Nov. 12, 1935. R. J. ROCKWELL 2,020,575

THERMOSTATIC DEVICE

Filed April 21, 1932 2 Sheets-Sheet 1

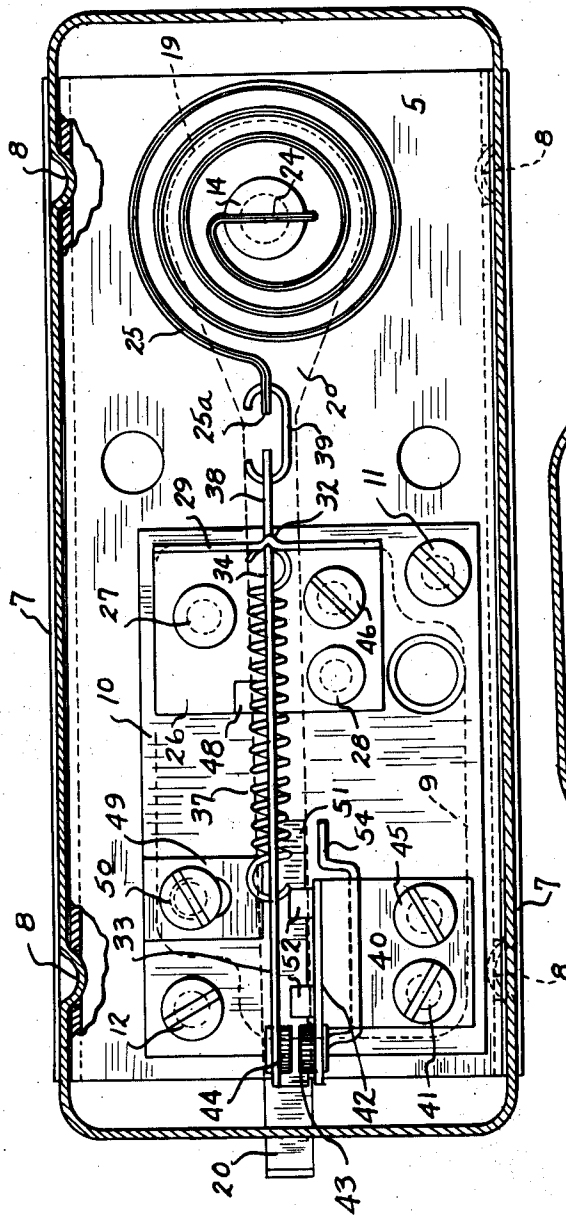


Fig. 1.

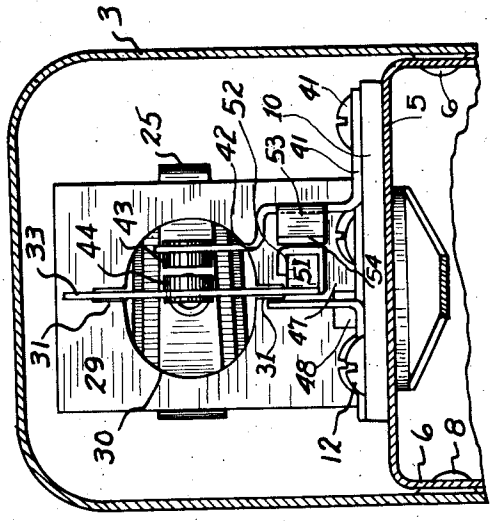


Fig. 2.

INVENTOR.
Ronald J. Rockwell
BY
Allen & Allen
ATTORNEYS.

Nov. 12, 1935. R. J. ROCKWELL 2,020,575

THERMOSTATIC DEVICE

Filed April 21, 1932 2 Sheets-Sheet 2

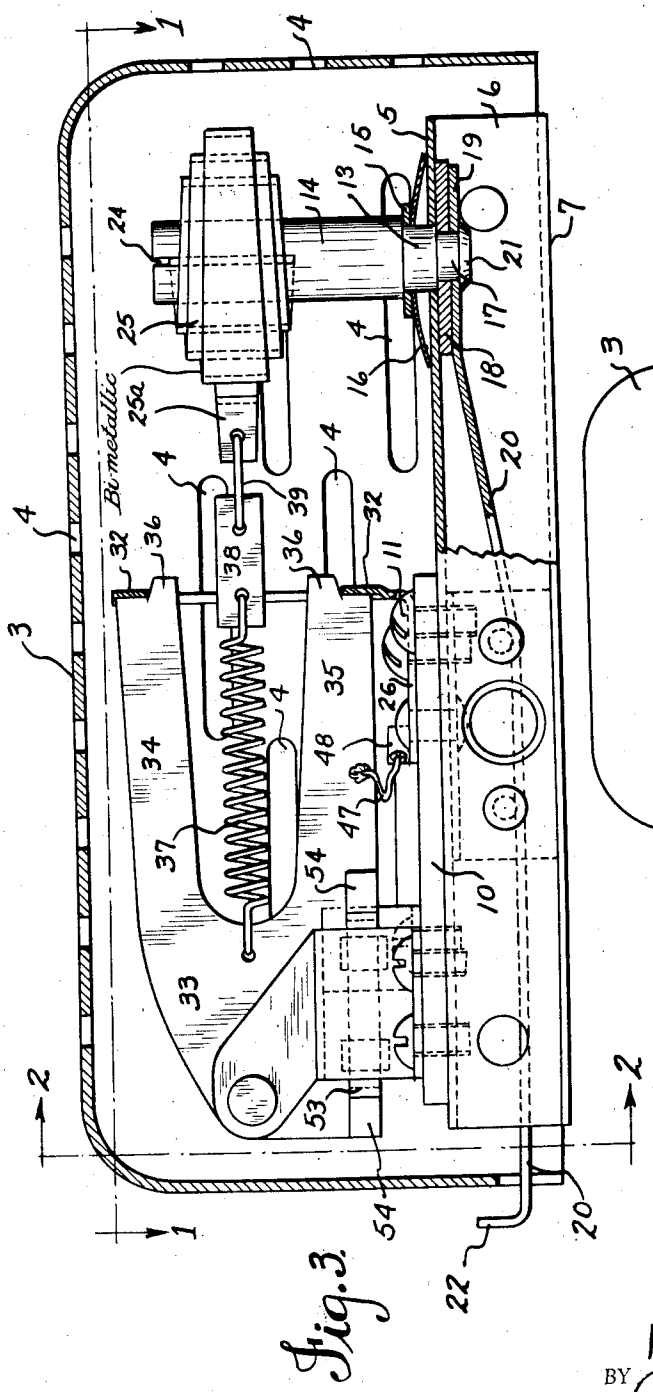


Fig. 3.

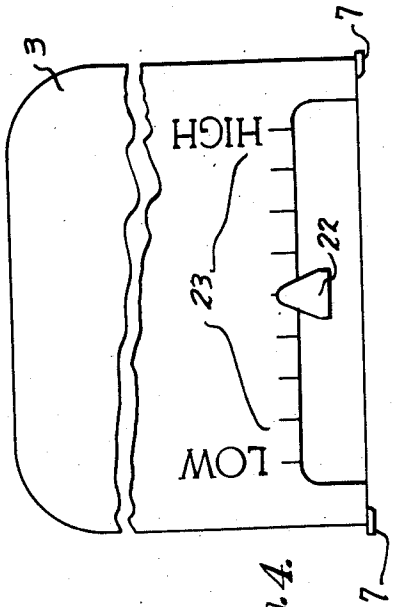


Fig. 4.

INVENTOR.
Ronald J. Rockwell
BY Allen & Allen
ATTORNEYS.

Patented Nov. 12, 1935 2,020,575

UNITED STATES PATENT OFFICE

2,020,575

THERMOSTATIC DEVICE

Ronald J. Rockwell, Cincinnati, Ohio, assignor to The Crosley Radio Corporation, Cincinnati, Ohio, a corporation of Ohio

Application April 21, 1932, Serial No. 606,709

2 Claims. (Cl. 200—138)

My general object is to provide an improved type of thermostatic device, particularly designed for the control of electric circuits, and having the advantages which flow from the novel features of construction hereinafter set forth. More specifically, it is my object to provide a device which is compact in space requirements, very economical to construct, and which is positive and accurate in action. It is also my object to combine with the rapid action secured by a snap mechanism, a magnetic control, and means for stabilizing the moving, contact-bearing member.

These and other objects of my invention which will be set forth hereinafter or will be apparent to those skilled in the art upon reading these specifications, I accomplish by that certain construction and arrangement of parts of which I shall now describe an exemplary embodiment, reference being had to the accompanying drawings, wherein:

Figure 1 is a plan view of my device with the top or cover member cut away along the lines 1—1 of Figure 3.

Figure 2 is an end view of my device with a portion of the cover member cut away along the lines 2—2 of Figure 3.

Figure 3 is a side elevation of my device with the cover member cut away, and certain parts shown in section.

Figure 4 is an end elevation of the cover member.

In this organization my thermostatic device is located in the base. It will be understood, however, that the utility of my device is not restricted to the organization referred to, but may be used in other organizations or used alone for the thermal control of distant apparatus. I have shown it with a cover 3, formed of sheet metal drawn to the shape of a domed box. It will be understood that when my device is employed in a general organization with the apparatus to be controlled, the cover may be omitted or modified to suit conditions. It will preferably be perforated as at 4 to permit the easy circulation of air about my controlling elements.

I provide a sub-base member 5, preferably of sheet metal. The central portion of it is held in raised position by edgewise flanges 6, which may, if desired, have turned over feet portions 7. The cover, if one is employed, is arranged to slip over the sub-base 5 and flanges 6; and may have a snap engagement with the flanges, as clearly shown in Figure 1, by means of depressed elements 8 which engage in holes in the flanges.

The sub-base 5 is cut away along the dotted lines 9 in Figure 1, and above the cut away portions there is fastened a base or panel 10 by means of bolts 11 and 12. This base is of insulating material.

Toward the other end of the sub-base 5 I provide a hole for the passage of a reduced end portion 13 of a post 14. A washer 15 is engaged by the shoulder which off-sets the reduced portion 13 and a domed washer 16 or other suitable member abuts the washer 15 and engages the sub-base 5. Below the portion 13 the post 14 is still further reduced as at 17 and passes through a washer 18 or other suitable member engaging the sub-base 5 from beneath. It also passes through an enlarged portion 19 of an arm or lever 20 and is riveted thereagainst as at 21. This construction may, of course, be varied as desired. Its general purpose is to mount the post 14 rotatably with respect to the sub-base 5 and to fix the lever or arm 20 with reference to said post so that the rocking or rotation thereof may be controlled by said arm. Preferably the post 14 is frictionally or otherwise mounted with respect to the sub-base 5, so that it tends to remain in adjusted position excepting when the arm 20 is manually moved; but instead of this I may provide means for locking the arm 20 in adjusted position. It is convenient to turn up the end of the arm 20 as at 22 to provide both a gripping means and a pointer; and I prefer to provide some calibrated means for the pointer, which in the particular embodiment illustrated is a portion of the cover 3, calibrated as at 23.

The upper end of the post 14 is bifurcated as at 24 and the inner end of a spiral coiled bi-metallic element 25 is held in the bifurcated portion or otherwise attached to the post 14. It will be clear that the effect of temperature changes upon the bi-metallic element 25 will be to cause the outer end 25a thereof to move substantially radially about the post 14 and that this movement may be adjusted as to position by a rocking or rotation of the post 14 by means of the arm 20.

Upon the base 10, I mount a standard which has a portion 26 for attachment to the base by bolts or rivets 27 and 28, and an upstanding portion 29. This upstanding portion is cut away centrally as at 30, and may also be slotted as at 31. Portions adjacent the slots may be depressed as shown at 32 in Figure 1. My contact bearing member indicated generally at 33, is bifurcated and has interspaced legs 34 and 35. The ends of these legs engage in the depressed portions 32 of the standard portion 29, and tongues 36 may en-

gage in the notches aforesaid, to prevent vertical displacement of my contact bearing member.

The contact bearing member is connected to the end 25*a* of the bi-metallic element 25 by means of a coil spring 37, and if desired one or more link members 38 and 39. The link member 38 preferably is of insulating substance. It will be clear that as the end 25*a* of the bi-metallic element moves radially with respect to the post 14, the spring 37 will cause the contact bearing member 33 to snap rapidly in either direction, as soon as the spring 37 has passed the dead center.

Near the forward end of the base 10, I provide another standard member having a portion 40 attached to the base by means of a screw or rivet 41 and a generally upstanding portion 42. This portion bears a contact member 43 of suitable material and a cooperating contact member 44 is borne by the contact bearing member 33. A terminal screw 45 for line connection may be provided on the member 40 and another terminal screw for line connection may be provided upon the member 26. Since in some embodiments my thermostat will have to control fairly heavy currents, I prefer to connect my contact bearing member 33 to the member 26 electrically in a positive manner by means of a flexible stranded metallic conductor 47 soldered to the member 33 and to a stud 48 upon the member 26.

To control the back swing of the member 33 I provide a bracket 49 adjustably held to the base 10 by a screw 50 passing through a slot in the bracket.

I also provide upon my member 33 a controlling element in the form of a bar magnet 51 which may be held to the member 33 by turned over portions 52 or otherwise as desired. As a combined keeper and armature for the magnet 51, I provide either attached to or as part of the member 42 the device 53, interspaced from the bar magnet, but having ends 54 which approach it.

It will be clear that the magnet acts to increase the speed of the making and breaking of contact between elements 43 and 44 and therefore to prevent undue arcing therebetween. The mass of the magnet 51 also acts to stabilize my contact bearing member 33 to which it is attached.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a thermostatic device, a metallic subbase having a cut-away portion, an insulating base mounted over said cut-away portion, a standard carried by said insulating base, a bifurcated contact bearing member mounted for pivotal movement with relation to said standard, a contact bearing arm mounted on said base, a thermal responsive device mounted on said subbase, a tension connection between said thermal responsive device and said contact bearing member adapted to cause a quick movement of said contact bearing member upon passing a dead center, a bar magnet mounted upon said contact bearing member, and an armature therefor mounted on said contact bearing arm.

2. In a thermostatic device, a metallic subbase having a cut-away portion, an insulating base mounted over said cut-away portion, a standard carried by said insulating base, a bifurcated contact bearing member mounted for pivotal movement with relation to said standard, a contact bearing arm mounted on said base, a thermal responsive device mounted on said subbase, a tension connection between said thermal responsive device and said contact bearing member adapted to cause a quick movement of said contact bearing member upon passing a dead center, a bar magnet mounted upon said contact bearing member by means of fingers cut from the member, and an armature therefor mounted on said contact bearing arm.

RONALD J. ROCKWELL.