(No Model.)

T. GRIBI.

MEANS FOR POISING THE HAIR SPRINGS OF WATCHES.

No. 345,840. Patented July 20, 1886.

Fig. 1.

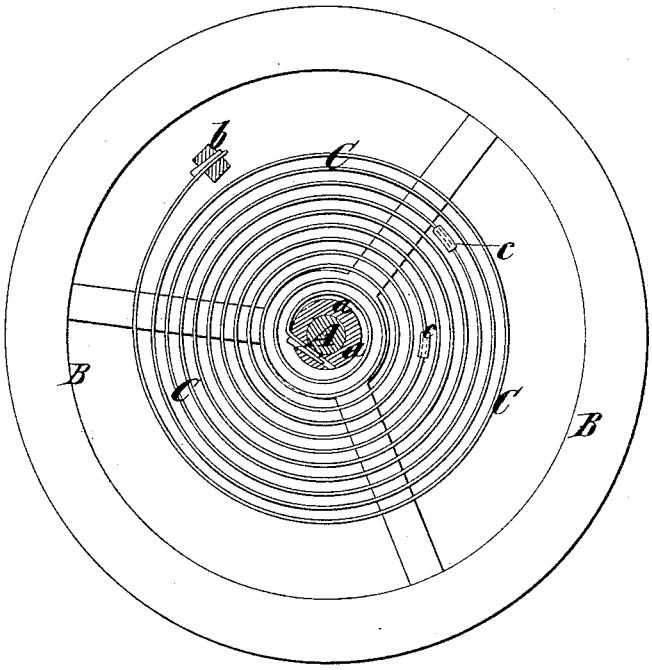

Fig. 2.

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UNITED STATES PATENT OFFICE.

THEOPHILUS GRIBI, OF ELGIN, ILLINOIS.

MEANS FOR POISING THE HAIR-SPRINGS OF WATCHES.

SPECIFICATION forming part of Letters Patent No. 345,840, dated July 20, 1886.

Application filed November 18, 1885. Serial No. 183,233. (No model.)

To all whom it may concern:

Be it known that I, THEOPHILUS GRIBI, of Elgin, in the county of Kane and State of Illinois, have invented a new and useful Improvement in Means of Poising the Hair-Springs of Watches and Clocks, of which the following is specification.

By experiments with watches and clocks it is found that there is a very considerable variation in the rate of the watch or clock when running in a vertical position—as when a watch is carried in the pocket. This difference or variation exists even when the balance-wheel itself is perfectly poised, so that the center of weight is exactly coincident with its axis, and is due wholly or in great degree to the lack of perfect poise in the hair-spring. The hair-spring is a spiral, and none of its convolutions are concentric with the axis of the balance-wheel, and this eccentricity of the spring brings or throws the center of its weight out of or away from the axis of the balance-wheel and produces the lack of poise in the spring. This lack of poise will produce a variation in the rate of the watch or the amount of time which it gains or loses when running in opposite vertical positions, which will be greater or less according to the length of arc through which the balance-wheel swings or vibrates. I have discovered that this defect in watches may be overcome by applying a small weight or weights to the hair-spring in such positions that the weight or weights will poise the spring and bring its center of weight almost or quite coincident with the axis of the balance-wheel.

The invention consists in the combination, with the hair-spring of a watch or clock, of one or more weights applied thereto for poising the spring.

The invention also consists in the combination, with the hair-spring of a watch or clock, of one or more weights applied to and adjustable upon the spring.

The invention also consists in the combination, with the hair-spring of a watch or clock, of one or more weights, each consisting of a U-shaped metal clasp straddling the spring and having its ends bent inward to secure it upon the spring.

In the accompanying drawings, Figure 1 represents a balance-wheel and hair-spring upon an enlarged scale, and having my invention applied thereto; and Fig. 2 is a transverse section of a convolution of the spring and a weight applied thereto upon a still more enlarged scale.

Similar letters of reference designate corresponding parts in both figures.

A designates the shaft or arbor of the balance-wheel B, and *a* designates a collar or collet fixed on the shaft or arbor, and in which is secured the inner end of the hair-spring C. The outer end of the hair-spring C is fixed in the post *b* in the usual manner.

It will be readily understood that, inasmuch as the spring C is a spiral, no portions of its convolutions are concentric with the axis of the arbor A of the balance-wheel B, and consequently the center of weight of the spring is never coincident with said axis, and the spring is to that extent out of poise.

To poise the spring I apply thereto one or more weights. These I prefer to make adjustable, and the weight here shown to illustrate my invention consists of a U-shaped clasp, *c*, straddling the spring, as shown best in Fig. 2, and having its ends bent inward slightly, as shown at *, Fig. 2, in order to secure it on the spring.

The weights *c* may be of gold, platinum, or other suitable metal, and one or more of them may be placed on any desired convolution or convolutions of the spring. I prefer to make the weights adjustable on the convolutions of the spring, as they may then be readily shifted to the desired position.

The proper position of the weights may be determined approximately by experiment, and where exact accuracy is desired the watch or clock can be tested, and the proper position of the weights determined accurately.

By my invention I effect the poising of hair-springs at a very small expense and obviate the difficulty heretofore inherent in them, and I am enabled to adjust watches for position in much less time at much less expense than heretofore.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the hair-spring of a watch or clock, of one or more weights applied thereto for poising the spring, substantially as herein described.

2. The combination, with the hair-spring of a watch or clock, of one or more weights applied to and adjustable upon the spring for poising it, substantially as herein described.

3. The combination, with the hair-spring of a watch or clock, of one or more poising-weights, each consisting of a U-shaped metal clasp straddling the spring and having its ends bent inward to secure it thereon, substantially as herein described.

THEOPHILUS GRIBI.

Witnesses:
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