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TEMPERATURE RESPONSIVE SWITCH
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2 Claims. (Cl. 300—113)

This invention relates to a temperature-responsive switch.

It is an object of this invention to provide an improved temperature-responsive switch which is relatively simple and inexpensive in construction and efficient in use.

Among the several objects of the invention is the provision of a novel temperature-responsive or thermostatic switch used in connection with electrical equipment where there is a possibility that the electrical apparatus may, during the course of operation, stick or stop and create a high current flow in the line and a consequent possibility of burning out some of the electrical apparatus, batteries or the like; or where there is a possibility of running the same down; the object of this invention being to provide a novel temperature-responsive switch whereby whenever an excessive current flow is set up in the line, the switch will automatically open and thereby open the circuit in the line, thus protecting the electrical apparatus which may be arranged therein.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings showing the preferred form of construction, and in which:

Fig. 1 is a vertical sectional view showing a preferred form of the present invention;

Fig. 2 is a bottom plan view taken on line 2—2 in Fig. 1, and

Fig. 3 is a schematic wiring diagram illustrating the present invention in one of its typical uses.

In the operation of electrical devices in which there are moving parts, some of these may develop a tendency to bind or stick and thus create a condition in the circuit wherein the current flow becomes excessive, causing a temperature rise in the conductors or in the mechanism in circuit, and thereby cause a drain on the source of energy, and there also is a possibility that some of the equipment may also become over-heated and be ruined.

To prevent the difficulties enumerated above, I have provided a temperature responsive switch which is generally indicated at 10. This switch 10 has a central metal strip 11, and formed integrally with the strip 11 is a metal contact 12 which is threaded, as at 13, so that it may be adjusted relative to a movable contact 14, the contact 12—14 having a slot 15 formed in one end thereof so as to facilitate the adjustment of the contact 12 relative to the movable contact 14. Also threaded upon the body 13 is a locking device in the form of a nut 16.

The movable contact 14 is mounted upon a bi-metallic strip of metal 17, this bi-metallic strip 17 being composed of two thin strips 18 and 19 of metal of different compositions held together in close relationship so as to form a unitary member. This strip 17 is mounted upon a base 20 by means of a rivet or the like 21.

Separating the metal strip 11 from the base 20 is an insulating member 22 which may be composed of fibrous material, hard rubber, or the like, and this member 22 has a small raised portion 23 which is fitted into the opening 24 of the strip 11. The members 14 and 20 are fastened together by means of screws or the like 25, the head 26 of the screw 25 being insulated from the member 11 by another strip 27 of fibrous material, hard rubber, or the like 27, and this strip 27 is also provided with raised portions 28 which are fitted into the opening 24, 25.

An electrical conductor 29 is fastened to the metal strip 11 by means of a metal screw or the like 30, current thus passing from the conductor 29 through the screw 30 into the strip 11 and through its contact point 12, through the movable contact point 14, the bi-metallic strip 17, the base 20, the screw 25, and back through the conductor 31, the present switch being thus connected in series in the circuit 32 (Fig. 3) which shows diagrammatically how the switch 10 may be connected in series in a typical circuit 32, which may include a motor or some other electrical mechanism 33, and also a source of energy in the form of a battery or the like 35; it being understood that the present switch 10 may be used in conjunction with any type of electrical apparatus.

It has been found that frequently when an electrical mechanism is in operation, the same will inadvertently stop and cause a dangerous rise in current in the circuit, and when such a contingency arises, the source of current 35 may be drained or the motor or other apparatus which may be embodied in the circuit may be burned out.

When such a contingency arises in the use of the present protective switch, the excessively heavy current passing through the circuit 32 causes the bi-metallic strip 17 to become heated the latter being dimensioned for predetermined loads or currents, and due to the difference in the expansion coefficients of the metals 18 and 55...
19, the bi-metallic strip 17 is caused to expand (from full line to dotted line position, Fig. 1), thus separating the contact points 12 and 14, and thereby opening the circuit 32. The circuit 32 being thus opened removes the load from the line. When the bi-metallic strip 17 cools there being no current flow to heat it, the circuit 32 is again closed at that point since the strip 17 will return to its normal closed circuit condition, whereupon the operation of the mechanism may be resumed.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

1. A thermostatic switch for use with game apparatus and comprising a substantially elongated arm having a pair of oppositely directed oriflead side wings extended from its sides intermediate its longitudinal extremities, said wings being bowed adjacent the juncture with said elongated arm to raise the latter above the plane of the wings, an elongated bi-metallic contactor extended from and secured to one of the longitudinal extremities of said arm, a second elongated contact arm insulated from and secured to said first arm, said second arm having an angled end portion overlying said bi-metallic member, an adjustable contact member threaded through said angled end portion adjacent the outermost extremity thereof and threadable toward and away from said bi-metallic member, together with means including a member threadable onto said adjustable contact member and against said last-mentioned arm to lock said adjustable contactor in position.

2. A thermostatic switch for use with game apparatus and comprising a substantially elongated arm having a pair of oppositely directed oriflead side wings extended from its sides intermediate its longitudinal extremities, said wings being bowed adjacent the juncture with said elongated arm to raise the latter above the plane of the wings, an elongated bi-metallic contactor extended from and secured to one of the longitudinal extremities of said arm, said extremity being tapered in a direction toward its juncture with said bi-metallic contactor, a second elongated contact arm insulated from and secured to said first arm, said second arm having an angled end portion overlying said bi-metallic member, an adjustable contact member threaded through said angled end portion adjacent the outermost extremity thereof and threadable toward and away from said bi-metallic member, together with means including a member threadable onto said adjustable contact member and against said last-mentioned arm to lock said adjustable contactor in position, and said second contact arm having an elongated tapered tail portion at its extremity opposite said angled end portion and extended beyond the underlying extremity of said first-mentioned contact arm.