May 6, 1924. 1,492,967

H. P. DONLE

AUTOMATIC CUT-OUT

Filed March 24, 1921

Fig.1.

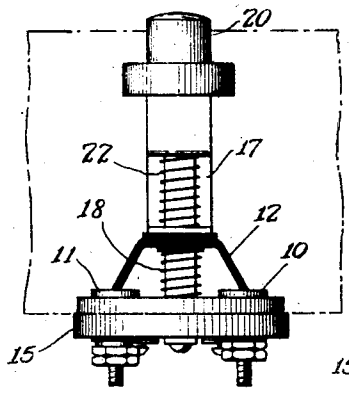


Fig.2.

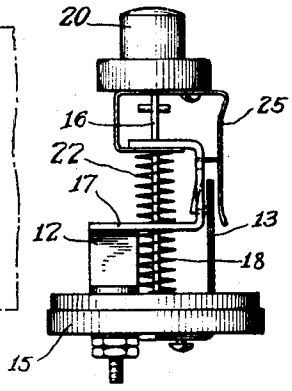


Fig.3.

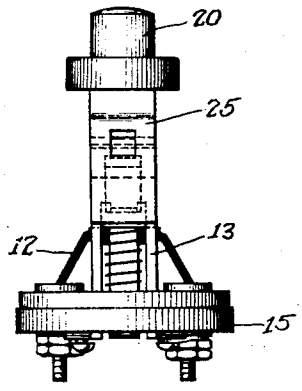


Fig.4.

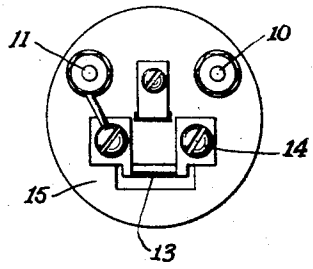


Fig.5.

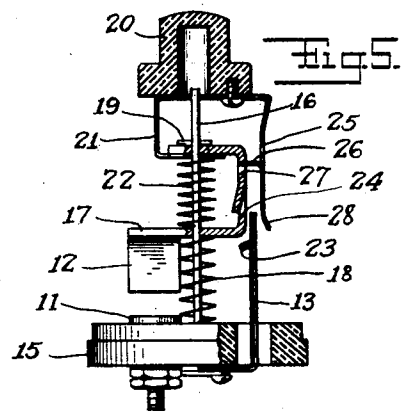


Fig.7.

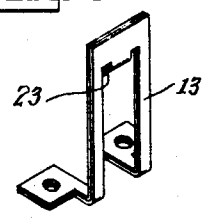
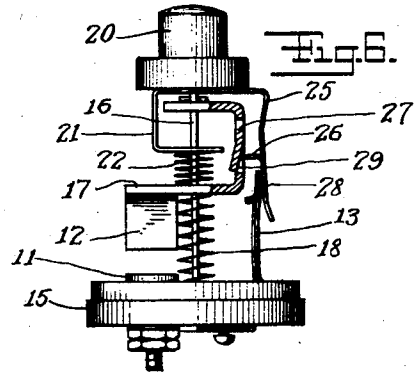


Fig.6.



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Patented May 6, 1924. 1,492,967

UNITED STATES PATENT OFFICE.

HAROLD POTTER DONLE, OF MERIDEN, CONNECTICUT, ASSIGNOR TO THE CONNECTICUT TELEPHONE & ELECTRIC COMPANY, INCORPORATED, OF MERIDEN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

AUTOMATIC CUT-OUT.

Application filed March 24, 1921. Serial No. 455,364.

To all whom it may concern:

Be it known that I, HAROLD P. DONLE, a citizen of the United States of America, residing at Meriden, Connecticut, have invented a new and useful Automatic Cut-Out, of which the following is a specification.

My invention relates particularly to a switch intended for use with an ignition system for an internal combustion motor but it should be understood that the invention is not limited to such use.

The main object is to provide a simple and reliable switch which will automatically interrupt the circuit in case of an excessive current flow or in case of continuous flow for a greater period of time than current is supposed to flow in the device.

Another object is to provide for the resetting of the device as above described in such a way that it is impossible to manually hold the switch closed long enough to run down the battery or cause damage.

Another object is to avoid the use of a resistance coil commonly employed in such switches.

In carrying out the invention, I provide a spring pressed movable switch member which is normally held in its closed circuit position by means of a thermostatic element. A part of this thermostatic element moves when it is heated so as to release the movable switch member. The movable switch member is adapted to be reset by hand and I have provided means for rendering this manual resetting means ineffective in case it is sought to prevent the automatic release of the switch member.

Fig. 1 is a side view of a switch embodying the improvements of my invention suggesting in dotted lines a casing for covering the mechanism, the switch being shown in the closed circuit position.

Fig. 2 is an edge view of the same.

Fig. 3 is a view from the opposite side of Fig. 1.

Fig. 4 is a rear view showing the circuit connections.

Fig. 5 is a longitudinal sectional view showing the switch in the open circuit position.

Fig. 6 is a view similar to that of Fig. 5 but with the manually operable part pushed inward.

Fig. 7 is a perspective view of the thermostatic element.

The two switch contacts 10 and 11 are normally bridged by a movable switch member 12. The U-shaped thermostatic element 13 has two offset portions or feet and to one of which a circuit terminal 14 is secured. All the parts may be conveniently mounted on the insulating base 15. The rod or post 16 secured to the base forms a support for all of the movable elements except the thermostatic device. The U-shaped yoke 17 is slidably mounted on this post 16 and carries the switch member 12 which is insulated from it. A spring 18 surrounding the post 16 is interposed between the base 15 and the yoke 17 so as to tend to push the yoke and switch member 12 away from the base and the contacts 10 and 11. A pin 19 secured to the post 16 acts as a stop to limit the outward movement of the yoke 17. A manually operable push button 20 has secured to it a member 21 which interlocks with the yoke 17 and serves to guide the push button on the post 16. A spring 22 on the post 16 is interposed between the yoke 17 and the yoke-like member 21 for the purpose of yieldingly holding the push button 20 and attached parts in the position shown in Fig. 5. This spring 22, however, is less powerful than the spring 18 so that the spring 18 is able to compress the spring 22 in the position shown in Fig. 6. The thermostatic member 13 serves to normally hold the switch member 12 in the closed circuit position and for this purpose the thermostatic member is provided with a catch shoulder 23 adapted to engage the shoulder 24 on the yoke 17 as shown in Fig. 2. The yielding or spring finger 25 carried by the push button 20 has a catch projection 26 adapted to engage the shoulder 27 on the yoke 17. This finger 25 also has a projecting tip 28 located adjacent the upper end of the thermostatic member 23. The circuit through the switch normally includes the thermostatic element 13, the contact 11, switch member 12 and contact 10. The thermostatic element is so designed and proportioned and of such composition that under normal running conditions the yoke 17 and movable switch member 12 are held in the closed circuit position as shown in Figs. 1, 2 and 3. In case of excessive current or

current prolonged more than normally required for operating conditions, the thermostatic element is warped because of its bimetallic structure so as to disengage the catch 23 from the shoulder 24 and allow the spring 18 to move the yoke and switch member and break the circuit. As soon as the circuit is interrupted, the thermostatic element will begin to cool off and return to its normal position. The circuit may be again closed by pushing the button 20 whereupon the catch 26 engages the shoulder 27 and the longitudinal thrust is applied through the yoke 17 until the catch 23 again snaps over the shoulder 24. If the previous abnormal circuit condition continues of course the thermostatic element will again release the switch member. Should the operator try to hold the switch closed by keeping the button 20 pushed in, the thermostatic member will continue to bend outwardly as shown in Fig. 6, and push the finger 28 outward so as to release the catch 26 from the shoulder 27, thus permitting the spring 18 to move the yoke 17 and break the circuit. To facilitate the operation of the catches, the catch 23 and the adjacent lower edge of the yoke 17 (see Fig. 5) may be inclined and an inclined shoulder 29 may be provided up which the catch 26 may slide when the push button is released from the position shown in Fig. 6.

I claim:

1. In an automatic switch, a stationary contact, a movable switch member, a thermostatic element normally retaining said switch member in closed circuit position, a spring for operating said switch member in one direction, a manually operable member for moving said switch member in the opposite direction, and automatic means for rendering said manually operable member ineffective.

2. In an automatic switch, a movable member, a thermostatic element normally in circuit therewith for holding said member in the closed circuit position, means for automatically moving said member and manually operable means for resetting said member, and means for automatically disengaging said manually operable means.

3. In an automatic switch, a sliding yoke, a thermostatic element having a catch engaging said yoke, a manually operable member for moving said yoke, said thermostatic element being adapted to disengage said manually operable member.

4. In an automatic switch, a supporting post, a yoke slidable thereon, a push button slidable on said post, a member carried thereby interlocking with said yoke but movable with relation thereto, a spring for moving said yoke, a second spring for moving said member, a thermostatic element normally engaging said yoke, a catch carried by said push button normally engaging said yoke, said thermostatic element being adapted to disengage said catch.

5. In an automatic switch, a sliding yoke, a push button, a catch member carried by said push button and a thermostatic element having a movable end interposed between said catch member and said yoke.

6. In an automatic switch, two sliding members interlocked one with the other, a catch for normally limiting the relative movement of said members, spring means for moving said members, and a thermostatic element normally engaging one sliding member and adapted to disengage said catch.

7. An electric switch, comprising a base, a thermostatically controlled latch carried thereby and insulated therefrom, a spring arranged to be held under compression and released from compression by said latch, and a spring operating device manually movable into one position to cause said spring to be compressed to close the circuit, said manually controlled device being held in said position by said latch and being automatically released therefrom by said latch under abnormal circuit conditions.

8. In an electric switch, stationary and movable contacts, an operating device movable manually in one direction, a spring for moving same in an opposite direction, means between said manually operable device and said movable contact for imparting positive movement from the former to the latter, and a thermostatically controlled latch for holding said contacts in engagement under normal circuit conditions, said latch being movable into a disengaging position under abnormal circuit conditions to automatically release the movable contact member.

9. In an electric switch, stationary and movable contacts, an operating device movable manually in one direction, a spring for moving same in an opposite direction, means between said manually operable device and said movable contact for imparting positive movement from the former to the latter, and a thermostatically controlled latch for holding said contacts in engagement under normal circuit conditions, said latch being movable into a disengaging position under abnormal circuit conditions to automatically release the movable contact member, and to also operatively disengage said manually controllable device therefrom.

HAROLD POTTER DONLE.