J. THOMSON.
Watch-Regulator.

No. 197,687. Patented Nov. 27, 1877.

Fig. 1.

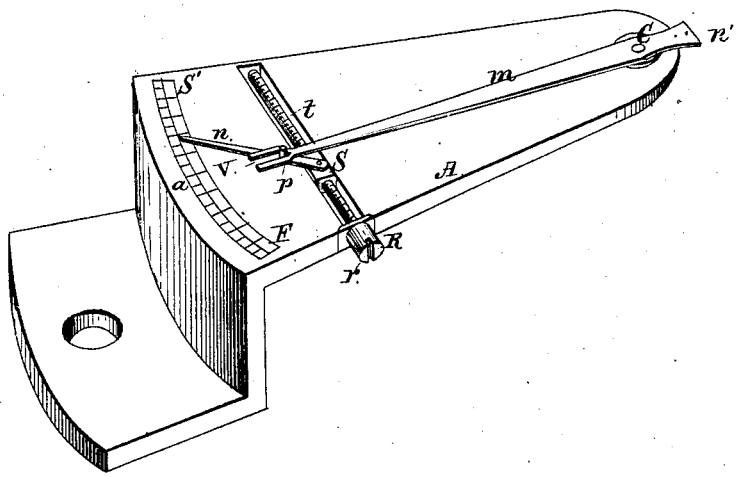

Fig. 3.

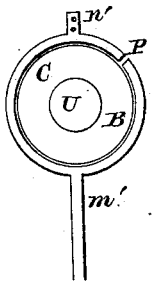

Fig. 2.

Attest.

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Inventor.

John Thomson

UNITED STATES PATENT OFFICE.

JOHN THOMSON, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN WATCH-REGULATORS.

Specification forming part of Letters Patent No. **197,687**, dated November 27, 1877; application filed October 18, 1877.

To all whom it may concern:

Be it known that I, JOHN THOMSON, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Watch-Regulators, of which the following is a specification:

The object of this invention is to provide a watch-regulator which may be operated with convenience, and which will combine a fine micrometer adjustment with a long range of arc.

To this end my invention consists, first, in the combination, with the balance-wheel spring of a watch, of a pivoted regulator-lever, forked at its extremity, the regulator-screw and the pivoted index-lever connected with the screw, and having a pin adapted to the forked end of the regulator-lever, whereby, by adjusting the screw, the forked lever and index-lever are moved back and forth, as more fully hereinafter set forth; second, in the combination, with the regulator-lever and the index-lever, of an adjustable block, to which the indicator-lever is pivoted, mounted on a micrometer-screw located in a transverse recess in the bridge of the watch, whereby the fulcrum of the indicator-lever may be changed in order to provide for a perfect adjustment of the regulator-lever, as more fully hereinafter set forth; and, third, in the combination, with the regulator-lever, of a concavo-convex disk fitting over the cup-jewel, whereby the friction at the fulcrum of the lever is obviated, as more fully hereinafter specified.

In the drawing, Figure 1 represents a perspective view of the balance-bridge and regulator of a watch. Fig. 2 represents a vertical section through the balance-staff jewel-plate, and Fig. 3 represents the device in ordinary use for holding the regulator-lever in position.

The regulator-lever M is pivoted at C on the top face of the balance-bridge A, and the long arm of this lever is forked, as shown at V, and extends outward beyond a transverse recess, *t*, in which plays a micrometer-screw, R, in bearings in the opposite end walls of said recess. Upon the screw is secured a traveling block or nut, S, the flat top of which is flush with the face of the bridge. To the top of this traveling nut is pivoted a short index-lever, *n*, which extends outwardly and traverses a graduated arc, *a*, engraved upon the face of the bridge, near its outer end. A pin, *p*, projects upward from the index-lever through the fork of the lever M. A projecting end of the screw R is provided with a milled head, *r*, or other suitable device, by which it may be turned.

In adjusting the lever M for regulating the watch, the index-lever *n* is moved toward the letter F or S′, at the opposite ends of the arc, as desired, and the regulator-lever M is moved in the same direction, as will be readily seen, but in a very much less degree; and the relative degree of movement will vary as the distance of the pin from the pivot of the index-lever is increased or decreased. Supposing the watch to be running fast, the block S in any given position, and the index-arm *n* thrown to the extreme limit of the graduated arc toward the letter S or slow end—now, in order to gain further control of the regulator, so that the watch may be caused to run slower, it is only necessary to turn the screw R and shift the nut S toward the letter S′, or slow end of the arc, thus throwing the free end of the index-lever *n* away from said end, toward which it may again be moved by its outer end carrying in the same direction the regulator-lever M. From this explanation the manner of obtaining further control of the regulator when the index-lever *n* is at the limit of its movement in either direction will be readily understood.

The pivot-pin C of the regulator-lever projects upward from a disk, W, a vertical section of which is shown in Fig. 2. This disk is slightly hollowed or dished in its under side, and fits over and holds in position the balance-staff top or cap jewel, said disk being secured to the bridge by small screws, two or more, at its periphery. By this arrangement I am enabled to avoid a great objection to the old manner of pivoting the regulator—viz., friction at the fulcrum—as will be understood by reference to Fig. 3 of the drawing, which represents the mode commonly in use. In this figure the letter B is a steel plate having a central opening, U, for holding the balance-cap jewel in position. It also serves to hold the regulator-lever, the long arm *m′* and short arm *n′* of which project from opposite sides of an open ring, P, which is sprung over said

plate; or this plate, in some cases, has simply an under-cut beveled edge, and is screwed down upon a beveled inner edge of the ring P so tightly as to hold the regulator in position. Constructed in this way, if left so loose that the regulator may be easily moved, the friction being farthest from the point of leverage, both it and the cap-jewel are liable to accidental displacement; and if set so tightly as to surely prevent accidental shifting, it springs and jumps when the regulator is purposely moved, deceives the eye, and renders fine adjustment impossible, unless the regulator is made very heavy and clumsy.

In my arrangement the regulator is simply pivoted, without extra friction, upon the pin C, and the index-arm *n* is pivoted to the block S with a slight friction, which effectually locks the regulator, and, instead of having the friction at the fulcrum, I have it at the extremes of the leverage, the said regulator being understood to be connected with the balance-spring in the ordinary manner. This construction is neater in appearance, will wear longer, and is easier and cheaper to manufacture, and more reliable in operation than the old mode.

Having now fully described the construction and operation of my invention, I claim—

1. In combination with the balance-wheel spring of a watch, the pivoted regulator-lever, forked at its outer end, the regulator-screw, and the pivoted index-lever, connected with the screw, and having a pin adapted to the forked end of the regulator-lever, whereby, by adjusting the screw, the forked lever and index-lever are moved back and forth, substantially as set forth.

2. In combination with the regulator-lever and index-lever, an adjustable block, to which the index-lever is pivoted, mounted on a micrometer-screw located in a transverse recess in the bridge of the watch, whereby the fulcrum of the indicator-lever may be changed in order to provide for a perfect adjustment of the regulator-lever, substantially as set forth.

3. In combination with the regulator-lever, a concavo-convex disk fitting over the cap-jewel, whereby the friction at the fulcrum of the lever is obviated, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN THOMSON.

Witnesses:
J. W. MOORE,
CHAS. M. EVEREST.