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THERMOSTAT.

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1,062,136.

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Fig. 1.

Fig. 2.

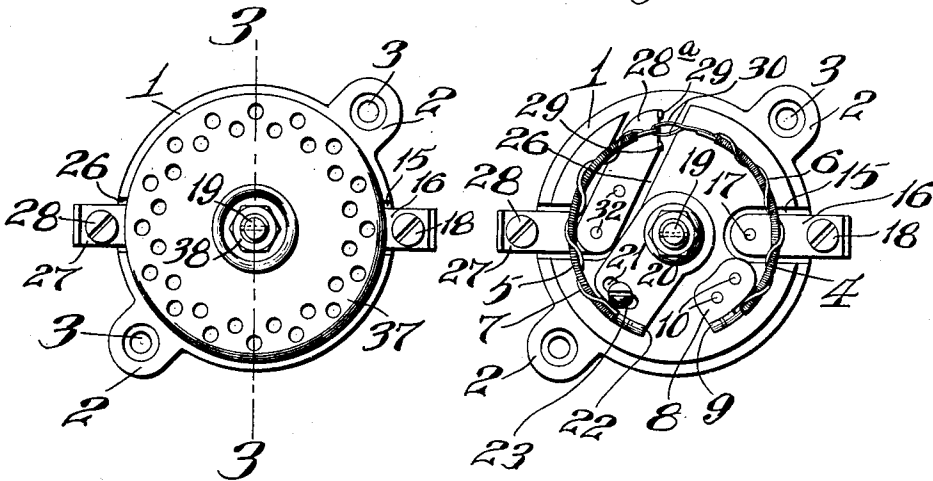
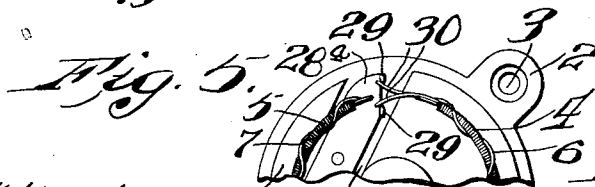
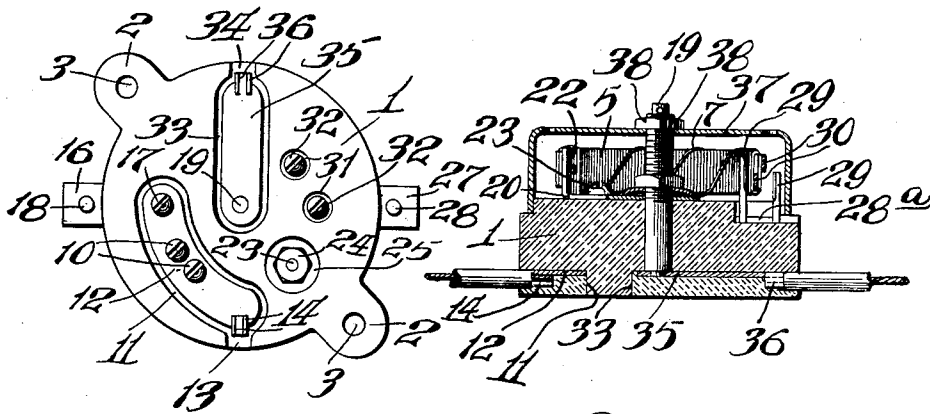


Fig. 4.

Fig. 3.



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# UNITED STATES PATENT OFFICE.

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THE NATIONAL CLOCK AND ELECTRIC MFG. CO., OF ST. LOUIS, MISSOURI, A COR-  
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THERMOSTAT.

1,062,136.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that we, THEODORE H. WURMB and ROBERT BAUMANN, citizens of the United States, and residents of St. Louis, Missouri, have invented certain new and useful Improvements in Thermostats, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to improvements in thermostats, the object of our invention being to construct a thermostat with a pair of thermally operated springs and a fixed contact point, one of the springs having an elastic bifurcated end arranged to "snap" into engagement with the fixed point.

For the above purposes our invention consists in certain novel features of construction and arrangement of parts as will be hereinafter more fully described, pointed out in the claims and illustrated by the accompanying drawings, in which:

Figure 1 is a plan of the complete device; Fig. 2 is a plan of the device with the cover removed and showing the engaging ends of the thermo springs in contact; Fig. 3 is a sectional elevation taken on the line 3—3 of Fig. 1 and showing the ends of two conductors of a closed circuit; Fig. 4 is an inverted plan of the complete device; Fig. 5 is a plan of a portion of the device with the cover removed and illustrates the engaging ends of the thermo springs out of contact and in engagement with a fixed contact point.

Referring by numerals to the accompanying drawings: 1 designates a base section which is constructed of insulating material and is provided with the integral ears 2 having the counter-sunk screw openings 3.

4 and 5 designate the thermo springs which are substantially the same as those shown in our Patents No. 770,345 of January 12, 1904, and No. 857,709 of June 25, 1907. In our present springs, however, we employ conductors 6 and 7 which conductors lead from one end of the springs to the other the function of which will be made more clear hereinafter. The fixed end of the spring 4 is secured to the base by means of the plate 8 and integral extensions 9 to which the spring is attached, the plate being secured to the base by means of the screws 10.

Located in a depression 11 on the under face of the base section 1 is a plate 12 which is arranged substantially parallel with the plate 8, and arranged in a position to receive the screws 10. A section of the wall of the depression 11 is removed at 13 so that a conductor may be secured to the plate 12 in a plane above the bottom face of the base 1. Carried by the plate 12 and preferably formed integral therewith are the wings 14 which are arranged to clamp a conductor and are in a position alining with the opening 13.

Formed in the upper face of the base, underlying the central portion of the spring 4 and at right angles thereto, is a depression 15 and located in the depression 15 is a conducting plate 16 the inner end of which is secured by means of the screw 17 which is also inserted through the plate 12. The outer free end of the plate 16 is turned upwardly and located adjacent said up-turned end is a binding screw 18. Centrally positioned with relation to the base is a vertically disposed threaded bolt 19 and positioned upon the upper face of the base 1 and embracing the bolt 19 is a plate 20 which is provided with a slot 21, and formed integral with the plate 20 is an upwardly extending portion 22 to which the spring 5 is secured. Inserted through the slot 21 is a set screw 23 which is seated in a nut 24 seated in a depression 25 in the bottom face of the base. By means of this slotted connection between the base and the plate 20 the contacting end of the spring 5 may be shifted as required to vary the movement of the spring 5 relative to the spring 4 when actuated thermally. Formed in the upper face of the base is a depression 26 a portion of which is in a line paralleling the depression 15 and arranged in the last mentioned portion of the depression 26 is a plate 27 identical in construction with the plate 16 and provided with a binding screw 28. Positioned within the remaining portion of the depression 26 is a conducting plate 28<sup>a</sup>, the outer end of which is provided with integral upright posts 29 arranged in positions to contact with the bifurcated resilient ends 30 of the spring 4 when acted upon thermally. Formed in the end face of the base are the depressions 31 and seated in these depressions are the heads of the screws 32, the threaded ends of the screws being

seated in the plate 28 and securing said plate and the plate 27 to the base. Formed in the base is a depression 33 a section of the wall of which is removed forming an opening 34 diametrically opposing the opening 13 and arranged in the depression 33 is a conducting plate 35 one end of which embraces the lower end of the bolt 19 and the opposite end of the plate is provided with wings 36 which are identical in shape with the wings 14 carried by the plate 12.

37 designates a cap or cover which is designed to protect the operative parts of the device and is preferably provided with a number of perforations in its upper face and is secured to the base by means of the nut 38.

By the arrangement of the conducting parts of our improved device and by reason of their relation to the springs we are enabled to employ the device in connection with various systems of wiring.

It is obvious that the devices may be fixed at different points throughout a building by means of screws inserted through the openings in the perforated ears and made a permanent fixture.

It is obvious further, as shown in Fig. 3, that the depressions 11 and 33, after the conductors are secured to the wings 14 and 36, that an insulating filler may be placed in the depressions, which filler prevents tampering with the conductors after they are placed in position.

It is obvious further that the devices may be employed in a temporary system and one in which the devices need not be fixed but simply placed at convenient points.

The springs 4 and 5 as described in the patents referred to are composed of flat metal springs around which are wound a wire, preferably of different metal from the springs, the wire thus wrapped being extremely sensitive to thermal variations but it has been found in practice that such springs and wires offer considerable resistance to an electric current and to overcome this resistance we have applied the wires 6 and 7 which are of copper or such material as is required for the rapid conductivity of an electric current. By this means the current may flow from end to end of the springs without apparent resistance.

The bifurcated, resilient ends 30 of one of the springs are of such nature as to spring in opposite directions, as shown in Fig. 5, so that they will each contact with one of the fixed contacts 29 when the thermo

springs are moved away from each other. To set the machine, that is to form a contact between the resilient ends 30 and the end of the opposite thermo spring, the spring, which is the lowermost one shown in Fig. 5 has a tendency to spring downwardly, is manually placed on top of the thermo spring and the uppermost resilient member, which has a tendency to spring upwardly, has its free end placed beneath the end of the thermo spring 5, as clearly shown in Fig. 2. When the springs are thermally acted upon the thermo springs are moved away from each other and the resilient ends sprung to the position shown in Fig. 5 which makes what is known as a "snap" contact with the fixed contacts 29.

We claim:

1. In combination with a pair of electric conducting members, one of which is thermally movable bodily relative to the other, and a fixed contact point, an elastic element carried by one of said members and adapted to electrically contact with the other of said members when the said members are in juxtaposition, said elastic element arranged to spring toward said fixed contact when said member carrying it is thermally acted upon.

2. In combination with a pair of members which are thermally movable bodily relative to each other and a pair of fixed contact points, an elastic bifurcated member carried by one of said pair of members arranged to embrace the other one of the pair of said members to form an electrical connection between said pair of members and arranged to spring to engage with said fixed contacts when said pair of members are thermally moved.

3. In combination with a pair of members one of which is thermally movable bodily relative to the other and a fixed contact point, a pair of elastic elements carried by one of said members arranged to embrace the other member of the pair to form an electrical connection between said pair of members and also arranged to spring toward and electrically connect said movable member with said fixed contact when said member is thermally moved.

In testimony whereof, we have signed our names to this specification, in presence of two subscribing witnesses.

THEODORE H. WURMB.  
ROBERT BAUMANN.

Witnesses:

EDWARD E. LONGAN,  
E. L. WALLACE.