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W. J. BOSTON

THERMOSTATIC CIRCUIT CLOSER

Filed May 22, 1922

Fig. 1

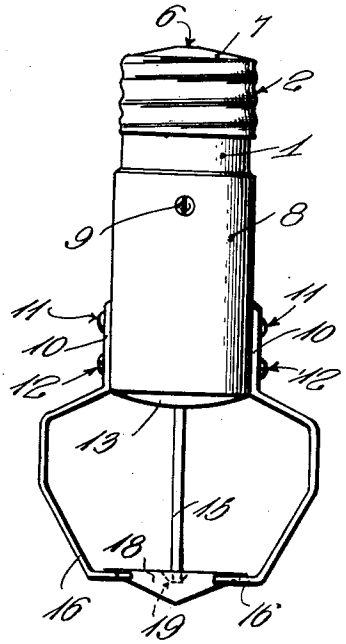


Fig. 2

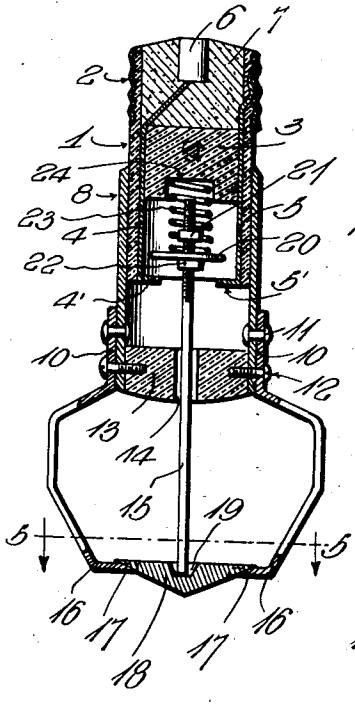


Fig. 4

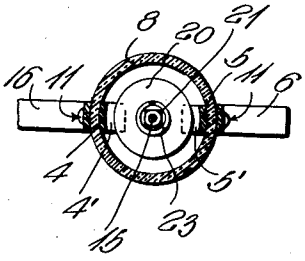


Fig. 3

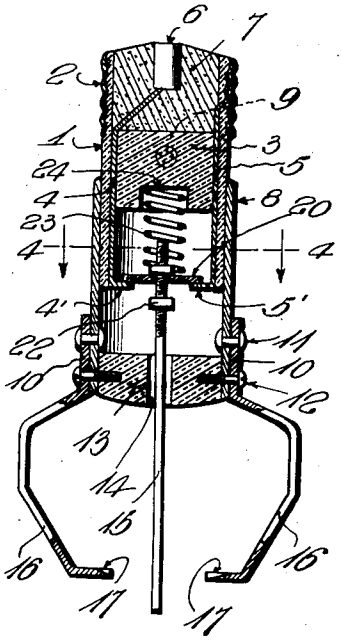


Fig. 5

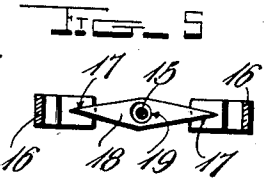


Fig. 6



Witness

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UNITED STATES PATENT OFFICE.

WILLIAM JOHN BOSTON, OF SOUTH BERWICK, MAINE.

THERMOSTATIC CIRCUIT CLOSER.

Application filed May 22, 1922. Serial No. 562,708.

To all whom it may concern:

Be it known that I, WILLIAM J. BOSTON, a citizen of the United States, residing at South Berwick, in the county of York and State of Maine, have invented certain new and useful Improvements in Thermostatic Circuit Closers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improved fire detector for use in closing a circuit and permitting a signal controlled by the circuit to be sounded.

One object of the invention is to provide a circuit closer so constructed that it may be screwed into an ordinary electric light circuit. The signal which is to be operated and may be an electrically operated horn of a conventional construction will be plugged into the circuit at any suitable point and if desired may be provided with a plug which will be screwed into place where the usual fuse plug is put in place. This device is to be so constructed that it will be compact in its construction and so constructed that a spindle which carries a bridging disk may be held in a position rendering the bridge inoperative by means of a multiple supporting block. It is further desired to so construct this device that the supporting block for the spindle may be securely held in place but permitted to easily drop out of place when melted.

This invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a view showing the improved device in side elevation.

Figure 2 is a longitudinal sectional view through the device.

Figure 3 is a view similar to Fig. 2 showing the spindle supporting block removed and the bridge in the operative position.

Figure 4 is a transverse sectional view taken along the line 4—4 of Fig. 3.

Figure 5 is a transverse sectional view taken along the line 5—5 of Fig. 2.

Figure 6 is a perspective view showing the spindle supporting block cut in half.

This improved circuit closer is provided with a body portion including a sleeve or tube 1 which is formed by fibre and carries a threaded contact sleeve 2 formed of brass or other conducting material, this contact sleeve being threaded so that the device can be screwed into an ordinary light socket. A block 3 of fibre is mounted in the tube 1 intermediate its length and contact strips 4 and 5 extend longitudinally of the tube upon opposite sides of the block 3 and have their free end portions bent to provide arms or fingers 4′ and 5′ which extend towards each other but terminate in spaced relation as clearly shown in Fig. 2. The upper end portion of the strips 5 extends through the tube 1 and engages the contact sleeve 2 and the upper end portion of the strip 4 is extended over the upper end of the block 3 and has connection with a contact point 6 which corresponds to the usual center contact provided in connection with electric bulbs. The tube 1 above the block 3 is filled with plaster Paris or other suitable substance and this filler 7 serves to hold the contact point 6 in the proper position. A sleeve 8 which is formed of fibre, brass or any other suitable material fits upon the lower portion of the fibre tube 1 and is held in place by securing screws 9. Arms 10 which are formed of rigid metal are secured at opposite sides of the sleeve 8 by rivets 11 and screws 12, the screws 12 being passed through the sleeves 8 and into a head or plug 13 which is positioned within the sleeve. This head 13 will be formed of metal or of fibre if so desired and is provided with a central passage 14 so that a pin 15 may be passed through this passage 14 and extend between the fingers 16 of the free ends of the arms 10. These fingers 16 are cut from their upper faces to provide seats 17 so that a support 18 formed of easily meltable substance may be supported as shown in Figs. 2 and 5. The support is provided with tapered end portions which rest in the V-shaped seats 17 and intermediate its length is provided with a socket 19 to receive the end of the pin 15.

This pin 15 extends upwardly between the contact strips 4 and 5 and extends through an opening formed in a bridging disk 20 which serves to bridge space between the fingers 4′ and 5′ of these contact strips. Shoulders 21 and 22 are provided upon this pin above and below the bridging disk 20 so that the pin may be suspended from the disk by means of the upper shoulder 21 and may have engagement with the disk through the medium of the shoulder 22 to permit the disk to be moved upwardly to an inopera-

tive position against the action of the spring 23. This spring 23 is positioned about the pin above the disk 20 and has its lower end engaging the disk and its upper end portion positioned in a seat 24 formed in the block 3. It will thus be seen that when the pin is moved upwardly and supported in the raised position by means of the support 18, the disk will be held out of bridging engagement with the fingers of the contact strips 4 and 5 and then when the support is melted and drops out of place, the spring will move the disk downwardly to bridge the space between the fingers of the contact strip as shown in Fig. 3. When this device is in use, it is to be screwed into an ordinary electric light socket and the support 18 is to be put in place with the pin 15 seated in the seat 19 and the tapered ends of the support resting in the seats 17. The signal horn may be located at any suitable point along the line of the circuit and as previously explained, may be inserted in place of a fuse plug if so desired. With the support 18 in place, the disk 20 will be held out of engagement with the end portions of the contact strips 4 and 5 and the circuit through the signal horn will be broken. In case of fire, the heat will cause the support 18 to melt and as its end portions are tapered, it only requires a small amount of melting to permit the support to drop out of place. By having the blocks provided with tapered end portions as shown in Figs. 2 and 5 and V-shaped in cross section as shown in Fig. 6, the end portions of the blocks will fit snugly in the V-shaped grooves formed in the free end portions of the supporting arms and the small end portions can readily melt off. By bending the arms 16 closer to each other, they will engage the blocks closer to the intermediate points thereof and therefore it will take a greater amount of melting to release the blocks. Therefore, the arms may be moved to release the blocks when a predetermined temperature has been reached. When this support drops out of place, the spring 23 forces the disk downwardly into bridging engagement with the finger portions of the contact strips thus completing the circuit. When the bridging disk is in engagement with the finger portions of the contact strips, the current can then pass through the strips 4 and 5 and through the signal horn which will then be sounded to give an alarm. The pin will hang from the bridging disk and when it is desired to stop sounding of the horn, it is simply necessary to place a new support in engagement with the end of the pin and after moving the pin upwardly, turn the support so that its end portions can rest in the seats 17. A circuit closing device has thus been provided which will be simple in construction and efficient in operation.

I claim:

1. A circuit closer comprising a tubular casing of insulating material, a socket engaging contact sleeve carried by said casing, a block of insulating material in said casing, contact strips in the casing spaced by said block, one having its upper end connected with the contact sleeve and the other having its upper end portion terminating in a center contact and said strips having their lower end portions extending towards each other in spaced relation to said block, a jacket sleeve upon the lower portion of the casing extending below the lower end thereof, supporting arms carried by said jacket and having finger portions extending towards each other, a stem extending between the ends of the contact arms and the supporting arms and into the casing below said block, a bridging disk upon said stem, stop collars upon said stem above and below said disk, a spring about said stem fitting into a seat in said block and engaging the disk to yieldably hold the disk in engagement with the lower free end portions of the contact strips, and a support of readily fusible material carried by the finger portions of said supporting arms for engaging the lower end of said stem and holding the stem in an elevated position with said bridging disk out of engagement with said contact strips.

2. A circuit closer comprising a casing of insulating material, a socket engaging contact sleeve carried by said casing, contact strips in said casing, one having its upper end projected through the side of the casing and connected with said contact sleeve, a center contact connected with the upper end of the other contact strip, insulating material in said casing holding the contact strips in spaced and insulated relation, said strips being extended beneath said insulating material and having their ends bent to provide abutment fingers terminating in spaced relation, supporting means beneath said casing, a fusible element adapted to be carried by said supporting means, a stem positioned axially of said casing with its upper end portion extending between said abutment fingers and its lower end engageable with the fusible element when the fusible element is in place, a bridge for engaging said fingers carried by said stem above the fingers, and a spring in said casing having one end engaging the insulating material and its other end engaging said bridge to yieldably retain the bridge in engagement with said fingers when the fusible element is out of place.

3. A circuit closer comprising a casing, contact strips in said casing and insulated from each other and having end portions terminating in spaced relation, a guide of insulating material below said contact strips, supporting arms below said guide having

lower end portions bent towards each other and terminating in spaced relation and having their upper faces provided with seats, a stem extending through said guide and between the ends of the contact strips and the arms and having bridging means for engaging the contact strips, means yieldably holding said stem in a lowered position with the bridge in engagement with said contact strips, and a stem supporting block of readily fusible material having end portions fitting into the seats of said arms, the intermediate portion of the block being thickened downwardly to extend below the plane of the lower ends of said arms and having a stem receiving seat leading from its upper face.

4. A circuit closer comprising a body portion, spaced contacts carried by the body portion and insulated from each other, supporting arms having free end portions terminating in spaced relation to each other, the supporting arms being bendable to vary the distance between the free ends thereof, said free ends having their upper faces provided with V-shaped grooves cut from their ends and inwardly decreasing in depth, a stem movable longitudinally between these contacts and free end portions of said arms, bridging means for said contacts carried by said stem, and a supporting block for said stem formed of easily fusible material, said block being provided intermediate its length with a stem-receiving seat and having its end portions tapered towards their ends and V-shaped in cross section for fitting in the notches of said arms.

In testimony whereof I have hereunto set my hand.

WILLIAM JOHN BOSTON.