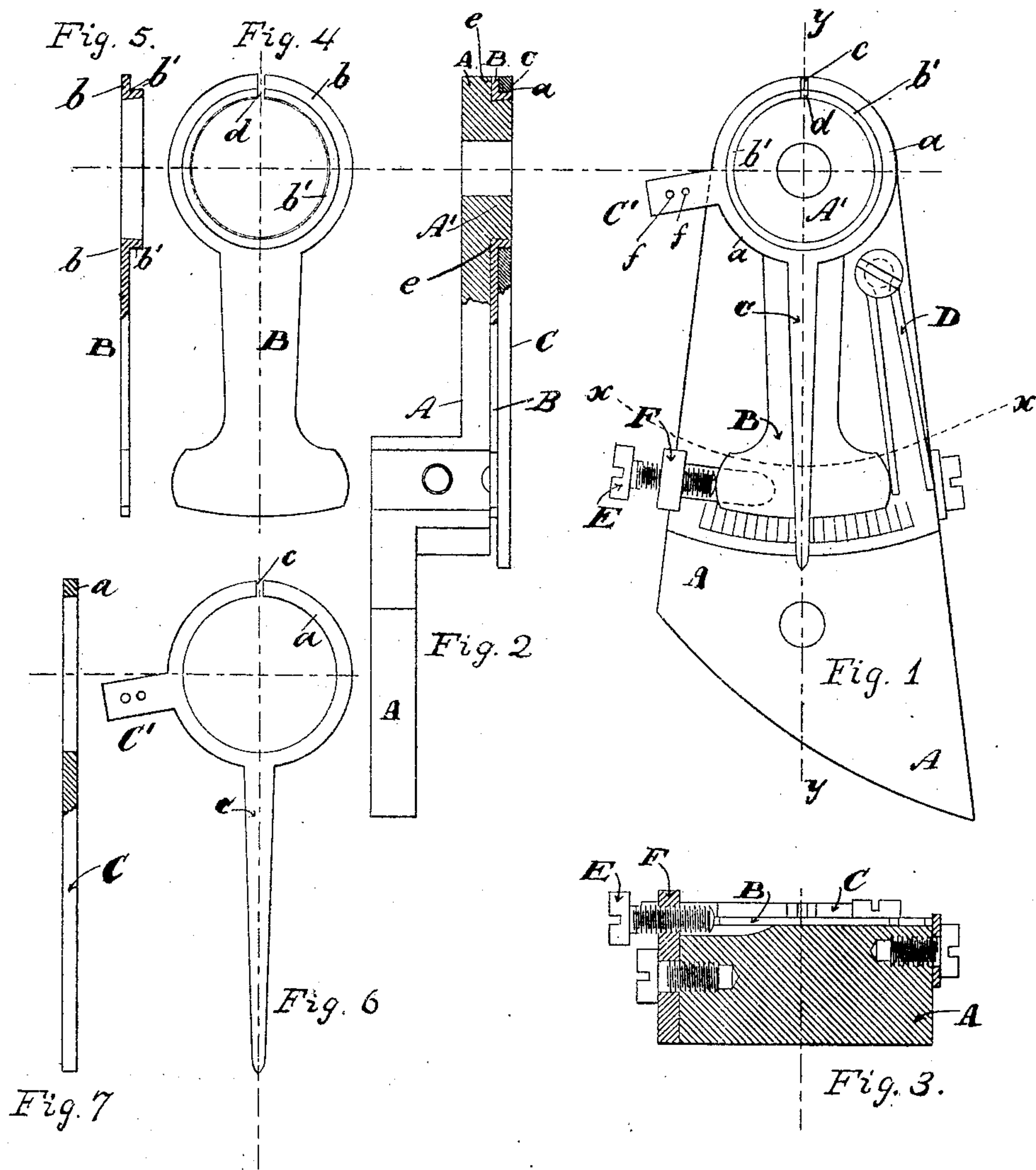


(Model.)

A. BITNER.  
REGULATOR FOR WATCHES.

No. 265,568.

Patented Oct. 10, 1882.



WITNESSES:

*J. C. Wilson*  
*L. B. Longenecker*

INVENTOR:

*A. Bitner*  
by *Louis Hagger & Co*  
*Attorneys*



# UNITED STATES PATENT OFFICE.

ABRAHAM BITNER, OF LANCASTER, PENNSYLVANIA.

## REGULATOR FOR WATCHES.

SPECIFICATION forming part of Letters Patent No. 265,568, dated October 10, 1882.

Application filed November 19, 1881. (Model.)

*To all whom it may concern:*

Be it known that I, ABRAHAM BITNER, of Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Regulators for Watches; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a plan of the balance-bridge of a watch embodying my improvement. Fig. 2 is a side elevation of the same, partly in section, through line *yy* in Fig. 1, the part marked *F* having been removed. Fig. 3 is a cross-section of the same through the line indicated by the letters *xx* in Fig. 1. Fig. 4 is a plan of the "sub-regulator," which constitutes my improvement. Fig. 5 is a longitudinal sectional view of the same. Fig. 6 is a plan of the ordinary regulator, which is used in combination with the sub-regulator; and Fig. 7 is a longitudinal sectional view of the same.

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

My invention relates to regulators for watches, and has for its object to construct a regulator which shall be capable of very nice and micrometrical adjustment, and yet be simple and comparatively inexpensive in construction.

To this end it consists in the combination, with the regulator-bridge and regulator, of a sub-regulator or "auxiliary regulator" of peculiar construction, as hereinafter more fully described and claimed.

In the accompanying drawings, *A* denotes the balance-bridge of a watch, which is of the usual shape, having a raised portion or dome, *A'*, at one end. This dome is turned with a circular step or shoulder, *e*, which forms a seat for the sub-regulator and regulator; and in order to prevent these from coming off of the seat the latter may be turned with a projecting annular ledge or flange, both the sub-regulator and regulator being cut through or split at one side, as shown at *d* and *c*, respectively, to permit them to be snapped over the retaining-flange.

The sub-regulator or auxiliary regulator *B*

is an intermediate piece or plate which is placed between the balance-bridge *A* and the regulator *C*. It is made with an annular head or ring, *b*, which has a raised step or shoulder, *b'*, the said part *b b'* being cut through at *d* for the purpose above stated—*i. e.*, to permit it to be snapped upon the annular seat *e* of the dome *A'*.

*C* is the regulator, which is likewise provided with an annular head or ring, *a*, cut through at *c*, to enable it to be snapped or sprung upon the shouldered head or seat *b b'* of the sub-regulator *B*, with which it moves when the latter is moved or adjusted. At the same time the parts *B* and *C* are movable independently of each other, although both swung upon the same center—*viz.*, the dome of the regulator-bridge. The free end of the sub-regulator *B* is in contact with a fine adjusting-screw, *E*, on one side, and with a spring of any convenient shape and construction, *D*, on the other side, the spring serving to hold it in contact with the adjusting-screw at all times. The latter works through a seat, *F*, which is secured to one side of balance-bridge *A*. The annular head *a* of the regulator has a projecting arm, *C'*, as usual, which carries the pins *f f*, which engage with the hair-spring.

From the foregoing description, taken in connection with the drawings, the operation and advantages of my improvement will be readily understood. When the watch has been brought nearly to time by the regulator *C*, which is free to be moved by hand, the regulating can be finished with micrometrical nicety and exactness by moving the sub-regulator *B* by adjusting the screw *E*, thus effecting an accurate adjustment of the regulating device in a simple and easy manner.

I am well aware that sub-regulators or auxiliary regulators have been used before to effect the adjustment of the hair-spring with a greater degree of nicety than where a single regulator or "pointer" is used, and I do not therefore claim broadly the combination, with the balance, balance-bridge, and regulator or pointer, of a sub-regulator; but by my improvement the regulator may be moved entirely independent of and without affecting in the least the sub-regulator, while the least adjustment of the latter will affect the former.

I am aware of Patent No. 59,394, of 1866,

in which two pointers and two scales are employed, each pointer having a distinct pivot; of Patent No. 184,229, of 1876, in which a single pointer having inclines is manipulated by  
5 a screw against the constant force of a spring, and of Patent No. 151,537, of 1874, in which a double spring embraces the pointer and a set-screw allows a nice adjustment, and none of these constructions is sought to be covered  
10 in this application.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

15 The sub-regulator B, having step *b b'* and circular aperture, and having slit *d*, to allow it to be snapped over the shoulder *e* of the dome A', the regulator C, having annular head and slit *e*, to allow it to be snapped over the

step *b b'* of the sub-regulator B, the latter and the pointer C having a common pivot, the 20 pointer being held to the sub-regulator by friction, and the sub-regulator being similarly held to the dome, the spring D, bearing with a constant force against one side of the sub-regulator, the adjusting-screw E, and the 25 bridge A, having dome A' with annular flange *e*, and the scale, all combined, arranged, and adapted to serve as and for the purposes set forth.

In testimony that I claim the foregoing as my 30 own I have hereunto affixed my signature in presence of two witnesses.

ABRAHAM BITNER.

Witnesses:

GEO. M. BORGER,

HUGH S. GARA.