C. HANSON.

Watch-Spring Equalizer.

No. 161,957. Patented April 13, 1875.

Fig. 1.

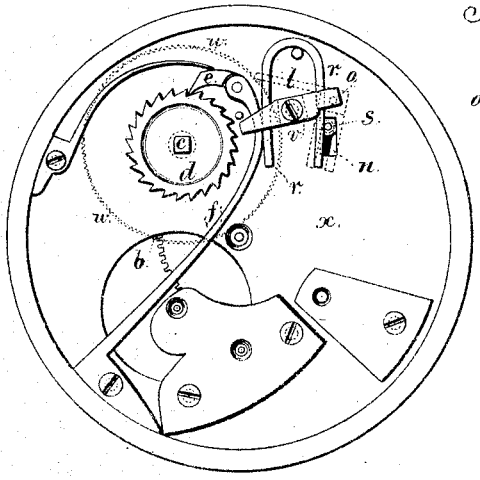


Fig. 3.

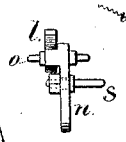


Fig. 4.

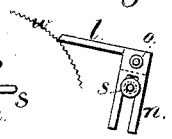
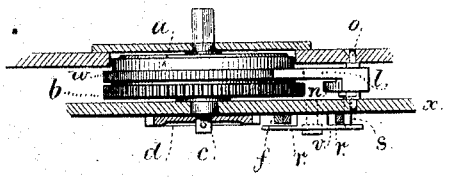


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES HANSON, OF HUDDERSFIELD, ENGLAND.

IMPROVEMENT IN WATCH-SPRING EQUALIZERS.

Specification forming part of Letters Patent No. **161,957**, dated April 13, 1875; application filed February 24, 1875.

To all whom it may concern:

Be it known that I, CHARLES HANSON, of Huddersfield, Yorkshire, England, have invented an Improvement in Watch-Spring Equalizing Mechanism, of which the following is a specification:

When a watch-spring is wound up its power is the greatest, and as the same runs down its power lessens. Efforts have been made to equalize the action of the spring, and for this purpose a chain and conical fusee have been employed.

My invention is made for equalizing the action of the spring without the use of a chain; and consists in a detaining-lever acting against the spring-barrel to lessen the effective force thereof, said detaining-lever being operated by the force of the spring itself, acting through the arbor of the spring-barrel and the ratchet-wheel and pawl upon a spring-arm that yields more or less according to the force exerted by the mainspring, and in so doing causes the detaining-lever to press upon the spring-barrel and neutralize the excess of the power thereof, so as to render the action of the spring-barrel as nearly uniform as possible.

In the drawing, Figure 1 represents the said equalizing mechanism as applied to the spring-barrel of a watch, the face being removed. Fig. 2 is a side view of the same with the plates in section. Fig. 3 is an edge view of the detaining-lever separately, and Fig. 4 is a side view of the same.

The spring within the barrel *a* is of any desired character, and *b* is the gear-wheel upon said barrel to the first pinion of the train. The arbor *c* and ratchet-wheel *d* are also of usual character, but the pawl or click *e*, instead of being upon a fixed screw, is upon the spring-arm *f*, and the parts are positioned so that the reaction of the spring operating through the ratchet-wheel moves said pawl *e* back bodily and endwise, and at right angles, or nearly so, to the spring *f*, and bending that spring and operating the detainer, as hereafter set forth. The detaining-lever *l* is upon the arbor or fulcrum *o*, and it is provided with the slotted arm *n*, in which is an adjustable pin, *s*, firmly secured by a clamping-nut. This pin *s* projects through a slot in the watch-plate *x*, and between the same and the spring-arm *f* is the bow-spring *r*, that is held loosely beneath the bridge *v*; hence it is allowed to move freely, and the power of the spring, when wound, being enough to press back the pawl *e* and spring-arm *f*, the bow-spring *r* and pin *s* are moved, and the end of the detaining-lever *l* is pressed upon the spring-barrel to lessen the effective force thereof by tending to rotate said barrel in the opposite direction to the movement derived from the mainspring. The action of this detaining-lever is to be regulated by adjusting the pin *s* in the slotted arm *n* to increase or lessen the leverage, and in this way the mechanism can be adapted to the peculiarities of the mainspring employed.

I prefer that the end of the detaining-lever *l* should act against fine ratchet-teeth *w* around the spring-barrel, so as to exert a pushing force against each of said fine teeth in succession instead of depending upon friction alone.

As the mainspring runs down, the pressure thereof upon the pawl *e* and spring-arm *f*, and of the detaining-lever *l* upon the barrel, are lessened, and finally relieved.

In case of the mainspring breaking the recoil will be taken by the detaining-lever, so that the teeth of the wheel will not be bent.

It will be evident that any suitable yielding mechanism may intervene between the spring-arm *f* and the detaining-lever *l* in place of the bow-spring *r*.

I claim as my invention—

The detaining-lever *l*, acting against the spring-barrel, in combination with the spring-arm *f*, pawl *e*, and stud *s*, substantially as set forth.

Signed by me this 28th day of January, A. D. 1875.

CHARLES HANSON.

Witnesses:

HENRY WHITE,

HENRY ROBINSON, Jr.,

Clerks to Mr. A. H. Owen,

Notary Public, Huddersfield.