

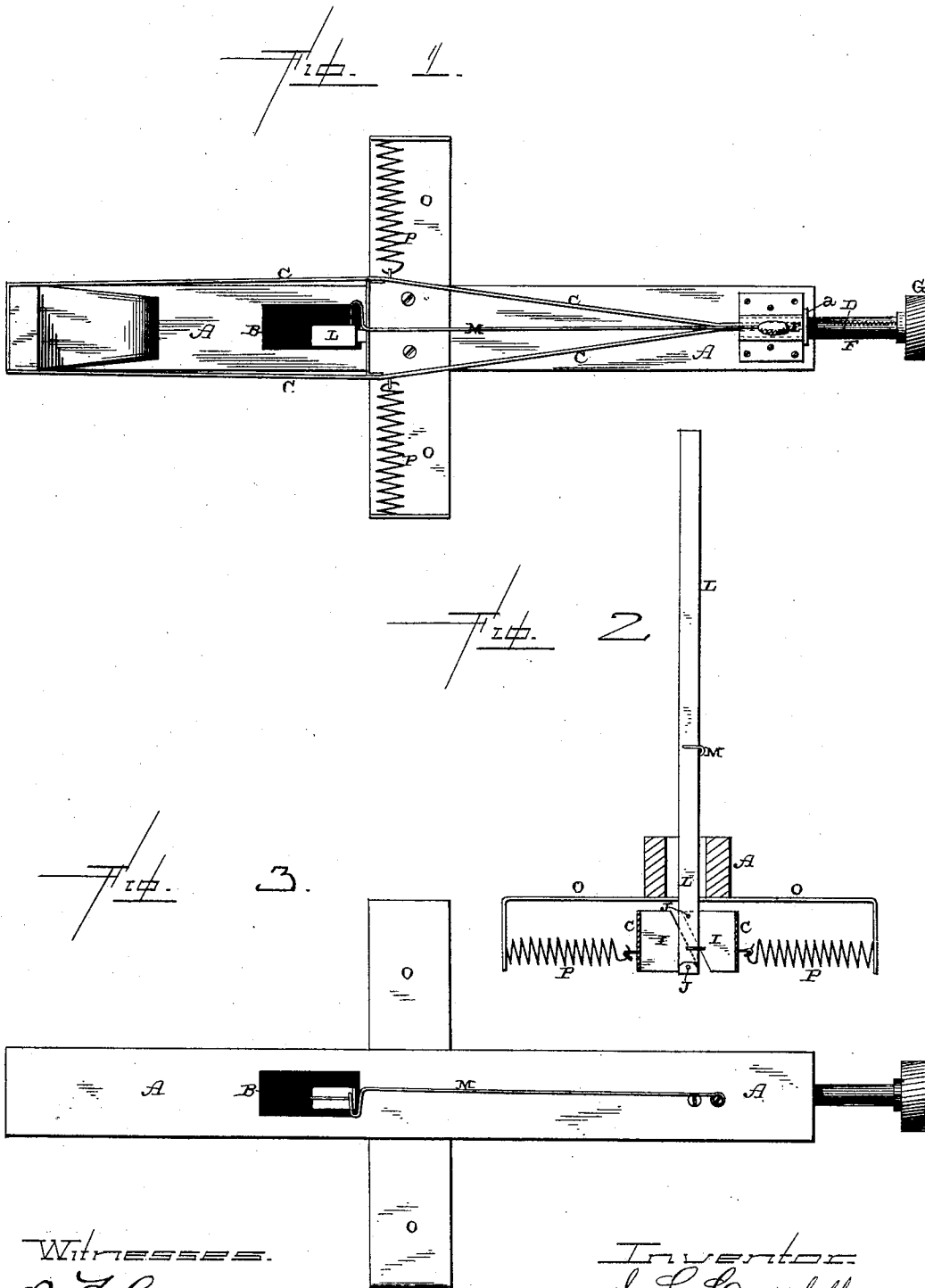
(Model.)

J. L. CAMPBELL.

THERMOSTAT.

No. 358,728.

Patented Mar. 1, 1887.



Witnesses.
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UNITED STATES PATENT OFFICE.

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THERMOSTAT.

SPECIFICATION forming part of Letters Patent No. 358,728, dated March 1, 1887.

Application filed May 24, 1886. Serial No. 203,085. (Model.)

To all whom it may concern:

Be it known that I, JAMES L. CAMPBELL, of West Elizabeth, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Thermostats; and I do hereby 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in thermostats; and it consists in, first, the combination of a wooden supporting-bar, the two expansible strips connected thereto, springs which are applied to the outer sides of the strips, the regulating-screw, and the operating-lever; second, the combination of the supporting-bar having a hole through it for the operating-lever to pass through, the expansible strips connected to the bar, the pins connected to the strips and upon which the operating-lever is placed, the springs applied to the outer sides of the strips, and the regulating-screw for adjusting the strips; third, the combination of parts, which will be more fully described hereinafter.

The object of my invention is to provide a thermostat for regulating the temperature in incubators, hot-houses, churches, theaters, private dwellings, and everywhere that a uniform heat is desired; to connect the springs to the outer sides of the strips, so that when the strips become cold the springs will not become displaced; to pass the operating-lever up through an opening in the bar or strip, and thus enable the lever to be turned in either direction in relation to the bar; to connect the bar to the strips in such a manner that the slightest movement of the strips will cause a positive movement of the lever, so as to regulate a valve, damper, or cut-off of any kind.

Figure 1 is an inverted view of a thermostat embodying my invention. Fig. 2 is a vertical section taken at one side of the spiral spring. Fig. 3 is a plan view.

A represents the support, rod, or bar, which will be placed in any desired position, and through which is made a suitable opening or slot, B, for the operating-lever to pass through.

The width of this slot will be sufficiently great to allow the lever to have any desired amount of lateral play. Secured to the under side of this bar A, in any suitable manner, are the two expansible strips C, which will preferably be made of metal, but which may be made of any other material which will answer the purpose. These strips are connected rigidly together at opposite ends from where they are connected to the wooden bar, and to these ends is connected the screw D. The ends of the strips C and the screw D pass through the guide E, which is secured to the under side of the rod A; and applied to the screw outside of the guide E is a sleeve, F, and a thumb-nut, G. The inner end of the sleeve bears against the cross-piece a upon the guide E, and the nut bears against the outer end of the sleeve. When the nut is turned in one direction it draws the screw and strips outward, so as to increase the tension upon the strips; but when the nut is turned in the opposite direction the tension is released, and the springs connected to the strips cause them to expand and draw their ends outward from the guide E.

Secured to the inner side of each one of the strips is a flange or bracket, I, which has its inner edge or end cut diagonally as shown.

Projecting from the upper inner corner of one of these brackets, and from the lower inner corner of the other is a pivotal pin, J, upon which the operating-lever L is placed. Both of these pins pass through the lower end of the lever L, and as the strips are made to expand and contract by the heat the movements of the brackets cause the lever L to move correspondingly, which movement, though very slight at its lower end, causes a considerable lateral movement at the upper one. The amount of this lateral movement at its upper end depends entirely upon the length of the operating-lever above the two pivotal points. To the upper end of the lever is connected the connecting-rods, or operating mechanism of any kind, for the purpose of moving a valve, damper, or cut-off of any kind for regulating heat.

Secured to both sides of the wooden bar A are springs M, which catch against the lever and keep it pressed just far enough to one side to cause it to take up any lost movement at

the pivots on its lower end. The lever being always held in such a manner that there is no lost motion, the slightest movement of the lever at its upper end will be conveyed directly to the connecting-rod, so as to operate upon the valve, damper, or cut-off, and thus give a fine adjustment.

Secured to the under side of the supporting-bar A is the metallic plate O, which has its outer ends turned downward, and to these turned-down ends are secured the spiral springs P, which have their inner ends fastened to the outer sides of the strips C. These springs serve to keep the strips always pressed downward, so that when the strips become heated they will expand in an outward direction, and thus pull in opposite directions upon the lower end of the lever L by means of the two pins which pass through the lever, and thus cause their expansion or contraction to exert a positive movement upon the lever. The spiral springs are placed upon the outer sides of the strips, as here shown, so that when the strips become cold they cannot cause the spring or springs to become displaced, as is the case where the spring or springs are placed between the strips. These springs being placed upon the outer sides of the strips, always exert a positive pull upon them, so as to keep their tension uniform, and thus prevent any of the parts from getting out of order.

I do not limit myself to any particular place where this thermostat is to be applied, or what mechanism is connected to the upper end of the lever. If the thermostat is placed in an incubator, the upper end of the lever will be connected to devices which will cause the flame of the lamp to be turned on or off, according as more or less heat is desired. In hot-houses, churches, theaters, and private dwellings, the lever will be connected to a valve or damper, which will admit or cut off the outside atmosphere, or may be connected to regulators connected with the source of heat. Where this thermostat is placed inside of an incubator, the lower edges of the metallic strips can almost touch the eggs, and thus get the exact heat, instead of having to be placed high above the

eggs, as must be the case where some part of the regulator projects downward below the strips.

As here shown, the strips are connected to the under side of the wooden rod; but this wooden rod need not necessarily be used as a support for the strips. Any supports which will hold the ends of the strips in any suitable relation to each other will answer the same purpose as the rod. The rod is a matter of convenience, because the whole thermostat can be connected directly thereto; but the rod is not a necessity, and hence can be dispensed with when desired.

Having thus described my invention, I claim—

1. In a thermostat, the combination of a suitable support, the strips, a regulating-screw connected to one end, and the springs applied to the outer sides of the strips, substantially as shown.

2. The combination of the strips, a regulating-screw connected to one end, the flanges, arms, or brackets connected to the inner sides of the strips and provided with pivotal pins, and the operating-lever, which is placed upon the pins, substantially as described.

3. The combination of the supporting-bar, provided with a slot, recess, or opening, the strips, the regulating-screw applied to the ends of the strips, the springs, arms, or flanges carrying pivotal pins, and the operating-lever, which is pivoted upon the pins, substantially as set forth.

4. The combination of the slotted wooden bar, the two strips connected to the metallic guide E, the screw D, sleeve F, and the nut G, with the springs which are applied to the outer sides of the strips, the arms carrying the pivotal pins, the operating-lever L, and the spring N, all arranged substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES L. CAMPBELL.

Witnesses:

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CHARLEY M. SHOAF.