Aug. 31, 1943. L. M. HOWARD 2,328,342

HEATING PAD THERMOSTAT

Filed Nov. 10, 1941

Fig. 1.

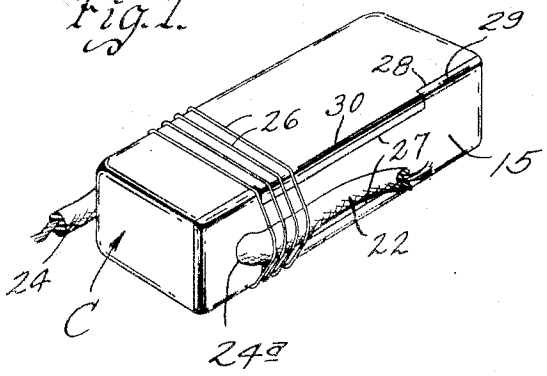


Fig. 2.

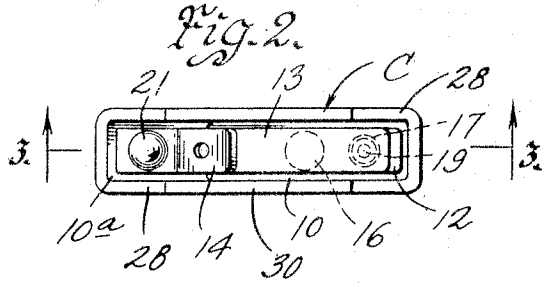


Fig. 3.

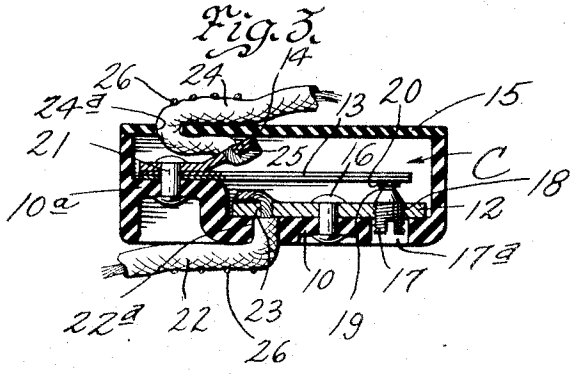
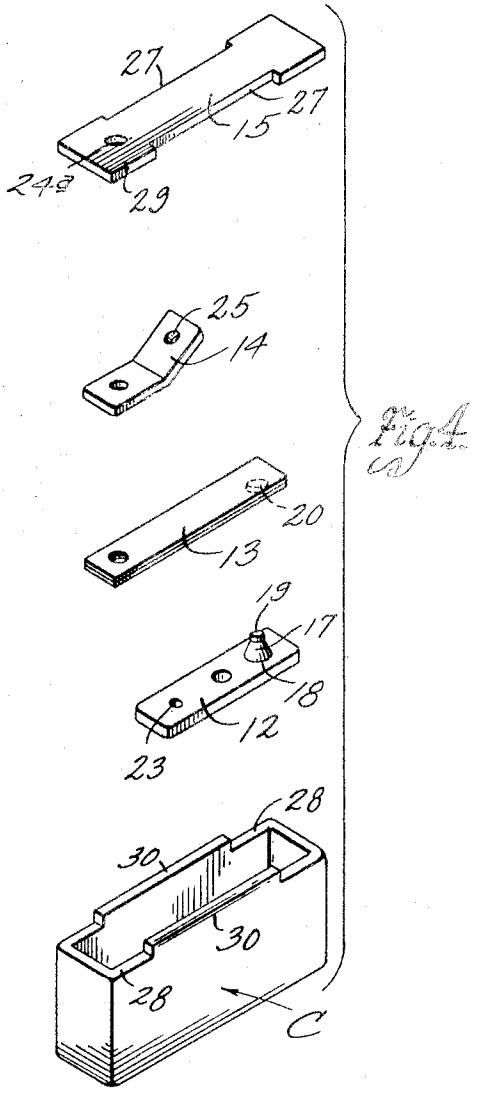


Fig. 4.



Inventor
Lawrence M. Howard
by Bair & Freeman
Attys.

Patented Aug. 31, 1943 2,328,342

UNITED STATES PATENT OFFICE

2,328,342

HEATING PAD THERMOSTAT

Lawrence M. Howard, St. Louis, Mo., assignor to Knapp-Monarch Company, St. Louis, Mo., a corporation of Missouri

Application November 10, 1941, Serial No. 418,458

7 Claims. (Cl. 200—138)

My present invention relates to a thermostat particularly designed for heating pads or the like. In connection with a heating pad it is desirable to have a relatively small thermostat so as to reduce the bulkiness of the pad where the thermostat is located. It is necessary, however, to provide the necessary space for warping of the bimetal element of the thermostat and longitudinal movement of an adjusting screw.

It is accordingly an object of my invention to provide a simple and inexpensive thermostat which may be made small in size yet utilizes a casing of insulating material instead of metal, as usual.

Another object is to provide the casing and the elements therein so arranged that the casing is wider than it is high, its width permitting the necessary space for operation of the bimetal element and adjustment of the adjusting screw, while, at the same time, compactness of the structure is obtained.

A further object is to provide a casing which is open on its side, and the open side is closed by a cover that needs no fastening means other than a wrapping of string or the like, which also retains the ends of lead wires to the casing against being pulled out of the casing.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawing, wherein:

Figure 1 is a perspective view of a thermostat embodying my invention;

Figure 2 is a side view thereof looking into the interior, with the cover removed;

Figure 3 is a sectional view on the line 3—3 of Figure 2 showing the cover in position and the thermostat fully assembled; and

Figure 4 is an exploded perspective view of the casing and cover and the three metallic elements within the casing which constitute the essential parts of my thermostat.

On the accompanying drawing I have used the reference character C to indicate a casing. The casing C has a side wall 10 opposite an open side thereof. Within the casing C I provide a terminal bar 12, a bimetal element 13 and a second terminal bar 14. For closing the open side of the casing C I provide a cover 15.

The first terminal bar 12 is secured to the side 10 of the casing C by a rivet 16. The bar substantially fits in the casing between the upper and lower walls thereof to prevent it from turning on the rivet 16. An adjustable contact 17 is screw-threaded in an opening 18 of the bar 12 adjacent one end thereof, and the casing side 10 has an opening 17a in which the head of the contact screw 17 is countersunk so as to prevent accidental contact of the user therewith.

The bimetal element 13 carries a contact 20 to cooperate with a contact 19 of the screw 17. The bimetal element 13 is mounted on an elevated side portion 10a of the casing side 10 by means of a rivet 21. The rivet 21 also supports the terminal bar 14 in position and affords an electrical connection between it and the bimetal element 13.

A lead wire 22 extends through an opening 22a of the casing side 10 and through a perforation 23 in the terminal bar 12. The extending end is then soldered to the terminal bar. A second lead wire 24 extends through an opening 24a in the cover 15 and through a perforation 25 in the second terminal bar 14. The end of the lead wire 24 is then soldered to the terminal bar.

The ends of the open side of the casing C are rabbeted, as indicated at 28, whereas the cover 15 is provided with notches 27. The notches 27 leave enlarged ends 29 on the cover to fit in the rabbets 28, the notches themselves fitting projections 30 of the casing C, thus positively positioning the cover 15 with relation to the casing C.

During assembly the lead wire 24 is threaded through the opening 24a of the cover 15, and after the cover is in its proper position a wrapping 26 of cord (preferably asbestos cord) is used to retain the cover on the casing and to anchor the ends of the lead wires where they extend into the thermostat, thus preventing their soldered connections from being pulled loose from the terminal bars 12 and 14.

From the foregoing disclosure it is obvious that I have designed a relatively compact arrangement of parts, making it possible to provide an insulating casing for the thermostat, having the necessary strength to prevent crushing, and serving as a protection against shocks that might occur where a metallic casing for the thermostat is used. The parts are few and simple to construct, and the assembly problem has been reduced to a minimum of operations and time required.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope without sacrificing any of the advantages thereof.

I claim as my invention:

1. In a thermostat for heating pads or the like, a relatively narrow casing of insulating material having an open side, a terminal bar in said casing adjacent the opposite side thereof, a lead wire through said opposite side and connected

with said terminal bar, an adjustable contact carried by said terminal bar, said opposite side of said casing having an elevated portion adjacent one end of said terminal bar, a bimetal element secured to said elevated portion and having a contact to cooperate with said first mentioned contact, a second terminal bar connected with the portion of said bimetal element on said elevated portion, a second lead wire connected therewith, said terminal bars and said bimetal elements substantially filling said casing widthwise, a cover for the open side of said casing, means for positioning said cover relative to said casing, and a single means surrounding said casing and cover and the portions of said lead wires adjacent said casing and cover to retain the cover on the casing and secure the lead wires against pulling on said terminal bars.

2. In a thermostat for heating pads or the like, a casing of insulation having an open side, a terminal bar in said casing attached against the opposite side thereof, said opposite side having a hole therethrough, said terminal bar having a hole in alinement with said hole of said casing, a lead wire through said hole of said casing and through said hole of said terminal bar and soldered in the latter hole, an adjustable contact carried by said terminal bar, said opposite wall of said casing having a second hole partially receiving the portion of said adjusting screw outside of said terminal bar, a bimetal element secured in said casing and having a contact to cooperate with said first mentioned contact, a second lead wire electrically connected to said bimetal element, and a cover for the open side of said casing.

3. In a thermostat for heating pads or the like, a casing of insulating material having an open side, a terminal bar in said casing, a lead wire through a wall of said casing and connected with said terminal bar, a contact carried by said terminal bar, said opposite side of said casing having an elevated portion adjacent one end of said terminal bar, a bimetal element secured thereto and having a contact to cooperate with said first mentioned contact, a second lead wire electrically connected with said second contact and a cover for the open side of said casing and having opposite notches along its sides, said casing having rabbets receiving the ends of said cover beyond the ends of said notches for positioning said cover relative to said casing.

4. A thermostat of the class disclosed comprising a casing of insulating material having an open side, a terminal bar in said casing adjacent the opposite side thereof, a lead wire connected with said terminal bar, a contact carried by said terminal bar, said opposite side of said casing having an elevated wall portion adjacent one end of said terminal bar, a bimetal element mounted on said elevated wall portion and having a contact to cooperate with said first mentioned contact, a rivet through said elevated wall portion and said bimetal element for securing them together, a second lead wire connected with said bimetal element, a cover for the open side of said casing, and means surrounding said casing and cover and the portions of said lead wires adjacent said casing and cover to retain the cover on the casing and secure the lead wires in position relative to the casing.

5. A thermostat of the character described comprising a casing of insulating material having an open side, a terminal bar in said casing adjacent the opposite side thereof, a rivet through said opposite side to retain said terminal bar in position, a contact screw-threaded in said terminal bar, said opposite side of said casing having an opening in which said contact screw is countersunk, said opposite side having another opening, a lead wire extending therethrough and soldered to said terminal bar, said opposite side of said casing having an elevated portion, a bimetal element thereon having a contact for cooperation with said first contact, a second terminal bar, a rivet through said elevated portion for retaining said bimetal element and said second terminal bar in position thereon, a cover for the open side of said casing, the ends of said casing being rabbeted and said cover being provided with notched sides whereby the ends of the cover occupy positions in said rabbets and effect positioning of the cover relative to the casing, a second lead wire soldered to said second terminal bar, said cover having an opening through which said last wire extends.

6. A thermostat of the character described comprising a casing having an open side, a terminal bar in said casing adjacent the opposite side thereof, a rivet through said opposite side to retain said terminal bar in position, a contact carried by said terminal bar, said opposite side of said casing having an opening, a lead wire extending therethrough and connected with said terminal bar, said opposite side of said casing having an elevated portion, a bimetal element thereon having a contact for cooperation with said first contact, a rivet through said elevated portion for retaining said bimetal element in position thereon, a cover for the open side of said casing, the ends of said casing being rabbeted and said cover being provided with notched sides whereby the ends of the cover occupy positions in said rabbets and effect positioning of the cover relative to the casing, and a second lead wire connected with said bimetal element, said cover having an opening through which said last lead wire extends.

7. A thermostat of the character described comprising a casing having an open side, a terminal bar in said casing adjacent the opposite side thereof, a rivet through said opposite side to retain said terminal bar in position, a contact carried by said terminal bar, said opposite side of said casing having an opening, a lead wire extending therethrough and connected with said terminal bar, said opposite side of said casing having an elevated portion, a bimetal element thereon having a contact for cooperation with said first contact, a rivet through said elevated portion for retaining said bimetal element in position thereon, a cover for the open side of said casing, the ends of said casing being rabbetted and said cover being provided with notched sides whereby the ends of the cover occupy positions in said rabbets and effect positioning of the cover relative to the casing, a second lead wire connected with said bimetal element, said cover having an opening through which said last lead wire extends, and a wrapping element around said casing and cover and around the portions of said lead wires adjacent thereto retain the lead wires, casing and cover assembled.

LAWRENCE M. HOWARD.