Sept. 6, 1932. G. H. BRADY 1,875,699

THERMOSTATIC CIRCUIT CLOSER

Filed June 7, 1928

Fig. 1.

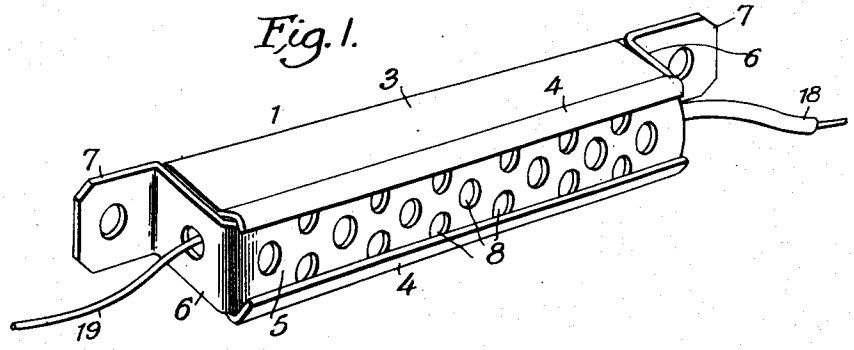


Fig. 2.

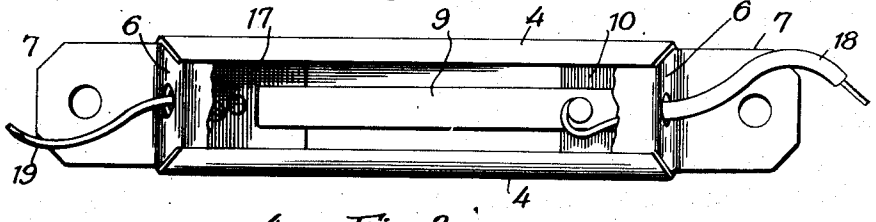


Fig. 3.

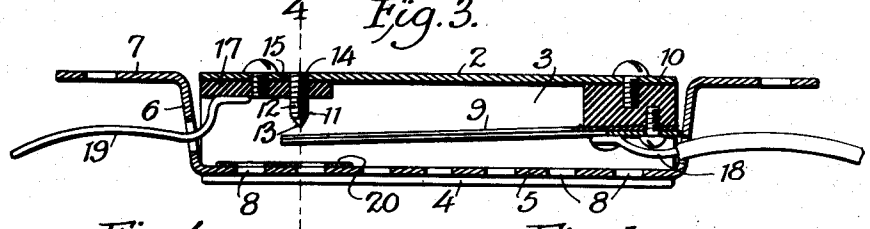


Fig. 4.

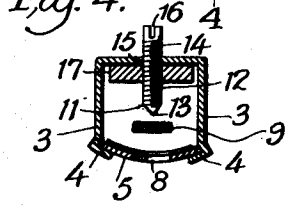


Fig. 5.

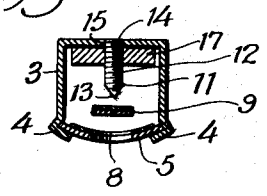
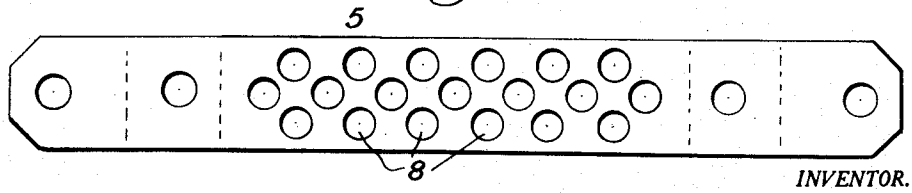


Fig. 6.



INVENTOR.

George H. Brady.

BY

ATTORNEY.

Patented Sept. 6, 1932

1,875,699

UNITED STATES PATENT OFFICE

GEORGE H. BRADY, OF BALTIMORE, MARYLAND, ASSIGNOR TO IMPROVED FIRE DETECTOR CORPORATION, OF BALTIMORE, MARYLAND, A CORPORATION OF MARYLAND

THERMOSTATIC CIRCUIT CLOSER

Application filed June 7, 1928. Serial No. 283,675.

This invention relates to certain new and useful improvements in thermostatic circuit closers for fire alarm systems.

One object of the invention is to provide a circuit closer which is simple of construction, reliable and efficient in action, and composed of a comparatively small number of parts capable of being easily made and assembled so as to adapt the device to be manufactured and sold at a low cost.

Another object of the invention is to provide a circuit closer which is designed to collect and retain the heat when a fire in its vicinity breaks out so as to ensure its positive action at the intended temperature.

Still another object of the invention is to provide a circuit closer which may be accurately set to close the circuit at a predetermined temperature and when so set will be proof against being easily tampered with or of its working parts being disarranged accidentally or by a mischievous person.

Still another object of the invention is to provide a circuit closer which will be proof against automatically sounding a false alarm in very cold weather or under other than intended conditions.

Still another object of the invention is to provide a circuit closer which may be readily and quickly tested to determine whether or not its contacts are in working condition.

The invention consists of the features of construction, combination and arrangement of parts, hereinafter fully described and claimed, reference being had to the accompaying drawing, in which:—

Figure 1 is a perspective view of my improved circuit closer.

Figure 2 is a face view thereof with the cover plate removed.

Figure 3 is a longitudinal section through the device on line 3—3 of Figure 2.

Figure 4 is a cross-section on line 4—4 of Figure 3, showing the contact screw as applied for adjustment and before its outer end is cut off.

Figure 5 is a similar view showing the contact screw in final adjustment and its outer end cut off.

Figure 6 is a view of the blank from which the cover plate is made.

In carrying my invention into practice, I provide a thermostatic circuit closer comprising a channeled casing body 1, formed of sheet metal, and having a back wall 2 and side walls 3, said casing body being normally open at its ends and front side. The walls 3 are provided with flanges 4 bent inwardly towards each other at the front side for the purpose of reducing the width of the front opening and retaining in position a cover plate 5. The cover plate is also made of sheet metal from a blank of the initial form shown in Figure 6. This cover plate comprises a body portion which is preferably transversely arched and closes the opening in the front of the casing between the flanges 4, said cover plate being overhung at its lateral edges by said flanges so as to be retained from outward displacement. The cover plate is provided with angularly bent portions 6 which extend rearwardly over the open ends of the casing body and close said ends of the casing body, and these portions 6 terminate in right angularly bent perforated attaching projections or ears 7, whereby the circuit closer may be fastened at the point of use to any suitable support. The body part of the cover plate is preferably provided throughout with perforations 8 for a purpose hereinafter described.

Arranged within the casing body are circuit closing contacts. One of these comprises a bimetallic strip 9, composed of two metals of different coefficiencies of expansion and contraction. These metal strip members are coextensive in length and welded together and are jointly secured at one end to a block 10 of insulating material, arranged at one end of the casing and secured to the wall 2 so as to insulate said strip from the casing. The free end of the strip 9 is arranged for coaction with a stationary contact 11. This contact comprises a pin or screw 12 having a sharp pointed contact end 13 and fine or micrometer screw threads 14, the threaded portion of said pin or screw engaging a threaded opening 15 in the back wall of the casing. Initially the opposite or outer end of the contact pin or screw is provided with

a nick 16 or other means whereby a screwdriver or other suitable tool may be engaged therewith to screw it into position. The pin or screw is preferably made of soft metal, so that after having once been set or adjusted its outer end or projecting portion may be cut off flush with the outer surface of the casing, so as to prevent accidental displacement of the contact 11 from its set position or of meddlesome persons turning it and changing its position. The pointed end 13 of the contact pin or screw lies in the path of movement of the strip 9, when the latter is bowed or deflected in one direction by the action of heat at a certain predetermined temperature, and the pointed form of the contact and wiping motion of the strip over the same reduces to a material extent liability of the collection of dirt or other foreign substances causing imperfect contact, the contact surfaces being kept clean, so that a reliable contact will always be made. A block 17 of metal may be fastened to the casing, through which the screw may project, in order to give greater stability to the contact and to provide means for the connection of a circuit conductor thereto. This block 17 is in electrical connection with the casing body. Conductors 18 and 19 forming part of an electrical circuit are respectively connected with the screw end of the strip 9 and the block 17, so that when the strip 9 engages the contact surface 13 the circuit will be closed to sound an alarm.

The described construction of the parts provides a very simple type of thermostatic circuit closer for fire alarm circuits, which may be manufactured and sold at a comparatively low cost. It will be observed that the construction of the parts provides for very ready and convenient assemblage. The perforations 8 in the cover plate allows hot air, when a fire breaks out, to freely enter the casing to influence the strip 9, while the portions 6 of the cover plate, by closing the ends of the channeled casing body, serve as heat retainers, so that a reliable circuit closing action at the exact temperature desired will be secured. By the provision of the contact pin or screw 12 with the fine threads 14, a fine adjustment of the contact 12 for an alarm closing action at any certain temperature may be obtained. The perforations 8 also permit of the pointed end of a pencil or other simple tool being inserted to mechanically press the free end of the contact strip 9 into engagement with the contact point 13, whenever it is desired to test out the thermostatic circuit closers in an alarm system.

It frequently happens that where thermostatic circuit closers of this type are arranged so as to be exposed at times to very cold weather that the bimetallic strip 9 will be bowed in the reverse direction to that in which it is bowed by the action of heat. If this occurs in a circuit closing device where the strip when so bowed will come in contact with the casing or other conducting part of the circuit closer, a false alarm will be given. In order to overcome this objection in the present construction of the device, I provide the inner side of the cover plate with an insulated surface or coating 20 of some good insulating material, so as to prevent electrical connection between the thermostatic strip and the casing when the thermostatic strip is reversely bowed as in case of intense cold. The provision of the coating 20, which may be cheaply applied, obviates the necessity of making the casing of undue cross-sectional dimensions in order to prevent contact of the strip therewith under the conditions mentioned, so that a circuit closer of compact size may be produced.

By making the metals of the strip 9 coextensive in length and welding them together and fastening them jointly to the block 10 a strip of a desired elasticity or springiness is produced which will react or return positively to normal position after being deflected by heat or manually into engagement with the contact as soon as the temperature falls below circuit closing pressure or the manual pressure is released, so that the strip is capable of repeated use for circuit closing actions, thus overcoming the objection to certain types of strips which when bowed or deflected remain so and are thereby rendered inoperative or must be manually bent back to a normal state. In practice the strip may be silver plated or otherwise plated with a protective coating to prevent oxidation so that by this means and the use of a sharp pointed contact absolute reliability of action will be ensured.

Having thus described my invention, I claim:—

1. In a casing for a thermostatic circuit closer, a channeled casing body having a back wall and side walls and normally open at its ends and front, said side walls being provided with inturned flanges, and a cover plate closing the opening at the front of the body and underlying said flanges, said cover plate having end portions closing the said normally open ends of the body and terminating in fastening members parallel with the back wall of the casing whereby the closer may be attached to a support.

2. In a casing for a thermostatic circuit closer, a channeled sheet metal body normally open at its ends and front and having a back wall and side walls, the latter provided with inturned flanges contracting said open front, a perforate cover plate closing the open front of the casing and having end portions closing the open ends of the casing and provided with perforate ears extending beyond the ends of the casing and parallel with the back wall thereof and whereby the casing may be attached to a support.

3. In a casing for a thermostatic circuit closer, a channeled casing body having a back wall and side walls and normally open at its ends and front, and a cover plate comprising a body portion closing the opening at the front of the body and engaged along its lateral margins with the side walls thereof, end portions parallel with the body portion and arranged substantially in the plane of the back wall and forming attaching members for securing the casing to a support, and intermediate portions bent at right angles to and connecting said body and attaching portions and extending the full depth of and forming closure members for the open ends of the casing body.

In testimony whereof I affix my signature.

GEORGE H. BRADY.