to or formed integrally with the rear top end portion of the stand 15 is a rearwardly projecting metallic frame or bracket 20 having one or more horizontal arm portions 21 and an integral upwardly projecting bracket arm portion 22 which converges with the horizontal arm 21 at or near the rear end of the stand, so as to provide an angular space between said angularly disposed bracket arms. Mounted on the bracket 20 in said angular space between the angular bracket arms 21 and 22, and rigidly secured to said bracket arms and thereby firmly attached to the upper rear end portion of the stand 15 is a hollow angular insulating socket or casing 23, formed of insulating fiber, hard rubber or other suitable strong insulating material, and comprising, by preference, a bottom angular casing member forming a horizontal base 24 and an integral front upwardly projecting inclined wall 25, and a top angular casing or cover member 26 of insulating material mounted upon and rigidly but, by preference, removably secured to the said bottom angular casing or socket member by means of a securing screw or bolt 27 seated in and extending through suitable openings in the bottom and top casing members and through an opening in the bracket arm 22, and rigidly secured to the latter, so as to hold said casing or socket members in rigid tightly fitting engagement with each other and in firmly secured operative position upon the stand. The connected base and cover members 24 and 26 thus form a strong hollow angular insulating frame or socket 23 having one or more chambers 28 in the horizontal arm or base, and one or more chambers 29 in the upwardly extending angular portion of said insulating casing or socket, and is provided with one or more openings 30 leading from the chambered portions 28, for receiving electric wires.

Mounted in the insulating casing or socket 23, and by preference, in the chambers 28 formed in the base and between the bottom socket member and the top angular casing or cover member 26, is a pair of electric contact members or terminals 31, 31, each of which is formed, by preference, of a flat piece of sheet metal of suitable dimensions and connected with a corresponding one of a pair of insulated electric wires 32, 32 adapted to lead to or communicate with a source of electric supply. In the form shown in the accompanying drawings the terminal contacts 31, 31 are each connected with a corresponding electric wire 32 by means of loops 33, 33 formed by bending integral flat strips of said contact members 31, 31 around and securing the same in snugly fitting engagement with the adjacent ends of the corresponding electric wires 32, 32, respectively, by soldering or otherwise by any ordinary suitable connecting means. Each of said contact members 31, 31, respectively, is rigidly secured in its seat in the socket 23 by a headed bolt 34 which extends through suitable openings in the contact member and base 24 respectively, and a nut 35 in threaded engagement with such bolt.

Movably mounted in the upright chambered portion of the socket 23 is a pair of electrically conductive connecting contacts 36, 36 which, in the form shown in the accompanying drawings, comprise a pair of spring-pressed plungers each slidably mounted in an upper bearing 37 and a lower bearing 38 in the upright wall 25 and between said casing wall and the front socket member or cover 26. Each of the plungers or connecting contacts 36 is provided with an annular shoulder 39 located directly below and movable upward and downward with the plunger into and out of engagement with the bottom face of the adjacent upper bearing 37, so as to

limit the upward movement of the plunger; and a compression spring 40 loosely encircles each plunger respectively and rests on the bottom bearing 29, the upper end of the spring being in engagement with the annular shoulder of the encircled plunger. The bottom end of each plunger is located directly over and normally out of contact with a corresponding one of the stationary contacts 31, and is movable into and out of engagement with such bottom contact against the tension of the spring. The upper ends of the plungers 36 project above the top bearings 37; but the top end margin of the socket 23 projects upward above the top ends of the plungers and surrounds and forms a protecting guard for the same. Openings 41 in the upper end of the socket are adapted to receive the rearwardly projecting ends of the contact arms or terminals 11, 11 which are supported on the iron and insulated from the iron by insulating bushings 42, the inner ends of said contacts 11 being connected with the usual electrical heating element 5—that is to say, to the terminals 12 of the usual coil 6 of the heating element 5—as already described, or by any ordinary suitable connecting means.

Each of the stationary contacts 31 has a top surface which may be flat and is adapted to engage the bottom end of the corresponding adjacent movable contact or spring-pressed plunger 36 when the latter is in its lowered circuit-closing position. By thus permitting the ends of the plungers to be moved downward into abutting engagement with the top surface of the stationary contacts 31 the latter are enabled to receive and support the weight and pressure of the movable plungers and the weight of the iron which, by pressing the contact arms 11 down upon the top ends of the plungers, serves to move and hold said plungers down in circuit-closing position in engagement with said stationary contacts against the tension of the springs 40 which act to raise the plungers out of contact with the stationary contacts 31 and to circuit-breaking position when the iron is lifted from the stand in the operation of ironing with the electrically heated iron.

The stationary contacts 31, 31 are each, by preference, provided with an attached or integral resilient contact finger 43 which may be in the form of a spring finger integral with an upwardly projecting marginal flange 44 on the corresponding stationary contact member 31, said resilient finger 43 and its support 44 being adapted to slidably and yieldingly engage the side surface of the corresponding plunger 36 when the latter is in lowered circuit-closing position, and to disengage the same when the plunger is raised by its spring 40 out of contact with the resilient contact member 43 and rigid contact member 31 of which said resilient finger may form an integral part.

A top covering shield 45 on the iron projects rearward over the contact arms 11 on the iron and over the upper end of the socket 23 when the iron is in position on the stand and the contact arms 11, 11 are held in contact with the upper ends of the spring-pressed plungers, and the plungers are held down in contact with the contacts 31 by the weight of the iron.

It should be noted that the spring contact finger 43 is in sliding engagement with the side face of the plunger when the latter is lowered, and remains in contact with the plunger during the initial upward movement of the plunger after the bottom end of the plunger is lifted out of abutting contact with the flat top surface of the corresponding stationary contact 31. The spring finger being in contact when the abutting contact at the end of the plunger is broken, acts to prevent arcing at the bottom end of the plunger; and any arcing which does occur is at the sliding or moving point of contact between the spring finger and the plunger which is self-cleaning and kept constantly wiped clean. The resilient sliding contact or finger thus serves not only to keep itself and the side face of the plunger clean at that point of contact, but also serves to keep the point of contact clean where the end of the plunger abuts against the flat top face of the stationary contact and affords the desired abutting contact between the surfaces of broad area.

The contacts 11 on the iron are so disposed that the bottom of the iron is suspended above and extends backward and upward at an incline over and out of contact with the top surface of the flat top of the stand, with the nose of the iron forming a single bearing point at the front end of the iron, and the plungers 36 and contact arms 11 forming the only two other bearing points, thus permitting the iron to rock on its nose to adjust itself and insure a perfect engagement between the contacts 11 and the plungers, and a perfect contact at each end of each of the plungers notwithstanding any such irregularities in construction as may occur in practice.

From the foregoing it will be readily understood that the iron is detached from the electric cord and source of electric supply when removed from the stand and in use, thus leaving the iron free to be operated without the interference of the cord.

The plungers 36 being out of contact with the stationary contacts at all times when the socket is not covered, the safety of the operator and of the device from injury which might be caused by the accidental closing of the electric circuit is assured.

The top covering shield 45 has a depending marginal flange 46 on both sides and at

the back, to insure safety when the iron is in position on the supporting stand.

The springs 40 act to raise the electrically conductive plungers 36 out of abutting contact with the stationary contacts 31 while the spring contact fingers 43 are still in contact with the side surfaces of the plungers, and while the top ends of the plungers are still in contact with the projecting contact arms 11 on the iron; and as the raising of the plungers is continued by the action of the springs the plungers are lifted above and out of contact with the spring fingers before the upper ends of the plungers are released from engagement with the contact arms 11 on the iron, by the removal of the iron from the stand in the operation of ironing, thereby preventing arcing between the bottom ends of the plungers 36 and the top surfaces of the rigid contacts 31 both in the operation of closing the circuit and in the operation of breaking the circuit, and preventing arcing between the contact arms 11 on the iron and the top ends of the plungers 36 both in the making and in the breaking of the circuit.

I claim:

1. In a device of the class described, a stand adapted to form a support for an electric iron, a socket formed of insulating material supported on said stand, a pair of stationary electric contact members secured to said socket and adapted to be connected with a source of electric supply, and a pair of longitudinally movable contact members on said socket, spring mechanism in engagement with said movable contact members and adapted to normally hold the same in position to releasably engage a pair of electric contact members on such iron, said movable contact members being normally out of engagement with the stationary contact members and adapted to be pressed against the tension of said spring mechanism into contact with the stationary contact members by the weight of an iron supported on said stand.

2. In a device of the class described, a stand adapted to form a support for an electric iron, a socket formed of insulating material supported on said stand, a pair of stationary electric contact members secured to said socket and adapted to be connected with a source of electric supply, and a pair of movable spring-pressed contact members mounted on said socket, and adapted to engage a pair of electric contact members on such iron, said movable contact members being normally out of engagement with said stationary contact members, and adapted to be pressed into abutting contact with the stationary contact members by the weight of an iron supported on the stand, said stationary contact members each comprising a resilient contact finger adapted to slidably engage the corresponding adjacent movable contact member.

3. In a device of the class described, a stand adapted to form a support for an electric iron, a socket formed of insulating material supported on said stand, a pair of stationary electric contact members secured to said socket and adapted to be connected with a source of electric supply and a pair of movable spring-pressed contact members mounted on said socket and adapted to detachably engage a pair of contact members on such iron, said movable contact members being normally out of engagement with said stationary contact members, each of said movable contact members having an end surface portion adapted to be moved into and out of abutting engagement with a top surface portion of a corresponding adjacent stationary contact member, and each of said stationary contact members having a resilient contact thereon adapted to engage the surface of the corresponding adjacent movable contact during and immediately preceding and following the period of contact between the abutting surfaces of said movable and stationary contacts.

Signed at Chicago, in the county of Cook and State of Illinois, this 29th day of May, 1929.

BENJAMIN J. SALMON.