Oct. 7, 1952 C. E. ARMSTRONG 2,613,298

THERMOSTAT

Filed Sept. 12, 1949

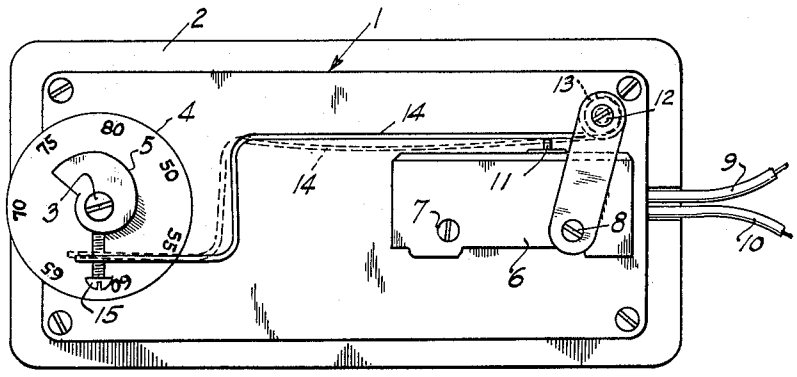


Fig. 1

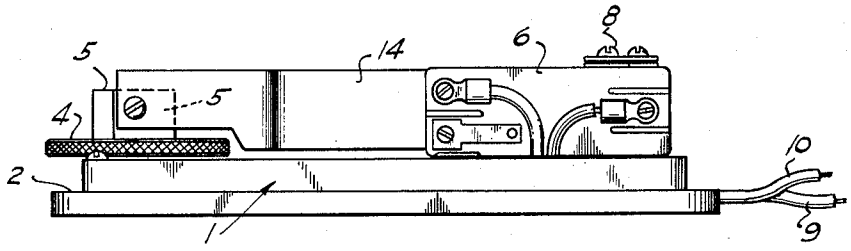


Fig. 2

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1 Claim. (Cl. 200—139)

1

This invention relates to improvements in temperature sensitive switching mechanisms and more particularly to a switch of this character embodying a "Micro" switch and a temperature sensitive element in the form of a bi-metallic strip for actuating said switch. One of the characteristics of a "Micro" switch is that the amount of travel required to actuate or depress its plunger is extremely small while the required pressure of force is relatively high.

Accordingly, it is one of the principal objects of my invention to provide a switch of this character wherein the thermostatic element is required to move only a short distance to apply, through leverage, the relatively high pressure necessary to actuate the plunger.

A further object is the provision of a switching mechanism which is of simple, efficient, durable and inexpensive construction, compact in size and operable within close temperature differential.

These and other objects will appear as my invention is more fully hereinafter described in the following specification, illustrated in the accompanying drawing and finally pointed out in the appended claim.

In the drawing:

Figure 1 is a top plan view of the invention.

Figure 2 is a side elevation of Figure 1.

Referring now more particularly to the drawing:

Reference numeral 1 indicates a base made of any approved type of insulating material and flanged as at 2 to accommodate any approved type of housing upon which may be mounted the usual mercury thermometer. Rotatably mounted upon the base by means of a screw 3 is a knurled wheel or disk 4 inscribed with numerals representing various degrees of temperature. Secured to the disk or formed integral therewith is a cam 5.

At the opposite end of the base I mount a "Micro" switch 6 by means of screws 7 and 8. Wires 9 and 10 of an electrical circuit are connected with the switch and a circuit through the wires is opened or closed by a plunger 11 which operates the switching mechanism.

Rotatably attached to the base by means of a screw 12 is a collar 13 to which is secured one end of a temperature sensitive element in the form of a strip of bi-metallic material 14. The end of the bi-metallic strip is partially coiled about the collar 13 and is secured thereto by any suitable means, such as soldering or the like. The opposite end of the bi-metallic strip is offset as shown and is provided with an adjusting screw 15 always in contact with the operating surface of the cam 5. The strip 14 is offset only for the purpose of rendering the assembly more compact.

It will be noted that the distance between the

2

screw 15 and the switch plunger 11 is many times greater than the distance between the plunger and the screw 12 about which the corresponding end of the bi-metallic strip pivots. The amount of leverage established by this arrangement applies ample downward pressure to the plunger by the mere deformation of the bi-metallic strip in its movement from the full line to dotted line position, shown in Figure 1, under the influence of a rising temperature. The normal spaced relation between the bi-metallic strip and the plunger 11 may be minutely adjusted by the screw 15 against the cam 5. The plunger is provided with a spring-return mechanism to urge it upwardly at all times into contact with the thermostatic element or in adjusted relationship thereto as aforesaid.

While I have shown a particular form of embodiment of my invention, I am aware that many minor changes therein will readily suggest themselves to others skilled in the art without departing from the spirit and scope of the invention. Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

A thermostatically actuated switching mechanism comprising in combination, an elongated base, a single length of bimetal temperature-sensitive controlling element extending substantially full length of the base and pivotally attached at one of its ends to one end of the base, a cam rotatably mounted on the opposite end of the base, the opposite end of said bimetal element being in adjustable contact with the cam, a switch mounted on the base near said one end thereof, a spring-urged plunger extending outwardly from the switch for actuating the switching mechanism, said plunger being in contact with said bimetal element and positioned at a point closer to said pivotal attachment of the bimetal element than to the center of said bimetal element whereby said plunger will be depressed with maximum pressure upon minimum temperature rise and released with minimum temperature fall.

CHARLES E. ARMSTRONG.

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