J. A. OCA-BALDA AND G. A. DE LANGIE.

ELECTRIC IRON.

APPLICATION FILED AUG. 6, 1920.

1,386,525.

Patented Aug. 2, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

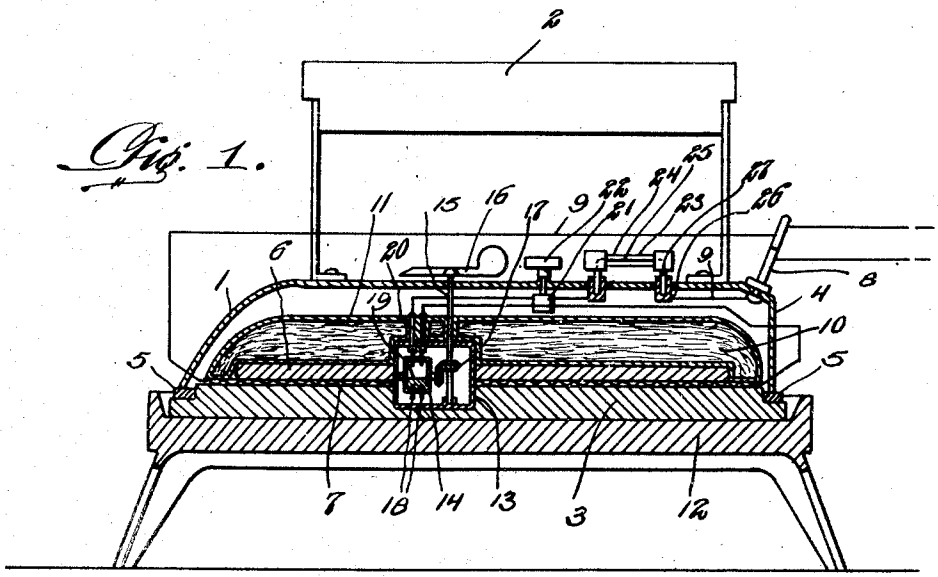
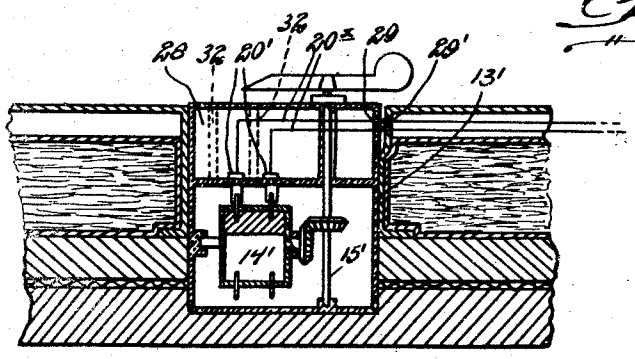


Fig. 2.



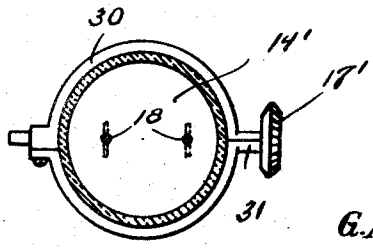


Fig. 3.

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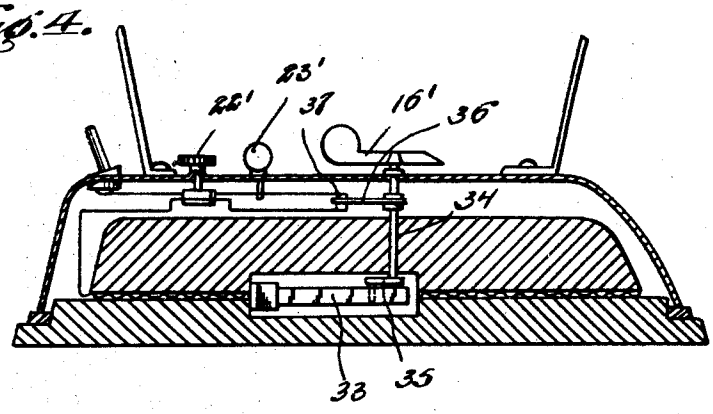
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2 SHEETS—SHEET 2.

Fig. 4.



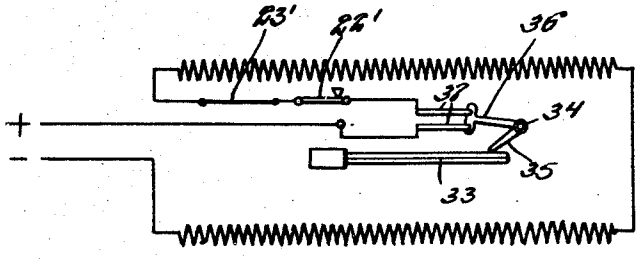
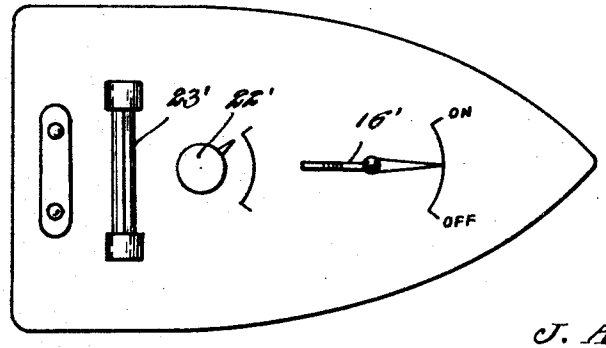


Fig. 5.

Fig. 6.



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WITNESSES:

UNITED STATES PATENT OFFICE.

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ELECTRIC IRON.

1,386,525. Specification of Letters Patent. Patented Aug. 2, 1921.

Application filed August 6, 1920. Serial No. 401,770.

To all whom it may concern:

Be it known that we, JOSÉ A. OCA-BALDA and GODFREY ALFRED DE LANGIE, citizens of Argentina and the United States, respectively, residing at New York city, in the county of New York and State of New York, have invented new and useful Improvements in Electric Irons, of which the following is a specification.

This invention relates to improvements in electric irons and the main purpose of the invention is to provide means for permanently cutting off the current when a certain temperature has been reached.

Another object of the invention is to provide means for turning on the current by hand, when desired, after the circuit has been automatically broken and the iron has reached a certain temperature lower than the desired temperature.

Another purpose of the invention is to provide reliable and practical means for indicating the condition of the circuit in cooperation with the automatic cut off means.

Another purpose of the invention is to provide arrangements whereby the indicating means and the automatic cut-off may be changed and removed when desired or necessary.

A still further purpose of the invention is to provide suitable insulation to conserve the heat generated when the current is flowing to the heating elements as long as possible after it has been turned off, especially when the iron is not being used.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing our invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a sectional view of the invention with the circuit shown diagrammatically.

Fig. 2 is an enlarged sectional view showing a slightly different form of the invention.

Fig. 3 is a sectional detail view of the rotatable casing.

Fig. 4 is a sectional view showing a modification.

Fig. 5 is a diagrammatic view of the circuit of this modification.

Fig. 6 is a plan view of this modification.

Referring to the first modification 1 indicates the body of the iron and 2 the handle thereof. The body is formed of a thick bottom plate 3 and an upper casing 4 which is suitably secured to the plate and is preferably insulated therefrom by means of the strip 5 of heat non-conducting material. Within the casing is located a second plate 6 and between this plate and plate 3 are arranged the heating elements 7, said elements being connected with the terminals 8 by the conductors 9. To prevent the radiation of heat upwardly we place insulating material 10 in the casing, above the plate 6, which insulation may be of any desired type such as asbestos and we may locate this material in a casing 11 made of aluminum or the like or we may use a casing having a vacuum therein.

In order to prevent the radiation of heat when the iron is not being used we may provide a support 12 therefor which is also formed in whole or in part of heat non-conducting material.

The circuit controlling means for the iron comprises a casing 13, arranged as shown in Fig. 1, and in which is located a rotatable housing 14. A vertical shaft 15 passes through said casing 13 and through the top of the body of the iron with its upper end provided with a handle 16 so that the shaft can be manually rotated. Within the casing 13 a shaft is geared to the housing 14 by the gears 17. The housing is provided with two pairs of contact pins 18, one pair being arranged opposite the other pair and within said housing is arranged a body 19 of material which will melt at a comparatively low temperature. This body may be formed of lead, bismuth, or similar material and the pin contacts are so arranged that when the body of material is melted and flows to the bottom of the housing it will inclose said pins and when solidified will be supported by the same when the housing is moved to place said pins at the top thereof. This body will bridge the contacts and permit the current to pass from one to the other. A pair of stationary contacts 20 extend through

the top of casing 13 and have their upper ends extending through the top of the casing 11 where they receive the spaced ends of one of the conductors 9.

It will thus be seen that when the housing is rotated by means of the shaft 15 to bring the pair of contact pins, which are bridged by the body 19, in engagement with the contacts 20 the circuit to the heating elements will be closed and the iron will be heated. As soon as the temperature of the iron reaches the degree at which the body will melt, said body will be liquefied and will pass to the bottom of the housing, leaving the pin contacts at the top of the housing and thus breaking the circuit to the heating elements. After the temperature drops the body will solidify and thus attach itself to the contacts at the bottom of the housing so that when it is desired to complete the circuit to the heating elements again it will be only necessary to give the housing a half turn to bring the other pair of contacts into engagement with the stationary contacts 20.

The handle 16 is made in the form of a pointer and coöperates with suitable indicating marks on the top of the casing 4 to properly set the device.

We also provide a switch 21 in the circuit in the iron which is controlled by the button 22, located on the top of the iron, for rendering the circuit controlling means inactive and permitting the iron to be used as an ordinary electric iron.

We also provide circuit indicating means 23 on the iron for indicating when the current is flowing to the heating elements or is cut off therefrom. Such means consist of a small casing 24 having transparent parts and carrying a small strip 25 which is connected with the circuit and which will glow when the current is passing through it. We may detachably connect the casing 24 to the iron by means of the sockets 26 in the iron for receiving the stems 27 connected with the casing. These parts are provided with suitable contacts for completing the circuit to the wire 25.

Due to the arrangement of the insulation the iron will retain its heat for some time after the current has been broken so that it will not be necessary to set the device to turn on the current for quite an elapse of time so that the consumption of current will be reduced. If the operator should attempt to turn on the current while the iron is still at a high temperature he will be prevented from doing so as the body 19 will still be in a liquid state and will remain at the lower part of the housing and thus fail to make contact with the contact pins which are in engagement with the stationary contacts.

The resistance wire 25 may be made of the same material as that used for the heating elements of the iron. By detachably connecting it with the iron and its circuit a new indicator may be quickly substituted for the old one if the old one should become broken or defective as it can be as easily removed and replaced as lamps and fuses. As shown in Fig. 1 the switches and the regulating device and the indicator are located in series.

In the modification shown in Fig. 2 the casing 13′ containing the housing 14′ extends through the top of the iron and its upper end is closed by the insulated cover 28. This cover 28 carries the stationary contacts 20′ and the leads 20× which pass from said contacts to the contacts 29 which are adapted to engage with the contacts 29′ which are located in the wall of the casing 13′ and are connected with the main leads. This arrangement provides access to the housing 14′ and its attached parts. The shaft 15′ is also carried by the cover 28.

As shown in Figs. 2 and 3, the housing 14′ is carried by the clamping ring 30 which encircles the middle of the housing and is provided with a stub shaft 31 to which the gear 17′ is secured.

By this arrangement of parts the housing may be easily and quickly removed and replaced by a new one or a similar device.

We may form channels 32 in the cover 28, if desired, to provide communication between the interior of the casing and the atmosphere.

The housing should be provided with air-tight joints and the air may be withdrawn therefrom to provide a vacuum in order to conserve the metal body 19.

In the modification shown in Figs. 4, 5 and 6, we provide a thermostat 33, which may be formed of two strips of different materials, this thermostat being located in the body of the iron adjacent the heating elements. A shaft 34 is rotatably mounted in the body and has a crank 35 at its lower end, the end of which is located adjacent the thermostat and is adapted to be engaged by the same when the heat actuates the thermostat. The upper end of this shaft passes through the upper face of the iron where it is provided with a handle 16′ which is formed with a pointer for coöperating with the indicia on the upper face of the iron as shown in Fig. 6. A switch finger 36 is secured to the shaft 34 and this finger coöperates with a pair of spring switch members 37 which are located in the circuit of the iron, the parts being so arranged that when the finger 36 is located between the spring members the circuit will be completed but when the finger is moved from between the members the circuit will be broken. When the iron is to be used the handle is moved into a position with its pointer over "On". This will move the finger between the spring switch mem-

bers so that the circuit to the heating elements may be closed. When the temperature reaches a certain degree the thermostat will act to partially rotate the shaft by striking the crank and thus throw the finger from between the members and thus break the circuit. When it is again desired to heat the iron the handle must be moved to the "on" position.

We may also provide for this modification the switch 22′ which is similar to that shown at 22 and the circuit indicating means 23′ which are similar to that before described. It will be seen that when the shaft is partially rotated by the thermostat the pointer on the handle will be moved to the "off" position.

It is thought from the foregoing description that the advantages and novel features of our invention will be readily apparent.

We desire it to be understood that we may make changes in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What we claim is:—

1. In combination with an electric iron, thermostatic means for breaking the current permanently when a certain temperature has been reached and means for turning on the current by hand after an elapse of time in which the iron has become slowly cold and has reached a certain temperature, said hand operated means setting the parts in condition to be acted upon by the thermostat when the temperature reaches again the highest limit.

2. A circuit indicating devices located in the circuit of an electric heated body comprising a resistance which will become red with the passage of the current, in combination with arrangements located in the circuit of the electric heated body in such a manner that this arrangement may permit changes of the signaling device in the same way that lamps or fuses are changed.

3. An electric iron comprising a switch including a casing containing terminals at both ends to be connected in series with the circuit of the iron, a body inside of the casing for bridging the terminals and which will maintain the circuit closed until the temperature of the iron reaches the melting point of the body when the body will fall to the bottom of the casing breaking the circuit between the upper terminals of the casing and connecting the lower terminals.

4. An electric iron comprising a switch including a casing, terminals at both ends thereof, a body inside of the casing which will maintain the circuit closed until the temperature of the iron reaches the melting point of the body when the body will fall downward breaking the circuit between the upper terminals of the casing and connecting the lower terminals and means operated by hand from outside of the iron to connect with the circuit either the lower or the upper pair of pins.

5. An electric heating body comprising a switch including a casing containing terminals at both ends to be connected in series with the circuit, a body inside of the casing for bridging the terminals and which will maintain the circuit closed until the temperature reaches the melting point of the body when the body will fall to the bottom of the casing breaking the circuit between the upper terminals of the casing and connecting the lower terminals.

6. An electric heating body comprising a switch including a casing, terminals at both ends thereof, a body inside of the casing which will maintain the circuit closed until the temperature reaches the melting point of the body when the body will fall downward breaking the circuit between the upper terminals of the casing and connecting the lower terminals and means operated by hand from outside to connect with the circuit either the lower or the upper pair of terminals.

7. A thermostatic switch comprising a casing, terminals at both ends thereof, a body inside of the casing which will maintain the circuit closed until the temperature of the body where the switch is located reaches the melting point of the body inside of the casing when the body will fall downward breaking the circuit between the upper terminals of the casing and connecting the lower terminals and means operated by hand from outside to connect with the circuit either the lower or upper pair of terminals.

In testimony whereof we affix our signatures.

JOSÉ A. OCA-BALDA.
GODFREY ALFRED DE LANGIE.