Feb. 3, 1953 N. J. SMITH 2,627,565

THERMOSTATIC SWITCH

Filed Oct. 11, 1949 2 SHEETS—SHEET 2

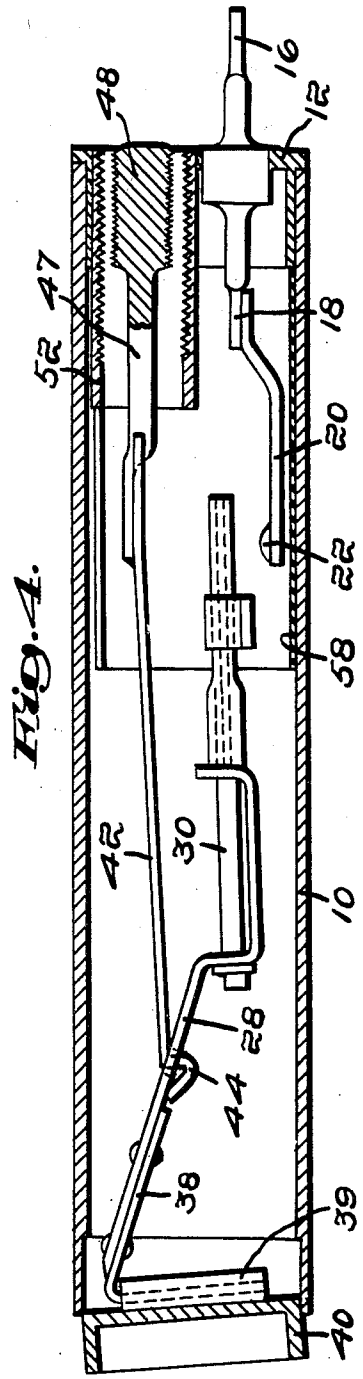


Fig. 4.

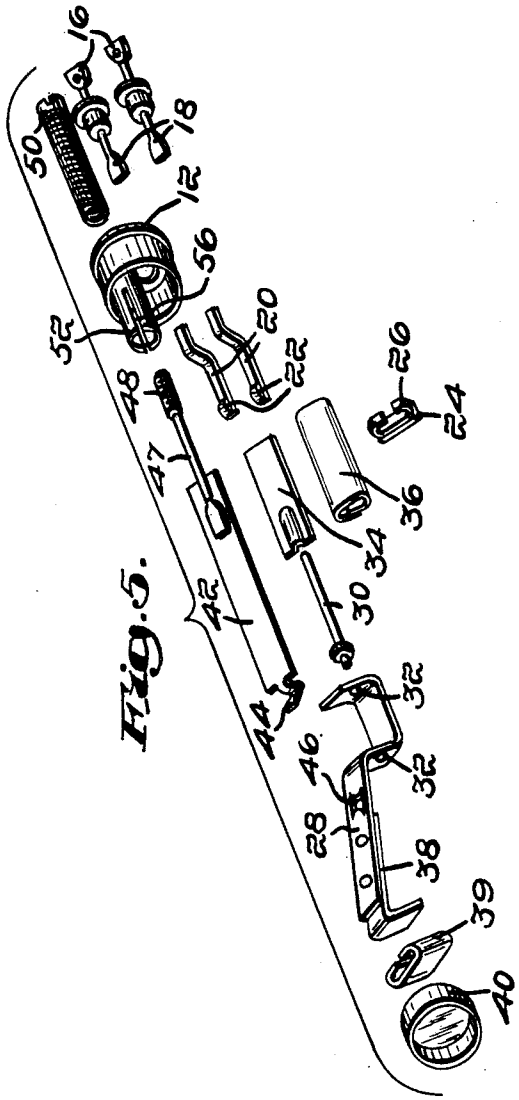


Fig. 5.

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THERMOSTATIC SWITCH

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7 Claims. (Cl. 200—137)

1

This invention relates to improvements in a thermostatic switch and more particularly to a thermostatic switch which is responsive to changes in temperature to open or close an electrical circuit used to regulate the action of a device with which the thermostatic switch is associated or to furnish indication of a temperature change. Thermostatic switches of this general character are preferably made in as small units as possible, although it is desirable to maintain a relatively high degree of accuracy.

Thermostatic switches of the character to which my improvements relate comprise essentially a tubular thermo-responsive case and switch mechanism within the case operative upon expansion or contraction of the case to open or close an electrical circuit, the leads of which extend into the case. It is also usually desirable to provide adjusting means to preset the thermostatic switch so that it will operate at the desired temperature.

It is an object of my invention to provide a thermostatic switch in which the electrical circuit within the tubular case is restricted to a relative short distance by providing a pair of contacts within the case mounted on the contact terminals and a movable contact member to complete the electrical circuit between said pair of contacts.

It is also an object of my invention to mount the movable contact member on its supporting arm in such a manner that the contact member is free to turn to ensure even pressure as it engages the pair of contact points.

It is still further an object of my invention to provide a thermostatic switch having relatively few parts which may be readily assembled and in which the parts mounted within the case which are composed of Invar or other material of relatively low coefficient of expansion and are not required to serve as leaf-spring members. Instead, the spring tension is obtained by the part which serves as a mounting for the contact carrying arm.

It is a still further object of my invention to provide a thermostatic switch in which the contact carrying arm is resiliently mounted on one head of the tubular casing and a strut member is mounted on the other head of the tubular casing and functions as a fulcrum support for the arm.

Further objects and advantages of my improvements will be more readily apparent from the following description of a preferred embodiment thereof; in which

Fig. 1 is a longitudinal section taken through the thermostat;

2

Fig. 2 is an end elevation looking at the right hand end of Fig. 1;

Fig. 3 is a cross sectional view on the plane indicated 3—3 in Fig. 1;

Fig. 4 is a longitudinal sectional view similar to Fig. 1 but showing the manner in which the parts are assembled;

Fig. 5 is an exploded view showing the various parts which make up the internal mechanism of the thermostat;

Fig. 6 is a plan view of a modified construction of the contact arm;

Fig. 7 is a side elevation of the contact arm as shown in Fig. 6; and

Fig. 8 is an enlarged plan view taken on the plane indicated 8—8 in Fig. 7.

It should be understood that my improved thermostat is preferably made in relatively small sizes and the figures of the drawings are considerably enlarged to show the parts more clearly. The thermostat has a tubular casing 10. The casing 10 is closed at its ends by the heads 12 and 14. A pair of electrical contact terminals 16 are mounted in the head 12. These terminals 16 are insulated from the head 12. The inner ends 18 of the terminals 16 are attached to the contact strips 20 which have the contact points 22. The circuit between the terminals 16 is completed by the bridge contact member 24 having a clip 26 to attach the contact member to its support.

The lever member 28 forms a support for the rod 30 which is rotatably mounted in the bearings 32 of the lever 28. A plate 34 is welded or otherwise secured to the rod 30, mica insulation 36 is wrapped around the plate 34 and the clip 26 for the contact member 24 is fastened around the mica insulation 36. Thus the contact 24 is free to rotate about the axis of its support in the lever 28 and to make contact under uniform pressure with both the contact points 22.

The lever member 28 is preferably made of Invar or other material having a relatively low co-efficient of expansion. The lever 28 at its left hand end is attached to a metal strap 38 of spring metal, the spring metal strap 38 is received by the sleeve 39 which is welded to the cup-shaped member 40 which forms part of the head 14. In assembly of the switch mechanism, the strap 38 will be placed under a slight tension so that the contact member 24 will be in engagement with the contact points 22.

A strut member 42 is provided having a hook-shaped end 44 to engage an opening 46 of the lever 28. The strut 42 is fixed to an extension 47 from the bolt 48 having, as shown, a relatively fine exterior thread. The bolt 48 is engaged by

of the opening in said contact arm and tend to hold the parts in seated position.

6. In a thermostatic switch, a tubular case having heads at the opposite ends thereof, a lever arm mounted on one end of said case for resilient rockable movement, a contact member mounted on the opposite end of said case, a contact carried by said lever arm and adapted to engage said contact member, fulcrum means engaging said arm between the ends thereof, a mounting sleeve fixed to the head of said case at the end opposite to the mounting of the lever arm, an adjusting screw threaded into said sleeve and extending outwardly from said head, said fulcrum means comprising a flat strap portion and a screw threaded extension therefrom engaged by said adjusting screw, said sleeve having slots cut in the sides thereof adapted to receive the end of the strap portion of said fulcrum means, whereby said strap portion is held against rotation, but is free to move longitudinally with respect to said sleeve when said adjusting screw is turned.

7. In a thermostatic switch, a movable contact arm, resilient means to move said arm in one direction, a fulcrum strut, said strut having a

hook end, said contact arm having an opening between its ends to detachably receive the hook end of said strut, the forward and rear edges of said opening being arc-shaped, the space between said arc-shaped edges being the least amount at the center line of said arm and increasing towards the sides thereof, whereby said hook has a point contact against the arc-shaped edges.

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CIRCUIT INTERRUPTER

Filed May 18, 1950 2 SHEETS—SHEET 1

Fig.1.

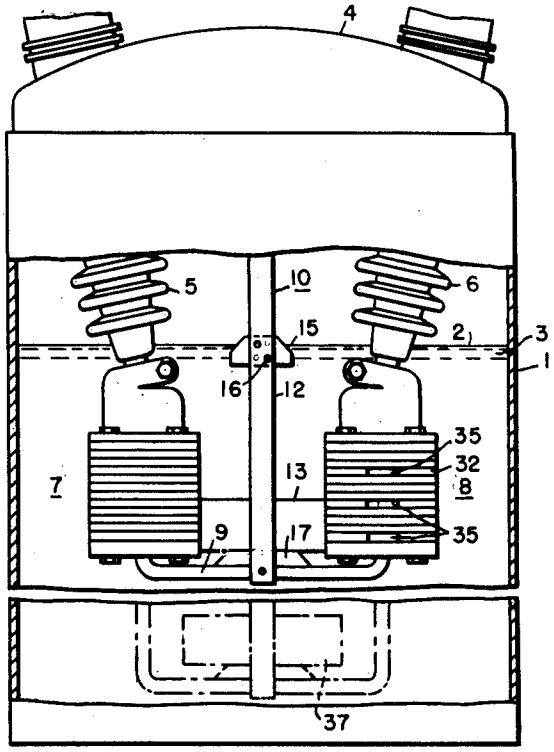
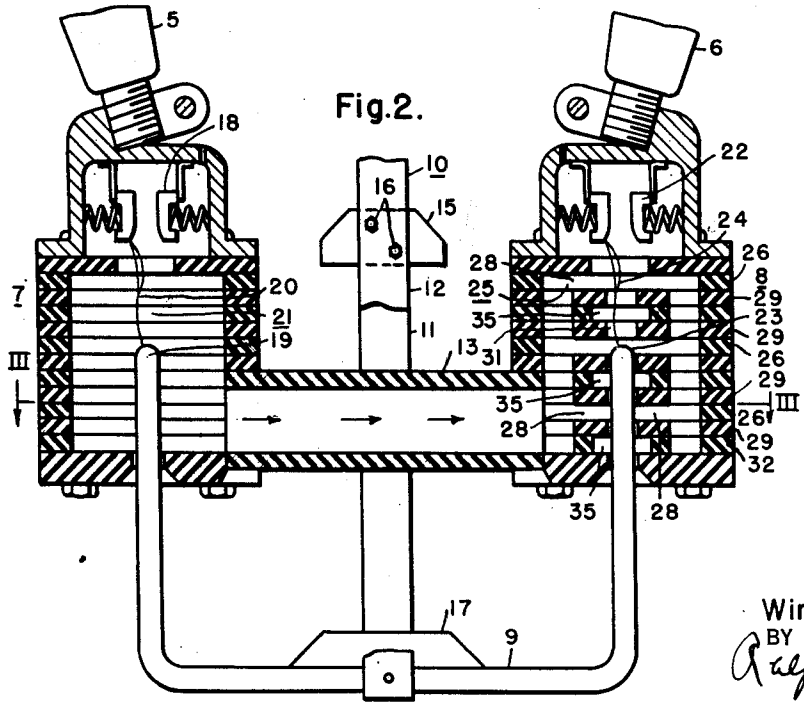


Fig.2.



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