

W. S. ANDREWS.
 AUTOMATIC CUT-OUT FOR ELECTRIC HEATERS.
 APPLICATION FILED JAN. 18, 1910.

1,025,852.

Patented May 7, 1912.
 2 SHEETS—SHEET 1.

Fig. 1.

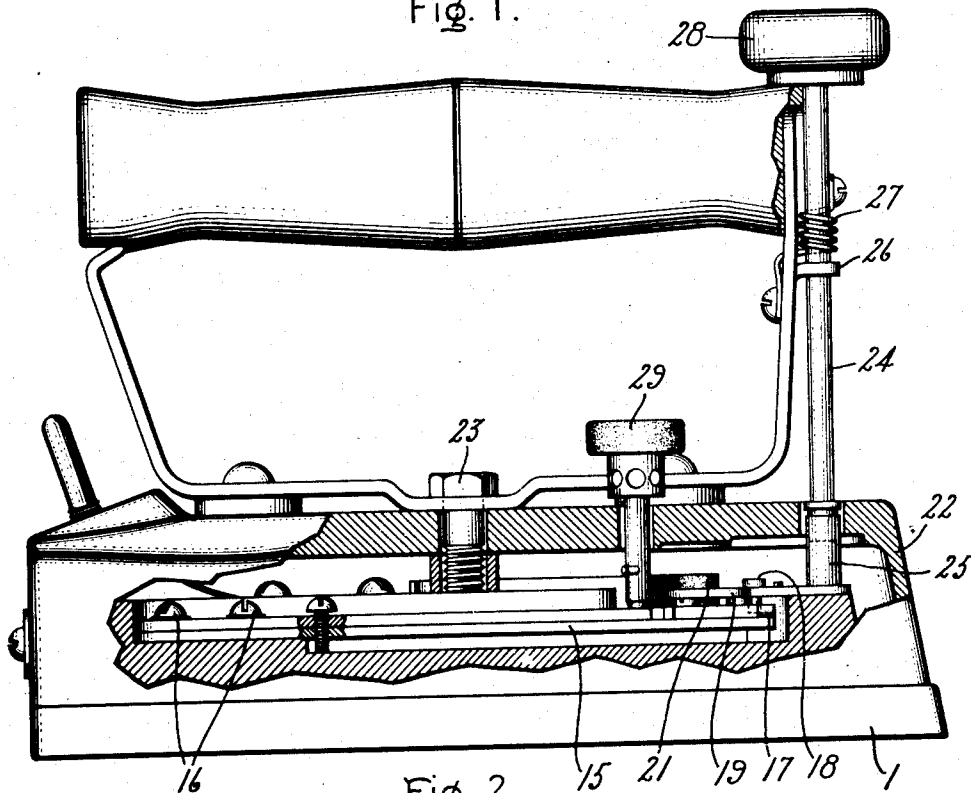
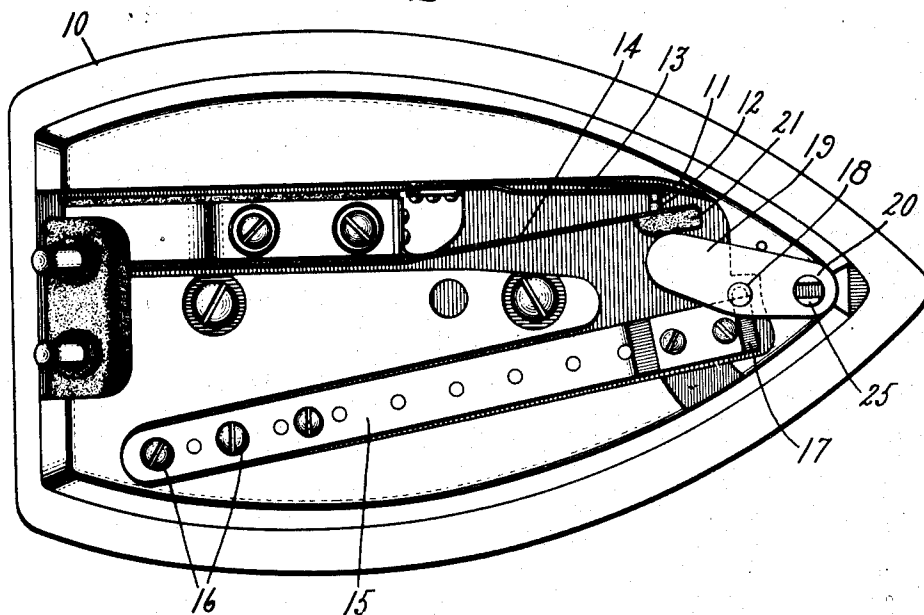


Fig. 2.



Witnesses:

George W. Tilden
J. Ellis Glen

Inventor:

William S. Andrews,

by *Alfred H. Davis*
 His Attorney.

1,025,852.

Patented May 7, 1912.

2 SHEETS—SHEET 2.

Fig. 3.

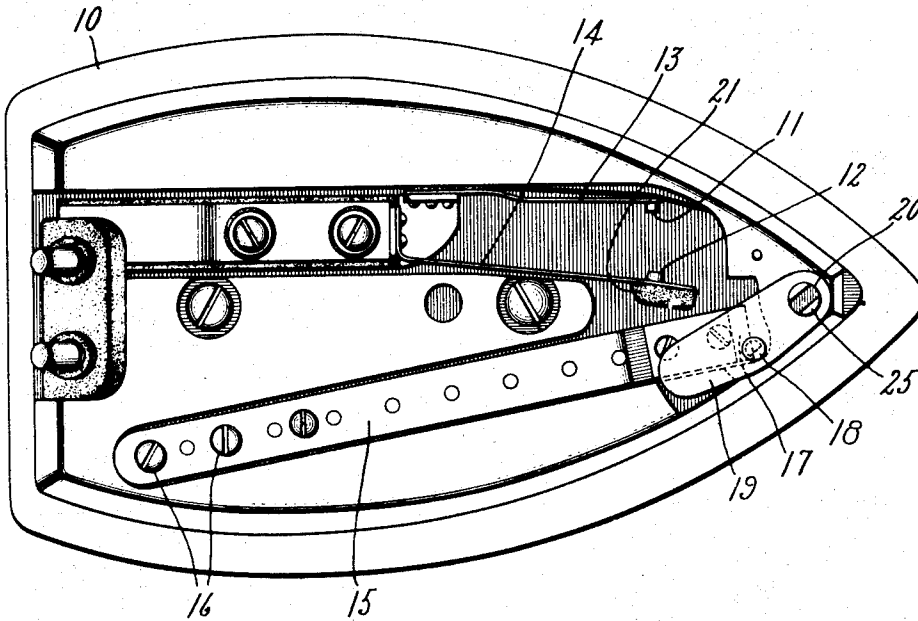
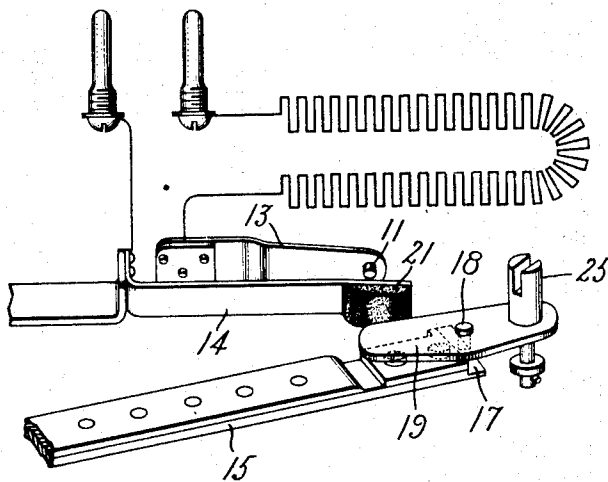


Fig. 4.



Witnesses:

George A. Tilden
J. Ellis Allen

Inventor:

William S. Andrews,

by *Alfred S. Davis*
 His Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM S. ANDREWS, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL
ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

AUTOMATIC CUT-OUT FOR ELECTRIC HEATERS.

1,025,852.

Specification of Letters Patent.

Patented May 7, 1912.

Application filed January 18, 1910. Serial No. 538,739.

To all whom it may concern:

Be it known that I, WILLIAM S. ANDREWS, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Automatic Cut-Outs for Electric Heaters, of which the following is a specification.

This invention relates to electric heaters and has for its object the provision of means whereby the current will be automatically cut off from the electric heater when the temperature reaches a predetermined point.

My invention relates more specifically to electrically heated flat irons and the like.

In devices of this sort it is often desirable that some means be provided whereby the heat will be cut off from the iron in case the temperature exceeds a predetermined degree.

One of the objects of my invention is to provide, in connection with an automatic switch for cutting out the heating unit, means for again closing the switch as well as means whereby the switch may be opened by the operator at any time.

I also provide mechanism for positively latching the switch closed and so arrange the parts that a wide quick break will be given so as to open the circuit effectively and without injury to the switch due to excessive arcing at the contacts.

Other objects of my invention will appear in the course of the following specification in which I have shown my invention embodied in concrete form for purposes of illustration.

In the drawings disclosing one form of my invention, Figure 1 represents a side view of the same, partly broken away to show the operating mechanism; Fig. 2 represents a plan view of the iron with the upper portion removed, the parts of the switch being shown in closed position; Fig. 3 represents a view similar to Fig. 2 with the switch in open position; and Fig. 4 represents a perspective view of the switch and the circuit connections.

Referring to the drawing, 10 represents the body of the iron, which may be of any desired material, such, for instance, as cast iron. The particular shape and construction of this iron, as far as the heating arrangement is concerned, forms no part of

my invention. The heating element may be of any well-known type.

Mounted upon the body of the iron is a switch comprising two contacts 11 and 12 which may be of platinum and when in contact with each other complete the circuit of the electric heater. The contact 11 is mounted upon the resilient metal bar 13. The contact 12 is likewise mounted upon the resilient bar or strip 14. One end of this strip is securely fastened to the body of the flat iron, whereas the end supporting the contact 12 is free to move toward and from the contact 11. This resilient strip 14 is preferably made of such material that it may be heated to a considerable temperature without destroying the resiliency. Normally the contacts 11 and 12 are separated from each other, as shown in Fig. 3.

Mounted longitudinally of the flat iron is a thermostatic element 15. This element may be constructed in any desired manner. I have shown the well-known compound bar type of thermostat which, when heated, will bend due to the difference in the coefficient of expansion of the metals composing it. One end of the thermostatic element is fixed to the body of the heater by screws 16, and the opposite end is free to move with changes of temperature. The free end of this member is adapted to act as a latch for locking switch contacts 11 and 12 in closed position. The latching mechanism comprises a beveled portion 17 on the end of the bar which is adapted to be engaged by a similarly beveled locking bar or bolt 18, preferably of hardened tool steel. This bolt 18 is fixedly mounted in a member 19 pivoted to the body of the iron at 20. The bolt is mounted about midway of the member 19 and the free end of the member is adapted to engage a block of insulating material 21 on the end of the strip 14 adjacent contact 12. The arrangement is such that when the member 19 is turned on its axis, the insulating block 21 is engaged by the end of the member and the contacts 11 and 12 forced into engagement. At the same time the bolt 18 rides along the beveled portion 17 of the thermostatic element and forces the end of the latter downward. By the time the contacts 11 and 12 are in good conducting relation the bolt 18 passes off of the beveled portion 17 and the thermostatic element re-

turns and acts as a barrier for the member 19 so that the switch will be locked in the closed position. A cover 22 is placed over the switch mechanism and the thermostatic element and is held in position by the bolt 23.

In order to operate the member 19 to close the switch, I have provided a rod 24 which enters the slot in the pivot pin 25. This rod 24 projects upward in front of the handle of the iron and is held in place by a guide 26. A spring 27, one end of which is secured to the rod, while the other end is secured to the fixed part of the handle, gives the rod a tendency to turn in a direction to open the switch, or in a counterclockwise direction. On the upper end of the rod 24 is a handle 28 for turning the rod to close the switch.

In order to manually open the switch at any time, I have provided a push button 29 the shank of which projects through the cover of the iron so that the end engages the thermostatic element 15. This push button 29 is arranged conveniently near the handle of the flat iron so that the operator may, by simply pressing a button, force the thermostatic element down and trip the latch, thereby opening the circuit of contacts 11 and 12. A set screw 30 is arranged to adjust the thermostat for various temperatures if desired.

The operation of my device will be very easily understood from the foregoing description. If the temperature exceeds a predetermined degree, the thermostatic element will bend and trip the latch, the spring 27 operating to quickly turn member 19 away from the block 21 to open the switch contacts. In order to again close the switch, the handle 28 is turned. Of course the switch cannot be latched closed until the iron is cooled off sufficiently to permit the thermostatic element to get back to its normal condition. If at any time it is desired to open the circuit without waiting for the iron to reach a predetermined degree of heat, the push button is operated. The circuit will, of course, again be closed by turning the handle 28.

It will be seen that I have provided a very simple arrangement whereby the current may be cut off either automatically or manually and may be again turned on by the operator in a simple manner. The construction is such as to cause a wide quick break to prevent injurious arcing at the contacts.

I have shown my invention embodied in concrete mechanism for purposes of illustration, in accordance with the patent statutes, but it should be understood that I do not limit my invention to the particular construction or arrangement of parts herein described, except in so far as they are limited by the scope of the annexed claims,

since various modifications of my invention will suggest themselves to those skilled in the art without departing from the spirit of my invention.

What I claim as new and desire to secure by Letters Patent of the United States, is:—

1. The combination with an electric heater, of a normally open switch in the circuit thereof, a thermostatic element for latching said switch closed and releasing the same at a predetermined temperature, and means controlled by the operator for releasing the latch.

2. The combination with an electric heater, of a normally open switch in the circuit thereof, a thermostatic element for latching said switch closed and releasing the same at a predetermined temperature, and means controlled by the operator for actuating the thermostatic element to release the latch.

3. The combination with an electric heater, of a normally open switch in the circuit thereof, a thermostatic element for latching said switch closed, manually operated means for moving the switch to latching position and independent manually operated means for releasing the latch.

4. The combination with an electric heater, of a switch in the circuit thereof biased to open position, a resilient thermostatic element, and means for latching said switch in closed position comprising a beveled member on the thermostatic element and a similarly beveled member associated with the switch.

5. The combination with an electric heater, of a switch in the circuit thereof biased to open position, a thermostatic element, and beveled latching mechanism between the thermostatic member and the switch.

6. The combination with an electric flat iron, of a switch in the circuit thereof biased to open position, a thermostatic element, latching mechanism between the thermostatic member and the switch, manually operated mechanism for moving the parts to latching position, and manually operated mechanism for moving the thermostatic member to release the latch.

7. The combination with an electric flat iron, of a normally open switch in the circuit thereof, a thermostatic element, latching mechanism between the switch and said element, a rotary member for moving the switch to latching position, and a button adjacent the handle for tripping the latch.

8. The combination with an electric flat-iron, of a normally open switch in the circuit thereof, a thermostatic element, beveled latching mechanism between the switch and said element, a manually operated member for moving the switch to latching position, and a push button for operating the thermostatic member to trip the latch.

9. The combination with an electric flat-

iron, of a normally open switch in the circuit thereof, means for latching the switch in closed position, an operating member for said latching means, and a releasing member
5 located adjacent the handle of the flatiron and arranged to be operated independently of the operating member.

10 10. The combination with an electric flatiron, of a normally open switch in the circuit thereof, a latching device for holding the switch in closed position, a member ad-

jacent the handle of the flatiron for latching the switch closed, and independent means located so as to be operated from the top of the flatiron for releasing the latch. 15

In witness whereof, I have hereunto set my hand this 17th day of January, 1910.

WILLIAM S. ANDREWS.

Witnesses:

BENJAMIN B. HULL,

HELEN ORFORD.