June 16, 1942. R. W. DE LANCEY 2,286,266

THERMOSTAT

Filed Feb. 15, 1940

Fig. 1.

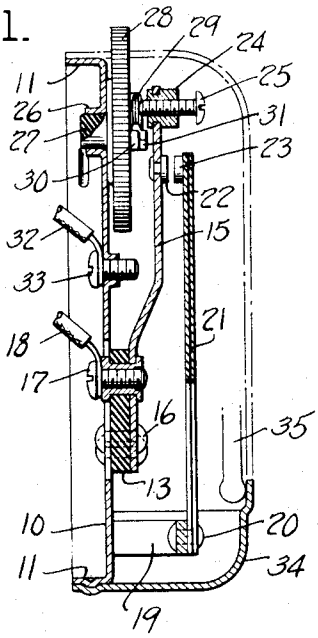


Fig. 2.

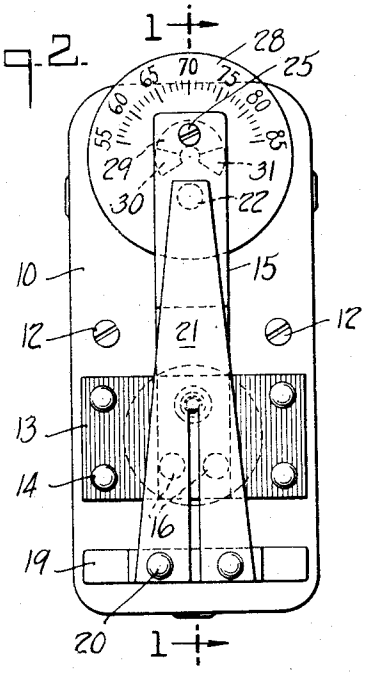


Fig. 3

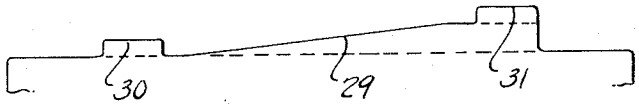


Fig. 4.

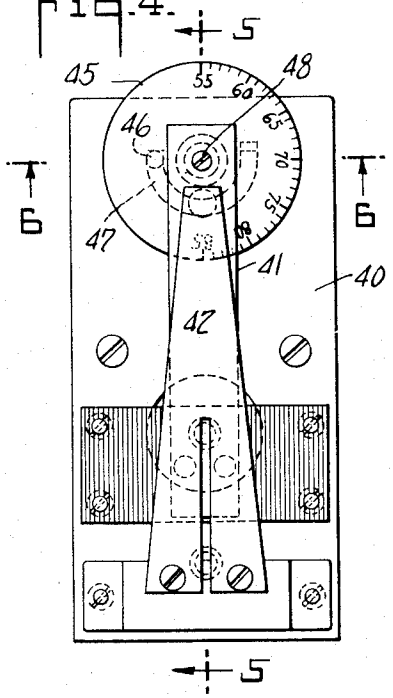


Fig. 5.

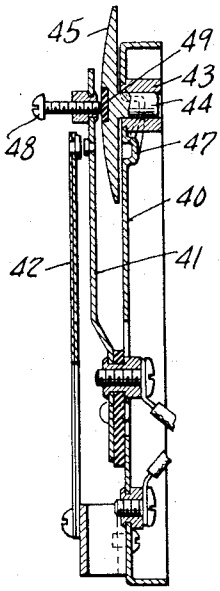
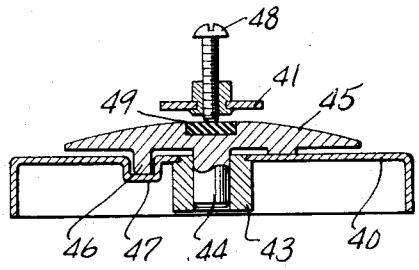


Fig. 6.



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2,286,266

THERMOSTAT

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Application February 15, 1940, Serial No. 318,994

12 Claims. (Cl. 200—138)

The present invention relates to thermostats, and is more particularly directed toward thermostats adapted for use as wall or room thermostats for controlling circuits for oil burners and the like.

The present invention contemplates circuit closers operating thermostats designed to work on very small changes in temperature so the temperature can be closely controlled and adapted for ready adjustment to change the temperature at which the circuit control is effected.

The type of thermostat herein shown is particularly designed for use in controlling the circuit to thermal motors utilized in actuating valve mechanisms and the like for controlling the flow of fuel to the burner.

The thermostats contemplated by the present invention comprise few parts capable of easy manufacture, assembly and test and whereby it is possible to produce a satisfactory and inexpensive article for the purposes referred to.

The accompanying drawing shows, for purposes of illustrating the present invention, two of the many embodiments in which the invention may take form, it being understood that the drawing is illustrative of the invention rather than limiting the same.

In the drawing:

Figure 1 is a vertical sectional view through one form of room or wall thermostat;

Figure 2 is a front elevational view of the same with the cover removed;

Figure 3 is a diagrammatic view illustrating the development of the cam on the adjusting wheel shown in Figures 1 and 2;

Figure 4 is a front elevational view;

Figure 5 is a vertical sectional view on the line 5—5 of Figure 4 illustrating a modified form of construction; and

Figure 6 is a sectional view on the line 6—6 of Figure 4.

In the arrangement shown in Figures 1, 2 and 3 the thermostat is provided with a sheet metal back plate 10 having rearwardly extending flanges 11 adapted to fit against the wall and to be held in place by screws indicated at 12. On the front face of the stamping an insulating base 13 is supported by means of rivets 14. A contact spring 15 is secured to the insulator 13 by rivets indicated at 16. It is provided with a binding post 17 so that it can readily be connected with a wire 18. Below the insulator 13 the plate 10 is provided, with a bridge 19 to which is secured by rivets 20 a bimetallic thermal element 21 which extends up in front of the contact spring 15. The contact spring and bimetallic thermal element have contacts indicated at 22 and 23, respectively. The end of the contact spring is provided with a bushing 24 to receive a screw 25.

The upper part of the back plate 10 has a rearwardly drawn bearing 26 which receives the hub 27 of an insulating wheel 28. This wheel has a cam, indicated at 29, provided with stops 30 and 31. The cam is opposite the end of the screw 25. The back plate 10 is adapted to be grounded through a wire 32 secured to a binding screw 33. The device may be provided with a suitable cover, indicated at 34, which may, if desired, carry a mercury thermometer indicated at 35.

The contact spring 15 is biased toward the rotatable member 28 and the thermostat 21 is so arranged that on decrease in temperature it bends toward the contact spring. When the device is assembled it is placed at a known temperature and the wheel 28 adjusted to bring the corresponding temperature marking into position. The screw 25 is then adjusted so that contact will be made. The user may then adjust the temperature at which the thermostat is to control the circuit by merely shifting the wheel 28 back and forth to bring different parts of the cam opposite the screw 25.

In the modified form of construction shown in Figures 4, 5 and 6, the back plate 40 supports an insulated contact strip 41 and a thermal element 42 in substantially the same manner as above described. Here the back plate carries a rearwardly extending bearing 43 which receives a stud 44 carried by a rotatable wheel 45. This wheel carries a rearwardly extending follower 46 which enters a cam track 47 formed in the stamping 40. The cam is effective to shift the wheel along its axis when it is turned. The free end of the contact spring 41 carries an adjusting screw 48 adapted to bear on an insulated center 49 of the wheel 45. The device will operate the same as previously described.

It is obvious that the invention may be embodied in many forms and constructions within the scope of the claims and I wish it to be understood that the particular forms shown are but a few of the many forms. Various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto.

What is claimed is:

1. A room thermostat comprising a supporting plate adapted to be secured to a wall, a rotatable, plate-supported member, a contact spring

secured to the plate forwardly of the plate and having its free end biased rearwardly toward the rotatable member, a bimetallic thermal element secured to the base with its free end disposed in front of the contact spring so as to be in open air and movable relative to the spring with change in temperature, means to insulate the thermal element from the contact spring, and means to adjust the spacing of the thermal element and the contact spring including cam means effective in response to the turning of the rotatable member for varying the flexure of the contact spring, the spring being in a fixed position in each adjustment of the cam means and forming a fixed stop for the thermal element when moved into contact making position.

2. A thermostat such as claimed in claim 1, wherein the cam means is in the face of the rotatable member toward the spring.

3. A thermostat such as claimed in claim 1, wherein the cam means is between the plate and rotatable member and the said member is moved on its axis.

4. A thermostat such as claimed in claim 1, wherein the axis of the rotatable member is eccentric of the point where the spring bears on the same and the rotatable member has the cam means.

5. A thermostat comprising a supporting plate, a rotatable, plate-supported member, a contact spring secured to the plate and having its free end biased toward the rotatable member, an adjusting screw carried on the spring and bearing on the rotatable member, a bimetallic thermal element secured to the base with its free end disposed in front of the contact spring and movable relative to the spring with change in temperature, means to insulate the thermal element from the contact spring, and means to adjust the spacing of the thermal element and the contact spring including cam means effective in response to the turning of the rotatable member for varying the flexure of the contact spring, the spring being in a fixed position in each adjustment of the cam means.

6. A thermostat comprising a supporting plate, a rotatable, plate-supported member, a contact spring secured to the plate and having its free end biased toward the rotatable member, an adjusting screw carried by the spring and bearing on the rotatable member, a bimetallic thermal element secured to the base with its free end disposed in front of the contact spring and movable relative to the spring with change in temperature, means to insulate the thermal element from the contact spring, and means to adjust the spacing of the thermal element and the contact spring including an arcuate cam on the face of the rotatable member effective in response to the turning of the rotatable member for varying the flexure of the contact spring, the spring being in a fixed position in each adjustment of the cam means.

7. A thermostat comprising a supporting plate, a rotatable, plate-supported member, a contact spring secured to the plate and having its free end biased toward the rotatable member, an adjusting screw carried on the spring and bearing on the rotatable member, a bimetallic thermal element secured to the base with its free end disposed in front of the contact spring and movable relative to the spring with change in temperature, means to insulate the thermal element from the contact spring, and means to adjust the spacing of the thermal element and the contact spring including a cam between the plate and rotatable member effective in response to the turning of the rotatable member for shifting it on its axis and thereby varying the flexure of the contact spring.

8. A thermostatic circuit closer comprising a base, a member mounted thereon for rotary movement about an axis and having a cam and follower relation with the base to effect axial movement of the rotary member, a spring acting on the rotary member to hold it against the cam, a thermal element having a free end adjacent the end of the spring and on the side thereof opposite the rotary element, and means insulating the spring from the thermal element so that when the thermal element deforms to engage the spring a circuit may be completed.

9. A thermostatic circuit closer comprising a base, a bimetallic thermal element supported by the base and having a movable free end, a contact spring supported by the base and having its free end biased away from the free end of the thermal element, means for insulating the thermal element from the contact spring, a rotary element opposite the free end of the contact spring, cam means between the base and rotary element for varying the spacing of the thermal element and the contact spring whereby the temperature at which the circuit is closed may be adjusted.

10. A thermostat comprising a thermal element supported at its end and having its free end movable in one direction in response to rise in temperature, a spring contact biased to move in the same direction, an element rotatably mounted about an axis parallel with the said direction of movement and against which the spring bears, and a cam for shifting the element on its axis to vary the spacing of the thermal element and spring, and insulation between the thermal element and spring.

11. A wall thermostat comprising a stamped base with rearwardly extending flanges to engage the wall and space the remainder of the base from the wall, and a forwardly opening cam, a rearwardly extending binding post, a contact spring insulatedly supported on the front face of the base and connected to a rearwardly extending binding post, a bimetallic thermal element secured to the base and disposed in front of the contact spring, a rearwardly extending horizontal bearing secured to the base opposite the end of the spring, a rotary member mounted in the bearing and having a follower engageable with the cam, an adjusting screw carried by the end of the spring and bearing on the rotary member, and means insulating the end of the spring from the rotary member.

12. A wall thermostat comprising a stamped base with rearwardly extending flanges to engage the wall and space the remainder of the base from the wall, a rearwardly extending binding post, a contact spring insulatedly supported on the front face of the base and connected to a rearwardly extending binding post, a bimetallic thermal element secured to the base and disposed in front of the contact spring, a rearwardly extending horizontal bearing secured to the base opposite the end of the spring, a rotary member mounted in the bearing and having a cam on its front face, an adjusting screw carried by the end of the spring and bearing on the cam, and means insulating the end of the spring from the cam.

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