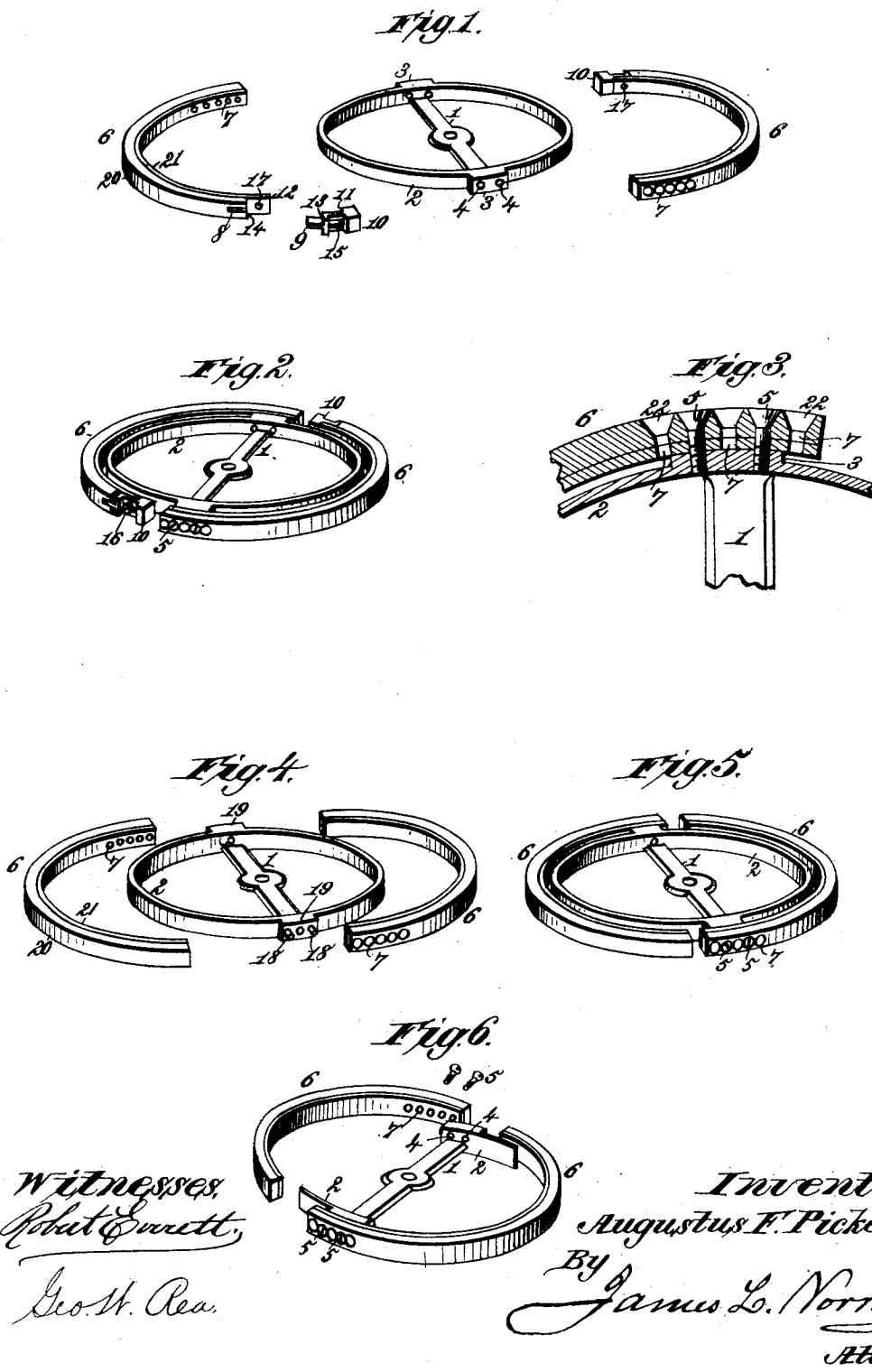


(No Model.)

A. F. PICKERT.
COMPENSATION WATCH BALANCE.

No. 402,032.

Patented Apr. 23, 1889.



UNITED STATES PATENT OFFICE.

AUGUSTUS F. PICKERT, OF ATLANTA, GEORGIA.

COMPENSATION WATCH-BALANCE.

SPECIFICATION forming part of Letters Patent No. 402,032, dated April 23, 1889.

Application filed June 28, 1888. Serial No. 278,440½. (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 county of Fulton and State of Georgia, have invented new and useful Improvements in Compensating Balances for Time-Pieces, of which the following is a specification.

This invention has for its object to provide a novel compensating balance-wheel for watches, chronometers, and other time-pieces, whereby I avoid the presence of weights or screws projecting laterally from the outside of the bimetallic segments, and thus remove as near as possible all resistance offered by the air to such projecting weights or screws while the balance-wheel is in motion.

The object 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 perspective view showing the several parts separated. Fig. 2 is a perspective view showing the parts connected to complete the balance-wheel; Fig. 3, a sectional view taken through two opposite screws attaching the segments to show the counter-sinks; Fig. 4, a perspective view similar to Fig. 1, showing a modification in which two set-pins are fixed on the wheel and each segment is fastened by one screw; Fig. 5, a perspective view with the parts in Fig. 4 connected together; Fig. 6, a perspective view showing a modification in which the rim of the balance-wheel proper is not continuous as in the other figures.

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, Figs. 1 and 2, wherein—

The numeral 1 indicates the cross-bar, and 2 its attached rim, constituting a balance-wheel proper. The rim is provided directly opposite each end of the cross-bar with a fixed plate or washer, 3, having two screw-holes, 4, which extend into the rim 2 to provide an extended bearing for the screws 5, which serve to attach and adjust the segments 6. The segments are each provided at one end with a longitudinal line of screw-

holes, 7, every adjacent two of which must coincide in distance from each other to the screw-holes 4 in the plate or washer 3, and the other end of each segment is rabbeted or provided with a recess, 8, in its outer side to receive the shank 9 of a weight, 10. The weights are of a thickness and width of the segments, so that when applied to the latter said weights will not project laterally from the side or edges of the segments. The weights are each furnished with a shoulder, 11, to abut against the outer free end, 12, of the segment, and the shank 9 has a shoulder, 13, at its inner end to abut against the inner wall, 14, of the rabbet or recess 8, and said shank is provided with a longitudinal slot, 15, extending in the direction of the length of the segments, through which passes a set-screw, 16, engaging a screw-hole, 17, in the free end of the segment, whereby the weight can be slid along and adjusted with nicety and delicacy, which is an advantage over those balances wherein screws are adjusted from hole to hole, as in the latter construction no adjustment can be effected to a point between a pair of adjacent screw-holes. The line of holes in the ends of the segments are, as stated, arranged so that they will correspond in pairs with the screw-holes 4 in the washer 3. The holes can be so arranged that there will be four in each segment, and the two holes 4 in each washer will be arranged, respectively, at opposite sides of the cross-bar 1, so that the first and third holes in the segment will be the same distance apart as the holes in the washer, the second hole being between the holes in the washer, thus permitting the segments to be nicely and accurately adjusted to lengthen or shorten their free end portions by increasing or diminishing the distance between their outer extremities and the attaching-screws nearest said extremities.

In the construction shown in Figs. 4 and 5 I employ a single screw, 5, for each segment, but use two smooth set-pins, 18, fixed on the rim 2 of the wheel at opposite ends of a washer or boss, 19, formed or otherwise provided on the rim and having a screw-threaded hole with which the screw 5 engages. The segments 6 in Figs. 4 and 5 are constructed with

a longitudinal line of screw-holes 7, the same as in Figs. 1 and 2; but they are not provided with the adjustable weights 10, though they may be, if desired.

5 In the construction shown in Figs. 1 to 5, inclusive, where the rim 2 of the balance-wheel is continuous in a circle, such rim is provided with the screw-holes 4 through the medium of the washers 3 or 19, this being necessary to support the free end portions of the segments at a short distance from the continuous band; but in Fig. 6 I illustrate a construction in which the rim of the wheel, instead of being continuous, is broken away to
10 leave a part only of the rim on each end of the cross-bar 1. In this construction I make those portions of the wheel-rim 2 which are adjacent to the ends of the cross-bar 1 somewhat thicker than the remaining portions of the rim, in such manner that the thickened portions opposite the ends of the cross-bar constitute in effect washers, so that the free ends of the segments will not bear against the respective ends of the segmental portions
15 of the wheel-rim, as will be obvious.

In the form shown in Fig. 6 I may use two screws, 5, as shown, to engage the screw-holes in the rim, as in Figs. 1, 2, and 3, or I may use the set-pins and single screw for attaching and lengthwise adjusting the segments, as in Figs. 4 and 5, to increase or diminish the distance between the free ends of the segments and their point of attachment to the rim. I may or may not use the weights shown
20 in Figs. 1 and 2 with the construction shown in Fig. 6.

I preferably construct each segment of an outer plate or band, 20, of a composition composed of pure silver and pure zinc in about
25 the proportion of sixty-seven parts of silver to thirty-three parts of zinc, (more or less,) and the inner band or plate, 21, I make of platinum. The platinum will expand but very little, while the composition of silver and zinc will expand and contract largely. Instead of zinc, I might use tin in connection with the silver; but I find that zinc gives the most satisfactory results, and, further, the silver will stand a larger proportion of zinc than
30 tin. The screw-holes in the segments for the attaching and adjusting screws are countersunk, as at 22, Fig. 3, and the heads of the screws are beveled to fit the countersunk holes, so that the heads of the screws can be set in flush with the outer surface of the segments to avoid lateral projections, thereby removing as far as practicable all resistance offered by the air while the balance-wheel is in motion. The adjustable weights are also
35 constructed and applied in such manner that no part of the weight or its attaching or adjusting screw projects laterally from the outer surface of the upper or lower edges of the segments, so as to remove in this respect the resistance offered by the air in the movement of the balance-wheel.

I do not claim herein lengthwise-adjustable bimetallic segments located inside of the wheel-rim of a compensating balance for time-pieces, as such is embraced in my application for Letters Patent filed February 14, 1888, Serial No. 263,932. 70

The segments made as described are harder than brass or copper and silver, and the zinc by eating into the platinum forms a still harder metal portion along the center of the segments, and, further, that part of the platinum into which the zinc eats will expand and contract more than the other portion of said platinum. 75 80

Having thus described my invention, what I claim is—

1. The combination, with the wheel-rim of a compensating balance, of lengthwise movable and adjustable segments arranged upon and secured to the exterior of the wheel-rim, substantially as described. 85

2. The combination, with the wheel-rim of a compensating balance having screw-holes, of lengthwise-adjustable segments located outside the wheel-rim and provided with a longitudinal line of perforations, and screws passing through the segments into the holes of the wheel-rim, substantially as described. 90

3. The combination, with the wheel-rim of a balance having screw-holes, of segments on the exterior thereof having countersunk screw-holes, and screws attaching the segments and fitting the countersinks with their heads flush with the surface of the segments, substantially as described. 95 100

4. The combination, with the wheel-rim of a balance having screw-holes, of segments on the exterior thereof having countersunk screw-holes, screws attaching the segments and fitting the countersinks with their heads flush with the surface of the segments, and weights slidable lengthwise on the segments and having their sides and edges flush with or within the sides and edges of the segments to remove resistance to the air in the movement of the balance, substantially as described. 105 110

5. The combination, with the segments having rabbeted or recessed free extremities, of sliding weights having slotted shanks fitting the rabbets or recesses, and set-screws for holding the weights in their adjusted position, substantially as described. 115

6. The combination, with the wheel-rim having screw-holes, of lengthwise-adjustable segments, each having at one end more than two screw-holes, and screws adapted to pass through any of the holes into the wheel-rim to hold the segments when moved lengthwise, substantially as described. 120 125

7. The combination, with the wheel-rim having the thickened portions or projections provided with screw-holes, of lengthwise-adjustable segments, each having one end setting on the washer and provided with more than two screw-holes, and screws for holding 130

the segments on the washers when adjusted lengthwise, substantially as described.

8. The combination, with a balance having a sectional wheel-rim thickened at points opposite the end of the cross-bar, substantially as described, of the segments and screws attaching the segments to said thickened portions of the sectional rim.

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

A. F. PICKERT.

Witnesses:

ROBERT L. COSTAN,
W. H. WILLIAMS.