W. G. COLBORN.

AUTOMATIC CUT-OFF.

APPLICATION FILED JAN. 13, 1919.

1,303,166. Patented May 6, 1919.

Fig. 1.

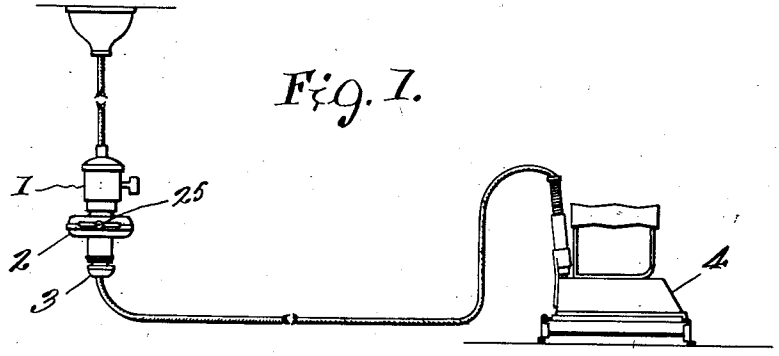


Fig. 2.

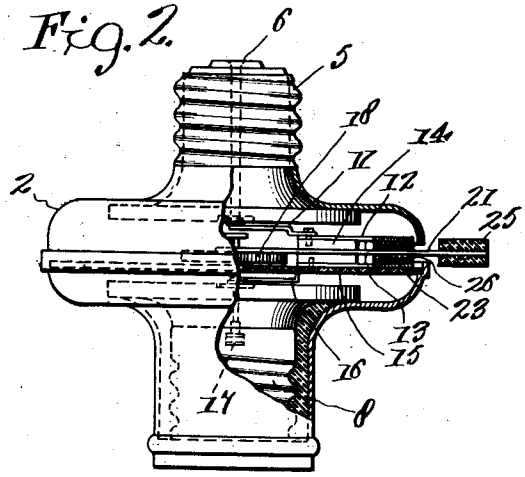


Fig. 3.

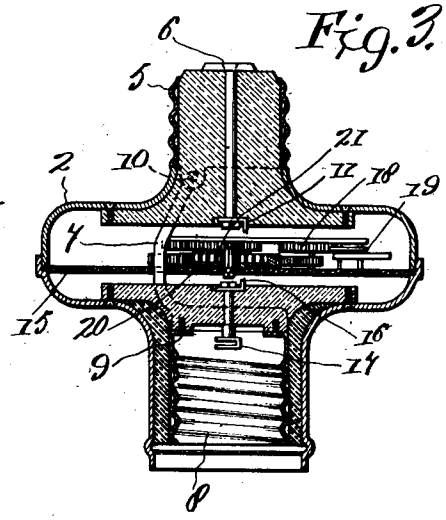
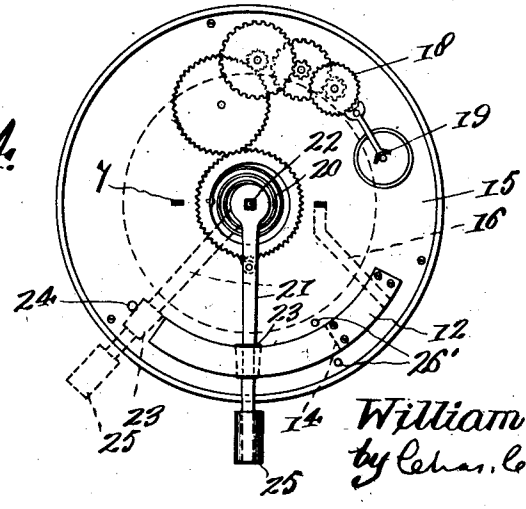


Fig. 4.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC CUT-OFF.

1,303,166. Specification of Letters Patent. Patented May 6, 1919.

Application filed January 13, 1919. Serial No. 270,953.

To all whom it may concern:

Be it known that I, WILLIAM G. COLBORN, a citizen of the United States, residing at Raven, county of Tazewell, and State of Virginia, have invented certain new and useful Improvements in Automatic Cut-Offs; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to devices for automatically cutting off current after a certain predetermined time, in order to prevent waste of current and expense from such waste when current has been inadvertently left on when no longer serving a useful purpose.

My invention relates to a casing or frame in which certain parts are to be found for effecting this purpose, and in this casing or frame I may place, and usually do place a plug and socket, the plug being adapted to the ordinary electric light socket and the socket being adapted to receive the ordinary plug when connected to lamps, irons, heating devices, etc.

In said casing or frame I mount a timing device, and connected with said device some means, here shown as an arm or lever, whereby the timing device may be wound up and the circuit closed from the plug to the socket. The timing device, after a certain interval, carries the winding arm to a position in which the circuit is interrupted after a predetermined interval.

My invention is intended to be used for various purposes, as for instance for shutting off current from a flatiron, current from a lamp, from an electric stove, from a bed warming device, from cooking devices, and from various other devices in connection with which current is to be used for a comparatively short time.

In the drawing which forms a part of this invention:

Figure 1 illustrates my device connected to a flatiron.

Fig. 2 is a view of my device with the casing partly in section, showing interior features.

Fig. 3 is a section through my device; and

Fig. 4 is a top sectional view showing the timing mechanism.

In the drawing, 1 represents an ordinary electric light socket depending from the ceiling, and 2 my device screwed into said socket. In the socket end of my device at 3 I have shown the plug of an ordinary flatiron 4, to be heated by electricity. The upper or plug end of my device 3 has the usual outside metal screw thread 5 and the usual plug 6. Connected with the screw part 5 I show a wire 7 which is carried through the device and connects with the screw thread part 8 of the socket end, so that the connection is complete, the screws 9 and 10 offering perfect electric connection.

The center rod 6 is connected by suitable means 11 with the upper one of a pair of curved metal contacts 12 and 13 which are insulated from each other by insulation indicated at 14, so that they are free to spring toward each other without contacting with each other. These contacts thus separated are arranged on a partition or diaphragm 15 between the upper and lower parts of my cut off, and the lower one, 13, is electrically connected by conductors 16 with the center plug 17, of the socket part. It will be obvious that when the conductor is placed between the two contacting members 12 and 13, current may pass, and that when no conductor is present current will not pass.

On the diaphragm 15 I mount a clock train 18 provided with an escapement 19 and driving spring 20. Connected to the said driving spring is an arm or lever 21, which is adapted, when turned to the right as shown in Fig. 4, to wind up said spring by said arm or lever being on the center post 22. The contacts 12 and 13 heretofore alluded to, are curved, as shown in Fig. 4, on a radius drawn from a center of the winding post, and on said lever 21 and extending between these contacts I provide a rotating thimble or sleeve 23 of brass or other conductor, so arranged as to bridge the gap between the upper and lower contacts.

It will be seen, therefore, that as long as said part 23 is between the contacts, current will pass.

I arrange the clock train so that in running down it will carry the arm 21 with the thimble or roller 23 to the left until it escapes from between said contacts and is arrested by the post or stop 24 from further movement.

I provide the arm 21 with an insulating

handle 25 preferably, and preferably, I insulate the thimble 23 by a suitable insulation as shown at 26.

It will therefore be seen that all that is necessary to do in using this device is to attach the plug or the wire to the socket of the device and screw the plug of the cut off into the wall or chandelier socket, then the arm or lever is turned to the right, as shown in Fig. 4, until it strikes against the stops 26′, and this winds the clock train. The clock train in unwinding carries the thimble 23 between the contacts and closes the circuit through the iron, or whatever device is used.

I propose, in adapting my device in connection with the use of flatirons, to provide for a contact period, say of fifteen minutes, so that it will be necssary for the laundress, in order to keep her iron hot, to turn the arm or lever every fifteen minutes. It is the experience of many housekeepers that irons are sometimes left standing for hours and days even, with the current fully on. This is not only wasteful and expensive but is a common cause of fires. The iron does not glow like a lamp, and unobserving persons will fail to perceive that the current may be on. Of course the interval which I have suggested is merely arbitrary and may be increased or diminished to any desired extent.

Similarly, lights used only occasionally in closets, cellars, etc., may be provided with one of my cut off plugs, and they will, of course, go out of their own accord after a certain interval. Other devices and uses, as indicated above, readily suggest themselves.

Of course I provide the usual insulation for the sockets and plugs, and my diaphragm 15 is preferably made of fiber or other insulating material. This diaphragm need not be continuous but may be merely a skeleton.

I reserve the right to use equivalents.

It will thus be seen that I have invented a convenient and handy device of little weight, of simple construction, one that is useful anywhere by anybody, requires no skill, one that is safe, cannot get out of order readily, and one that is substantially fool proof.

Having thus described my invention what I claim and desire to secure by Letters Patent of the United States, is:

1. In a device for controlling time of current flow in combination, a socket plug at one end of the device, a plug receiving socket at the other, circuits between them and in one of said circuits, a clock driven lever, said lever being adapted to wind said clock mechanism in movement in one direction and to be made to reverse its movement by the clock train, the clock train controlling the time of said reverse movement and the period of current flow.

2. In a circuit cut-off in combination, a clock train, a lever for winding said train, and a switch of which said lever forms a part, the said clock train being adapted to control the period during which the circuit is closed through the switch.

3. In a circuit cut-off in combination, a spring driven clock train having an escapement therein, a lever, said lever forming one member of a switch, said lever adapted in motion in one direction, to wind said spring and to be returned by the clock train as the latter runs down, and being adapted to open the circuit at the end of its return traverse.

4. In an automatic circuit cut-off, in combination, an energizable cut-off delaying means, and energizing means for such delaying means so as to cause the latter to close an interrupted circuit, for a definite period, said energizing means forming a part of the circuit.

5. In an automatic device for delayed breaking of a circuit, in combination, a time measuring device, a circuit around said time measuring device, and means for energizing said time measuring device, said last named means forming part of said circuit and closing the circuit while the energizable device remains potentially active.

6. In an automatic cut-off for breaking a circuit after a defined interval of time, in combination, a frame, a plug and socket in said frame, connections from said plug to said socket, and in one of said connections, a clock driven lever, said lever serving to wind said clock and to be itself moved by said clock to a circuit breaking position.

7. In an automatic delayed action cut-off for electric circuits, in combination, a holder, a plug and a socket therein, there being electrical connection between the two, a spring driven clock train, a lever for winding said train, and adapted to be returned by said train, conductors arranged on either side of the path of said lever, in part, and in contact therewith whereby as long as the path of said lever corresponds with said conductors, a circuit is completed, but at other times is broken.

8. In combination, a frame, a plug and socket in said frame, a direct connection between one of the contacts of both the plug and socket, a partition of insulating material in said frame, elongated fixed contact members, mounted in insulated relation on said partition, a movable member arranged to be moved between said elongated members, to close a circuit between them, one of them being connected to the plug and the other to the socket, and means adapted to be energized by movement of said movable member to cause it to pass between said elongated members.

9. In a circuit cut-off, in combination, a frame, a plug and a socket in said frame, a conductor on one side, an insulated dia-

phragm in said frame, elongated switch members arranged in insulated relation to each other on said diaphragm, a clock train mounted on said diaphragm, a lever for winding said clock train, said lever passing in part of its movement, between said insulated switch members, and making contact therewith, and conductors to said members from the plug and socket, whereby by moving the lever in one direction the clock is wound up and the clock in unwinding carries said lever between said switch members to close the circuit between them.

10. In a circuit cut-off, a frame, connections from one side of said frame to the other, one connection being continuous and the other interrupted, a movable arm, arranged to have a limited traverse, elongated contact members arranged on each side of part of the traverse of said arm, and arranged to contact with said arm, and a device for moving said arm, said device adapted to be energized by movement of the arm in one direction, and to move the arm with a slow motion between said contacts in the other direction.

11. In a delayed action cut-off, in combination, a frame, a socket and plug in said frame, conductors between said socket and plug, in one of said conductors there being arranged means whereby a circuit may be interrupted or may be closed for a predetermined period, said means including an arm and elongated contact plates, a clock train adapted to be wound by said arm and to move said arm past the said contacts, and an insulated conductor on said arm arranged to conduct current directly from one contact plate to the other during the traverse of said arm past the plates.

In testimony whereof, I affix my signature.

W. G. COLBORN.