

E. WARE.
Spring-Power for Watches and Clocks.

No. 223,418.

Patented Jan. 6, 1880.

Fig. 2.

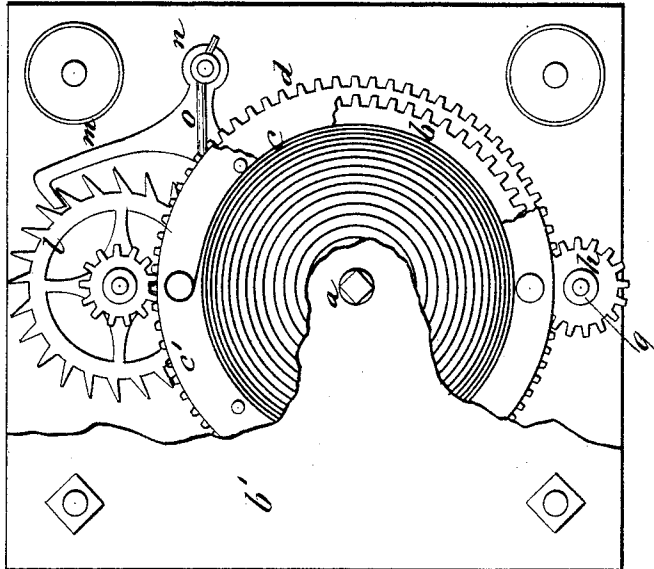
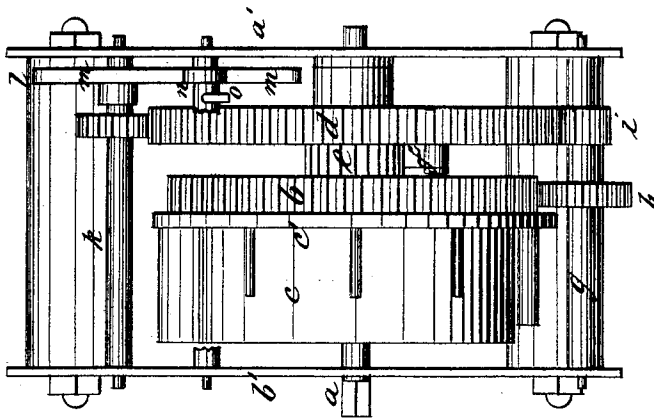


Fig. 1.



WITNESSES:

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ELIJAH WARE, OF OMAHA, NEBRASKA.

SPRING-POWER FOR WATCHES AND CLOCKS.

SPECIFICATION forming part of Letters Patent No. 223,418, dated January 6, 1880.

Application filed November 3, 1879.

To all whom it may concern:

Be it known that I, ELIJAH WARE, of Omaha, in the county of Douglas and State of Nebraska, have invented a new and useful Improvement in Spring-Powers for Driving Watches, Clocks, &c., of which the following is a specification.

The object of my invention is to construct a spring-power mechanical movement for use in watches and clocks, or for other purposes, where a small power is required, and to dispense with the train of gearing usually required.

I make use of a spring attached to and coiled around a shaft that carries a loose and fast gear-wheel, the spring being attached also to the loose gear, and the two wheels geared to a secondary shaft.

The speed and direction of revolution of the main shaft are determined by the relative size of the fast and loose gear. An escapement may be combined with the movement, and to permit winding the fast gear-wheel is connected to the shaft by a ratchet and pawl.

In the accompanying drawings the movement is shown in a form adapted for a clock.

Figure 1 is an end elevation. Fig. 2 is a side elevation with one plate partially broken away.

Similar letters of reference indicate corresponding parts.

The front and back plates, *a' b'*, carry the movement. *a* is the main shaft or arbor. *b* is a gear-wheel loose on shaft *a*. *c* is a coiled spring connected to shaft *a* and to a circular plate, *c'*, that is fixed upon the side of wheel *b*. *d* is a gear-wheel on shaft *a*, connected thereto by a ratchet-wheel, *e*, and pawl *f*, which permit shaft *a* to be turned independently of wheel *d* for winding the spring. *g* is a secondary shaft, carrying pinions *h* and *i*, that mesh with the gears *b d*, respectively. *k* is a spindle carrying a pinion that meshes with wheel *d*, and also carrying the escapement-wheel *l*. *m m* are the pallets of the escapement, con-

nected to a rock-shaft, *n*, to which the escape-ment-rod *o* is connected.

As shown, the fast gear-wheel *d* is larger or has more teeth than loose gear *b*, and the pinions *h* and *i* vary in size to correspond. The result obtained is, that gear *b* carries *d* with it, and the shaft *a* is revolved by wheel *d*. The movement of *b* is caused by the spring unwinding, while the revolution of shaft *a* again winds the spring, the difference between the two movements representing the power.

In watches and clocks the difference between the gears *b d* need be but slight, and the movement will run a long time with small power, as required. For other purposes, such as for driving a sewing-machine, the difference in size of gears will be much more, and the movement will have a greater power, but run a shorter time. If the loose gear be made the largest the shaft *a* will then be turned in the opposite direction, and the fast gear will be the unwinding gear.

The power may be taken from the hub from shaft *a*, or the escapement-spindle, and for a clock the dial and hands will be attached in the usual manner.

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

1. The spring-power mechanical movement consisting of the shaft *a*, spring *c*, gear-wheels *b d*, ratchet-wheel and pawl *e f*, shaft *g*, and pinions *h i*, combined for operation substantially as described and shown.

2. The spring-power movement for watches, clocks, &c., consisting of the shaft *a*, spring *c*, gear-wheels *b d*, ratchet-wheel and pawl *e f*, shaft *g*, pinions *h i*, and escapement, combined for operation substantially as described and shown.

ELIJAH WARE.

Witnesses:

MARTHA A. WARE,
HARRIET D. McCLOUD.