Oct. 4, 1949. P. ANDREWS 2,483,484

THERMOSTATIC SWITCH

Filed June 6, 1945

Fig. 1.

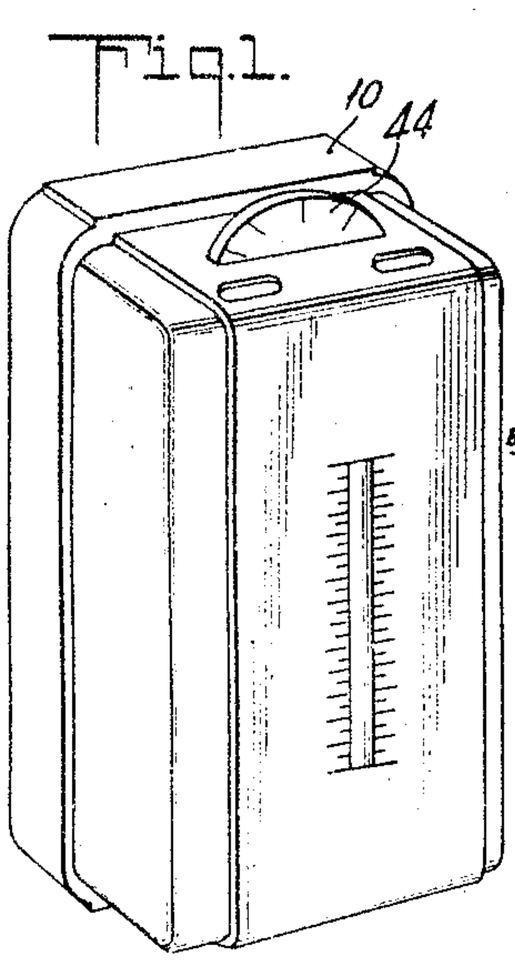


Fig. 2.

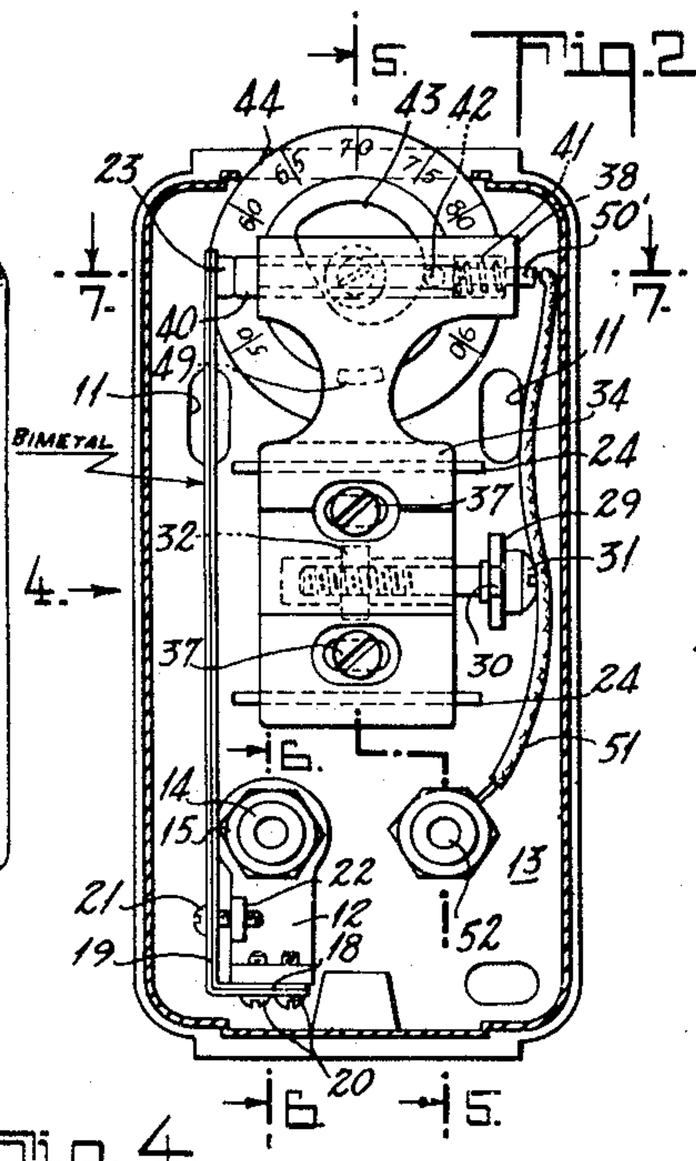


Fig. 3.

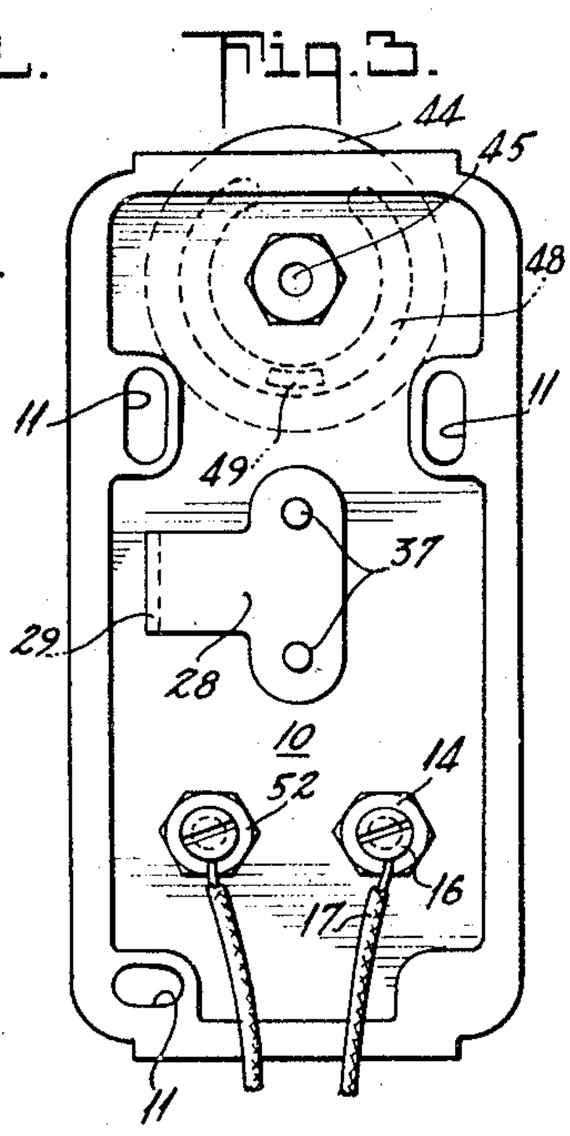


Fig. 4.

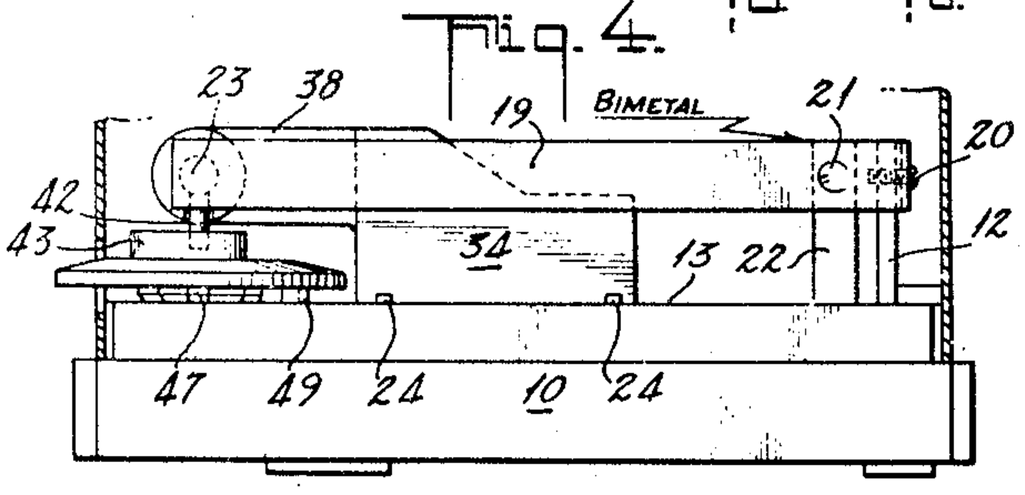


Fig. 6.

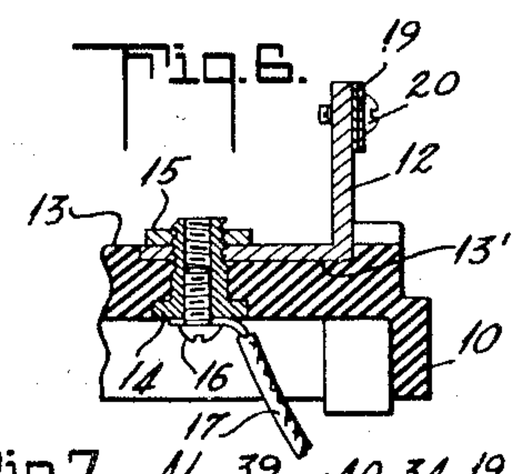


Fig. 5.

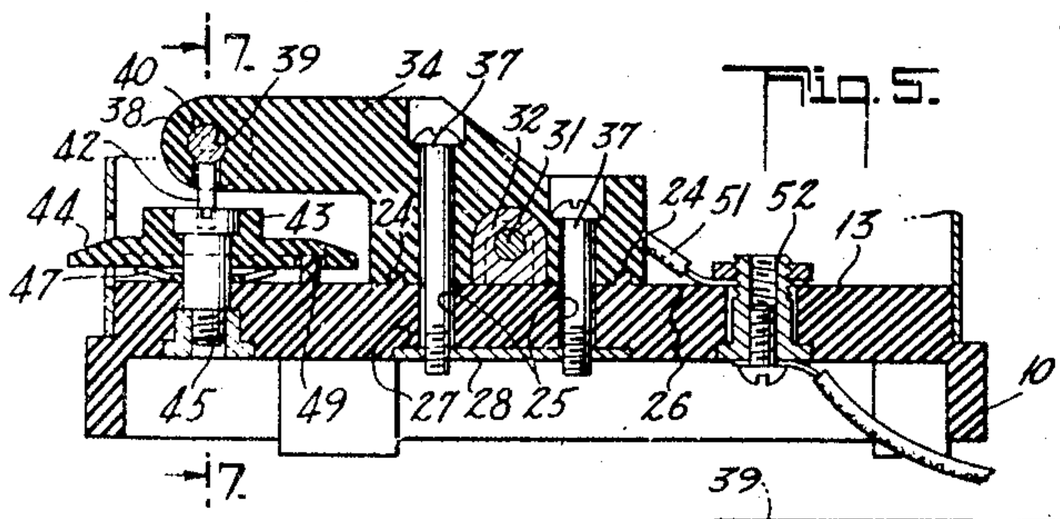


Fig. 7.

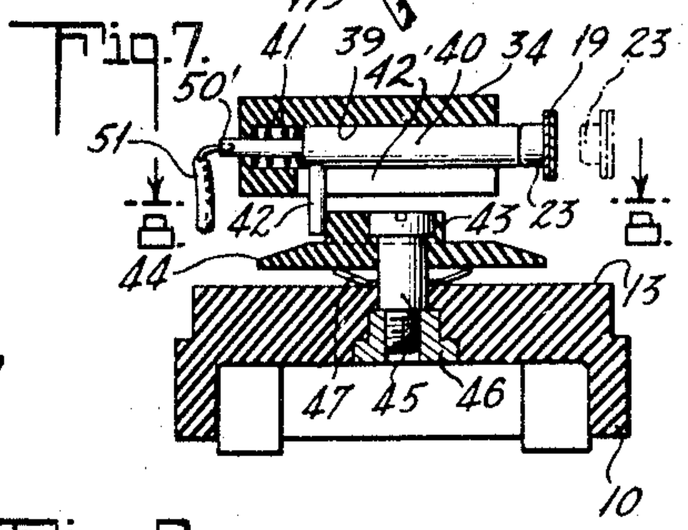


Fig. 8.

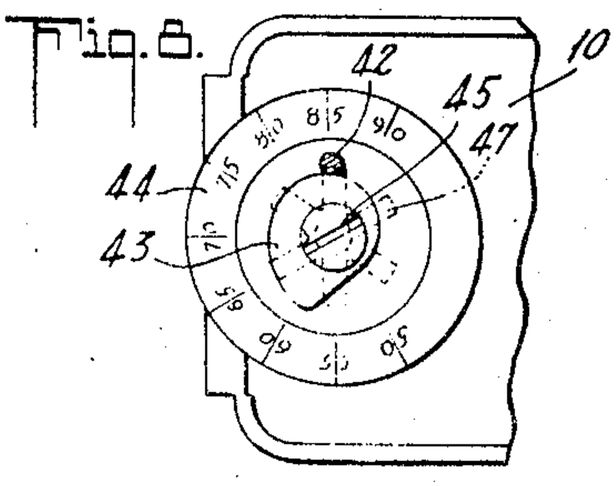
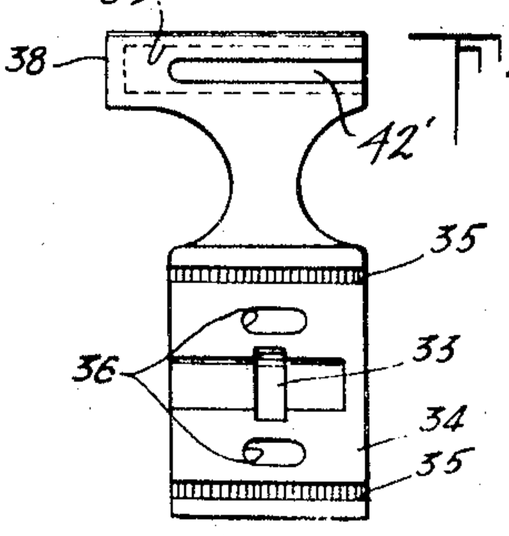


Fig. 9.



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THERMOSTATIC SWITCH

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7 Claims. (Cl. 200—138)

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The present invention relates to thermostatic devices, and more particularly toward thermostatic devices in the nature of room thermostats for controlling the circuits of heating equipment.

The room thermostats contemplated by the present invention are of the type employing low voltage in which the making and breaking of the circuit is accomplished by very small movement of a contact carried by a bimetallic element. Thermostats for this purpose are usually provided with some form of adjustment whereby one can select the temperature at which the thermostat is to make or break the circuit. Devices heretofore provided for this purpose have generally employed an adjustable contact which had an arcuate movement.

The present invention contemplates devices of this nature wherein the adjustment of the movable contact is at all times in a straight line so that the errors which follow from having both the contact carried by the warp bar and the adjustable contact move in arcuate paths.

The present invention contemplates the employment of a contact carrier which can be bodily adjusted during factory assembling of the device.

Other and further objects will hereinafter appear as the description proceeds.

The accompanying drawings show, for purposes of illustrating the present invention, an embodiment in which the invention may take form, it being understood that the drawings are illustrative of the invention rather than limiting the same.

In these drawings:

Figure 1 is a perspective view of a wall thermostat showing the cover in place;

Figure 2 is a front view of the mechanism of the room thermostat, the cover being shown in section;

Figure 3 is a view of the device from the rear;

Figure 4 is a side elevational view of the mechanism with the cover partly in section and partly broken away;

Figure 5 is a sectional view on the line 5—5 of Figure 2;

Figure 6 is a sectional view on the line 6—6 of Figure 2;

Figure 7 is a transverse sectional view on the line 7—7 of Figure 2;

Figure 8 is a fragmentary sectional view on the line 8—8 of Figure 7; and

Figure 9 is a rear elevational view of the contact carrier.

The room thermostat employs a wall plate 10 preferably in the form of a piece of molded insulating material. It is provided with mounting holes 11 whereby it may be mounted on the wall.

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An L-shaped anchorage member 12 fits in a recess 13' in the front face 13 of the wall plate and is anchored in place by a bushing 14 and nut 15. The bushing is tapped to receive a screw 16 whereby one of the circuit wires 17 can be connected to it. The L-shaped anchorage member 12 extends forwardly of the wall plate as will be apparent from the drawings and receives the lower end 18 of a generally L-shaped bimetal warp bar 19, screws 20 being used to secure it in place. The bimetal strip is drilled to receive a screw 21 which is threaded into an arm 22 formed in the anchorage member 12. The bimetal bar is provided at its upper end with a contact indicated at 23.

The front face 13 of the wall plate is provided with guides 24, 24 which are horizontal when the wall plate is mounted on the wall. It also has two drillings 25, 25. The rear face 26 of the wall plate is recessed as indicated at 27 to receive a plate 28 which has an arm 29 extending forwardly through an opening in the base plate. This arm is slotted as indicated at 30 to receive an adjusting screw 31. This screw passes through a nut 32 non-rotatably received in a recess 33 of a contact carrier 34. This contact carrier is grooved as indicated at 35, 35 to fit the guides 24, 24. It is provided with elongated slots 36, 36 to receive screws 37 adapted to be threaded into the plate 28. The contact carrier 34 can therefore be adjusted back and forth along the guides by means of the screw 31 and can then be locked in position by the screws 37, 37.

The contact carrier forms a bracket-like member and its upper end 38 is provided with a bore 39 forming a guideway for a conducting rod 40. This rod is urged to the left, as shown in Figure 2, by a spring 41. The parts are so dimensioned that the conducting rod 40 is opposite the upper contact 23 carried by the bimetal thermostat and the rod 40 is therefore adapted to move in a horizontal direction which substantially coincides with the line of movement of the contact 23.

The rod 40 carries a rearwardly extending pin 42 which is guided in slot 42' and is adapted to engage the surface of a plate cam 43. This cam is formed integral with a disk 44. The disk is rotatably mounted on a stud 45 held in place by a nut 46. The spring bushing 47 is interposed between the disk 44 and the face of the

back plate. The rear face of the disk 44 is provided with an arcuate slot 48 which receives a forwardly projecting stop lug 49 carried by the plate 10. This limits the angular movement of the disk 44.

The disk 44 is provided with indicia such as the degree marks indicated, and by adjusting the position of the disk 44 it is possible to adjust the position of the rod or contact 40 relative to the rest of the structure. The rod 40 has an extension 50' to which is soldered a wire 51. This wire is connected to a binding post 52.

In making the adjustments of the thermostat at the factory the entire device is brought to a known temperature and the disk 44 set for this temperature. The bimetal is moved into a substantially vertical position by adjusting the screw 21. The contact carrier is then adjusted to a position such as to bring the contacts 23 and 40 very close together and locked in place. The screw 21 is then available for making very fine adjustments so that the circuit closing and opening will take place at the temperature at which the device is set. The adjustability of the contact carrier makes it possible to compensate for variations in spring tension and length and other manufacturing irregularities, so that working to close tolerances may be avoided.

Since it is obvious that the invention may be embodied in other forms and constructions within the scope of the claims, I wish it to be understood that the particular form shown is but one of these forms, and various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto.

What is claimed is:

1. A circuit controlling room thermostat comprising a mounting plate adapted to be secured to a wall, two binding posts insulated from one another and carried by the plate, a normally vertical bimetallic warp bar disposed in a plane at right angles to the plate and having its lower end secured to the plate and connected to one binding post, a plate carried contact supporting element having a horizontal guideway parallel with the plate opposite the upper free end of the warp bar and in its line of movement with change in temperature, a contact element movable in the guideway and connected with the other binding post, and means to adjustably position the contact element.

2. A thermostat as in claim 1, wherein the positioning means includes a plate carried cam and a contact element carried follower.

3. A thermostat as in claim 1, wherein the guideway is adjustably supported on the plate for bodily movement.

4. A thermostat as claimed in claim 1, wherein the positioning means includes a plate carried cam and a contact element carried follower, and wherein the guideway is adjustably supported on the plate for bodily movement.

5. A circuit controlling room thermostat comprising a mounting plate adapted to be secured to the wall, a contact carrier, the carrier and plate having cooperative horizontal guides whereby the carrier may be adjustably positioned across the front face of the plate, carrier securing means, the carrier being provided with a horizontal guideway parallel with the guides, a contact element slidably carried in the guideway, a plate carried cam for shifting the contact element, and a plate supported warp bar insulated from the contact element and having its free contact making end opposite the contact element and movable within the working range of temperatures in substantially the same line as the contact element.

6. A thermostat as in claim 5, wherein the guideway is an extension of the carrier spaced in front of the plate and the cam is in this space.

7. A room thermostat comprising a back plate adapted to be secured to the wall, a disk pivoted near the top of the plate to turn on a horizontal axis at right angles to the wall and carrying a cam in front of the plate, the front of the plate having transversely extending horizontal guides, a bracket piece fitting the guides and having an extension spaced in front of the cam, means to secure the bracket piece in adjusted position on the plate, a spring pressed plunger carried in the extension in a guideway parallel with the guides and having a portion riding on the cam, a substantially vertical bimetallic warp bar secured to the lower end of the plate and having a contact at its free end adapted to engage the plunger.

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