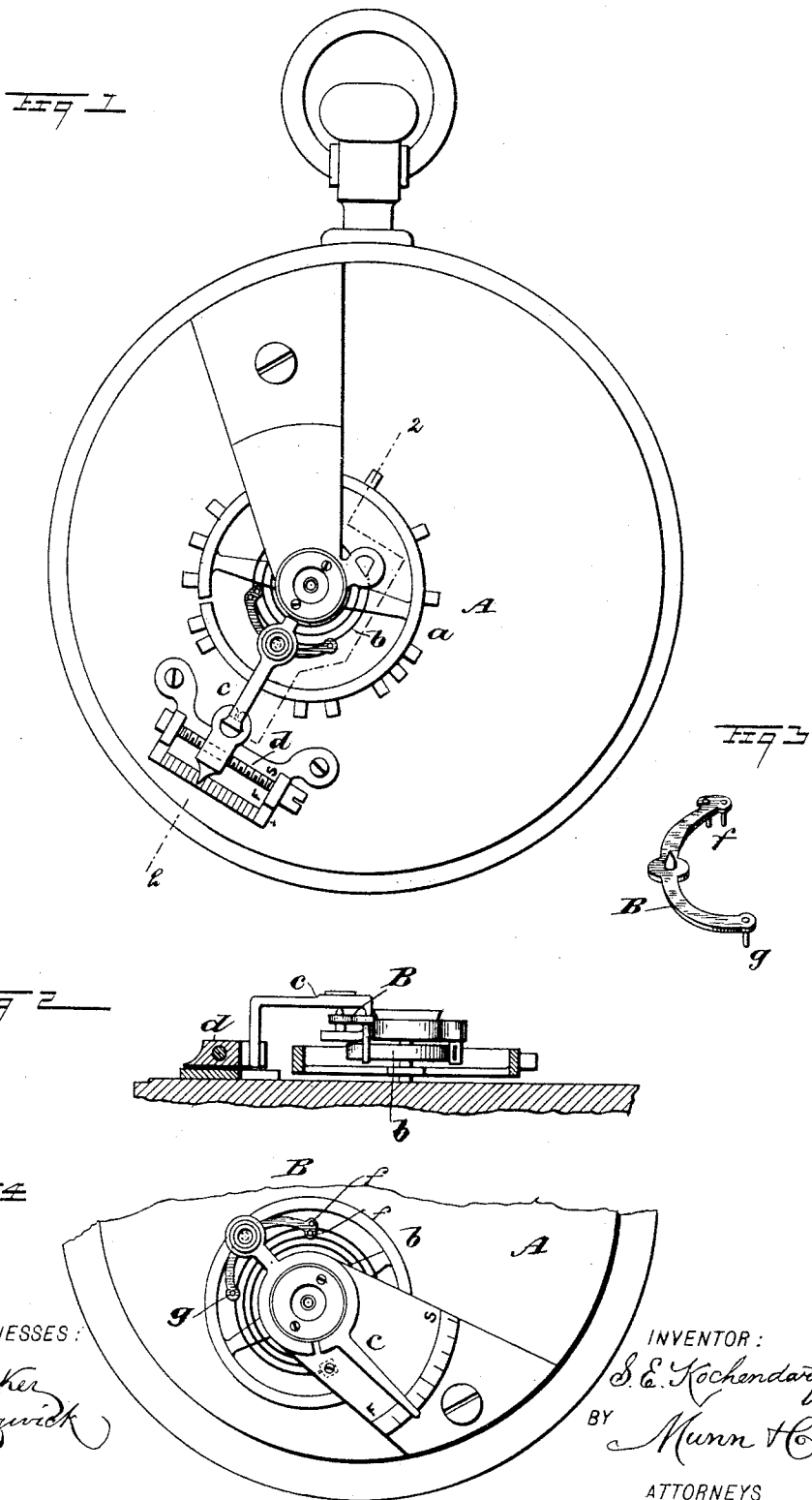


(No Model.)

S. E. KOCHENDARFER.
WATCH REGULATOR.

No. 473,422.

Patented Apr. 19, 1892.



WITNESSES:

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UNITED STATES PATENT OFFICE.

SIRUS EDWARD KOCHENDARFER, OF HOLLIDAYSBURG, PENNSYLVANIA.

WATCH-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 473,422, dated April 19, 1892.

Application filed November 5, 1891. Serial No. 410,955. (No model.)

To all whom it may concern:

Be it known that I, SIRUS EDWARD KOCHENDARFER, of Hollidaysburg, in the county of Blair and State of Pennsylvania, have invented a new and Improved Watch Regulator and Adjuster, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a side elevation of a watch-movement, showing the application of my improvement. Fig. 2 is a transverse section taken on line 2 2 in Fig. 1. Fig. 3 is a detail perspective view of the regulator-lever, and Fig. 4 is a side elevation showing a modified form.

Similar letters of reference indicate corresponding parts in all the views.

The regulators heretofore used on watches are usually affected by either shock or jar. The second fly of the hair-spring in such cases expands and catches in the regulator, thus causing the watch to gain.

The object of my invention is to overcome this difficulty and provide a device whereby the undue expansion of the hair-spring will be opposed and the increased momentum of the balance will be counteracted, thus permitting of only the normal action of the balance and hair-spring, and preventing the overbeating or breaking of the roller-jewel.

My invention consists in the combination, with the regulator-arm, of a lever pivoted to the regulator-arm and furnished at one end with two studs, which embrace the outer coil of the hair-spring, and at the opposite end with a single stud, which is held normally near but not in contact with the outer surface of the outer coil of the hair-spring, all as will be hereinafter more fully described.

In the present case I have shown my improvement as applied to Teske's patent regulator in Fig. 1, while in Fig. 4 the improvement is shown as applied to an ordinary regulator-arm.

The improvement A is provided with a balance *a* and hair-spring *b*, attached thereto in the usual way. The regulator-arm *c*, which is arranged to swing concentrically with the balance *a*, is moved by means of a screw *d*, journaled in the frame secured to the back

plate of the movement. The arm *c* is forked, and in the fork thus formed are journaled the pivots of the curved lever B. One arm of the lever is furnished with two studs *f*, between which the outer coil of the hair-spring is received. The other arm of the lever is provided with a single stud *g*, which is held normally near but not in contact with the outer coil of the hair-spring. As the balance *a* oscillates, the spring alternately expands and contracts, and the lever B is made to oscillate on its pivots, causing the stud *g* to lightly touch the outer coil at each vibration of the spring. When the movement receives an undue shock, the abnormal movement of the spring is prevented by the inward pressure of the stud *g* on the outer coil, thus preventing the second fly of the hair-spring from catching between the studs *f f*.

In addition to the action described, my improved attachment serves to compensate for the expansion and contraction of the spring, thereby rendering the adjustment of the balance unnecessary.

In Fig. 4 my improvement is shown as applied to the ordinary regulator-arm *c'*, the action being exactly the same as in the case already described.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a watch-movement, the combination, with the hair-spring, of a two-armed lever pivoted in an adjustable support and provided at one end with a pair of studs for embracing the outer coil of a hair-spring and at the other end with a stud arranged to touch the outer surface of the outer coil of the hair-spring, substantially as specified.

2. The combination, with the hair-spring *b* and regulator-arm *c* of a watch-movement, of the lever B, pivoted in the arm *c* and provided in one end with studs *f f* for engaging the outer coil of the hair-spring and furnished at the other end with a stud *g*, substantially as specified.

SIRUS EDWARD KOCHENDARFER.

Witnesses:

ROBERT W. SMITH,
JOHN W. CLIBER.