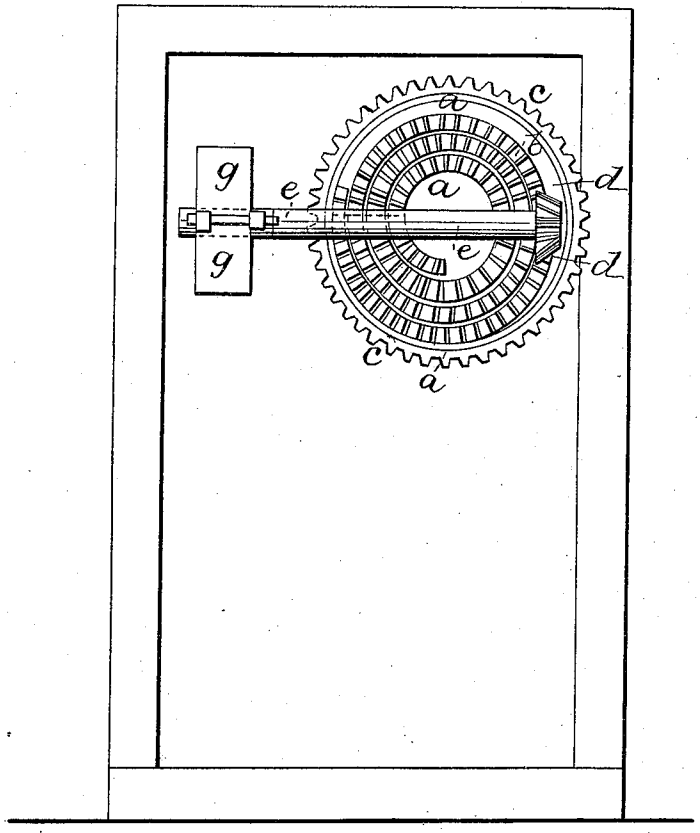
H. Smith,

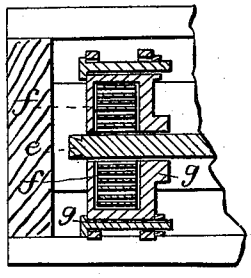
Mechanical Movement.

No. 52,334. Patented Jan. 30, 1866.

Fig; 1.



Fig; 2.



Witnesses;
John A. Bassett
H. B. Connolly

Inventor;
Henry Smith

AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS)

UNITED STATES PATENT OFFICE.

HENRY SMITH, OF SALEM, MASSACHUSETTS.

IMPROVEMENT IN MECHANICAL MOVEMENTS.

Specification forming part of Letters Patent No. **52,334**, dated January 30, 1866.

To all whom it may concern:

Be it known that I, HENRY SMITH, of Salem, in the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Method of Producing Mechanical Movements; and I do hereby declare that the following is an exact description of the same, with reference to the drawings which accompany this specification.

My invention consists in a new method of producing a rotary motion by means of a power which is alternately increasing and decreasing, to a degree corresponding with the increased or diminished tension of the spring. Such a motion has long been sought for in machinery, but has never, previous to my invention, been successfully attained except by very complicated arrangement of devices.

By my improvement I have succeeded in so combining a coiled spring with certain mechanical devices as to cause the force exerted by the said spring upon the object to which it may be applied, to be always and uniformly the same in whatever state of tension the spring may be.

I accomplish this object by the combination of a scroll-wheel (the teeth of which are arranged in a spiral form upon the said wheel) and a traveling shaft having a pinion on one end that works in the teeth of the said volute gear, and attached at its other end to a coiled spring, the traveling shaft being so arranged as to be free to move to and from the center of the volute gear; and the box which confines the spring being also susceptible of a lateral motion.

In the accompanying drawings, Figure 1 is a front elevation, and Fig. 2 is a sectional elevation of the spring.

a a a in the drawings represent a gear-wheel, upon the face of which are formed apertures or teeth, *b b*, arranged in the shape of a volute or scroll. Upon the circumference of the wheel *a a* are teeth *c c*, with which a pinion or rack may be made to engage, and the power transmitted to any object which may be desired.

A pinion, *d d*, engages with the scroll-gear *a a*, and is attached to the shaft *e e*, which shaft is free to travel longitudinally to and from the center of the scroll-gear *a a*. The opposite end of the shaft is attached to the coiled spring *f f*, which is inclosed in the case *g g*, through which case the shaft *e e* extends, the other end of the coiled spring being fastened to the case *g g*, and in its winding and unwinding always corresponds with the position occupied by the pinion *d d* upon the volute gear *a a*.

It will be seen, by the lateral motion of the shaft with its pinion, that the leverage is constantly changing, as the pinion travels in a larger or smaller circle of the volute wheel. As the spring is being coiled around the shaft he leverage is changed by the position of the pinion to a degree corresponding with the increased force of the spring.

In the above-described arrangement it will be seen that the important feature consists in the functions which the volute gear and its pinion bear to the coiled spring, the leverage afforded by the said gear and pinion being an exact counterbalance to the power of the spring, so that the force exerted by the latter, instead of being, as in ordinary cases, variable, is always and uniformly the same.

Having thus described the nature of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The volute wheel and pinion, as shown, when used in connection with a coiled spring, for the purposes described.

2. The movable shaft *e e* and box *g g*, when used in connection with the volute wheel and pinion, as already set forth.

3. The spring *f f* when used in combination with the volute wheel and pinion, for the purposes indicated.

HENRY SMITH.

Witnesses:
THOMAS C. CONNOLLY,
JOHN A. BASSETT.