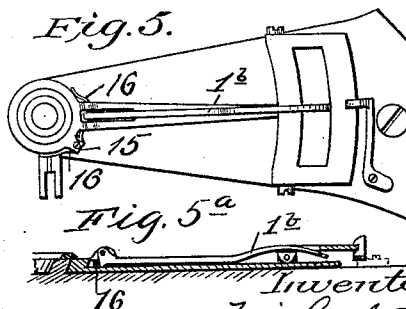
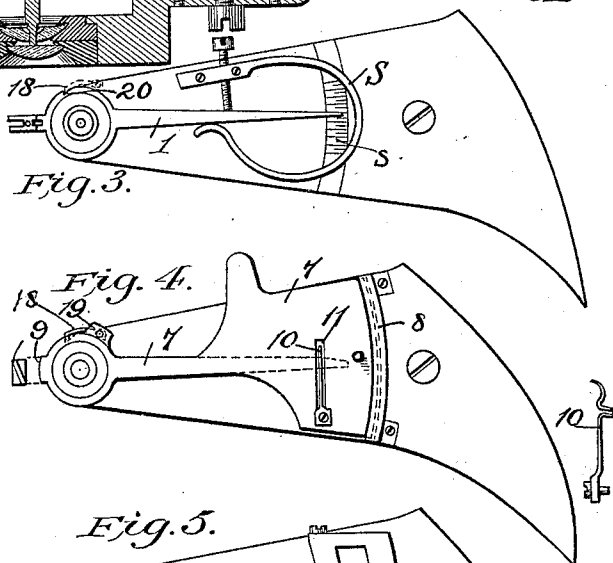
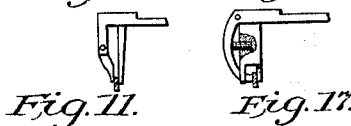
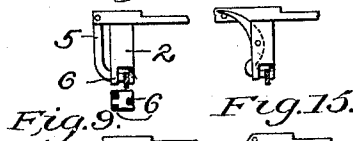
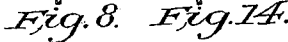
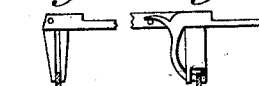
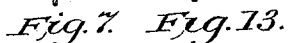
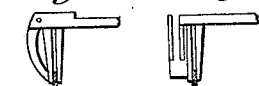
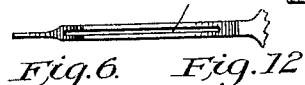
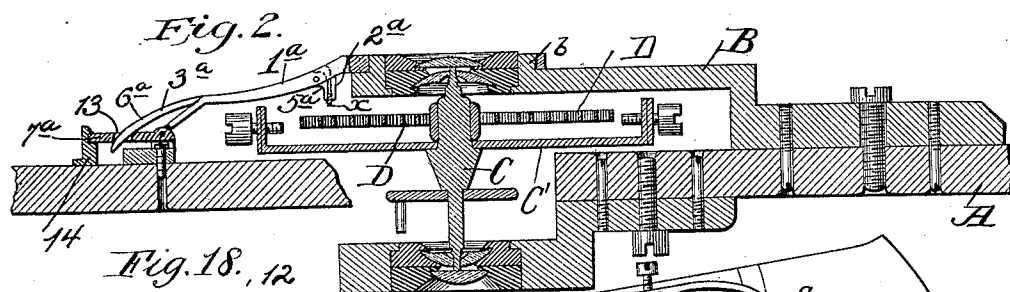


M. SPORLEDER.
WATCH REGULATOR.

No. 569,844

Patented Oct. 20, 1896.



Inventor:
Michael Sporleder
by M. Dorian
his attorney

UNITED STATES PATENT OFFICE.

MICHAEL SPORLEDER, OF LEXINGTON, OKLAHOMA TERRITORY.

WATCH-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 569,844, dated October 20, 1896.

Application filed May 31, 1895. Serial No. 551,080. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL SPORLEDER, a citizen of the United States, residing at Lexington, in the county of Cleveland and Territory of Oklahoma, have invented certain new and useful Improvements in Watch-Regulators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in watch-regulators of that class in which there are attached to the index a curb pin or pins adapted to bear at different points on the balance-spring to lessen or increase the vibrations thereof, according as it is desired to retard or quicken the movement of the works.

Heretofore in regulators of this description there was always a certain amount of play of the spring against the curb-pins which caused a wearing of the parts, a rattling, and, in cases, a piling or bunching of the coils of the spring on each other.

The objects of my invention are to provide the regulator with a means for positively clamping the spring wherever set. The balance-spring will then perform with the same regularity as though no curb-pins were used at all, and thus prevent any friction or wearing of the parts; and to so construct and arrange the regulator and the spring-clamping means that the clamp or grip must be loosened or opened before the regulator can be adjusted; to avoid the before-mentioned piling of the spring-coils, and to prevent the rattling of the spring and associated parts.

With these objects in view my invention consists in the parts and combination thereof to be hereinafter more particularly described and claimed.

That my invention may be the more clearly understood I have shown in the accompanying drawings practical embodiments thereof, without intending to limit my improvements in their useful applications to the precise constructions delineated.

In the said drawings, Figure 1 is a vertical sectional view of a watch-balance having my improved regulator applied thereto. Fig. 2 is a similar view of a modified form of regulator. Fig. 3 is a plan view of the regulator

index and adjuster, showing the shield removed. Fig. 4 is a plan view showing the shield in place over the index. Fig. 5 is a plan, and Fig. 5^a a sectional view, of a modified form of shield and index. Figs. 6 to 17, inclusive, show slightly-different forms of clamps for the springs; and Fig. 18 is a plan view of a portion of the index shown in Fig. 2.

Referring to the drawings, A indicates the pillar-plate; B, the balance bridge or cock; C, the balance-staff, journaled in suitable bearings in the plate A and bridge and carrying the balance C', and D is the balance or hair spring, all of which are of well-known construction and need not be further described.

On the bridge and surrounding the bearing for the balance-staff is an undercut annular flange b.

Referring particularly to Fig. 1, which shows my improvements applied to a form of regulator generally in use, 1 designates the index, which is shown as snapped or sprung on the flange b, which latter serves as its pivot. This index carries a curb pin or pins 2, adapted to engage a coil x of the balance-spring, and for its full length, except contiguous to the pins 2, the index is only about half the thickness of the ordinary regulator-index.

At the end carrying the pins the index is forked or bifurcated, as clearly shown in Fig. 3. Between the limbs of this bifurcated portion is pivoted at 4 a bell-crank lever 3, having a depending gripping-jaw 5, which, when the lever is rocked on its pivot by means to be hereinafter described, engages the coil x of the spring and presses the latter against the stud or pin 2 and there firmly holds it.

I do not intend to limit myself to any particular form of grip, as many changes and modifications could be made in this part of my improvement without departing from the scope of my invention. For instance, any one of the several forms indicated in Figs. 6 to 17 of the drawings could be employed. In this Fig. 1, however, in which I have shown a form of clamp which gives very satisfactory results, the stud 2 is secured in any suitable manner to the under side of the index 1 and has at its lower end three lugs or projections 6, (see Fig. 8,) arranged in a substan-

tially triangular form. The coil x passes between these projections 6 and is adapted to be clamped against one by the jaw 5, which is guided and held from lateral movement by the other two projections.

Situated above the index and adapted to be also snapped on the flange b is a shield or thin plate 7, which hides the index and graduated scale shown at s , so that it is impossible to regulate the watch until the shield is first removed out of the way. The shield 7 has a pivotal engagement with the flange b , its free end being guided by any suitable means, such as a rabbeted flange 8, concentric with the flange b , rigidly secured to the bridge B.

9 (see Figs. 1 and 4) is an inclined or cam-shaped projection carried by the shield 7 and adapted to engage in a notch in the horizontal arm of the lever 3 and raise or lower said arm as the shield is moved in one or the other direction. It will thus be seen that by moving the shield the clamping-jaw 5 can be made to engage or release the spring D. A suitable handle may be placed on the shield for operating it. In order to prevent any movement or rattling of the shield, I employ a spring 10, Fig. 4, which is secured to the shield and, passing through a slot 11 therein, engages the bridge-plate B.

In Fig. 2, wherein is shown a form of my invention applicable to full-plate watches, 1^a indicates the pointer or index, pivoted on the flange b , as in Fig. 1, and provided with a stud or pin 2^a, depending therefrom and adapted to engage the spring-coil x . The index is slotted at 12, Fig. 18, and in this slot is pivoted a bell-crank lever 3^a, carrying a gripping jaw or arm 5^a. The other arm 6^a of this lever extends beyond said slot 12 and enters a slot 13, concentric with the bearing-flange b in a plate or shield 7^a, hinged on the plate A or other suitable part of the watch, which shield hides, as in the former case, the end of the pointer and the usual graduated scale. 14 is a spring-clip secured to the plate A and adapted to hold the plate 7^a firmly in its closed position. The plate 7^a, when it is raised or lowered on its pivot, correspondingly raises or lowers the arm 6^a of the bell-crank lever, thereby causing its gripping-jaw to release or engage the spring D.

I have shown in Figs. 5 and 5^a a different form of index and shield, which can be applied to the construction illustrated in Fig. 1. In this form the index carries a pivoted lever 1^b, adapted to enter a slot in a hinged plate similar to that shown in Fig. 2. Pivoted centrally to a lug 15 on the hub or bearing of the regulator is a lever 16, one end of which is engaged by the lever 1^b and the other end of which engages and is adapted to operate the horizontal arm of the hair-spring-clamping lever. The lever 16 is preferably formed of spring metal, and is so shaped that the end engaged by the lever 1^b bears against the hub of the index and causes normally a pressure

at its other end on the hair-spring-clamping lever in a direction to cause the latter to release the spring. In this embodiment, as also that shown in Fig. 2, it is necessary to lift the hinged plate, thereby opening the clamp and releasing the spring before the regulator can be operated.

At 18, Fig. 3, I have shown another device for holding the shield and regulator steady to prevent rattling and to keep it closed. It comprises a spring 18, secured on a lug 19 on the shield 7 and engaging a notch 20 in the regulator. This notch is of a shape to permit the movement of the shield and spring 18 in one direction and to form a stop to limit its movement in the other direction.

S indicates a substantially U-shaped spring, one end of which is rigidly secured to the bridge B and the other free end of which engages and presses the index against a set-screw working in the stationary end of the spring. This spring and set-screw form an adjuster for the regulator, the use of which is desirable in connection with my regulator, as it is necessary that the latter should be held from any movement while the shield is being removed. The form of adjuster, however, is not essential, and any style may be employed.

21 indicates a cap or annulus, which may be secured in any suitable manner on the flange b , and operates to hold the parts thereon.

Having thus described my invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a watch, the combination with the regulator-index, the graduated scale therefor and the hair-spring, means for positively holding said spring, and a shield adapted to hide the scale and a portion of the index adjacent thereto, and adapted to prevent the movement of the index while the spring is held by said holding means.

2. In a watch, the combination with the regulator-index, the scale therefor, and the hair-spring, of a clamp for the spring carried by said regulator, a shield adapted to hide the scale, and means adapted on the movement of the shield to operate said clamp.

3. In a watch, the combination with the regulator and a clamp for grasping the balance-spring in different adjustments of the regulator, of a shield for the regulator, and a cam carried by the shield and engaging the clamp and adapted to operate the same.

4. In a watch, the combination of a regulator-index, a hair-spring, a rigid projection on the index adjacent to said spring, a lever pivoted on said index adapted to form with said projection a positive clamp for the spring, a shield for said index, and means for operating said lever upon the movement of said shield.

5. In a watch the combination with the balance-bridge, of the regulator pivoted thereon, a clamp carried by the regulator, and a shield

for the regulator pivoted on the bridge above the regulator engaging and adapted to operate said clamp.

6. In a watch, the combination with the
5 bridge having the bearing *b*, of the regulator pivoted thereon having the bifurcated end, the clamping-lever pivoted in said bifurcation and having one arm engaging the balance-spring and the other arm having in its
10 end a notch, the shield pivoted on the bridge, and the cam on said shield engaging the notch in said lever-arm, substantially as described.

7. In a watch, the combination with the
15 regulator, of the lever pivoted thereon, the clamp operated by said lever, the shield having therein a slot concentric with the regu-

lator-pivot covering the graduated scale, said lever entering said slot, and means for holding said shield in a closed position, substantially as described.

8. In a watch, the combination with a regu-
20 lator, of a shield therefor, a spring carried by the shield and engaging a fixed part of the watch for holding the shield in position in relation to the regulator, substantially as de-
25 scribed.

In testimony whereof I affix my signature in presence of two witnesses.

MICHAEL SPORLEDER.

Witnesses:

R. F. GROW,

C. H. GRIFFITH.