

(No Model.)

C. R. KINEHAN.
WATCH REGULATOR.

No. 249,367.

Patented Nov. 8, 1881.

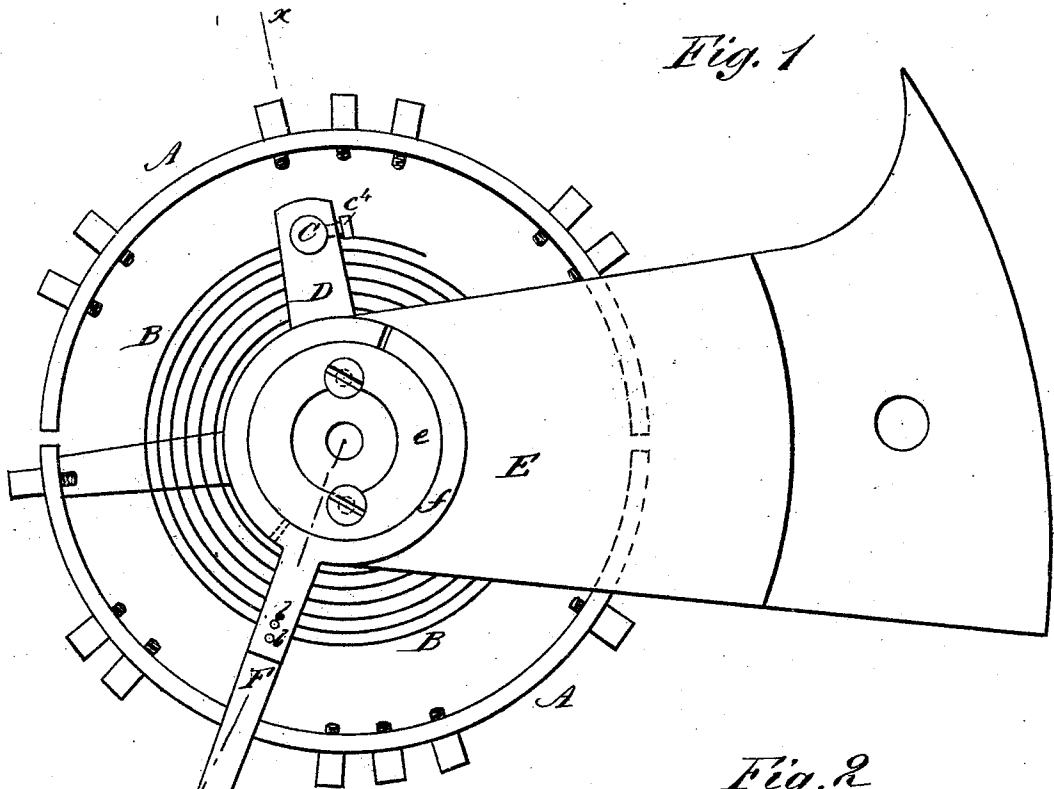


Fig. 1

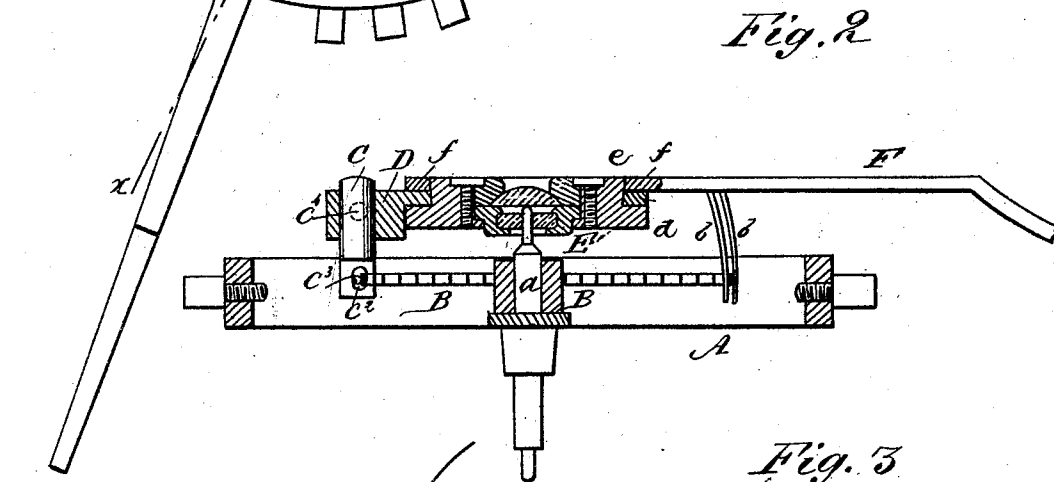


Fig. 2

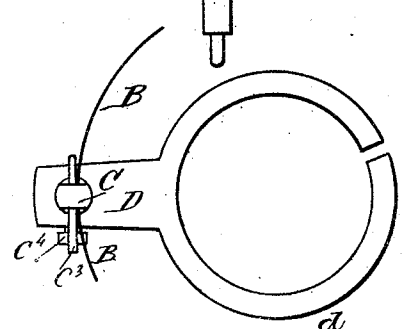


Fig. 3

WITNESSES:

C. Neveu
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UNITED STATES PATENT OFFICE.

CHARLES R. KINEHAN, OF SPRINGFIELD, ILLINOIS.

WATCH-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 249,367, dated November 8, 1881.

Application filed April 6, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHARLES R. KINEHAN, of Springfield, in the county of Sangamon and State of Illinois, have invented a new and useful Improvement in Watch-Regulators, of which the following is a specification.

My invention relates to mechanism for facilitating the adjustment of the balance or hair spring by the watch-maker before the watch is exposed for sale.

The invention consists in a novel construction, combination, and arrangement with relation to each other of the cock, the regulator, the hair-spring, a plate for carrying the stud, and other devices, whereby the adjustment of the balance-spring and the "timing" of the watch by the maker is accomplished with less expenditure of time and labor than by the methods heretofore employed.

In the accompanying drawings, Figure 1 is a top view of my invention. Fig. 2 is a transverse vertical section taken in the line $x x$, Fig. 1. Fig. 3 is a view of the lower side of the stud-carrying plate, showing the mode of attaching the spring to the stud.

A is the balance-wheel, having one end of its staff a journaled in the usual manner in a plate of the watch, and the other in the cock B.

B is the balance-spring or hair-spring, attached at its inner end, in any suitable manner, to the staff or arbor a of the balance-wheel. Its outer end is attached to the stud C by being passed through a slot, e^2 , in said stud, and secured by a wedge or key, e^3 . The stud is inserted in the stud-bearing plate D, and secured by a set-screw, e^4 , or in any other suitable manner. The stud-bearing plate D is connected to the cock in the following manner:

Attached to or made in one piece with the cock is a circular plate, e , the diameter of the lower face of which is less than that of the upper, the sides of the plate being inclined at an angle of about ten degrees from a vertical line.

The inner end of the stud-bearing plate D is a mutilated circle, d , the inside bearing-surface of which is also inclined at an angle of about ten degrees from a vertical line, so as

to be exactly parallel with the inclined bearing-surface of the plate e . When the stud-bearing plate D is laid exactly over the plate e and pressed down the mutilated circle d springs over the upper and larger portion of said plate e , which then holds it securely in place, allowing, however, a rotary motion when sufficient force is applied to the outer end of the plate D.

The regulator F is provided with curb-pins b , in the usual manner. Its inner end is a mutilated circle, f , having the inside bearing-surface inclined similar to the one above described; but as it occupies a position above the plate D, and consequently on a larger part of the plate e , the circle f is slightly larger in diameter than the circle d .

The method heretofore employed for timing the watch by the workman before exposing it for sale is as follows: The balance-wheel is weighed, and a suitable spring is selected and gaged and attached in place. The wheel is then set in motion and compared with a vibrating standard balance wheel and spring, and if any discrepancy is observed in the vibrations the hair-spring is loosened in the stud and either lengthened or shortened as much as is necessary to cause the vibrations to conform to the standard as nearly as can be judged by the eye. The watch is then allowed to run for about fifteen hours, and if at the end of that time it is discovered to be either fast or slow the spring is again adjusted. It is frequently necessary to repeat this operation several times. It sometimes occurs that in readjusting the spring it becomes "out of true," and requires to be entirely removed and "trued" and then replaced.

By means of my invention the workman causes the vibrations to conform to the standard by moving the stud-carrying plate D in the proper direction for lengthening or shortening the spring, and consequently the vibrations.

Another advantage in my invention is that as the plate D has for its center of motion a point directly over the staff of the balance-wheel there is no tendency to get the spring out of true in moving the plate, and as the

stud C has its shank round instead of angular it is more easily adjusted in its seat, so as to insure the true position of the spring.

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

In a watch-regulator, the combination of the plate *e*, having its sides converging downwardly, and attached to or made in one piece
10 a regulator, F, having, respectively, mutilated

circle ends *d f*, with their inner surfaces converging upward for engagement with said plate *e*, substantially as and for the purpose described.

CHARLES R. KINEHAN.

Witnesses:

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H. B. MILLER.