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PLASTIC SWITCH

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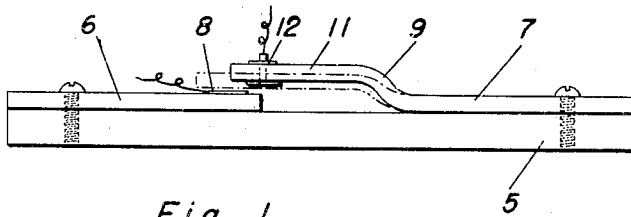


Fig 1

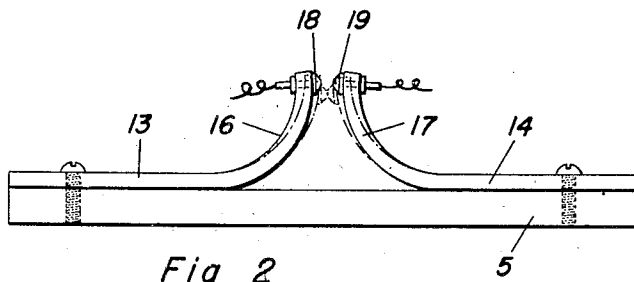


Fig 2

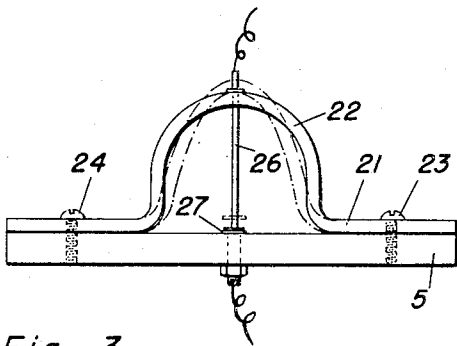


Fig 3

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## PLASTIC SWITCH

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2 Claims. (Cl. 200—137)

1

This invention relates to improvements in switches, made of thermoplastic resinous material.

The principal object of this invention is to produce a switch for the purpose of controlling an electrical circuit through change in temperature of the air surrounding the switch.

A further object is to produce a switch which is economical to manufacture, positive in operation and simple to install.

A still further object is to produce a switch having a known characteristic so that the same will always actuate under given physical conditions.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same,

Fig. 1 is a side elevation of one form of my switch adapted to close a circuit.

Fig. 2 is a side elevation of a modified form of my switch adapted to close a circuit, and

Fig. 3 is a side elevation of a switch adapted to open a circuit.

In many places it is desirable to have some means for indicating sudden rises in temperature which will indicate the possibility of fire and promote an investigation.

These switches must be of such a nature that they will actuate under given conditions in a positive manner so that even after long periods of time, and without investigation, the same will function.

I have, therefore, devised a switch arrangement wherein the thermoplastic resinous material is employed to open or close an electrical circuit when certain preset locked-in forces are released through heat, which permits these locked-in forces to tend to change the form of the thermoplastic resinous material to return it to its original shape; also, by varying the thickness of the thermoplastic resinous material which is bent to form the switch a very definite degree of temperature change can be predetermined so that a switch may be designed for almost any known condition.

In the accompanying drawings wherein for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 5 designates a base of any type, upon which I mount a pair of arms of thermoplastic resinous material, as shown at 6 and 7.

The arm 6 is preferably a flat strip of material,

2

upon which is positioned a contact 8 which may be electrically connected to one side of an electrical circuit.

The arm 7, is also formed of a thermoplastic resinous strip which is provided with a pair of offset bends 9, whereby the portion 11, is offset with respect to the remainder of the arm. This is accomplished by heating the thermoplastic material, bending it and holding it until it cools off sufficiently to become rigid which results in establishing in the arm locked-in forces, for the reason that such material, when bent under these conditions, has a tendency to again straighten out or assume its original shape when heat is applied thereto. The offset portion 11, carries a contact 12, which may be connected to the opposite side of the electric circuit, the result being that, when the parts are in the full-line position, as shown in Fig. 1, the contacts 8 and 12, will be held in separated position. However, when the temperature surrounding the switch rises to a definite predetermined point, the arm 7, will tend to soften and the above-described locked-in forces or stresses, will tend to straighten the arm, as shown in dotted lines, thus moving the contact 12, into engagement with the contact 8.

This movement will also cause a wiping action of one contact on the other so that any dust which might interfere with causing a good contact will be wiped away.

In the modified form shown in Fig. 2 the arms 13 and 14 are also made of thermoplastic resinous material and have their ends bent into arcuate curves, as shown at 16 and 17, respectively, these curved ends being spaced one from the other and each carrying a contact as shown at 18 and 19, which contacts are in turn connected to the opposite sides of an electrical circuit.

In this modified form, when heat occurs around the switch the two arms 13 and 14 will commence to soften and their locked-in stresses will cause the curved ends to move toward each other, thus causing the contacts 18 and 19 to engage and complete an electrical circuit.

In the form shown in Fig. 3, a thermoplastic resinous strip 21 has an arcuate U-shaped bend 22 formed substantially midway of its length and as the ends of the strip are secured to the base 5 by bolts 23 and 24, it will be apparent that the two ends of the strip cannot be moved relative to each other. Therefore, a contact 26 carried by the middle portion of the bend 22 may engage a contact 27 carried by the base 5.

These two contacts are electrically connected to a circuit so that when heat is applied to the

3

switch the locked-in stresses will cause the U-shaped portion to tend to straighten out, as shown in dotted lines in the figure.

This will move the two contacts apart, thus breaking the circuit and causing a signal to be given.

It will thus be seen that by employing the locked-in stresses of thermoplastic resinous material I have created a positive acting switch arrangement.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same and that various changes relative to the material, size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. In a switch of the character described, a base, a pair of arms formed of thermo-plastic resinous material secured to said base at their opposite extremities, one of said arms being bent under heat and then cooled to create a locked-in force in said arm and having its free end spaced from the free end of the other of said arms, and a contact carried by the free end of each of said arms, whereby the release of stress in said bent arm through the application of

4

heat, will cause said contacts to engage each other.

2. In a switch, a rigid base, a pair of elongated members formed of thermo-plastic resinous material, each having one end thereof secured to said base, at least one of said members being bent under heat and then cooled to create a locked-in force in the member at a point between its ends, the free end of one member being spaced from the free end of the other member, and a contact carried by each of said members, whereby, when said bent member is heated, the stresses locked therein by the bending operation are released to cause said contacts to engage one with the other.

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