

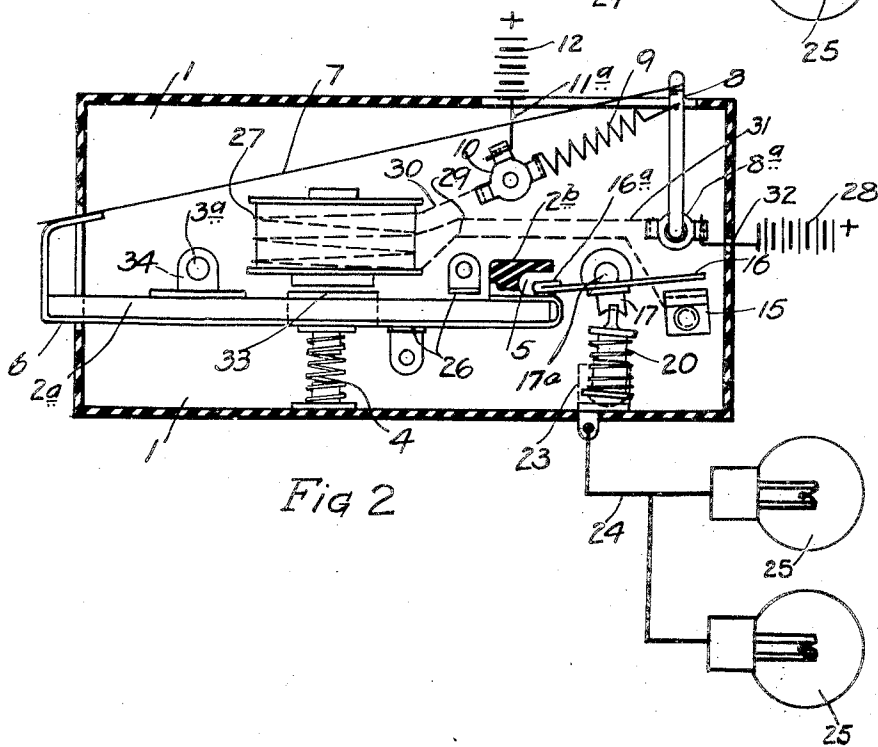
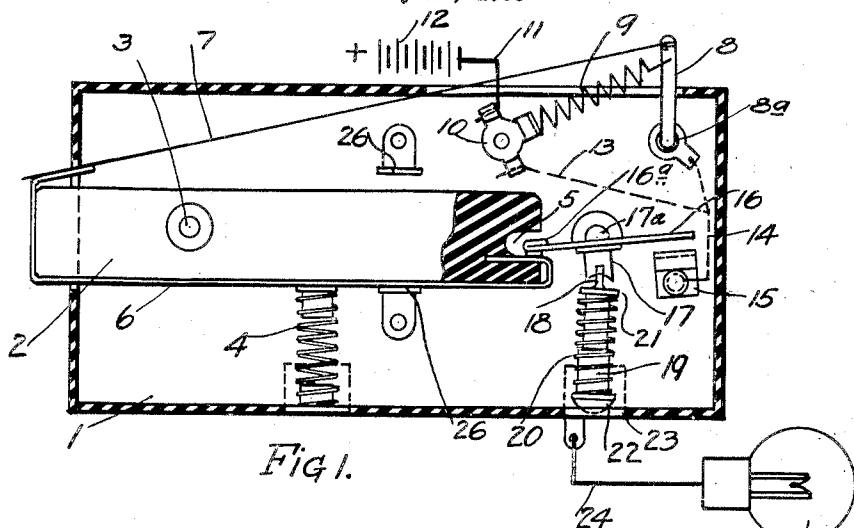
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FLASHER

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FLASHER

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11 Claims. (Cl. 200—113)

This invention relates to an improvement in flashers and concerns itself primarily with a thermo-responsive electric switch for producing a more effective flash than heretofore.

It is an object of this invention to provide a more effective switch in which the thermo-responsive element merely initiates the movement of certain mechanism for controlling the current making and breaking contacts.

A further object of this invention is to provide a thermo-responsive circuit and a flashing circuit which alternately and automatically come into action, in such a manner that the thermo-responsive circuit is completely inactive when the flashing circuit is active, thus causing a more rapid cooling of the resistance.

It is accordingly the purpose of this invention to provide a more complete definite and distinct flash contrasted by a distinct dark period between the flashes with no flickering.

The invention comprises the novel structure and combination of parts hereinafter described and more particularly pointed out and defined in the appended claims.

In the accompanying drawing which illustrates certain preferred embodiments of this invention and in which similar reference numerals refer to similar features, in the different views:

Fig. 1 is a part sectional and part elevational view of a flash producing mechanism involving this invention.

Fig. 2 is a similar view of a slightly modified form of flash producing mechanism involving this invention.

In referring to the drawing especially to Fig. 1, it will be observed there is shown a support 1 which may be made of metal or any suitable material, for supporting the various parts of the mechanism. In the present instance the support 1 is shown as made of an insulating plastic such as Bakelite. Upon this support 1, there is pivoted a lever 2 of insulating material by means of a pivot 3 rearward of the medial point of such lever. Forward of the pivot 3, a coil spring 4 suitably supported upon the support 1 normally acts against the bottom of the lever 2 for elevating the forward end thereof as will later more fully appear. The forward end of the lever 2 is provided with a bifurcation 5. An electrical conductor 6 is bent around the rear end and bottom of the lever 2 with its forward end portion bent up and then extended rearwardly into the bifurcation 5 so as to form the lower wall thereof.

To the rear portion of the conductor 6 there is connected a high resistance wire 7 that extends

in an inclined plane in a forward direction to the front end of the support 1 where it is connected to an upright conducting member 8 on the support 1 and of course suitably insulated therefrom. An electrical resistance conductor 9 connects the upright 8 with a conductive plate 10 insulated upon the support 1. The plate 10 is connected by means of a conductor 11 with a battery 12. The plate 10 is further connected by means of a conductor 13 with a conductor 14 that connects with a stationary switch contact 15. A plate 8a or the like associated with the base of the upright 8 is preferably used to support the wire 14.

A movable contact or switch member 16 is adapted to cooperate with the stationary contact member 15 for completing a circuit therethrough. This movable switch member or contact 16 has at an intermediate point, a bearing 17 which is pivotally attached to support 1 above the member as indicated at 17a and which is articulated below said member upon a spring pressed stud 18 which is slidably mounted in a socket 19 mounted upon the support 1. A coil spring 20 surrounds the stud 18 and socket 19 and is confined between a collar 21 on the stud and a collar 22 on the socket. The rear end of the movable switch member 16 is preferably folded upon itself as indicated at 16a and extends into the bifurcation 5. This folded portion 16a rests upon the inturned end of the conductor 6 when the switch member 16 is in open position.

The movable switch member 16, the bearing 17, stud 18 and socket 19 form an electrical conductor that leads to a plate 23 secured upon the support 1 against the socket 19. An electrical conductor 24 connects the plate 23 with a light 25.

During the operation of the device, the lever 2 pivots upon the pin 3 and to control or limit the tilting movement of the lever, stops 26 are secured to the support 1, one above and the other below the lever 2.

When the thermoresistance wire 7 is under normal temperature, the lever 2 will substantially be in the position shown in Fig. 1 and the contacts 15 and 16 will be in separated relation. However, when the current is turned on at the battery 12, it will flow through the conductors 11, 9 and 8 to the resistance wire 7. From the wire 7, the current will flow through the conductor 6 and through a part of the movable switch member 16 from which it will descend to the lamp 25 through the aforementioned conductors. The lamp 25 may be connected to ground or any other connection to complete the circuit.

The current flowing through the resistance wire

will heat the same and cause an elongation thereof. This elongation of the wire 7 will allow the rear end of the lever 2 to tilt downwardly through the upward action of spring 4 which will tilt the forward end of the lever 2 upwardly. As the front end of the lever 2 is elevated, it will also elevate the rear end of the movable switch member 16 until it passes beyond dead center with respect to its pivot point at which time, the spring 20 will snap the switch 16 completely over to contact stationary contact 15. This snapping action will elevate the rear end of the switch member from engagement with the conductor 6 to completely break the circuit through the resistance wire and to form a second circuit through the contacts 15 and 16.

The second circuit comprises the wire 11, the fixture 10, the conductors 13 and 14, the contact 15, the right hand half of movable contact member 16 and the downward conducting means to the lamp 25. As there is very little resistance in this second circuit, it will be sufficient to illuminate the lamp 25 whereas the current through the first circuit is incapable of causing such illumination.

Of course, as the resistance wire 7 cools it will contract and elevate the rear end of the lever 2 and simultaneously cause the upper wall of the bifurcation in the front end of the lever to engage the movable switch member 16 and tilt the same downwardly beyond dead center whereby the spring action will snap it into engagement with the conductor 6. The second circuit through contacts 15 and 16 will be completely broken and the first circuit will again be established.

In Fig. 2 a slight modification of the invention has been illustrated. In this modified form a narrow lever 2a is used instead of the wider lever 2 in the first form so as to provide space for an electro-magnet 27 which is supported thereabove upon the support 1. The lever 2a is supported by a lug 34 thereon which is pivoted at 3a to the support 1. The lever is limited in its up and downward movements by the stops 26. The forward end of the lever carries an overhanging lug 2b that forms the bifurcation as in the first form to receive the rear end of the movable contact member 16.

In this modified form of the invention, a second battery 28 is electrically connected to the plate 8a at the base of the conductor 8. Either of these batteries may be used and both may be used for supplying the current for two signal lights 25 as shown.

The winding of the electro-magnet 27 is connected with the contact 15 through the wire 29 and is connected with the battery 12 through the wire 30, the plate 10 and connector 11a and is connected with the battery 28 through wire 31, plate 8a and wire 32. The only function of this electro-magnet is to assist in maintaining the contacts 15 and 16 in engagement. To this end, the electro-magnet does not become effective until the switch contacts 15 and 16 are closed allowing the current to pass directly from one or both batteries through the coil and wire 29. When the current from one or both batteries is passing through resistance wires 9 and 7, it does not have the potential to cause the solenoid to act.

It will be appreciated that in the use of the battery 28, the circuit will pass through the conductor 8 and hence directly to the resistance wire 7 and will not pass through the resistance wire 9. The two batteries are only used when there are two lamps 25 in the circuit. The extra lamp 25

will supply the necessary resistance without using the resistance of the wire. It will be noted in this second form that in the use of both batteries, one merely supplements the other and increases the current in instances where two signal lights 25 are desired.

The operation of the modified form is similar to the first form. The only difference resides in the fact that when the circuit through contacts 15 and 16 is closed, the electro-magnet becomes effective for holding the lever 2a in elevated position. For this purpose the lever 2a may be provided with an armature 33 directly below the electro-magnet.

It will be understood that the showing in the drawing is more or less diagrammatic and that the insulation of parts may be readily performed by a mechanic without illustration.

According to this invention, it will be evident that the complete breaking of one circuit when the other circuit is established will produce a distinct and sharply defined illumination or flash. It will also be appreciated that the thermoresponsive resistance is only instrumental in initiating the movement of the movable contact member, the movement of which is completed by an effective snap action.

I am aware that many changes may be made and details of construction may be varied without departing from the spirit of this invention and I do not propose limiting the patent granted thereon otherwise than necessitated by the prior art.

I claim as my invention:

1. In a device of the character described, a pair of circuits, a thermo-responsive resistance element in one circuit, a movable contact in one circuit, a stationary contact in the other circuit, a switch member mounted between said contacts and means controlled by said resistance element for causing a movement of said movable contact for initiating the movement of said switch member toward said stationary contact and means for completing the movement of said switch member for engaging said stationary contact and disengaging said movable contact.

2. In a device of the character described, a pair of circuits, a thermo-responsive resistance element in one circuit, a lever controlled by said element and having a conductor in circuit with said element, a stationary contact in the other circuit, a switch lever having an intermediate conductor pivotally mounted between said contact and first conductor and adapted to alternately engage said contact or first mentioned conductor, movement of said lever being adapted to initiate the movement of said switch lever and independent means for completing the movement thereof.

3. In a device of the character described, a pair of circuits, a thermo-responsive resistance element in one circuit, a movable conducting member in circuit with said element and having a contact, a second contact in the other circuit, a switch member pivoted between said contacts for alternately engaging the same, said movable member being adapted to initiate the movement of said switch member for engaging a contact, yielding means for completing the movement of said switch member and a conductor connected to a medial point of said switch member.

4. In a device of the character described, a thermo-responsive circuit including a resistance wire, a lever having a bifurcation at its forward end, conducting means extending from the rear end of said lever along the bottom thereof and bent up and extended into said bifurcation for

forming a contact, a second circuit including a contact, a conductive switch lever pivoted between said contacts for alternately engaging the same, said switch lever extending into said bifurcation for initial activation by tilting movement of said lever and yielding means for completing the activation of said switch lever.

5 5. In a device of the class described, a pair of circuits, a movable contact in one circuit, a stationary contact in the other circuit, a current conducting member pivotally mounted between said contacts for alternately engaging the same, means responsive to one circuit for moving said movable contact for initially tilting said conducting member and yielding means for completing such tilting movement for breaking one circuit and establishing the other.

6. In a device of the class described, a pair of circuits, means for breaking one circuit and establishing the other including a stationary contact member, a movable member having a bifurcation with a contact therein, a pivoted conductor having one end extending into said bifurcation and the other end extending over said stationary contact, means including a thermo-responsive element in one circuit for moving said movable member for initially tilting said conductor and yielding means for causing the completion of the tilting movement for said conductor.

7. In a device of the character described, a pair of circuits, a tiltable member carrying a part of one circuit and having a bifurcation into which said circuit extends, a contact in the other circuit, a pivotal conducting member constituting part of both circuits between said contact and bifurcation and extending into said bifurcation for completing the first circuit, means including a thermo-responsive element in the first circuit for tilting said tiltable member for initially tilting said conducting member and yielding means for completing the tilting of said conducting member for breaking one circuit and establishing the other.

8. In a device of the character described, a pair of circuits, means controlled by one circuit for making and breaking the other circuit comprising a movable contact in one circuit, a stationary

contact in the other circuit, a conductor constituting a part of each circuit pivotally mounted between said contacts and adapted for alternately engaging the same, a thermo-responsive element for controlling said movable contact and allowing movement thereof for initiating a tilting movement of said conductor and means for completing the movement of said conductor for breaking one circuit and establishing the other.

9. In a flasher, a pivoted lever having a bifurcation in one end, an electrical conductor carried by said lever and having one end extending into said bifurcation and forming a contact portion therein, a stationary contact spaced from said bifurcation, a switch lever pivoted intermediate its ends and having one end extending into said bifurcation for engaging said contact portion and having its other end in operative relation with said stationary contact, means for moving the first mentioned lever for initiating the movement of said switch lever and snap acting means for completing the movement of said switch lever for the purpose set forth.

10. In a flasher, a pivoted lever having a bifurcation in one end, an electrical conductor carried by said lever and extending into said bifurcation and forming a contact portion therein, a stationary contact spaced from the front end of said lever, and a pivoted switch member extending into said bifurcation and adapted for alternately engaging said contact portion and said stationary contact and means for controlling said pivoted lever and effecting movement of said switch lever.

11. In a flasher, a pivoted lever having a bifurcation in one end, a thermo-responsive resistance wire connected to said lever for controlling the movements thereof, conducting means carried by said lever and connected to said wire and extending into said bifurcation for forming a contact therein, a switch lever pivoted adjacent the front end of said bifurcation and having one end extending into said bifurcation for engaging said contact and snap action mechanism associated with said switch lever, said pivoted lever initiating the movement of said switch lever to snap action position.

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