June 23, 1953 J. A. RODDEN 2,643,312

THERMOELECTRIC SWITCH

Filed June 11, 1951

Fig. 1

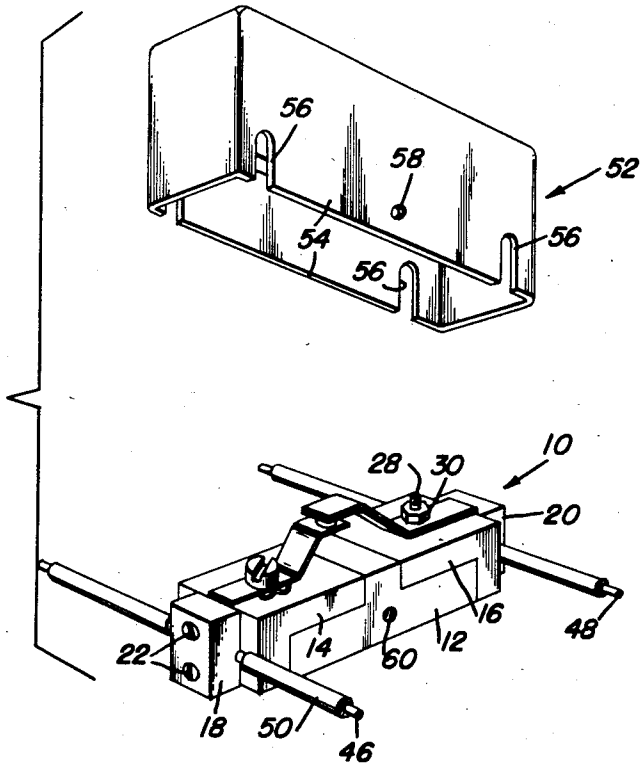


Fig. 2

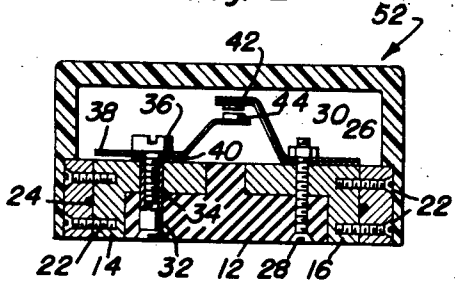


Fig. 3



John A. Rodden
INVENTOR.

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

Patented June 23, 1953

2,643,312

UNITED STATES PATENT OFFICE

2,643,312

THERMOELECTRIC SWITCH

John A. Rodden, Pontiac, Mich.

Application June 11, 1951, Serial No. 230,860

4 Claims. (Cl. 200—138)

1

This invention relates to new and useful improvements in thermal responsive electric switches, and pertains more particularly to a switch of this type especially well suited for use in fire warning circuits.

The primary object of this invention is to provide an adjustable thermal responsive switch of such a character that any number of the same may be readily and securely bridged in parallel across a pair of conduits in a fire warning system.

Another important object of this invention is to provide a switch of this character which will be of simple, economical and durable construction, and which will be thoroughly dependable in operation.

A meritorious feature of the present invention resides in the construction of the base block whereby a single fastener may be utilized to secure a contact strip, an electrical conducting member and its insulation together.

Still another important feature of the present invention resides in the means provided for adjustably spacing the contact strips, and the incorporation of such means with a means for securing the adjustable contact strip to the base block.

A final important feature of the present invention to be specifically enumerated herein resides in the provision of clamps at the opposite ends of the base block for securing electrical conduits to the electrically conducting elements of the base block.

These, together with various ancillary objects and features of the invention, which will become apparent as the following description proceeds, are attained by the present invention, a preferred embodiment of which has been illustrated by way of example only, in the accompanying drawings, wherein:

Figure 1 is a perspective view of the electric switch showing the same installed for use, and the protective cover of the same raised;

Figure 2 is a longitudinal vertical sectional view taken through the electric switch, and

Figure 3 is a perspective view of the spring disk utilized in the adjusting means for the switch.

Reference is now made more specifically to the accompanying drawings, wherein like numerals designate similar parts throughout the various views, and in which the numeral 10 designates the switch generally.

The switch 10 comprises a composite base block formed of an inverted T-shaped insulating member 12, and a pair of electrically conductive L-shaped elements 14 and 16, the latter elements being arranged to overlap the oppositely extending portions of the T-shaped member 12 as clearly shown in Figure 1.

2

A pair of clamping plates 18 and 20 are disposed at the opposite extremities of the elements 14 and 16, each of the plates 18 and 20 being detachably secured to the elements by means of vertically spaced screw fasteners 22. The faces of the clamping plates 18 and 20 adjacent the elements 14 and 16, respectively, are provided with conduit receiving grooves 24.

A contact strip 26 is secured to the element 16, and the element 16 is secured to the insulating member 12 by means of a threaded bolt 28 extending through the overlapping portions of the member 12 and the element 16, as well as through the contact strip 26, such bolt 28 being provided with a nut 30.

The element 14 is secured to the insulating member 12 by means of a bushing 32 extending into aligned openings in the element 14 and the member 12, such bushing 32 being provided with an internally threaded bore which receives the threaded shank 34 of a screw fastener 36. The bushing 32 as well as the screw fasteners 36 are provided with enlarged heads having kerfs therein, as clearly shown in the drawings, whereby the screw fastener 36 may be turned relative to the bushing 32 to adjust the spacing of the heads of the bushings 32 and the screw fastener. A second contact strip 38 is provided through which the screw fastener 36 extends, the head of the screw fastener 36 bearing against the contact strip 38, and a disk spring 40, more clearly shown in Figure 3, embraces the threaded shank 34 and is disposed between the contact strip 38 and the upper surface of the element 14. As will be appreciated, the arrangement is such that the vertical position of the contact strip 38 may be adjusted by turning of the screw fastener 36. The purpose of this arrangement will presently appear.

The adjacent ends of the contact strips 26 and 38 overlap each other with the contact strips being so bent that the overlapping portions of the contact strips are spaced above the insulating member 12. In addition, the adjacent sides of the overlapping portions of the contact strips 26 and 38 are provided with suitable electrical contacts 42 and 44, preferably bronze. Either one of both of the contact strips 26 and 38 is of bimatallic construction, so that the contacts 42 and 44 will move toward and away from each other

upon temperature changes. It will be understood that while only the contact strip 26 is shown of being of bimetallic construction, that alternatively the contact strip 38 may be of bimetallic construction or that both of such strips may be of bimetallic construction. As thus far described, it will be evident that upon the strips 26 and 38 attaining a predetermined temperature, the contacts 42 and 44 will come together, and that such predetermined temperature may be adjusted by use of the screw 36.

In use, the plates 18 and 20 are sufficiently loosened, or entirely removed by use of the screws 22 so that electrical conduits 46 and 48 may be placed in the grooves 24 therein, after which the plates 18 and 20 are firmly secured, thereby affording electrical connection between the electrical conduit and the contact strips 26 and 38. It will thus be seen that the electric switch 10 may be positioned to bridge continuous parallel electrical conduits, it being only necessary to strip a small quantity of the insulation 50 from the electrical conduits and to remove the clamping plates 18 and 20.

An insulating cover 52 is provided for the switch 10. The cover 52 includes side walls 54 that are provided with open ended slots 56 for receiving the electrical conduits 46 and 48 when the cover 52 is slipped down over the switch 10. In addition, one of the side walls 54 of the cover 52 is provided with an opening 58 through which a screw fastener, not shown, may be extended and threaded into an internally threaded bore 60 in the member 12 to secure the cover 52. The cover 52, as well as the insulating member 12 may be of plastic material if desired.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

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

1. In a thermal responsive switch, a composite substantially rectangular block formed of a pair of electrically conductive elements and an intervening insulating member, said insulating member being of inverted T-shape, said elements being of L-shape with the elements overlapping the insulating member, a pair of contact strips carried by the elements and having overlapping normally vertically spaced end portions, fastening means extending through the overlapping member and elements for securing the same and also securing the contact strips to the blocks, at least one of said strips being of bimetallic construction so that said end portion thereof moves toward and away from the end portion of the other strip upon temperature changes, and means for securing electrical conductors to said elements.

2. In a thermal responsive switch, a base member including an inverted T-shaped insulating member, a pair of inverted L-shaped conducting blocks interfitting with said T-shaped block, a pair of contact strips carried by said conductive blocks, said strips having ends arranged in overlapping normally spaced relation, at least one of said strips being of bimetallic thermo flexing construction, so that the end portion thereof moves toward and away from the end portion of the other strip in response to temperature changes, end blocks secured to said conducting blocks, electrical conductors secured between said end blocks and said conducting blocks, through fasteners securing said conducting blocks and said strip in assembled relation on said insulating member.

3. In a thermal responsive switch, a base member including an inverted T-shaped insulating member, a pair of inverted L-shaped conducting blocks interfitting with said T-shaped block, a pair of contact strips carried by said conductive blocks, said strips having ends arranged in overlapping normally spaced relation, at least one of said strips being of bimetallic thermo flexing construction, so that the end portion thereof moves toward and away from the end portion of the other strip in response to temperature changes, end blocks secured to said conducting blocks, electrical conductors secured between said end blocks and said conducting blocks, through fasteners securing said conducting blocks and said strip in assembled relation on said insulating member, one of said through fasteners being a threaded screw engaging a threaded head, a spring washer on said screw and interposed between the respective conducting block and the associated strip.

4. In a thermal responsive switch, a composite substantially rectangular block including a pair of L-shaped electrically conductive elements and an intervening inverted T-shaped insulating member, said elements overlapping said insulating member, a pair of contact strips carried by the elements and having overlapping normally vertically spaced free end portions, at least one of the strips being of bimetallic thermo flexing construction so that said end portion thereof moves toward and away from the end portion of the other strip in response to temperature changes, a threaded fastener securing one of the strips and one of the elements to the member, a spring washer interposed between said strip and said element for adjusting said strip vertically with respect to the other strip, electrical conductors secured to the respective elements, a cover for the contact strips detachably secured to the block.

JOHN A. RODDEN.

References Cited in the file of this patent

FOREIGN PATENTS

Number	Country	Date
251,431	France	Oct. 31, 1947