

(No Model.)

A. F. PICKERT.
COMPENSATION WATCH BALANCE.

No. 387,567.

Patented Aug. 7, 1888.

Fig. 1.

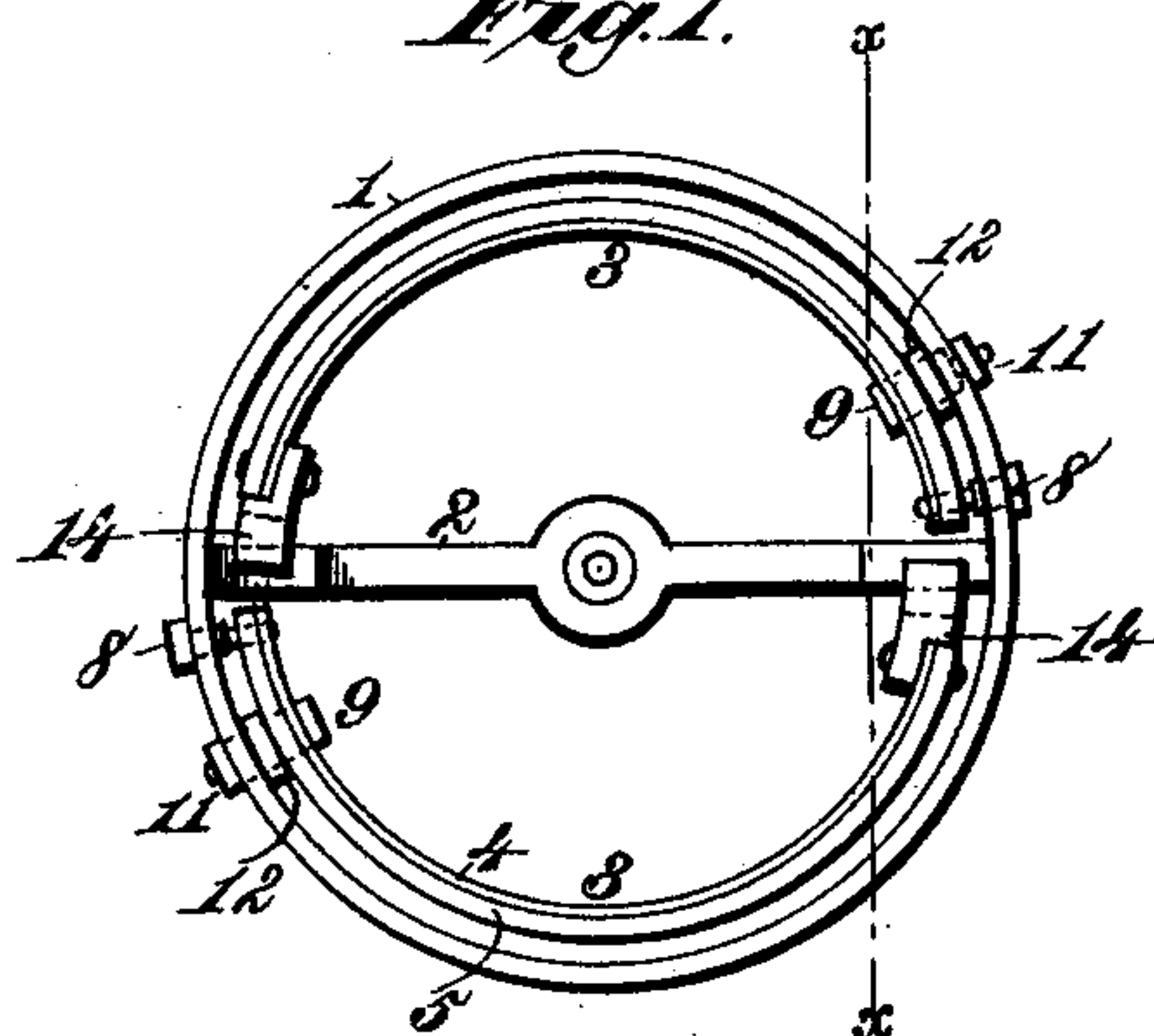


Fig. 2.

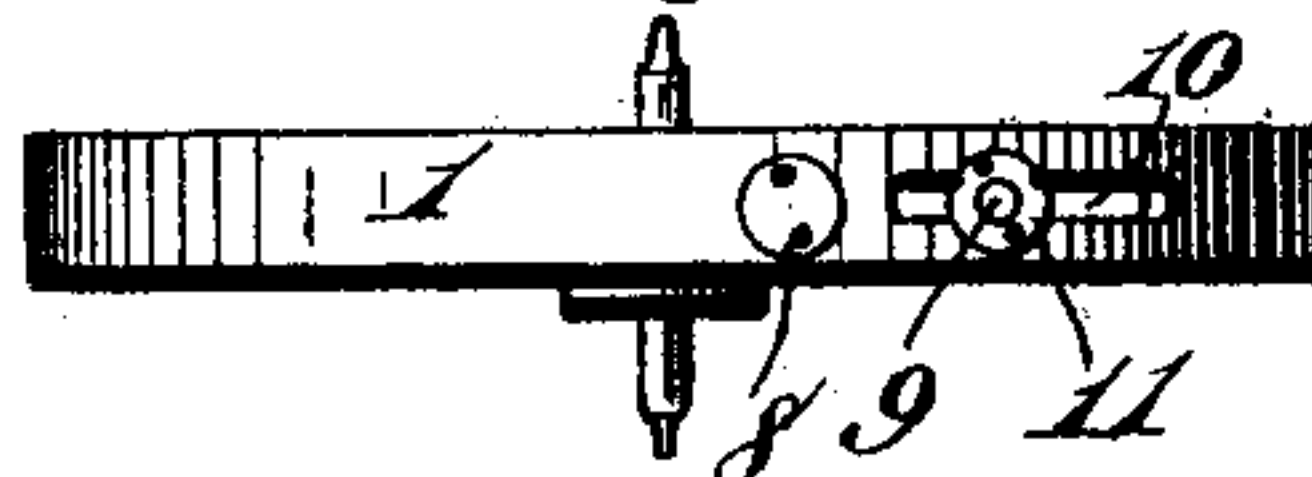


Fig. 3.

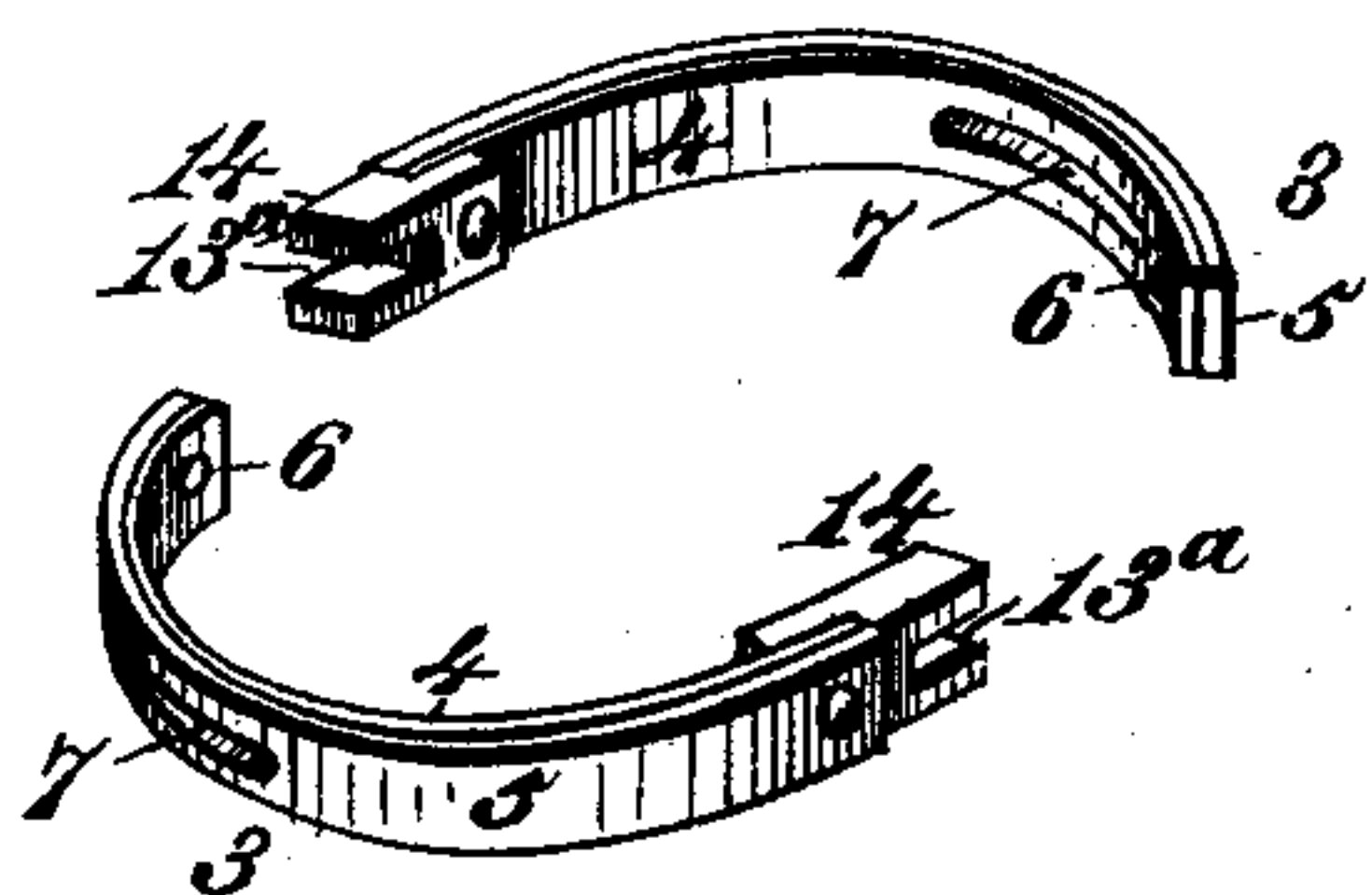


Fig. 4.

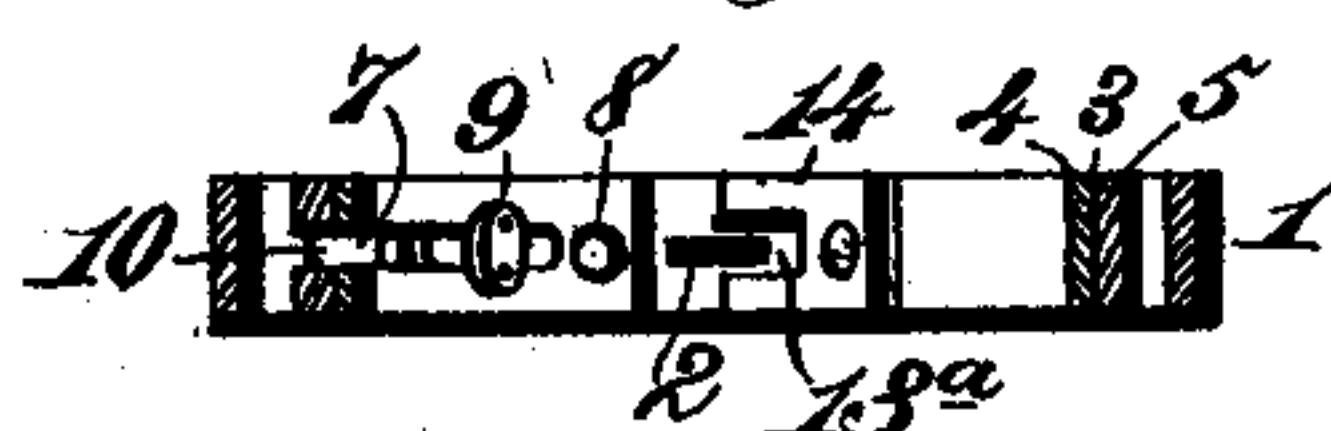


Fig. 6.

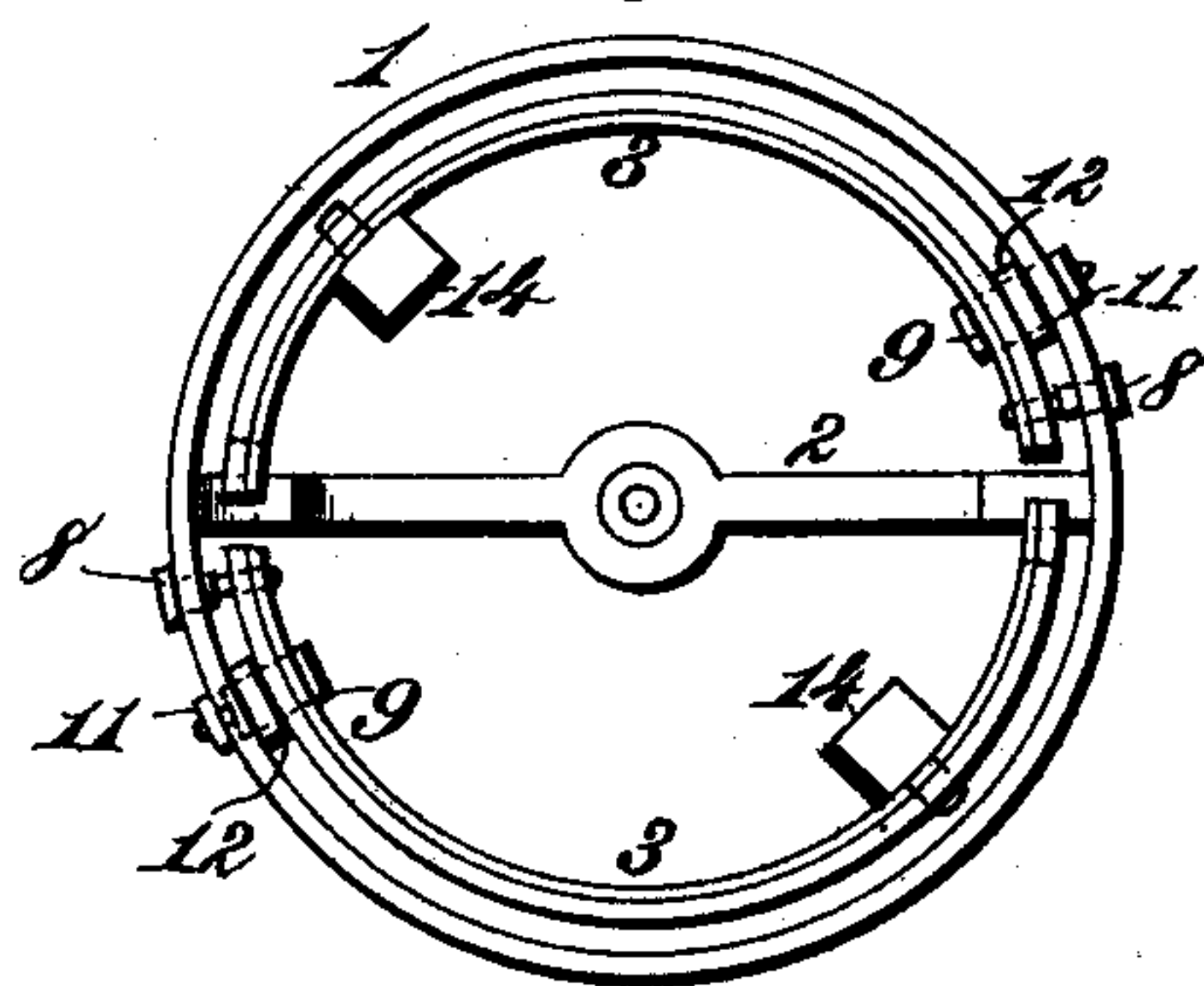


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

AUGUSTUS F. PICKERT, OF ATLANTA, GEORGIA.

COMPENSATION WATCH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 387,567, dated August 7, 1888.

Application filed February 14, 1888. Serial No. 263,932. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS F. PICKERT, a citizen of the United States, residing at Atlanta, in the State of Georgia, have invented new and useful Improvements in Compensation-Balances for Time-Pieces, of which the following is a specification.

This invention relates to bimetallic compensation-balances for time-pieces—such as watches and chronometers—and has for its objects to provide novel means for more accurately adjusting the parts to compensate for the influences of heat and cold, and to improve the construction of bimetallic compensation-balances, whereby they are rendered more substantial and durable and less likely to be injured by unskilled workmen in repairing the delicate parts of the balance—such as the balance-staff, roller, jewels, or the hair-spring—and also to provide means whereby the balance can be conveniently and quickly adjusted to compensate for the influences of heat and cold without danger of injuring the parts or the necessity of adjusting set weights from one part of the balance to another.

The objects of my invention I accomplish in the manner and by the means hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a plan view of the improved balance on an enlarged scale; Fig. 2, a side elevation of the same; Fig. 3, detail perspective views of the bimetallic segments; Fig. 4, a section on the line *x x*, Fig. 1, showing the engagement of one of the segments with the cross-bar; Fig. 5, a detail perspective view of one of the adjustable bolts and washers, and Fig. 6 a plan view showing a modification in the construction of the bimetallic segments or sections.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings, wherein—

The numeral 1 indicates a circular metallic band or wheel having a cross-bar, 2, provided with an orifice for a center bearing or balance-staff, as is usual. The two bimetallic segments or sections 3 are each composed of two metals, 4 and 5, of unequal expansion and contraction, the outer metal, 5—such as silver—being more

sensitive to the action of heat and cold, and therefore expanding or contracting to a greater degree than the inner metal, 4. The segments or sections 3 are each provided adjacent to one end with a perforation, 6, and a longitudinal slot, 7, the perforation engaging the inner end of a pin or screw, 8, extending through the ring or wheel 1, while the slot 7 receives an adjustable pin or screw, 9, which passes through a corresponding slot, 10, in the ring or wheel. The pin or screw 9 has a head, a rectangular shank, and a threaded end, and passes through the slots 7 and 10, and is secured by a nut, 11. A washer, 12, having a slot, 13, engages the pin or screw 9, and is interposed between the guard ring or wheel 1 and the segment or section 3, which latter is firmly held at one end by the pin or screw 8, while its other end is furnished with a groove, 13^a, to receive a part of the cross-bar 2. The segments or sections 3 each carry a fixed weight, 14, of any suitable form and construction, and, as shown in Figs. 1 and 4, the groove 13^a is provided in said weight; but if the weight 14 be located on some other part of the segment or section, which may be desirable, the groove 13^a is formed directly in the end of the segment, as shown in Fig. 6. In either event the free ends of the segments have a loose engagement with the cross-bar 2, and, while such ends can have limited lateral vibratory movements, the segments are preserved in proper position and prevented from displacement, avoiding liability of pressing the segments from proper position when repairs are necessary, while at the same time the bimetallic segments are protected by the external guard ring or wheel and injury avoided by reason of blows or unskilled workmanship. These are important advantages over those balances in which bimetallic segments or sections are fixed to the cross-bar for the center bearing or balance-staff and are not guarded and protected by a ring or wheel.

The metals used in the construction of the balance may differ; but I employ those metals which are not affected by magnetic and electric influences. The segments may be composed of palladium and silver—that is, the inside parts, 4, of palladium and the outside parts, 5, of silver. When the metal of the

balance is expanded too much by heat and the weighted ends of the segments are not thrown sufficiently near the axis to quicken the motion of the balance, the pins or screws 9 are moved away from the weights or toward the stationary pins or screws 8 to increase the distance between the weights and the pins or screws 9. This renders the segments more sensitive to heat and permits the silver to expand to a greater degree, and hence throw the free ends of the segments nearer the axis of the center bearing or staff, and thereby increase the speed of the balance. The converse of this is the case in colder temperatures, and consequently by properly adjusting the pins or screws 9 the motions of the balance are equalized when exposed to heat and cold. By constructing each segment or section of metals which expand and contract unequally, and providing the slots 7 and 10, adjustable pins or screws 9, and the guard ring or wheel 1, I provide a well-protected non-magnetic compensation-balance which can be readily adapted to hot and cold temperatures by adjusting the pins or screws 9 to and fro in the slots 7 and 10 to shorten or lengthen the free end of the segments or sections.

By means of the guard ring or wheel the bimetallic segments or sections are protected and prevented from being disarranged by accidental blows or unskilled workmen.

Having thus described my invention, what I claim is—

1. The combination of the solid balance-wheel and the lengthwise-adjustable compensating bimetallic segments supported upon the inside of the wheel, substantially as described. 35

2. The combination, in a compensation-balance for time pieces, of a slotted ring or wheel, slotted bimetallic segments, and adjustable pins or screws passing through the slots of the ring or wheel and the segments or sections, substantially as and for the purposes described. 40

3. The combination of a slotted ring or wheel having a cross-bar, slotted bimetallic segments secured at one end and loosely engaging the cross-bar at the other end, and adjustable pins or screws passing through the slots in the ring or wheel and the segments or sections, substantially as and for the purposes described. 45 50

4. A compensation-balance for time-pieces, consisting of a guard ring or band, 1, weighted bimetallic segments or sections protected externally by the ring or guard and each adjustable thereupon in the direction of its length, and a cross-bar for the center bearing or balance-staff, substantially as described. 55

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

A. F. PICKERT.

Witnesses:

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