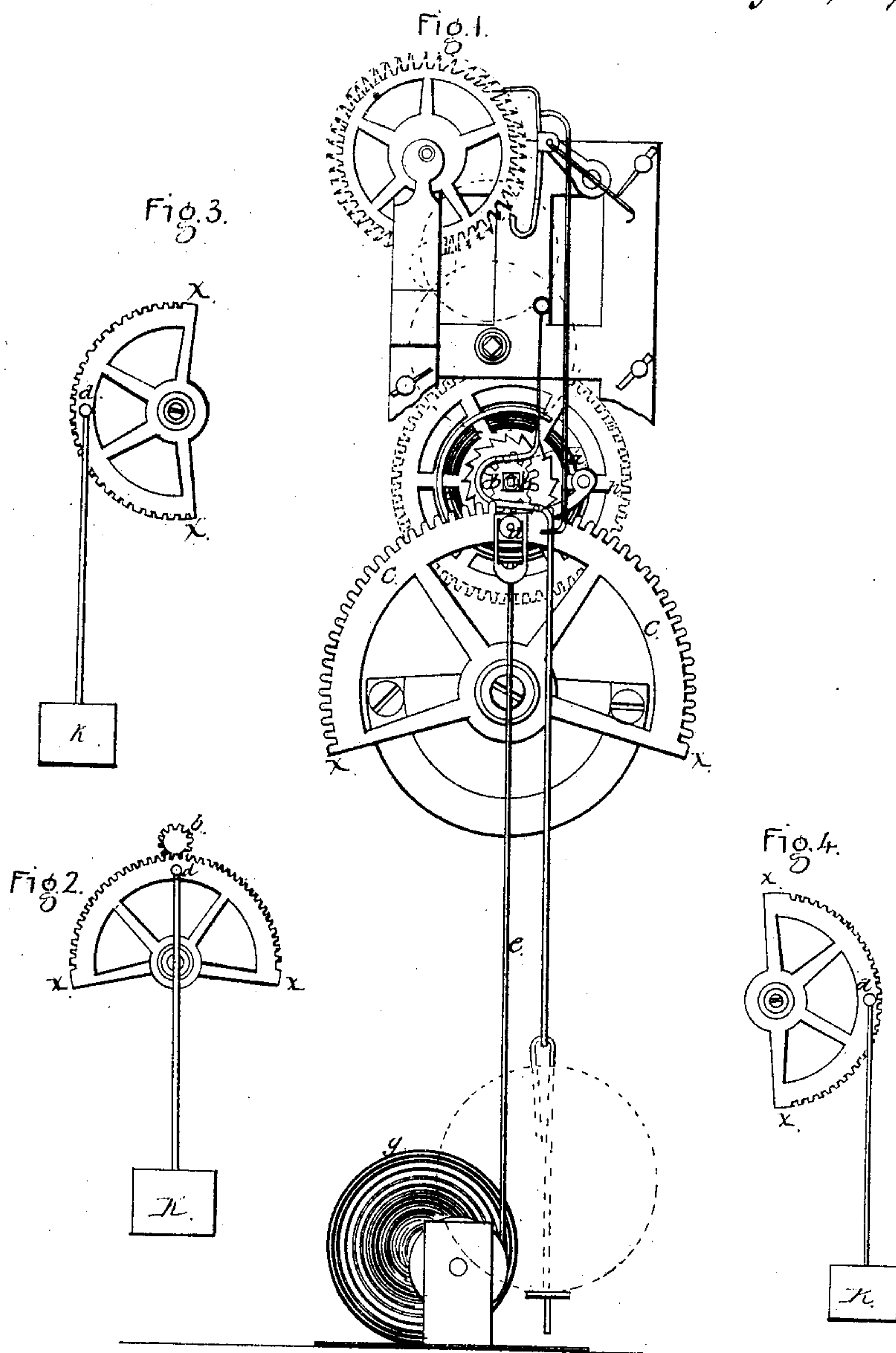


J. P. Adams.

Equalizing Clock Springs.

N^o 106,304.

Patented Aug. 16, 1870.



Witnesses:

E. B. Hill
J. S. Brown

Inventor:

John P. Adams
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UNITED STATES PATENT OFFICE.

JOHN PEABODY ADAMS, OF IPSWICH, MASSACHUSETTS.

IMPROVEMENT IN EQUALIZING THE MAINSPRING OF TIME-PIECES.

Specification forming part of Letters Patent No. **106,304**, dated August 16, 1870.

To all whom it may concern:

Be it known that I, JOHN PEABODY ADAMS, of Ipswich, in the county of Essex and State of Massachusetts, have invented a Method of Equalizing or Nearly Equalizing the Force of the Mainspring in Clocks and Watches, of which the following is a full and exact description, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

The want of a simple and effectual method of equalizing the force of the mainspring in clocks and watches has long been felt. This inequality of tension is more particularly noticed in eight-day spring-clocks, which will gain several moments per day when first wound, and lose as much toward the end of the week.

During the first part of the running after winding the spring is usually too strong, forcing the works, thereby increasing the friction, to which the whole movement soon becomes a victim. During the last part of the running of the spring it is too weak to insure even a constant motion, especially when the oil becomes thick and dust has accumulated.

If a spring has the proper amount of motive force when wound up, it will be too weak when nearly run down; and, if right when nearly run down, it will be too strong when wound up. Hence the right spring for a watch or clock is one which exercises the correct tension when half run down; and to equalize this spring the force must be retarded during the first of its action and assisted during the last.

I claim that I have invented a simple, cheap, and effective method of equalizing this tension.

My invention consists in a mechanism in which, by means of a spring or weight or other well-known contrivance, a force is brought to bear upon a wheel which acts indirectly upon the mainspring in such a manner as to retard its force when first wound and to assist it when nearly run down.

In the accompanying drawing, Figure 1 is a full and exact view of my invention.

h is the main wheel. *a* is the mainspring.

On the same staff with the main wheel *h* a pinion, *b*, is firmly fastened. This pinion *b* pitches into a large wheel, *c*, which makes one-half a revolution during the time intended for the time-keeper to run at one winding. Near

the circumference of this wheel *c* a stud, *d*, is fastened. This stud *d* is connected by a cord, *e*, chain, rod, or other like arrangement, to the spring *g*. When the movement is half wound this cord *e* will be directly over the center of the wheel *c* and the stud *d* will be opposite the pinion *b*. When the time-keeper is fully wound the stud *d* will be at right angles to the line of centers, and directly opposite, at the same angle, when run down. When wound, the force of the spring *g* will retard the force of the mainspring. This retarding force will decrease regularly as the stud *b* approaches the line of centers. When at this point the movement is half run down and the spring is neither retarded nor assisted. As soon as it presses this point it commences to assist the mainspring, and increases regularly until the movement needs to be again wound. Thus the motive power is the same throughout the day or week. The motive force being reduced when the spring is first wound, the tendency to wear the main wheel and the various pivots and holes is greatly lessened.

After allowing extra teeth for unequal time of winding, the space between two teeth can be filled up, (*x x*), thus affording a very simple and effective stop-work.

When a mainspring increases unequally in its tension, the power may be equalized by changing the shape of the stud *d* or its position on the wheel.

Figs. 2, 3, and 4 represent my invention, with a weight, *k*, taking the place of the spring *g*. In Fig. 2 the movement is half wound; in Fig. 3 it is fully wound; in Fig. 4 it is run down.

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

In combination with a clock-movement driven by a spring, the wheel *c*, acting upon the main wheel *h* by means of the pinion *b* or other well-known contrivance, and the stud *d*, with the cord *e*, connecting with a spring, *g*, or weight *k*, or their equivalents, for the purpose of equalizing the tension of the mainspring, substantially in the manner hereinbefore set forth.

JOHN P. ADAMS.

Witnesses:

J. G. ROBINSON,
H. W. WILLIAMS.