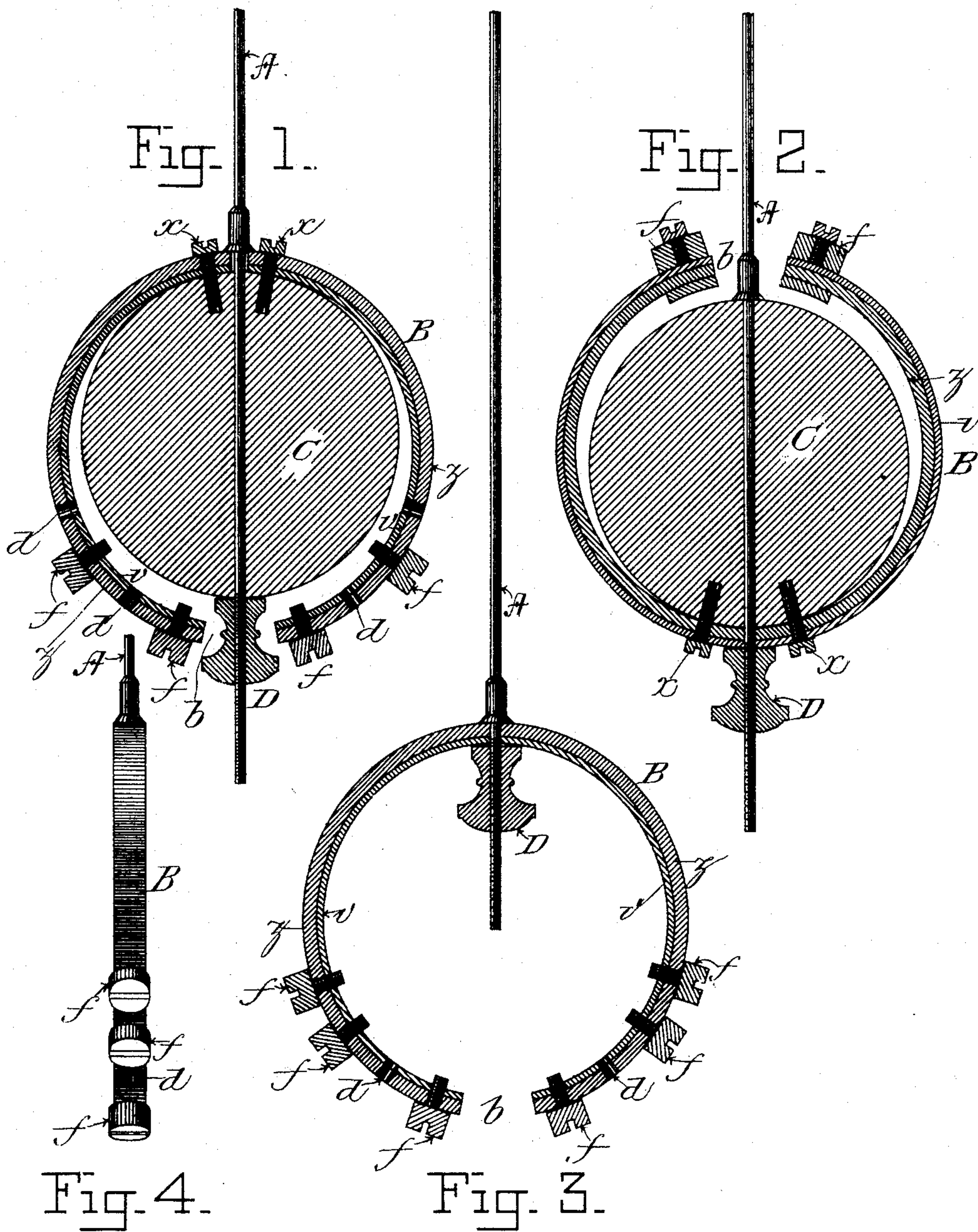


(No Model.)

G. P. REED.
CLOCK PENDULUM.

No. 409,705.

Patented Aug. 27, 1889.



Witnesses:
Walter S. Coffin.
E. L. Russell.

Inventor:
George P. Reed.
per Daniel B. Whittier
Attorney

UNITED STATES PATENT OFFICE.

GEORGE P. REED, OF MELROSE, MASSACHUSETTS.

CLOCK-PENDULUM.

SPECIFICATION forming part of Letters Patent No. 409,705, dated August 27, 1889.

Application filed June 30, 1888. Serial No. 278,713. (No model.)

To all whom it may concern:

Be it known that I, GEORGE P. REED, of Melrose, in the county of Middlesex, State of Massachusetts, have invented a certain new and useful Improvement in Pendulums, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation showing a pendulum provided with my improvement, the rod being represented as broken off; Fig. 2, a like view showing an alternate method of attaching the ring; and Fig. 3, a similar view of the pendulum, the ball being removed. Fig. 4 is an edge view of the ring.

Like letters and figures of reference indicate corresponding parts in the different figures of the drawings.

My invention relates to an attachment for ordinary clock-pendulums by which variations in temperature may be automatically compensated for; and it consists in certain novel features, as hereinafter fully set forth and claimed, the object being to produce a simpler, cheaper, and more effective device of this character than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents the pendulum-rod, and C the ball, these parts being of the ordinary form and construction and secured together in the usual manner.

A laminar ring B, consisting preferably of an inner plate of steel *v* and the outer plate of brass *z*, firmly united together, is secured to the top of the ball C by screws *x*, (see Fig. 1,) said ring being of greater diameter than said ball and split or opened at its opposite side, as shown at *b*. The free ends of the ring B are provided with a series of screw-holes *d*, to receive screws by means of which weights *f* may be secured at different points thereon. The ring may be secured to the lower portion of the ball C in such a manner

that its free ends project upward around said ball without coming in contact therewith, as shown in Fig. 2; or, if desired, the ring B may be constructed of sufficient weight to enable the ball C to be entirely dispensed with, the rod A in this case passing through a hole (not shown) in the ring, which is held in position thereon by the ordinary nut D at the bottom of said rod, as shown in Fig. 3. The ring may also be constructed in sections, if desired, and each portion secured to the ball C, as illustrated in Fig. 1.

It is well known that the effect of heat or cold upon the metal in the pendulum of a clock causes the vibrations thereof to lengthen or shorten and the clock to either lose or gain time, as the case may be. To obviate this objection, it has been customary to move the ball C on the rod A until the pendulum is adjusted. My improvement removes this objection and enables the pendulum to adjust itself automatically to the different degrees of heat or cold. The brass plate *z*, being much more susceptible to the action of heat or cold than the steel plate *v*, expands and contracts more readily, and thereby causes the free ends of the ring to move inward or outward or upward or downward to the plane of the rod A. It will be understood that the effect is diametrically opposite to the effect of the same degree of temperature upon the pendulum-rod and that the weight is maintained at the same distance from the pivotal point or point of suspension of the rod, thereby causing the vibrations of the pendulum to be at all times equal. By moving the weights *f* on the free ends of the ring the movement of said weights will be greatly increased or diminished in proportion to their distance from the free ends of said ring. The weights *f* may be fitted to slide on the ends of the rings or secured by screws, as may be deemed preferable. When the ring is secured to the bottom of the ball C, as illustrated in Fig. 2, it is necessary to construct it with the brass plate *z* on the inner side, as the movement of the free ends thereof is necessarily opposite that which results when attached as shown in Fig. 1.

I do not confine myself to constructing the ring B of plates of brass and steel, as described,

as it may be formed of any metals which vary sufficiently in their contractile and expansive capacity.

Having thus described my invention, what I claim is—

1. In a clock-pendulum, the combination of a rod provided with a ball, a laminar ring comprising plates of different contractile and expansive capacity, said ring being secured to said ball and cut or opened at a point opposite its attaching-point to form free ends, and the adjustable weights on said ends, substantially as described.

2. In a clock - pendulum, the laminar ring B, comprising the plates *v z*, having the openings *b*, in combination with the sliding weights *f*, adjustably disposed on said ring, the rod A, and means for securing said ring to said rod, substantially as set forth.

3. In a clock-pendulum, the rod A, in combination with the ring B, secured on said rod by the nut D, said ring comprising the bisected plates *v z*, of different contractile and expansive capacities, and the adjustable weights *f*,

disposed in said ring, substantially as and for the purpose described.

4. In a clock-pendulum, the combination of the rod A, provided with the ball C, the ring B, comprising the plates *v z*, said ring being cut at *b* and secured to said ball by screws *x*, and the sliding weights *f*, disposed on the free ends of said ring, substantially as set forth.

5. In a clock - pendulum, the laminar ring B, formed in sections, each section being secured to the pendulum-ball C in such a manner as to leave the opposite ends of said sections free, substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 20th day of June, A. D. 1888.

GEORGE P. REED.

Witnesses:

ANDREW H. POTTER,
FRED L. MARTIN.