(No Model.)

W. M. MATHESON.

WATCH REGULATOR.

No. 493,508. Patented Mar. 14, 1893.

Fig. 1.

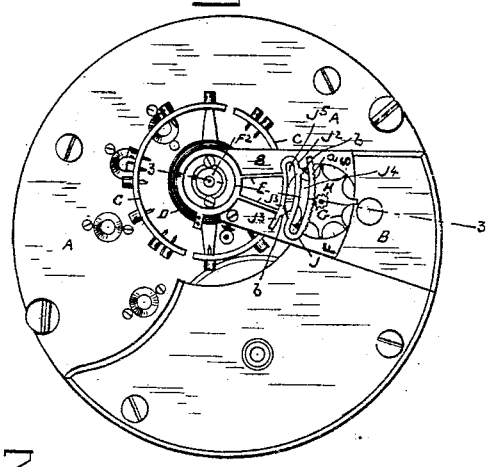


Fig. 2.

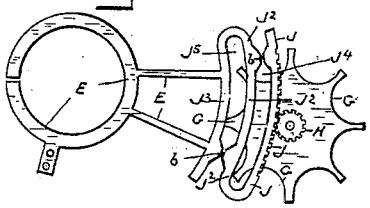
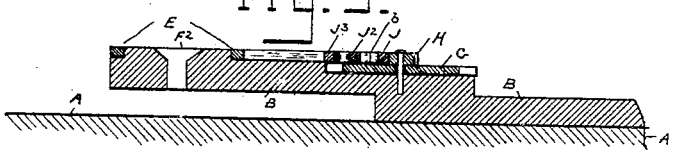


Fig. 3.



Witnesses.

M. E. Brown.

M. V. Storer.

Inventor.

William M. Matheson
by his Attorneys
Brown Bros.

UNITED STATES PATENT OFFICE.

WILLIAM M. MATHESON, OF WALTHAM, MASSACHUSETTS.

WATCH-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 493,508, dated March 14, 1893.

Application filed September 16, 1892. Serial No. 446,012. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. MATHESON, a subject of the Queen of Great Britain, and a resident of the city of Waltham, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Watch-Regulators, of which the following is a full, clear, and exact description.

This invention in regulators for watch and other like movements consists in a construction of the regulator-arm for elastic action in radial directions all substantially as hereinafter described.

In the drawings, the regulator of this invention is illustrated, Figure 1 being a face view of the upper plate and the regulator and of other parts of a watch movement all as fully appears. Fig. 2 is an enlarged plan view of the regulator-arm wheel contacting with said arm and star-wheel for operating said contacting-wheel. Fig. 3 is a sectional view, line 3—3, Fig. 1.

In the drawings, A is the top-plate; B is the balance-cock secured on the top-plate; C is the balance-wheel and D is the balance-spring.

E is the regulator-arm, at one end split and otherwise adapted to be sprung over and thereby hung on the dome F^2 of the balance-cock B, and also having the outer end of the balance secured to it, all as well known.

G is a star-wheel carrying a pinion H, and both adapted to turn as one on the balance-cock. The pinion H is located for its teeth to mesh the teeth *a* along the outer edge of the outer length or section J of two parallel, or substantially parallel, and continuous lengths or sections J, J^2, which together and with a length J^3 of the regulator-arm are in the form of a letter **S** and have an open space J^4, J^5, between the adjacent lengths. The length, or section, J^3 is either integral with or fixed on, and the whole of said sections constitute the outer end-portion of the regulator-arm. The outer and next adjacent sections J, J^2 are each adapted for elastic action along their whole length and each in radial directions of the regulator-arm or toward and from the pinion H with which the outer section J meshes as has been explained, and all in a manner securing elasticity in the mesh or bearing of the regulator-arm and pinion H, and an automatic adjustment of said mesh or bearing as occasion may require, without in the least degree perceptibly or substantially effecting the security of contact between the pinion and regulator-arm, to hold the balance-spring as adjusted by turning the pinion, using the star-wheel G as the operating device. As the other and next adjacent sections J, J^2, are elastic and have an open space between them and the section J^3 between it the section J^2 and the regulator-arm, plainly equal elastic action is secured at all parts of the mesh of the outer section J with the pinion, a very important advantage.

At the open spaces J^4, J^5, respectively, between the outer section J and its next adjacent section J^2 and between section J^2 and the section J^3 of regulator-arm, each section J, J^2, and J^3 has a nose or projection *b* all relatively situated to come into abutment on a given movement of the outer section J toward the section J^2 and of the section J^2 toward the section J^3 of the regulator-arm, and thus increased width of said open spaces J^4, J^5 and increased elastic action of the section J, J^2 can be had while at the same time the limit of movement of the section J toward the section J^2 and of the section J^2 toward the section J^3 of the regulator-arm is definitely fixed, irrespective of the width of the open spaces aforesaid.

As is apparent it is preferable to divide the abutment noses between the adjacent sections J, J^2 and J^3 as has been explained, but the invention in this regard is not to be limited, for a projection may be only on one and either of the adjacent sections.

The regulator-arm and pinion H may be adapted for frictional contact in lieu of for a meshing contact as stated.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a watch movement, a regulator-arm having two sections or lengths J, J^2 continuous with but having open spaces between and more or less parallel with each other and each adapted for elastic action in radial directions and the sections J^2 held on but having an open space between it and the regulator-arm, in combination with a wheel contacting with said

section J of, and adapted to operate said regulator-arm, substantially as described, for the purpose specified.

2. In a watch movement, a regulator-arm having two sections or lengths, J, J^2, continuous with but having open spaces between and more or less parallel with each other, and each adapted for elastic action in radial directions and the section J^2 held on but having an open space between it and the regulator-arm, in combination with abutment projections of said sections and the regulator-arm, and a wheel held on the cap-plate and contacting with said section of, and adapted to operate said regulator, substantially as described, for the purpose specified.

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

W. M. MATHESON.

Witnesses:
ALBERT W. BROWN,
MARION E. BROWN.