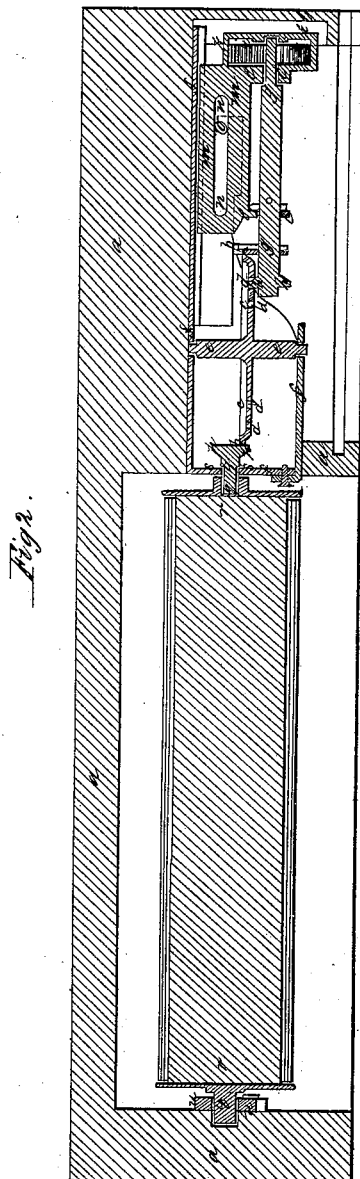
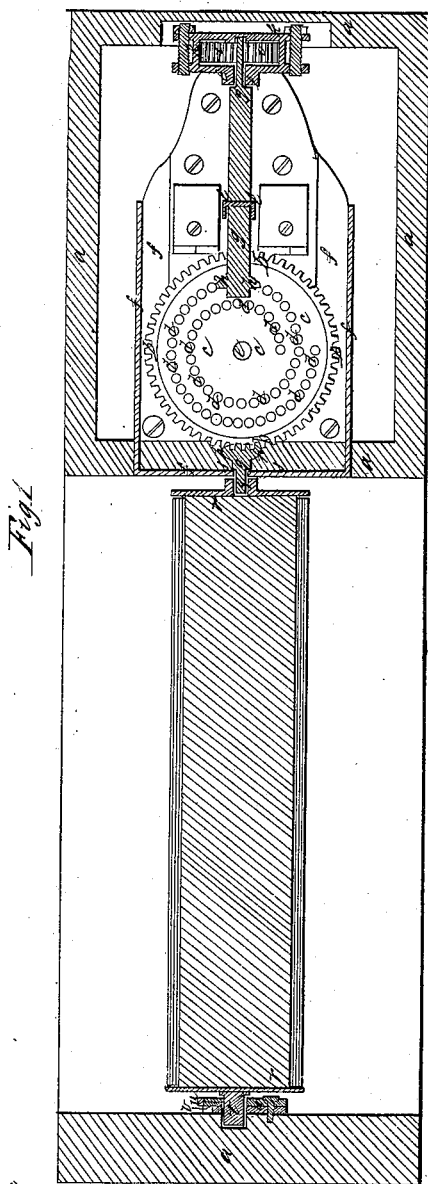


H. Smith, Curtain Fixture,

N^o 52,332.

Patented Jan. 30, 1866



Witnessed.
H. B. Hausfeld
Oliver C. Smith

Inventor:

Henry Smith

UNITED STATES PATENT OFFICE.

HENRY SMITH, OF SALEM, MASSACHUSETTS.

IMPROVEMENT IN OPERATING WINDOW-BLINDS.

Specification forming part of Letters Patent No. 52,332, 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 certain new and useful Improvements in a Device for Balancing the Power of a Coiled Spring; and I do hereby declare that the following description, taken in connection with the accompanying plate of drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The object of the present invention is to provide a balance to the varying power of a coiled spring in such a manner that the power given out by the spring will be equalized, so that in unwinding the spring will give out the same power when it is nearly unwound as when it is tightly coiled.

This invention in the present application for Letters Patent is applied to the purpose of providing an equal balance for a curtain-fixture, and is represented in the accompanying plate of drawings, of which—

Figure 1 is a vertical longitudinal section, and Fig. 2 a horizontal longitudinal section, of my improved device connected with a window-shade.

a a a in the drawings represent the box or frame-work of a window, in which is inserted my apparatus, which consists of a gear-wheel, *b b*, upon the face of which is formed a volute gear, *c c*, the teeth of which are arranged in the shape of a volute, as shown by the holes *d d d*. Attached to the volute gear *c c* is a shaft, *e e*, which turns in standards formed by the front and rear plates of the case or frame *f f* of the apparatus.

Formed on one end of a shaft, *g g*, is a pinion, *h h*, with circular pointed teeth, which engage with the volute gear *c c* and operate the same by means of the power imparted to it by a coiled spring, *i i*, inclosed in a case, *k k*, one end of the spring *i i* being fastened to the end of the shaft *g g*, which passes through the case *k k*.

Formed on the case *k k* and attached to the

shaft *g g* by standards *l l*, which form bearings for the shaft *g g*, is a slide, *m m*, formed with a slot, *n n*, which travels on a pivot, *o*, for the purpose of moving back and forth the shaft *g g* and case *k k* to suit the position of the pinion *h h*, which works in the volute gear *c c*.

Engaging with the gear *b b* on the periphery of the volute gear *c c* is a pinion, *p p*, attached to a shaft, *q q*, the outer end of which shaft *q q* is formed square to receive one end of a shade-roller, *r r*, and turns in a bearing, *s s*, formed by the end of the plate or frame *f f*. A pivot, *t*, is formed on the other end of the curtain or shade roller *r r*, and turns in a bearing formed by the standards *u u* attached to the opposite side of the window-frame *a a*.

A slide, *v*, in the upper part of the standards *u u* fits over the pivot *t* and serves to hold it in place when the roller *r r* is adjusted. When the slide *v* is removed from the standards *u u* the pivot *t* can be easily detached therefrom and the roller *r r* removed.

By the foregoing description, reference being made to the drawings, it will be seen that by drawing down the shade *w w* attached to the roller *r r*, which is fitted onto the square end of the shaft *q q*, the pinion *p p* is revolved, and thereby turns the volute gear *c c*, with whose outer gear, *b b*, the said pinion *p p* engages. The volute gear *c c* in turn operates the pinion *h h* and shaft *g g*, to which it is attached, thereby coiling up the spring *i i*, fastened to one end of the shaft *g g* and inclosed in the case *k k*. As the volute gear *c c* revolves it draws laterally the pinion *h h* and slide *m m* toward its center, thus giving the pinion *h h* more and more leverage in its relation to the pinion *p p*, and thereby compensating for the increasing power of the spring *i i* as it is coiled up. The volute gear *c c* and its pinion *h h* are arranged in such a manner with regard to the spring *i i* that the force exerted by the weight of the shade *w w* just balances the spring *i i*, and consequently the shade *w w* remains in any position in which it is placed. When the shade *w w* is raised or its weight relieved the action of the spring *i i* upon the shaft *g g* causes the pinion *h h* to revolve the volute gear *c c*, which turns the shaft *q q* connected with the roller *r r*, and thereby winds up the shade *w w* attached to the roller *r r*.

Having thus described my improvements, I shall state my claim as follows:

What I claim as my invention, and desire to have secured by Letters Patent, is—

1. Compensating for the increased or diminished power of a coiled spring in its various degrees of tension by means of a pinion working in a scroll-gear or volute toothed rack, whether said rack is wound on a plane surface or on the periphery of a cone, substantially as described.

2. The combination of the volute gear, traveling pinion, spring, and shade-roller, for the purpose of controlling the power of the spring in its action upon the said roller, as described.

HENRY SMITH.

Witnesses:

OLIVER C. SMITH,
M. B. MANSFIELD.