

W. BARSTOW.
THERMOSTAT.
APPLICATION FILED JUNE 19, 1918.

1,292,991.

Patented Feb. 4, 1919.

FIG. 1

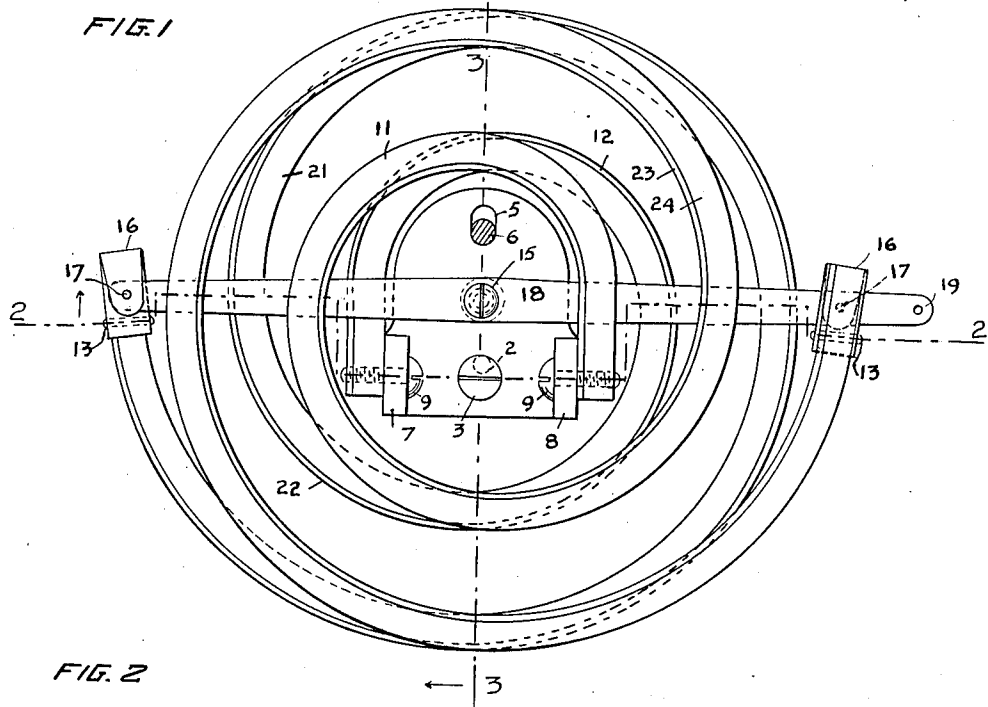


FIG. 2

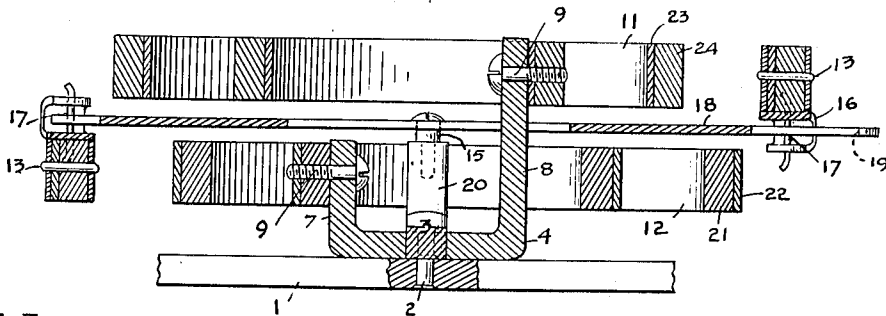
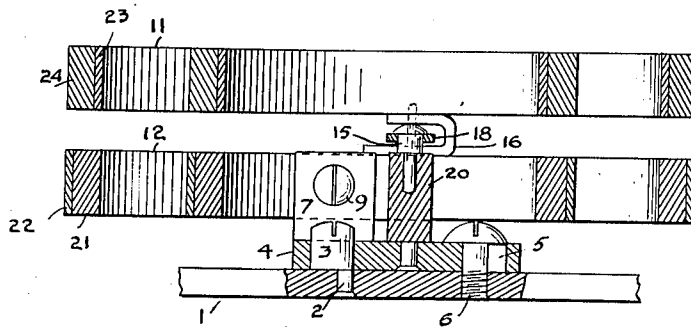


FIG. 3



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THERMOSTAT.

1,292,991.

Specification of Letters Patent.

Patented Feb. 4, 1919.

Application filed June 19, 1918. Serial No. 240,774.

To all whom it may concern:

Be it known that I, WELCH BARSTOW, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented new and useful Improvements in Thermostats, of which the following is a specification.

One object of the present invention is to provide in a thermostat a bi-metallic couple whose inertia does not cause it to open or close when subjected to shock.

A further object is to provide a bi-metallic element which will have a large movement having regard to its over-all dimensions and weight, and which will be of great accuracy.

In the accompanying drawing, Figure 1 is a plan view of my improved thermostat; Fig. 2 is a sectional view thereof on the line 2—2 of Fig. 1; Fig. 3 is a sectional view on the line 3—3 of Fig. 1.

Referring to the drawing, 1 indicates a suitable base, in which is pivoted a pin 2 having an eccentric head 3 rotatable in a support 4, so that said support is adjustable on said base by turning the eccentric pin 2. It is locked in any desired position by a locking screw 6 screwed into said base 1 and passing through a slot 5 in the support 4.

From said support extend upwardly a short standard 7 and a long standard 8. To said standards are secured by screws 9 inner ends of bi-metallic elements 11, 12, each of a general spiral form, but extending in opposite directions from their fixed ends. The outer ends of said elements are secured by pins 13, to caps 14 having yoke-shape extensions 16 in which are pivoted, by pins 17, terminal portions of a bar 18, pivoted, as shown at 15, on a standard 20 centrally located upon the support 4. One end of said bar is provided with means, as an aperture 19, for connecting it with a device for indicating the extent to which the elements 11, 12, are expanded or contracted.

Each bi-metallic element is composed of a pair of metals having the greatest practical difference of heat coefficient of expansion, namely, brass and approximately 36% nickel steel alloy, the brass having the greatest commercially available coefficient and the alloy the least, inasmuch as it is practically zero, and in some cases negative. The brass and alloy are arranged oppositely in the two bi-metallic elements, a brass strip 21 being ar-

ranged on the inside, and a strip 22 of alloy on the outside of the spiral coil in one element and the positions being reversed in the other element, a strip 23 of alloy being on the inside, and a strip 24 of brass being on the outside. Consequently while one element will expand, the other element will contract, with an increase in temperature, and since their outer ends are pivoted near the opposite ends of the bar 18, which is free to oscillate about its center, the thermostat so composed is statically balanced. Its inertia does not cause it to open or close when subjected to shock.

Moreover, the two coils linked together, as shown, tend to mutually overcome any slight differences of expansion due to hard spots in the metals, or for other reasons, and have therefore only one-half the error which each would have alone.

Another advantage of the present construction is the greater area exposed for a given cross-section of metal, the device thereby responding quickly to changes in temperature.

I claim:—

1. A thermostat comprising an oscillatory device and thermostatic elements, ends of which are secured to portions of said device on opposite sides of its center of oscillation, said elements being arranged, one to expand, and the other to contract with an increase in temperature, said device being provided with means for assisting to indicate its movements due to said expansion and contraction.

2. A thermostat comprising an oscillatory device and bi-metallic elements each secured fixedly at one end, the other ends of said elements being secured to portions of said device on opposite sides of its center of oscillation, said bi-metallic elements being arranged, the one to expand and the other to contract, with an increase in temperature, said device being provided with means for assisting to indicate its movement due to said expansion and contraction.

3. A thermostat comprising a device arranged to oscillate about an approximately central pivot and bi-metallic elements each in the form of a spiral coil fixed at one end, said coils extending in opposite directions from said fixed ends and their other ends being pivotally secured to portions of said device on opposite sides of said pivot, said bi-

metallic elements being arranged, the one to expand, and the other to contract, with an increase in temperature, said device being provided with means for assisting to indicate its movement due to said expansion and contraction.

4. A thermostat comprising a device arranged to oscillate about an approximately central pivot and bi-metallic elements each
10 secured fixedly at one end, the other ends of

said elements being pivotally secured to portions of said device on opposite sides of said center of oscillation, the metals of the two elements having different heat coefficients of expansion and being arranged oppositely in the respective elements, said device being provided with means for assisting to indicate its movement due to a change in temperature.

WELCH BARSTOW.