June 22, 1954 J. A. RODDEN 2,681,964

THERMOELECTRIC SWITCH

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Fig. 1

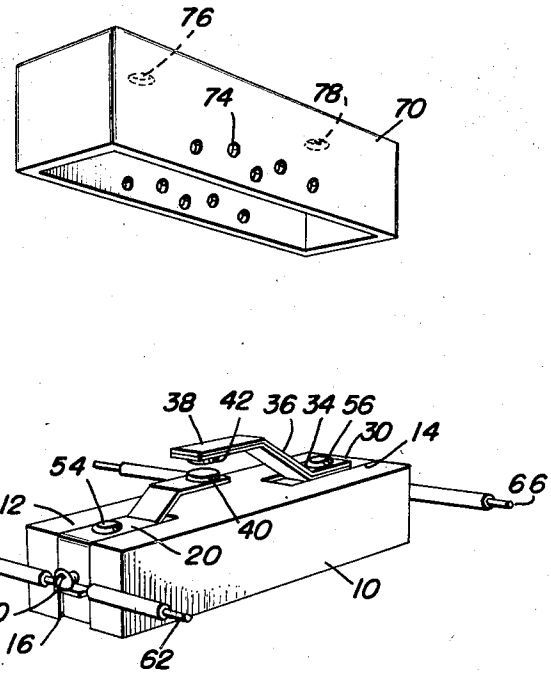
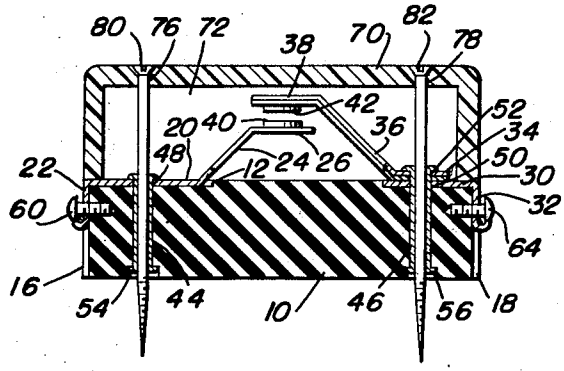


Fig. 2



John A. Rodden
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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THERMOELECTRIC SWITCH

John A. Rodden, Pontiac, Mich.

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1 Claim. (Cl. 200—138)

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This invention relates to a thermoelectric switch and particularly to a thermoelectric switch to be installed in a fire detector system.

In the installation of fire protective systems it is customary to run a pair of wires through the spaces or rooms to be protected and to periodically provide the conductors with bi-metal switches which operate in response to the adjacent temperature to operate the signal system and indicate that over temperature has developed.

In the use of such bi-metal controlled signalling circuits it is desirable to place a large number of the switches with small spacing therebetween so that an incipient fire will immediately give the alarm. However, the cost of such switches makes such optimum application too expensive so that in general the systems do not have enough thermoresponsive switches so that the fire may reach considerable proportions before it is announced.

The present invention provides a thermoresponsive switch of small size and economical construction so that they may be sold at a price so low that any desired number of the switches may be installed substantially without consideration of the cost thereof.

It is accordingly an object of the invention to provide a thermoresponsive switch.

It is a further object of the invention to provide a thermoresponsive switch which may be economically constructed.

A further object of the invention is to provide a thermoresponsive switch of small size which may be readily attached to any portion of a building to be protected.

It is a further object of the invention to provide a thermoresponsive switch having few and simple parts so that the manufacture may be economically accomplished.

Other objects and many of the attendant advantages of the invention will be apparent from the following description taken in conjunction with the accompanying drawing in which:

Figure 1 is an exploded perspective of a thermoresponsive electrical switch according to the invention; and

Figure 2 is a vertical elevation through an assembled switch according to the invention.

In the exemplary embodiment of the invention a base 10 constructed of insulated material is provided with a pair of aligned grooves 12 and 14. A pair of grooves 16 and 18 are provided in the ends of the base 10 and communicate with and form substantially continuations of the grooves 12 and 14.

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A strip conductor 20 provided with an angular extension 22 is mounted in the groove 12 and the continuing groove 16. One end of the strip 20 is provided as an upstanding angularly extending portion 24 which terminates in a terminal portion 26 which is substantially parallel to the portion 20. The strip conductor 20 with the terminal portions 22, 24 and 26 provides a mounting for a strip in the grooves 12 and 16 with an upstanding inwardly directed portion providing a terminal spaced from the surface of the body 10. A strip conductor 30 is mounted in the groove 14 and has an angular extension 32 mounted in the continuing groove 18. A bi-metal conductor 34 is secured on the end of the strip conductor 30 and extends in angular relation with an upstanding portion 36 terminating in a parallel end portion 38. The terminal end portions 26 and 38 are arranged in overlying preferably spaced relation and are provided with contact terminals 40 and 42, the terminals 40 and 42 being constructed of a suitable metal for repeatedly making and breaking contact. The body 10 is provided with a pair of transverse apertures 44 and 46 while the strip 20 is provided with an aperture 48 while the strip 30 is provided with an aperture 50 while the end of the bi-metal strip is provided with an aperture 52. The tubular rivet 54 extends through the apertures 44 and 48 and is headed over to securely fasten the strip 20 to the body 10. Likewise, a tubular rivet 56 extends through the apertures 46, 50 and 52 and is headed over to firmly secure the body 10, the conducting strip 30 and the bi-metal strip 34 in firm assembled relation.

The downturned end 22 is provided with a connector 60 adapted to make electrical contact and mechanically retain the conductor 62. Likewise the downturned end 32 is provided with a connector 64 which likewise makes contact with and retains the conductor 66.

A cover member 70 is provided with an aperture 72 adapted to receive and protect the upstanding terminals of the strips 20 and the bi-metal strip 34. The cover 70 being provided with apertures 74 so that heated air may readily enter the cover and actuate the bi-metal element 34. The cover 70 is further provided with a pair of apertures 76 and 78 which are arranged in alignment with the tubular rivets 54 and 56 so that fastening elements 80 and 82 may extend through the cover and the hollow rivets and attach the switch and the cover to any suitable support.

In the utilization of the switch according to the invention the opposite conductors 62 and

66 of a signal circuit are connected to the fasteners 60 and 64 so that they are in contact with the respective strips 22 and 32 and the contacts 40 and 42 are normally in open condition. Upon the occurrence of an over-heated condition the bi-metal element 36 will flex to bring the terminals 40 and 42 in current carrying contact with each other and produce the desired signalling result, the cover and the switch being readily attached at any desired point by means of the fasteners 80 and 82. Since the switch devices are so simple and may be constructed so economically the large plurality of switches may be utilized and installed at any place where an over-heated temperature may result so that the system becomes extremely sensitive to increase in temperature and the fire may be detected in its incipient stage when it may be readily extinguished.

For purpose of exemplification a particular embodiment of the invention has been shown, and described according to the best present understanding thereof. It will be apparent to those skilled in the art that changes and modifications can be made therein without departing from the true spirit of the invention.

Having described the invention, what is claimed as new is:

A temperature responsive switch comprising a base member constructed of insulating material, a pair of aligned longitudinal grooves in the surface of said base member, a groove in each end of said base, said end grooves communicating with and forming continuations of said top grooves, a strip conductor mounted in each of said grooves, said conductors extending into said end grooves, an upstanding offset end on one of said strips, an upstanding inwardly directed bi-metal strip mounted on the other of said strips, the ends of said upstanding end and of said bi-metal strip being in overlapped relation to each other, aligned transverse apertures in said body and said strips, hollow rivets secured in said apertures for attaching said strips to said base, a wire connector in the portion of the strip conductors disposed in said end grooves, a cover enclosing said upstanding ends, said cover contacting said base, said cover having a pair of apertures, said apertures being in alignment with said hollow rivets.

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