

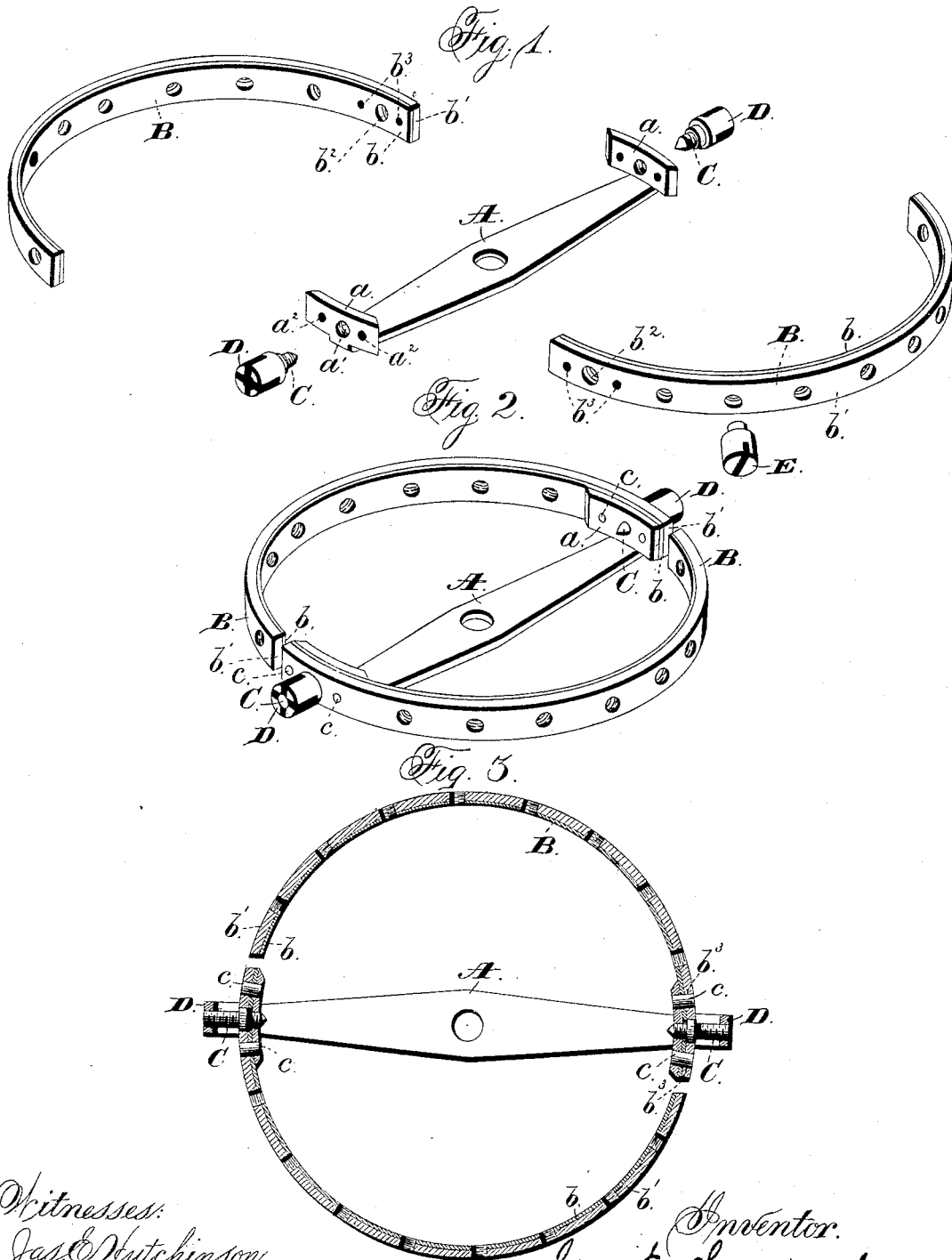
(No Model.)

G. E. HUNTER.

COMPENSATION BALANCE FOR TIME PIECES.

No. 347,297.

Patented Aug. 10, 1886.



Witnesses:  
Jas. C. Hutchinson.  
Henry C. Hazard.

Inventor.  
Geo. E. Hunter, by  
Prindle & Russell, his Attys

# UNITED STATES PATENT OFFICE.

GEORGE E. HUNTER, OF ELGIN, ILLINOIS.

## COMPENSATION-BALANCE FOR TIME-PIECES.

SPECIFICATION forming part of Letters Patent No. 347,297, dated August 10, 1886.

Application filed May 22, 1886. Serial No. 203,032. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE E. HUNTER, of Elgin, in the county of Kane, and in the State of Illinois, have invented certain new and useful Improvements in Balance-Wheels for Time-Pieces; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of the parts of my balance-wheel separated from each other. Fig. 2 is a like view of the same united, and Fig. 3 is a section of the completed balance through its plane of vibration.

Letters of like name and kind refer to like parts in each of the figures.

In the construction of balance-wheels for time-pieces it has heretofore been customary to form the arm and the steel portion of the rim from one solid piece of steel, and the brass portion of said rim from a ring of such metal which has been fitted to and brazed upon said steel. Balances constructed in this manner are often defective, as the metals composing the rim do not have uniform thickness, either jointly or severally, throughout their lengths, and the expansion and contraction of said rim are so unequal as to render impracticable the proper poising of the balance for the ordinary variations of temperature.

The design of my invention is to increase the efficiency of such balance-wheels; and to this end it consists, principally, as a new article of manufacture, in a balance-wheel for time-pieces, comprising a spider, and attached thereto a divided rim composed of integrally-rolled bimetallic strips, substantially as and for the purpose hereinafter specified.

It consists, further, as a new article of manufacture, in a balance-wheel for time-pieces, comprising a spider and an attached divided rim composed of brazed or soldered and rolled bimetallic strips, substantially as and for the purpose hereinafter shown.

It consists, further, in a time-piece balance-wheel composed of a spider or bar having at each end an upward-turned lug, and the rim formed of two sections secured to the lugs by screws passing through the sections and tapped into the lugs, substantially as and for the purpose hereinafter set forth.

It consists, further, in a balance-wheel for time-pieces, in the combination of the spider or bar having the upturned lugs, with the two rim-sections, the screws fastening the sections to the lugs, and pins passing through the sections and the lugs, substantially as and for the purpose hereinafter described.

It consists, further, in a balance-wheel for time-pieces, in the combination of the spider having the upturned lugs with the compensating rim-sections, the two screws, each one fastening an end of one of the rim-sections to one of the lugs on the spider, and two pins passing through each of the lugs and the respective rim-section on opposite sides of the fastening-screw, substantially as and for the purpose hereinafter specified.

It consists, finally, in a balance-wheel for time-pieces, in the combination of the spider or bar having an upturned lug, with a compensating rim-section provided at or near one end with a hole countersunk on its outer side, a screw passing through the rim-section and into the lug, provided with a collar fitting in the countersink, and a nut screwed on the outer end of the screw, substantially as and for the purpose hereinafter shown.

In the construction of my balance-wheel for time-pieces a spider or cross-bar, A, is preferably made, by dies, from a strip of steel having sufficient width, and at each end is provided with an upward-turned lug, *a*, that has a length equal to about twice the width of said arm at such point. The outer face of each of said lugs is formed upon a line which is concentric with the axis of said spider, and within the same are formed a centrally-located radial opening, *a'*, that is threaded, and one or more plain round radial pin-openings, *a''*.

The rim B consists of two curved sections having suitable lengths, each of which is composed of an inner member, *b*, of steel, and an outer member, *b'*, of brass. Said parts are united together by brazing, and by means of mills and rollers are given uniform thickness and width, and any desired density.

One end of each rim-section B is secured to one of the ends of the spider A by means of a screw, C, that passes through an opening, *b''*, in the former, into the threaded opening *a'* in said spider, and pins or rivets *c*, which pass

through the openings  $a^2$  in the latter, and through corresponding openings,  $b^2$ , in said rim. The outer projecting portion of said screw C is threaded, and upon the same is placed a nut, 5 D, that corresponds in size and shape to the like features of the heads of adjusting-screws E, which are placed between said nut and the free end of said rim-section. Said nut is preferably split from one end nearly to its opposite end, and such split portion closed slightly inward, to cause it to grasp its screw with sufficient firmness to prevent accidental movement thereon.

Having thus described my invention, what 15 I claim is—

1. As a new article of manufacture, a balance-wheel for time pieces, comprising a spider, and attached thereto a divided rim composed of integrally-rolled bimetallic strips, 20 substantially as and for the purpose specified.

2. As a new article of manufacture, a balance wheel for time-pieces, comprising a spider, and an attached divided rim composed of brazed or soldered and rolled bimetallic strips, 25 substantially as and for the purpose shown.

3. A time-piece balance-wheel composed of a spider or bar having at each end an upward-turned lug, and the rim formed of two sections secured to the lugs by screws passing through 30 the sections and tapped into the lugs, substantially as and for the purpose set forth.

4. In a balance-wheel for time-pieces, in

combination with the spider or bar having the upturned lugs, the two rim-sections, the screws fastening the sections to the lugs, and pins 35 passing through the sections and the lugs, substantially as and for the purpose described.

5. In a balance-wheel for time-pieces, in combination with the spider having the upturned lugs, the compensating rim-sections, the two 40 screws, each one fastening an end of one of the rim-sections to one of the lugs on the spider, and two pins passing through each of the lugs and the respective rim-section on opposite sides of the fastening-screw, substantially as and for 45 the purpose specified.

6. In a balance-wheel for time-pieces, in combination with the spider or bar having an upturned lug, a compensating rim-section provided at or near one end with a hole counter- 50 sunk on its outside, a screw passing through the rim-section and into the lug, provided with a collar fitting in the countersink, and a nut screwed on the outer end of the screw, substantially as and for the purpose shown. 55

In testimony that I claim the foregoing I have hereunto set my hand this 28th day of April, 1886.

GEORGE E. HUNTER.

Witnesses:

WM. H. CLOUDMAN,  
W. P. HEMMENS.