May 6, 1941. O. HOLM-HANSEN 2,241,067

SADIRON

Filed Sept. 9, 1939

Fig. 1.

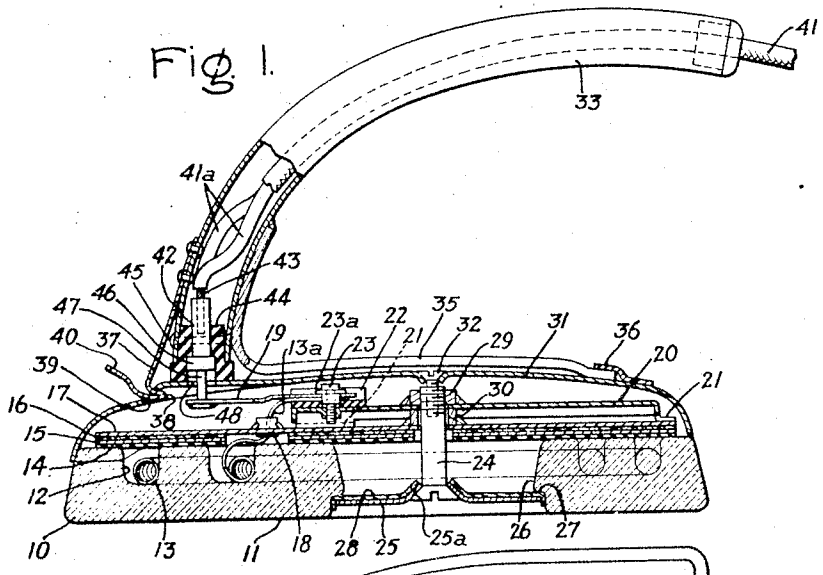


Fig. 2.

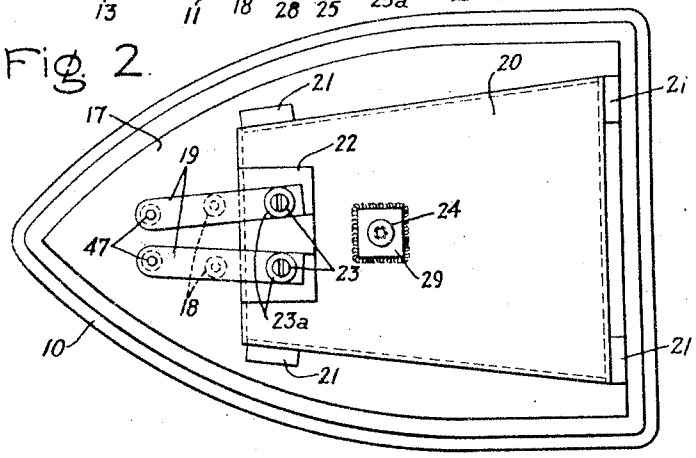
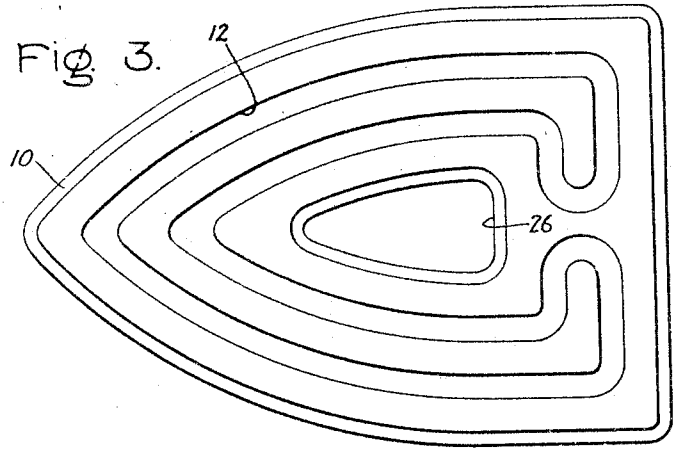


Fig. 3.



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SADIRON

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12 Claims. (Cl. 219—25)

This invention relates to sadirons, and it has for its object the provision of an improved device of this character which is inexpensive, light in weight, compact, and clean and neat in its appearance, and also a sadiron which is highly efficient in its operation.

This invention is particularly applicable to electrically heated sadirons, and in accordance with this invention in one form thereof, the iron is provided with a glass sole plate. The glass sole plate is heated by a resistance conductor mounted in heat-conducting relation with the plate, and preferably in a groove formed in the plate. Mounted over the resistance conductor are suitable heat barriers to prevent the radiation of heat upwardly, and to direct substantially all of the heat generated down through the glass sole plate to its pressing surface. It is preferable that at least one barrier be formed of a reflecting metallic foil, and another above the foil be formed of a poor conductor of heat, such as asbestos.

Preferably, the iron will be provided with a detachable handle so that the handle may be removed to facilitate packing and handling of the iron for shipment or travelling purposes.

In addition, improved connection means are provided for establishing electrical connections between the resistance conductor and a supply cord. For this purpose, in one form of my invention, flexible terminals are mounted within the iron and are electrically connected with the resistance conductor. Suitable contacts attached to a supply cord are mounted in the handle so that when the handle is attached to the iron, the contacts in the handle engage the flexible contacts to establish the electrical connections for the resistance conductor.

For a more complete understanding of this invention, reference should be had to the accompanying drawing in which Fig. 1 is an elevation mainly in section illustrating an electrically-heated flatiron embodying this invention; Fig. 2 is a plan view of the iron with the cover removed; and Fig. 3 is a plan view of the sole plate of the iron.

Referring to the drawing, this invention has been shown in one form as applied to an electrically heated flatiron having a sole plate 10 formed of glass. The sole plate 10 will be made of a suitable glass resistant to thermal shocks, such as the glass known as "Pyrex." The sole plate 10 on its lower side has a smooth plane pressing surface 11, while in its upper side there is provided a continuous groove 12, shown more clearly in Fig. 3.

Mounted within the groove 12 is a suitable helical resistance conductor 13 formed of any suitable material, such as nickel-chrome alloy. Mounted on the upper surface of the sole plate 10 so as to cover the groove 12 is an electrically insulating sheet 14 formed of a suitable material, such as clear mica. Above this sheet 14 is a sheet of heat-reflecting foil 15, preferably formed of aluminum. On top of this there is a thin sheet 16 of thermally-insulating material, such as asbestos. If desired, a second sheet (not shown) of aluminum foil may be placed on top of the asbestos sheet, and over all is a rigid metal sheet 17 which may be formed of any suitable material, but preferably will be formed of stainless steel.

The terminal ends 13*a* of the resistance conductor 13 are threaded upwardly through electrically insulating spools 18 mounted in the rigid sheet 17. These terminal ends 13*a* are electrically connected with suitable flexible contact terminal strips 19 which are mounted on a suitable rigid terminal-supporting plate 20. The plate 20 is provided at its opposite ends with outwardly-extending feet or tabs 21 which are secured to the rigid plate 17 in any suitable manner, as by welding. The terminal ends 13*a* are secured to the terminal strips 19 in any suitable manner, as by welding, and these ends, as well as the terminals, are secured to an insulating block 22, formed of any suitable material, such as a phenol condensation product. This block 22 and the terminal strips 19 with the terminal ends 13*a* secured to them are rigidly secured to the terminal plate 20 by means of screws 23 directed through insulating bushings 23*a* so as to electrically insulate the screws from the terminals 19 and terminal ends 13*a*.

The sheets 14, 15, and 16, the rigid plate 17, and the terminal plate 20 are rigidly secured to the sole plate 10 by means of a screw fastening device 24. This device 24 is directed through a rigid metallic plate 25 formed of any suitable material, such as stainless steel, and has its head bearing against the underside of this plate 25, as shown; preferably, and as shown, the plate 25 will be provided with a depression 25*a* that receives the head of the screw member 24. The sole plate 10 is provided with a relatively large aperture 26 therethrough through which the screw member 24 extends and in the lower end of this opening there is provided a shoulder 27 which forms an abutment for the plate 25. A

suitable yielding sheet 26, preferably formed of asbestos, is mounted on top of the plate 25 and separates this plate from the glass sole plate 10, as clearly shown in Fig. 1. The screw fastening member 24 is threaded into a nut 29 rigidly secured to the upper surface of the terminal plate 20. The nut 29 may be secured to the plate 20 in any suitable manner as by welding. Preferably, a spacer 30 surrounding the screw member 24 will be interposed between the rigid plate 17 and the terminal plate 20, and will be rigidly secured to the plate 17 in any suitable manner, as by welding.

A cover 31 is provided which houses the sheets 14, 15, and 16, the rigid plate 17, the terminal plate 20 and the terminals 19. The cover is secured to the screw-fastening device 24 by means of a screw 32 directed through the cover and received in threaded relation with the member 24, as shown. The cover may be formed of any suitable material, but preferably will be made of stainless steel, and preferably the cover will be lined on the inside with sheets of asbestos and aluminum foil (not shown).

A suitable handle 33 is provided which, as shown, is of curved tubular form. The handle is detachably secured to the cover 31 by means of an elongated tongue 35 which is secured at its forward end to the handle, as shown. The tongue extends rearwardly from the handle to the rear of the cover where it is received within a retaining socket 36 mounted on the upper surface of the cover. At the forward end, the handle is secured by means of a spring latch 37 having a detent 38 received in an aperture 39 provided for it in the forward end of the cover. The latch is provided with a finger piece 40 which may be moved outwardly toward the left, as viewed in Fig. 1, to withdraw the detent 38 and thereby release the handle which may be removed by moving it to the left to withdraw the right-hand end of the tongue 35 from the socket 36. The handle is attached by inserting the right-hand end of the tongue in the socket and then springing the detent 38 into the hole 39 at the finish.

Entering the tubular handle is a twin supply conductor 41. This conductor extends through the handle and has its two supply conductors 41*a* electrically connected with a pair of terminals 42. The terminals 42 are of pin-like form and have apertures therein which receive the conducting wires 43 of the conductors 41*a*. The wires 43 are electrically and mechanically connected with the terminals 42 in any suitable manner, as by soldering. The terminals 42 are threaded through a pair of spaced apertures provided for them in an insulating block 44, which is formed of any suitable electrically insulating material, such as porcelain. The block 44 has a section inserted in the tubular handle, as shown, and it is secured by means of a transverse pin 45 directed through the walls of the handle and through the insulator. The terminals 42 are provided with enlarged heads 46 which as shown are received in enlarged openings in the insulator. The heads 46 engaging the insulator prevent movement of the terminals upwardly through the handle 33.

Means are provided for causing the terminals 42 to electrically engage the flexible terminal members 19 when the handle is applied to the cover, as shown in Fig. 1. For this purpose, the flexible terminal members 19 carry upright pins 47 at their movable ends and these pins project upwardly through apertures 48 provided for them in the cover of the iron under the handle. The pins are spaced apart the same distance as the two terminal members 42 so that when the handle is applied the pins automatically engage the terminal members 42 and are depressed by them, the resiliency of the contacts 19 biasing the pins into firm electrical and mechanical contact with the terminals 42.

The aperture 26 in the sole plate, as shown, is made much larger than is necessary for the passage of the screw-fastening device 24. This aperture is thus made relatively large because I have found that it relieves substantially all strains in the glass sole plate that might be set up due to heating and cooling, and thereby prevents any cracking of the glass.

In the operation of this iron, it will be understood that if the conductor 41 be connected with an electrical supply source and the handle 33 be in its operative position, the resistance conductor 13 will be energized and will generate heat to heat the sole plate 10. The major portion of the energy generated is radiated to the ironing surface 11, the heat barrier including the reflecting sheet of foil 15 and the asbestos sheet 16 causing substantially all the radiations generated to be directed downwardly through the sole plate to its pressing surface. Some of the heat generated is transmitted by conduction through the glass sole plate 10, which has a high specific heat. The glass will transmit the short wave radiations, and as a result the flatiron may be used practically the moment that it is energized. In other words, the materials to be ironed will be heated by radiant energy. This is, of course, an important advantage because it is unnecessary to wait until the iron plate is heated up by conduction.

The glass sole plate 10 has a relatively high specific heat as compared with its weight and thus a heating body is provided which will store a considerable amount of heat but yet it is light in weight.

An additional advantage of the sole plate 10 is that it is electrically-insulating in itself, and, therefore, no additional electrically-insulating means is necessary to insulate the resistance conductor 13.

A further important feature of this invention is that the iron is clean and neat in appearance; and in addition the user can see the incandescent resistance conductor through the sole plate and can thus perceive at once whether or not the iron is energized.

A further feature of this invention is the provision of the readily-removable handle 33. This facilitates packing the iron for shipment and facilitates packing the iron for travelling purposes.

Also, an important feature is the provision of the means for automatically effecting an electrical connection between the resistance conductor 13 and the supply cord 41 when the handle 33 is attached to the iron.

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. A light-weight pressing device comprising a sole plate formed of glass having a pressing surface, an electrical heating element mounted in direct thermal contact with said sole plate above

said pressing surface, a heat reflecting member above said heating element for directing the major portion of the heat generated thereby to the material being pressed by said pressing surface by radiation through said glass sole plate, and said glass sole plate also conducting heat directly from said heat generating element through said sole plate to said material.

2. An electric pressing device comprising a pressing member formed of glass having a pressing surface and an open-topped groove above said surface, a resistance conductor mounted in said groove, an electrically-insulating sheet covering said groove, a heat-reflecting sheet covering said insulating sheet, a rigid supporting plate mounted above said reflecting sheet, and terminals for said resistance conductor mounted on said rigid plate.

3. A sadiron comprising a sole plate formed of glass having an aperture therethrough to relieve heat strains in the sole plate.

4. An electric pressing device comprising a pressing member formed of glass having a pressing surface and an open-topped groove above said surface, a resistance conductor mounted in said groove, an electrically-insulating sheet covering said groove, a heat-reflecting sheet covering said insulating sheet, said pressing member having an aperture therethrough, and means directed through said aperture for clamping said insulating and reflecting sheets to said pressing member.

5. A sadiron comprising a glass sole plate having an open groove in its upper surface, a resistance conductor in said open groove, a plate closing said groove and electrically-insulated from said conductor, insulating spools in said plate through which the terminal ends of said resistance conductor are threaded, and terminals mounted on said plate electrically connected to said terminal ends.

6. An electric sadiron comprising a sole plate, a resistance conductor for said sole plate having a pair of flexible terminals, a removable handle for said sole plate, and a pair of electrical supply contacts mounted on said handle and adapted to contact said flexible terminals when said handle is applied to said iron.

7. A sadiron comprising a glass sole plate having a resistance conductor mounted therein, a rigid plate above said sole plate carrying terminals for said resistance conductors, said sole plate having an aperture therethrough that is provided with a shoulder above the pressing surface, a plate mounted in said aperture bearing against said shoulder, and means clamping said plate and rigid plate together.

8. An electric sadiron comprising a sole plate, a resistance conductor for heating said sole plate having a pair of flexible terminals, a cover for said sole plate housing said flexible terminals, said terminals carrying pins that project through apertures provided for them in said cover, a handle, means detachably mounting said handle to said cover, and a pair of supply contacts in said handle abutting the ends of said pins when said handle is attached to said cover in its operative position.

9. A sadiron comprising a glass sole plate having an open groove in its upper side, a resistance conductor in said groove, a rigid plate over said groove, electrically-insulating and heat-reflecting sheets separating said rigid plate from said sole plate, means including a member directed through said sole plate rigidly securing said sheets and rigid plate to said sole plate, flexible contact members mounted on said rigid plate, a cover for said iron housing said sheets, rigid plate and contact members, said flexible contact members carrying pins that project through apertures provided for them in said cover, a handle, means detachably mounting said handle to said cover, and a pair of supply contacts in said handle abutting the ends of said pins when said handle is attached to said cover in its operative position.

10. An electric sadiron comprising a sole plate, a resistance conductor for heating said sole plate having a pair of terminals, a cover for said iron housing said terminals, a handle, means detachably connecting said handle with said cover, and supply contacts in said handle operative to engage said terminals when said handle is attached to said cover.

11. An electric pressing device comprising a pressing member formed of glass having a pressing surface and an open-topped groove above said surface, a resistance conductor mounted in said groove, a rigid metallic supporting plate mounted above said groove, means electrically insulating said plate from said resistance conductor, and terminals for said resistance conductor mounted on said supporting plate.

12. An electric pressing device comprising a pressing member formed of glass having a pressing surface, a resistance conductor mounted on said glass member, an electrically insulating member and a heat reflecting member covering said resistance conductor, said glass pressing member having an aperture therethrough, and means directed through said aperture for clamping said insulating and reflecting members to said pressing member.

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