July 4, 1933. F. KUHN ET AL 1,916,673

ELECTRIC IRON

Filed March 18, 1929

Fig. 1.

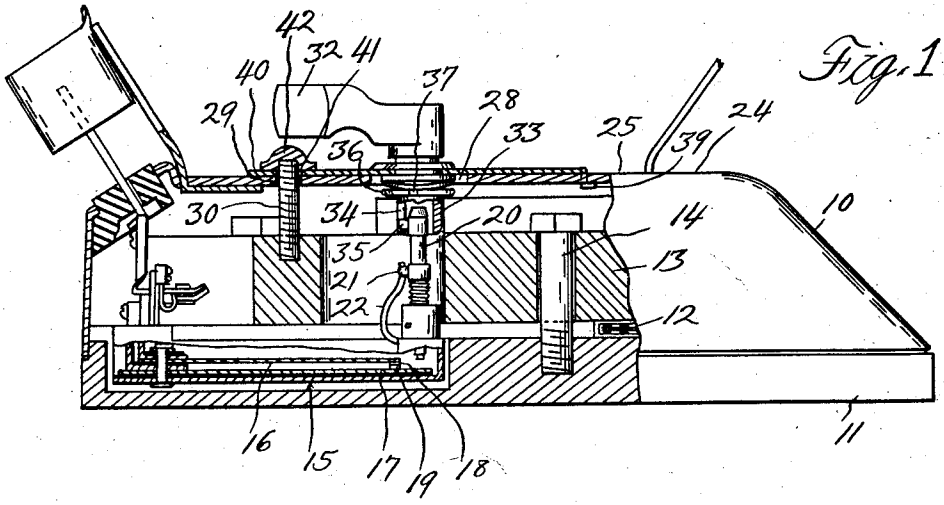


Fig. 2.

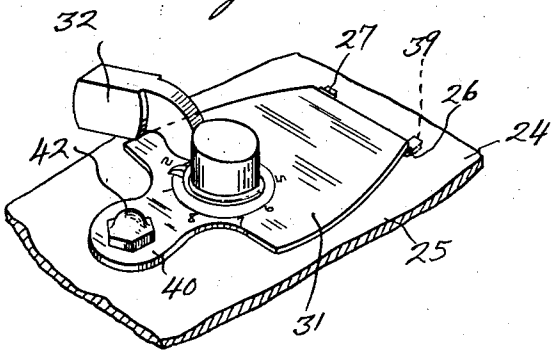
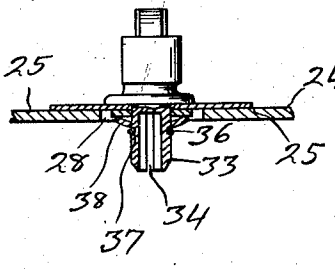


Fig. 3.



INVENTORS

Frank Kuhn

Laurence H. Thomas

BY

Whittemore Hulbert Whittemore & Belknap

ATTORNEYS

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UNITED STATES PATENT OFFICE

FRANK KUHN AND LAURENCE H. THOMAS, OF DETROIT, MICHIGAN, ASSIGNORS TO AMERICAN ELECTRICAL HEATER COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN

ELECTRIC IRON

Application filed March 18, 1929. Serial No. 348,061.

This invention relates generally to electric heaters and has particular reference to electric irons provided with manually operable control means located exteriorly of the iron in a position to be conveniently actuated by the operator.

Many of the objects of the present invention are attributed to the novel manner in which the control means is mounted upon the heater. These objects, as well as the details of construction of the invention, will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawing wherein:

Figure 1 is a sectional side elevation of an electric iron showing our improved control unit applied thereto;

Figure 2 is a perspective view of the control unit; and

Figure 3 is a detailed sectional view through the control unit.

Referring now to the drawing it will be noted that there is illustrated therein an electric iron 10 comprising, a heat distributing base plate 11, a heating element 12 seated upon the base plate 11, and a pressure plate 13 resting upon the heating element and detachably secured to the base plate by means of the fastener members 14.

For controlling the operation of the iron we preferably provide a thermostatic switch 15 positioned in a recess formed in the base plate and having by-metallic thermostatic strips 16 and 17. The strips 16 and 17 are electrically connected to the heating element in the conventional manner and are secured to the switch casing at one end thereof. The opposite ends of the strips are preferably free to move laterally and are provided with cooperating contacts 18 and 19 respectively. For effecting a separation of these contacts and as a consequence break the circuit to the iron when the latter has reached a certain predetermined temperature we provide an adjustable stop 20. As shown, this stop is threadedly mounted within a sleeve carried by the switch casing adjacent the free ends of the bi-metallic strips in such a manner that the lower end of the stop is disposed in the path of travel of the lower thermostatic strip 17 and will intercept this strip at a predetermined point during its upward movement to permit separation of the contacts 18 and 19. The upper end of the stop is preferably provided with a lateral projection 21 adapted to engage a suitable fixed stop 22 for limiting the extent of adjustment of the stop.

For concealing the heating element and associated parts thereof a suitable cover 24 is provided having a substantially flat top portion 25 formed with laterally spaced apertures 26 and 27 adjacent the forward end thereof and having longitudinally spaced apertures 28 and 29 therein adjacent the rear end thereof. As shown, the aperture 28 is formed directly above the adjustable element 20 in vertical alignment therewith and the aperture 29 is of a size to permit the passage of a threaded element 30 anchored in and extending upwardly from the pressure plate 13.

Seated upon the substantially flat portion 25 of the cover is a suitable control unit for the adjustable element 20. This unit comprises a plate 31 and a control arm 32 rotatably mounted upon the plate and having a sleeve-like portion 33 depending from the plate and projecting through the aperture 28 into the iron. The sleeve-like portion 33 preferably receives the upper end of the adjustable element 20 and is provided with a longitudinally extending slot 34 of sufficient width to receive a projection 35 extending laterally from the adjustable elements adjacent the upper end thereof. Thus it will be apparent that the slot and cooperating projection provides a detachable driving connection between the sleeve and adjustable element. The control arm forms a unit with the plate 31 and is secured thereto by means of a spring clip 36 engageable in an annular recess 37 formed in the sleeve-like portion 33. As shown, the clip is spaced a slight distance inwardly from the bottom surface of the plate 31 to permit limited axial and lateral movements of the sleeve-like portion relative to the plate. The control arm, however, is normally yieldably maintained in its normal position relative to the plate by

means of a spring washer 38 disposed between the clip and under surface of the plate. Thus it will be apparent that the mounting for the control arm upon the plate is one that facilitates assembly as it permits the control arm to automatically align itself with the adjustable element and thereby compensate for any slight inaccuracies in manufacture. Another advantageous feature of the aforesaid mounting which contributes materially to facilitating the assembly of the iron is the axial movement of the control arm relative to the plate. By reason of this axial movement it is not necessary to engage the projection 34 on the adjustable element with the slot 35 in the sleeve-like portion 33 when assembling the control unit upon the cover. For example, it will be assumed that when assembling the plate upon the cover the projection 34 instead of engaging in the slot 35 engages the bottom surface of the sleevelike portion adjacent to the slot. As a consequence, when the plate is pressed down upon the cover and secured thereto the projection 34 will move the sleeve-like portion 33 upwardly against the action of the spring washer 38. After the plate 31 is assembled upon the cover the control arm is merely rotated until the slot 35 moves in alignment with the projection 34, at which time the spring washer 38 will force the sleeve-like portion downwardly permitting the slot to receive the projection.

Referring now more in detail to the means illustrated herein for securing the plate to the cover it will be noted that the plate is preferably formed of sheet metal stamping and is provided at the forward end thereof with laterally spaced depending flanges terminating in forwardly projecting ears 39 adapted to extend through the slots 26 and 27 and engage the under surface of the cover. Thus a detachable and interlocking connection between the forward end of the plate and cover is provided. The rear end of the plate is preferably provided with an extension 40 having an opening 41 therein adapted to register with the opening 29 in the cover and receive the upper end portion of the stud 30. A suitable clamping nut 42 is preferably threaded upon the upper end of the stud to clamp the plate 31 to the cover and incidentally to secure the cover to the iron. The arrangement is such that the plate 31 and control arm carried thereby may be removed as a unit with the cover or may be removed independent of the cover. If desired, the plate may have suitable indicia thereon identifying the product and thereby, in addition to functioning as a support for the control arm, also constitutes a name plate for the article.

What we claim as our invention is:

1. In an electric iron, the combination with a cover and a switch for controlling the operation of the iron concealed by said cover, of control means for the switch including, a member positioned in operative relation to the switch and terminating adjacent the said cover, a plate readily detachably mounted upon the cover and a control member rotatably mounted upon the plate and having a portion extending through the cover and telescopically engaging the member aforesaid, said control member being capable of lateral movements relative to the plate permitting the same to automatically align itself with the said member and thereby facilitate the engagement between the latter and the control member.

2. In an electric iron, the combination with a cover and a switch for controlling the operation of the iron concealed by said cover, of control means for the switch including, a member positioned in operative relation to the switch and extending upwardly therefrom, a plate removably positioned upon the cover and a control member rotatably mounted upon the plate for lateral and rotative movements relative thereto and having a portion extending through the cover for engagement with the member aforesaid.

3. An electric heater having in combination, a cover, a switch for controlling the operation of the heater concealed by the cover, control means for the switch including, a member positioned in operation relation to the switch and extending into close proximity to the cover, a control member carried by the cover and having a portion extending through the latter and detachably engaging said member, and a mounting for the control member permitting lateral and rotative movements of the member relative to the cover.

4. In an electric iron, the combination with a cover, of a plate seated upon said cover and having a portion extending through an aperture in the cover and engageable with the under side of the latter forming a detachable interlocking connection therewith and means for controlling the operation of the iron including a control arm carried by said plate and removable therewith as a unit.

5. In an electric heater, the combination with a heating element, a removable cover normally concealing the heating element, and means for controlling the operation of the heating element, of a plate detachably mounted upon the outer surface of the cover and having inwardly offset ears at one edge thereof extending through openings formed in the top of the cover and engageable with the under side of the latter forming a detachable interlocking connection therewith, and means for adjusting the control means aforesaid including a member rotatably mounted upon said plate having a portion located exteriorly of the cover for convenient manipulation and having another portion extending through an opening in the cover and oper-

atively connected to the heating element control means.

6. In an electric heater, the combination with a heating element, a switch for controlling the operation of the heating element and a cover concealing said heating element and switch, of a plate positioned upon the outer surface of the cover and having laterally offset ears at one end extending through openings in the cover and engageable with the under side of the latter to form a detachable interlocking connection therewith, a stud projecting upwardly from the body of the heater through aligned openings in the cover and plate, a fastener element detachably engageable with the upper end of the stud for clamping the plate to the cover and the latter to the heater, and means carried by said plate for actuating the switch including a control member having a portion projecting above the cover for convenient manipulation and having another portion extending through an opening in the cover and operatively connected to the switch.

7. An electric heater having in combination, a cover, a heating element concealed by said cover, a device also concealed by said cover and operatively associated with the heating element for controlling the operation thereof including a rotatable member extending upwardly from the device toward the top of the cover, a plate detachably mounted upon the cover, and means carried by said plate for regulating the operation of said device including a control element having a portion extending above the cover for convenient manipulation and having another portion extending through an aperture in the cover for telescopically and non-rotatably engaging the upper end of said rotatable member.

8. An electric heater having in combination, a cover, a heating element concealed by said cover, means for controlling the operation of the heating element including a rotatable member extending upwardly from the heating element in proximity to the top of the cover, a plate detachably mounted upon the cover, means carried by said plate for actuating the switch including a control having a portion located exteriorly of the cover for convenient manipulation and having a sleeve-like portion telescopically engageable with the upper end of said member, and a lateral projection at the upper end of said rotatable member engageable within an elongated slot formed in said sleeve.

9. In an electric heater, the combination with a heating element, a switch for controlling the operation of the heating element including temperature responsive strips movable in one direction as a unit upon a predetermined rise in temperature and a cover for said heating element and switch, of a plate seated upon the upper surface of the cover and detachably secured to the latter, a rotatable adjustable stop for intercepting the movement of one of said strips to provide for separation of the same at a predetermined temperature, means forming a unit with said plate and connected to said stop for adjusting the same including a control member having a portion located exteriorly of the cover for convenient manipulation and having another portion extending through an opening in the top of the cover for engagement with the stop.

In testimony whereof we affix our signatures.

FRANK KUHN.
LAURENCE H. THOMAS.