

1,041,720.

H. P. BALL.  
AUTOMATIC FLAT IRON.  
APPLICATION FILED SEPT. 27, 1909.

Patented Oct. 22, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

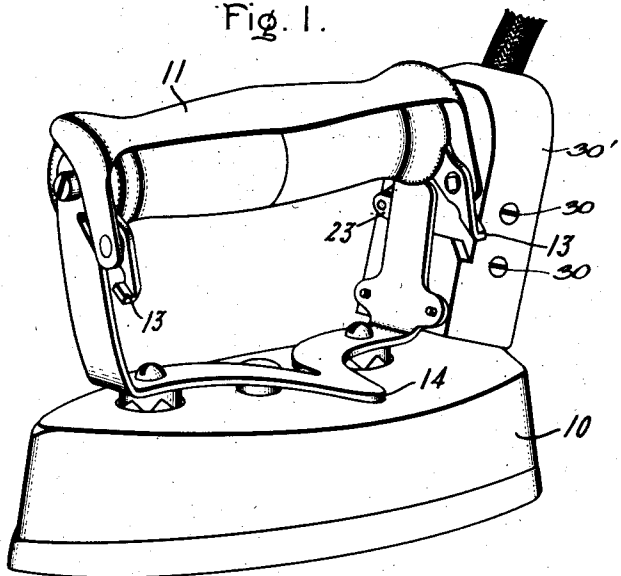
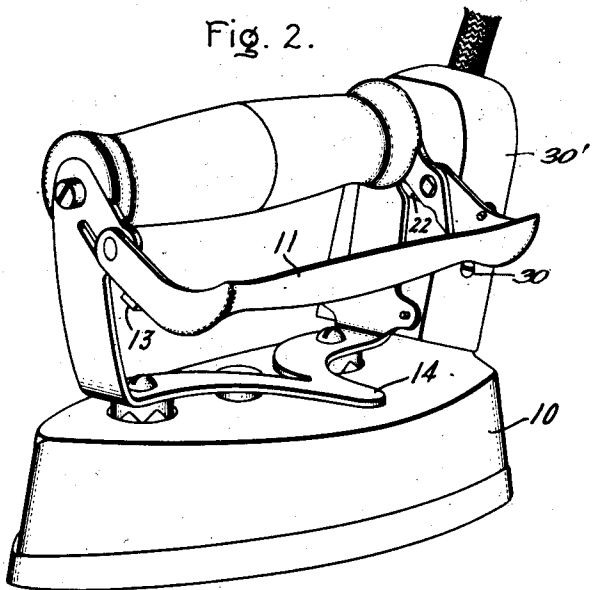


Fig. 2.



Witnesses:

*George H. Tilden*  
*J. Ellis Allen*

Inventor:

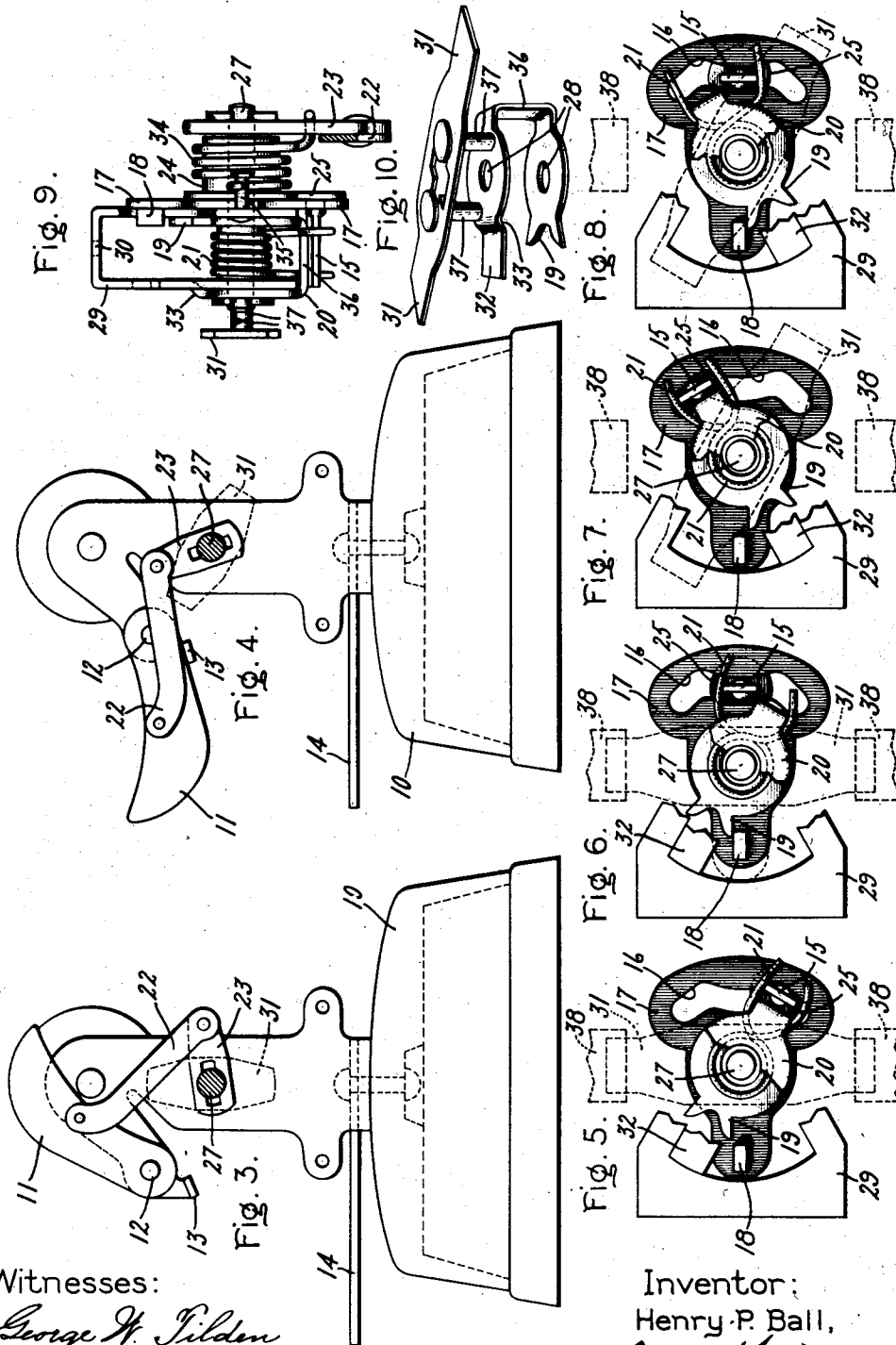
Henry P. Ball,

by *Alfred B. Davis*  
His Attorney.

1,041,720.

Patented Oct. 22, 1912.

2 SHEETS-SHEET 2.



Witnesses:

*George H. Tilden*  
*J. Ellis Elen.*

Inventor:

Henry P. Ball,

by *Albert H. Davis*  
His Attorney.

# UNITED STATES PATENT OFFICE.

HENRY PRICE BALL, OF PITTSFIELD, MASSACHUSETTS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

## AUTOMATIC FLAT-IRON.

1,041,720.

Specification of Letters Patent.

Patented Oct. 22, 1912.

Application filed September 27, 1909. Serial No. 519,764.

*To all whom it may concern:*

Be it known that I, HENRY P. BALL, a citizen of the United States, residing at Pittsfield, county of Berkshire, State of Massachusetts, have invented certain new and useful Improvements in Automatic Flat-Irons, of which the following is a specification.

This invention relates to electrically heated tools such as flat irons and the like, and has for its object the provision of a device of this character in which the electric current is automatically cut off in a simple and efficient manner when the tool is not in use.

One of the objects of my invention is to provide an electrically heated tool in which the current is applied when the handle of the tool is grasped and is automatically cut off when the handle is released.

Another object of my invention is to provide a tool of this character in which the circuit will be made and broken with a snap action as the handle is grasped and released, the arrangement being such that there will be no substantial strain upon the hand of the operator when the iron is in use.

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.

Referring to the drawings, Figure 1 represents a perspective view of my improved flat iron with the circuit controlling switch closed; Fig. 2 represents a similar view with the circuit-controlling switch open; Figs. 3 and 4 are rear elevations of the iron with the switch respectively closed and opened, the switch mechanism itself being removed; Figs. 5 to 10 show the switch mechanism in detail.

Referring to the drawing, 10 represents the body of the iron, which may be constructed and heated in any desired manner. Associated with the handle of this iron is a lever 11 pivoted at 12 to a fixed portion of the iron. This lever 11 is arranged in a convenient manner as shown, so as to be engaged by the hand of the operator, the pivotal point of the lever being eccentric with the handle. Should the operator grasp the handle and lever, the latter will be operated toward the handle until finally, when the switch is closed, it assumes the position shown in Figs. 1 and 3. This lever is spring

pressed to the position shown in Figs. 2 and 4 by means of a spring hereinafter described. A stop 13 is arranged, as shown, to limit the movement of the lever and the projection 14 which is formed integral with the handle, provides means for resting the iron on its side without interfering with the lever 11 in its open position. This lever 11 is adapted to actuate the switch mechanism which is of the quick make and break type. The arrangement of the switch mechanism is such that it rotates in one direction to open the circuit and in the opposite direction to close the circuit, but has a snap action in both directions. The specific mechanism whereby this result is carried out, I have shown, for purposes of illustration, in Figs. 5 to 10.

Referring now to Figs. 5 to 10 for the specific construction of the switch, it will be seen that the lever 11 is connected with the switch mechanism proper by means of a link 22 pivoted to the lever and to the operating arm 23 of the switch. This arm 23 is secured to the sleeve or drum 24 and to the member 25 in any desired manner so as to operate as one piece. The pin 15 is secured to member 25, so that when the arm 23 is rotated the pin 15 rotates therewith. The pin 15 secured to the member 25 projects through the slot 16 in member 17 for a considerable distance, as shown in Fig. 9, so as to be engaged by opposite ends of the spring 21. The member 17 has no rotary movement, but simply slides back and forth on the shaft, being held against rotation by the lug 18 projecting through a slot in the frame. The lug 18 is on the opposite end of the member 17 from the slot 16 so as to engage either side of the V-shaped projection 19. The member 20, of which the V-shaped projection 19 is a part, is U-shaped, as shown in Figs. 9 and 10, the central pivot or shaft 27 of the switch passing through the holes 28 on opposite sides of this U-shaped member. The frame 29 which supports the switch mechanism is likewise U-shaped and is secured in place by screws or bolts which pass through the holes 30 in the insulating casing 30' of the terminal plug. This frame 29 limits the movement of the member 20 and therefore of the switch blade 31, since a portion 32 of member 20 is bent into the plane of the frame 29 at 33. The spring 34 has one end

hooked over the arm 23 and the opposite end secured to a pin 35 in the fixed frame 29. The spring 21, which is lighter than spring 24, is wound about the central shaft of the switch and has its ends projecting on either side of the pin 15 and likewise on either side of the cross bar 36. The tendency of the spring 21, therefore, is to hold the pin 15 and cross bar 36 of U-shaped member 20 together, while the lug 18 engaging the projection 19 prevents them from going together. The switch blade 31 is secured to the member 20 by means of pins 37 as shown in Fig. 10.

Referring in general to the operation of the switch, it will be seen that the pin 15 is moved back and forth in the slot 16 as the lever 11 is moved back and forth on its pivot. The position of the parts in Fig. 5 correspond with that in Fig. 3. Assuming now the parts to be in the position shown in these two figures; when the operator releases the lever 11 the pin moves toward the position shown in Fig. 6. As it does so, the pin, by engaging the edge of the slot 16, forces the sliding member 17 in a direction so that the lug 18 engages the edge of projection 19, thus preventing the member 20 from returning and placing a tension upon the spring 21. As the lever 11 continues to rotate toward the open position, the pin 15 moves onward past the middle of the slot, at which point the edge of the slot is curved in the reverse direction and the pin engages the lower side of the slot, thereby sliding the member 17 backward toward the dotted line position shown in Fig. 6. When finally the lever 11 approaches the limit of its movement, the lug 18 is disengaged from the projection 19, thereby allowing the member 20 to move in response to the spring tension into the position shown in Fig. 7, thereby opening the switch. In closing the switch, this cycle of operation is repeated. During the early part of the movement of the lever the switch member is locked and placed under tension. In the latter portion of its movement the switch member is unlocked thereby operating the switch to either open or close it with a snap action.

It will be seen that as the lever 11 is rotated toward and from the handle the switch blade 31 will be rotated correspondingly so as to have a snap action as it makes and breaks the circuit on clips 38.

Various modifications of my invention will suggest themselves to those skilled in the art without departing from the spirit of my invention, the scope of which is set forth in the annexed claims.

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

1. The combination with an electrically heated flat iron, of a switch element for controlling the circuit thereof, a pivoted mem-

ber rotatable toward and from the handle of the iron, and mechanism for actuating the switch element in opposite directions with a snap action to make and break said circuit as said member is rotated in opposite directions.

2. The combination with an electrically heated flat iron, of a switch element for controlling the circuit thereof, a pivoted member rotatable by the hand of the operator toward the handle and spring pressed away from the handle, and mechanism for actuating the switch with a snap action in one direction to make the circuit as the pivoted member is moved by the hand and in the opposite direction with a snap action as the member is moved by the spring.

3. The combination with an electrically heated flat iron, of a switch element for controlling the circuit thereof, a pivoted member rotatable toward and from the handle of the iron and parallel therewith, and mechanism for actuating the switch element to make and break said circuit as said member is moved in opposite directions.

4. The combination with an electrically heated flat iron, of a switch element for controlling the circuit thereof, mechanism controlled by the hand of the operator in grasping the handle of the iron for actuating said element in opposite directions with a snap action to make and break said circuit.

5. The combination with an electrically heated flat iron, of a switch element for controlling the circuit thereof, a pivoted member movable toward and from the handle of the iron and parallel therewith, and mechanism for actuating the switch element in opposite directions with a snap action to make and break said circuit as said member is moved in opposite directions.

6. The combination with an electrically heated flat iron, of a switch element for controlling the circuit thereof, a pivoted member movable by the hand of the operator toward the handle and spring pressed away from the handle, and mechanism for actuating the switch element with a snap action in one direction to make the circuit as the pivoted member is moved by hand and in the opposite direction with a snap action as the member is moved by the spring.

7. The combination with an electrically heated flat iron, of a switch element for controlling the circuit thereof, a pivoted member rotatable toward the handle of the iron by the hand of the operator and spring pressed away from the handle, and mechanism for operating the switch element with a snap action to make and break said circuit as said member is moved in opposite directions.

8. The combination with an electrically heated flatiron, of a snap switch in the heater circuit secured thereto, a member

movably mounted so as to be engaged by  
the hand of the operator for movement to-  
ward and from the handle, and connections  
between the switch and said member where-  
5 by the switch is opened and closed with a  
snap movement by opposite movements of  
the member.

In witness whereof, I have hereunto set  
my hand this 20th day of September, 1909.

HENRY PRICE BALL.

Witnesses:

JAS. S. SMYSER,

FREDERICK M. VOGEL.