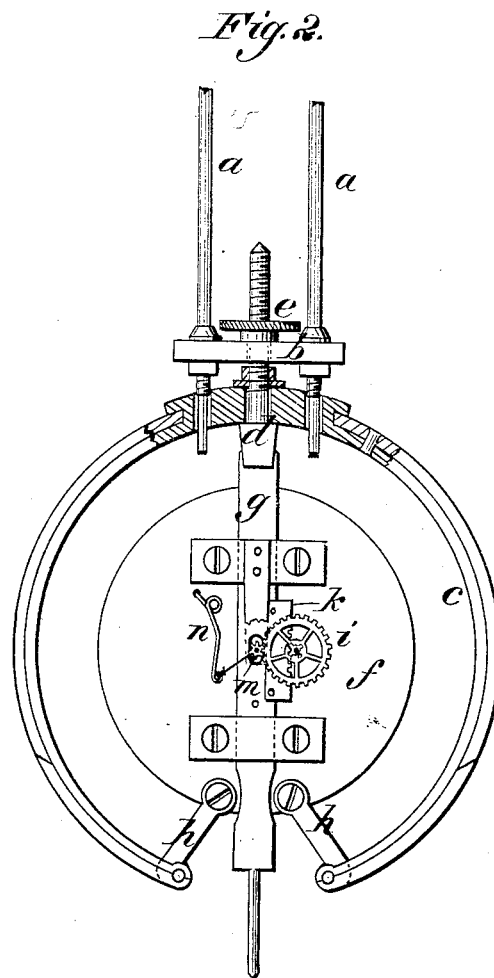
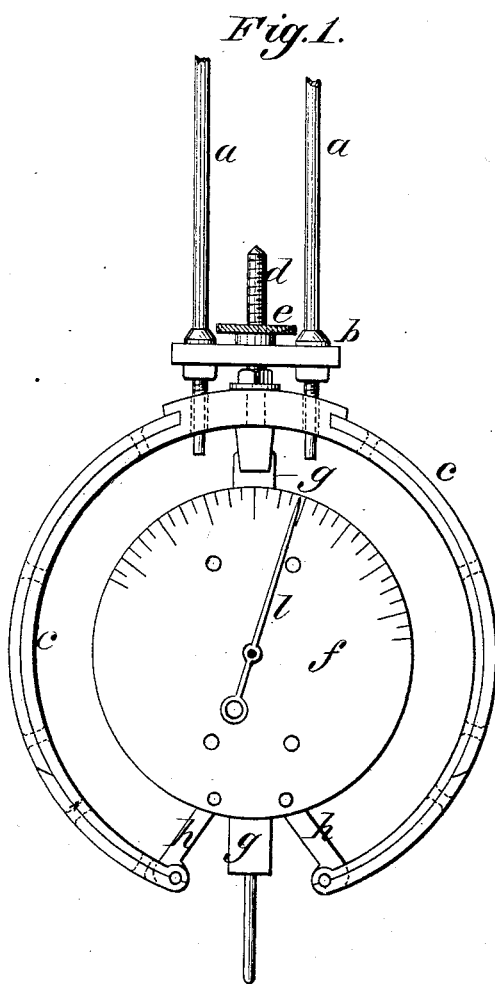


(No Model.)

C. F. MASON.
Compensating Pendulum.

No. 230,305.

Patented July 20, 1880.



WITNESSES:

Donn P. Twitchell.
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UNITED STATES PATENT OFFICE.

CHARLES T. MASON, OF SUMTER, SOUTH CAROLINA.

COMPENSATING-PENDULUM.

SPECIFICATION forming part of Letters Patent No. 230,305, dated July 20, 1880.

Application filed May 26, 1880. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. MASON, of Sumter, Sumter county, South Carolina, have invented a new and useful Improvement in
5 Compensating-Pendulums, of which the following is a specification.

My improvements relate to pendulums having means within themselves for adjustment to compensate for changes of temperature.

10 My invention consists in a compound bar of metal bent in curved form, hung on the pendulum-rod, and connected by links with the sliding bob in such manner that the expansion and contraction of the compound bar shifts
15 the bob in the direction of the length of the pendulum. The bob is sustained by the compound bar, and the latter hung on the pendulum-rods by a screw-rod, which permits adjustment for regulating the clock.

20 My invention consists, further, in gearing for multiplying the movement of the bob, connected with a hand for indicating the variations of temperature.

In the following detailed description of my
25 invention reference is made to the accompanying drawings, wherein—

Figure 1 is a front elevation of the pendulum, and Fig. 2 is a rear elevation, partially in section.

30 Similar letters of reference indicate corresponding parts.

a a are the rods of the pendulum, connected at their lower ends by a cross-bar, *b*. *c* is a compound bar of metal, bent in ring form and
35 suspended from the cross-bar *b* by a screw-rod, *d*, that extends through the bar *b*, and is fitted with a nut, *e*, that permits adjustment of the bar *c* to and from bar *b*. *f* is the bob or weight, hung on a rod, *g*, so that it may
40 slide freely thereon. The rod *g*, as shown, is connected rigidly to the lower end of rod *d*, so that the bob is within the ring-bar *c*, and the bob is sustained by links *h h*, that are pivoted to its lower side and pass to the opposite ends
45 of the bar *d*, where the links are also pivoted. The bob or weight is thus carried by the compound bar *d*, and partakes of the adjustment by the nut *e*, which adjustment is for regulation of the clock.

50 The compound bar *c* is composed of a strip

of brass and one of steel riveted or welded together, with the brass at the outer side. This is bent to nearly a complete circle, the two ends being at the under side and connected to the weight, as described.

In operation, increase of temperature will
55 cause expansion of the metal, and the expansion of the brass in the compound bar being greatest will throw the ends of the said bar inward, and by the links *h* raise the bob *f*,
60 thus shifting a portion of the whole weight of the pendulum upward to compensate for its extension by the increase of temperature. The reverse action takes place when the pendulum is shortened by fall of temperature, as such
65 lower temperature contracts the brass of the compound bar and spreads the open ends.

Upon the back of the weight *f* is fixed a stud carrying a gear-wheel, *i*, upon the back
70 of which is attached a pinion that engages with a rack, *k*, fixed on the side of the slide-bar *g*. At the center of weight *f* is fitted an arbor, that has suitable bearings on the weight and carries at one end, in front of the weight,
75 a hand or pointer, *l*, while at the back end this arbor carries a pinion, *m*, that engages with wheel *i*. By this mechanism the movement of weight *f* on bar *g* is multiplied and imparted to the pointer *l*, which will by its movement
80 thus indicate changes of temperature.

The face of the weights will be marked with a graduated scale, which may be so proportioned to indicate the changes by proper degrees for use as a thermometer.

The bar *g* is slotted where the arbor of hand
85 *i* passes through to allow movement of the arbor with the weight. Upon the weight *f* is fitted a light spring, *n*, from which a cord passes to the center arbor, takes up any looseness, and makes the hand more steady.

If desired, the expansion-bar and bob may be reversed in position—that is, the open ends of the bar placed upward. In that case the brass of the bar will be inside, so that its expansion shall move the bob upward.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The compensating-pendulum consisting of the compound bar *c*, bent in curved form 100

and attached at its middle portion to the pendulum-rods, the bob or weight fitted to slide on a rod suspended from bar *c*, and links *h*, connecting the ends of the bar *c* with the bob,
5 combined for operation substantially as shown and described.

2. In compensating-pendulums, the combined expansion-bar *c*, carrying the sliding bob and attached by screw *d* and nut *e* to the
10 cross-bar of the pendulum-rods, substantially as and for the purpose set forth.

3. In compensating-pendulums, in combination with the sliding bob fitted for movement by an expansion-bar, the hand *l*, pinion *m*, wheel *i*, rack *k*, and their supporting-arbors, 15 substantially as and for the purposes set forth.

CHARLES T. MASON.

Witnesses:

J. F. W. DELORME,
CHARLES W. DAVIS.