(No Model.)

A. B. SHAW.

SPRING ROLLER FIXTURE.

No. 280,249. Patented June 26, 1883.

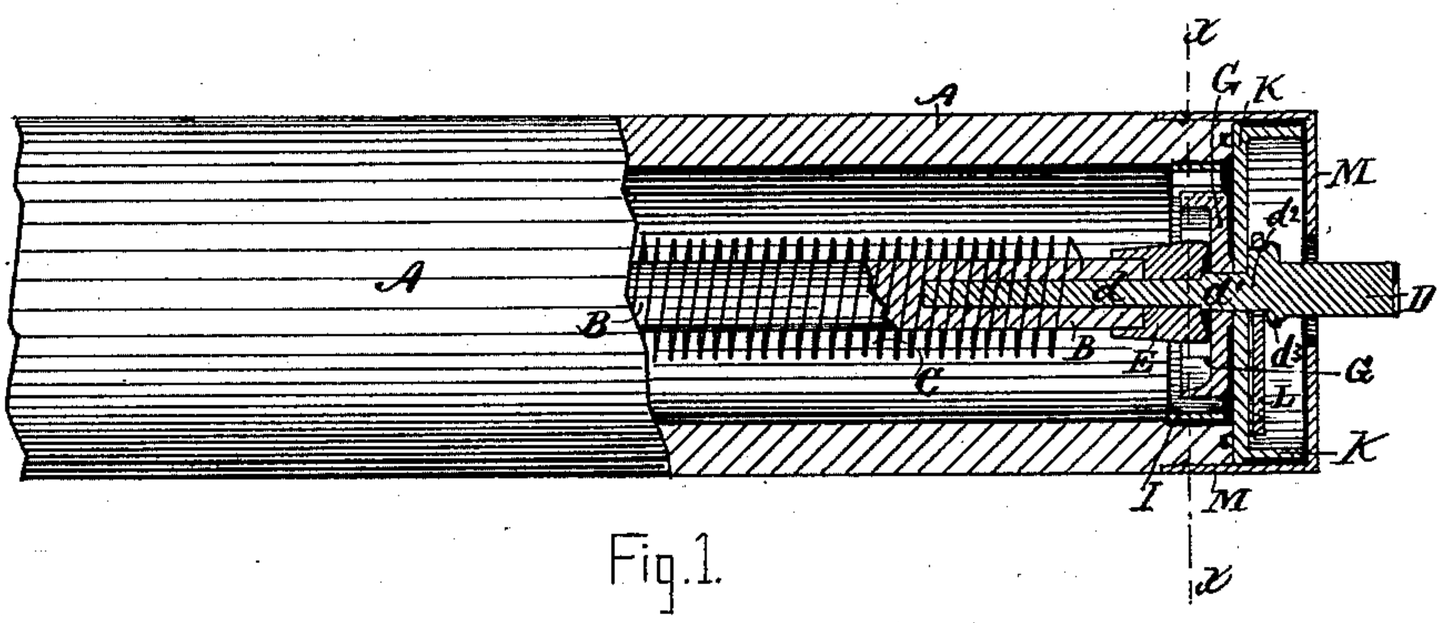

Fig. 1.

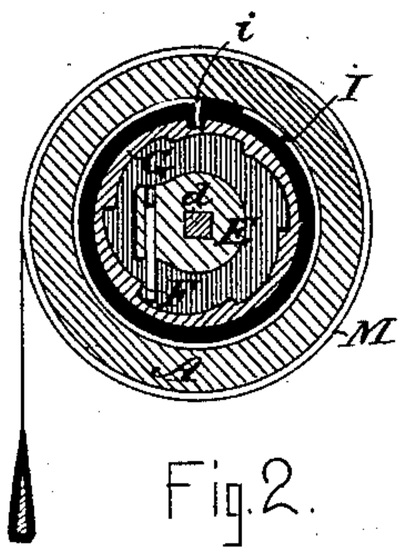

Fig. 2.

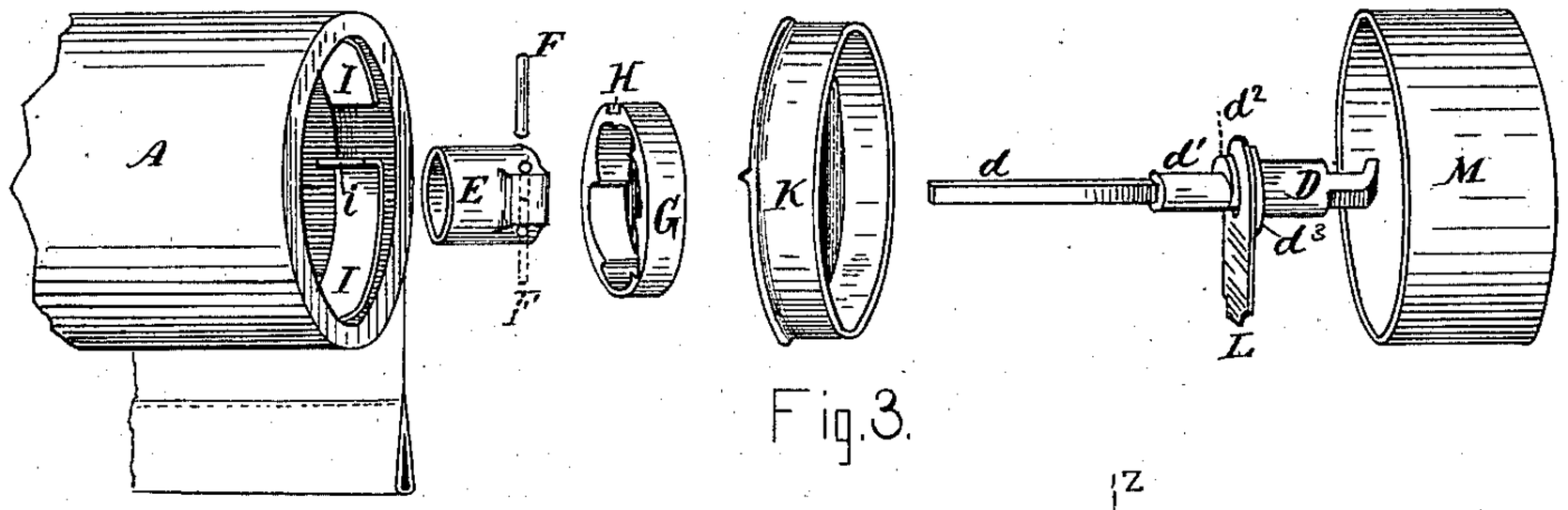

Fig. 3.

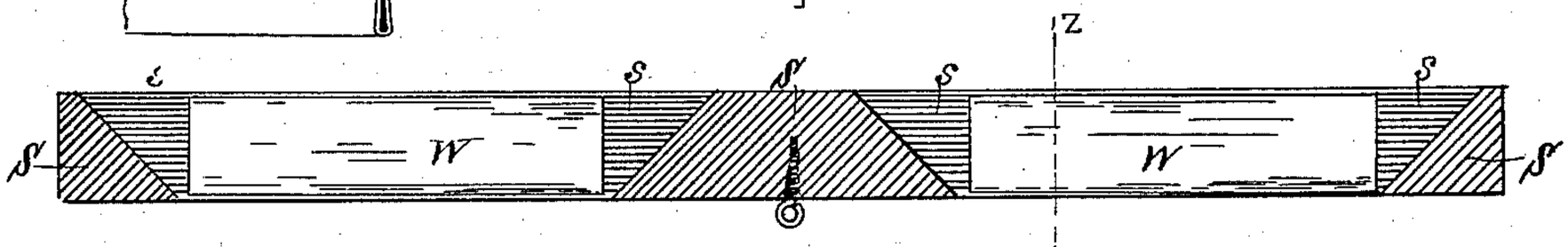

Fig. 4.

Fig. 5.

Witnesses
H. E. Roemick.
Chas. B. Wharton

Inventor
A. B. Shaw.
by A. H. Spencer Jr.
his Attorney.

UNITED STATES PATENT OFFICE.

AI B. SHAW, OF MEDFORD, MASSACHUSETTS.

SPRING-ROLLER FIXTURE.

SPECIFICATION forming part of Letters Patent No. 280,249, dated June 26, 1883.

Application filed January 23, 1882. (No model.)

To all whom it may concern:

Be it known that I, AI B. SHAW, a citizen of the United States, residing at Medford, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Curtain-Fixtures; and I do hereby declare that the same are fully described in the following specification and illustrated in the accompanying drawings.

These improvements relate to means for the automatic balancing of the shade while mounted for use, and to devices for retaining the tension of the operating-spring when the roller is dismounted.

The object of this invention is to simplify and perfect spring-balance curtain-fixtures, and this is accomplished by providing an improved balance-weight tending to draw down or uncoil the shade, an improved friction device to resist the downward tendency of the weighted shade in its bearings, and an improved locking apparatus to prevent the spring from uncoiling when the spindle is removed from the brackets. The two devices first named are operative when the curtain is raised or lowered, the last being at such times dormant.

My invention consists in the devices and combinations of devices set forth in the appended claims.

In the drawings, Figure 1 is a longitudinal section of a roller end furnished with my friction device and locking apparatus; Fig. 2, a transverse section at *x x*, Fig. 1; Fig. 3, a view of the parts detached; Fig. 4, a longitudinal section of my improved weighted stick; and Fig. 5, a transverse section at *z z*, Fig. 4, of the stick papered.

A is the tubular end of the cylindrical roller; B, the spindle, and C the operating-spring, secured at one end to the roller and at the other to the spindle, which it surrounds, and arranged in the usual way, so that its tension is increased when the curtain is drawn down, and its recoil tends to roll the curtain up again.

D is a metal tip, having its shank, *d*, driven into the wooden spindle B and permanently secured to it by means of a ferrule, E, having a square opening in its end to receive the square shank *d* of the part D. The ferrule prevents splitting of the spindle B when the piece D is driven in. The extremity of the metal piece D is, as usual, fitted to enter the bracket only in a given horizontal position, so as to insure action of the parts mounted upon it in the manner hereinafter described.

The parts comprising the friction device, whereby the balance of power is maintained between the weight tending downward and the spring tending upward, will now be described.

The ferrule E has a protuberance on one side, through which is a vertical aperture, in which a pawl, F, plays loosely to ride over or engage with the internal teeth of a ratchet-ring, G, which revolves freely in the direction permitted by the pawl when the curtain is being carried up by the action of the spring. The ratchet-ring G has its bearing on a cylindrical part, *d'*, of the metal piece D, adjoining the end of the ferrule. The outer face or periphery of this ring has a notch or recess, H, to receive the inwardly-turned end *i* of a C-spring, I, which is somewhat compressed and placed just within the end of the tubular roller A, shouldered to receive it. The reaction of the springs causes it to hug the inner walls of the roller and bear with considerable friction thereon.

The operation of this device is as follows: The spring I being placed within the roller, its end *i* enters the recess H in the ring G and maintains that position continually. The roller A, spring I *i*, and ring G turn together freely when the shade rises; but when it is drawn down, the pawl F holds the ratchet-ring fast and the ring holds the spring I *i* from turning, so that the roller can only turn by slipping upon the smooth outer face of the spring, which it does with considerable friction, sufficient to perfectly balance the shade, but not enough to prevent it being readily lowered by hand. The advantages of this construction are that the friction is between wood and metal, so as to be noiseless, and the friction-surface is the largest possible within the roller, where it is not affected by dust or changes in the weather, requires no lubrication, and is not liable to wear. The advantage of placing the vertical pawl F at one side of the spindle rather than centrally is that it thereby rises more freely during the upward movement of the shade without chat-

tering, and that any slight imperfection in casting the ratchet-ring G will not cause the pawl to slip over the teeth thereof.

The locking apparatus, to retain tension of the spiral spring when the roller is dismounted, is in construction and operation as follows: A flanged disk, K, is secured to the end of the roller A, and mounted upon a cylindrical part, d', of the spindle-tip D. Adjoining such cylindrical part, and integral with it, is an eccentric, d^2, upon which the locking-piece L hangs. A collar, d^3, cast in one with the eccentric, holds the locking-piece in position at all times. The locking-piece has a circular opening near one end to receive the eccentric d^2, and while the spindle is in position in the bracket the lock hangs dormant and the roller revolves either way upon the bearing d', the roller end being covered and supported by the disk K, attached to it by screws or other means. When the roller is dismounted, however, the spring C gives a sudden rotary impulse to the spindle, turning the eccentric d^2 within the circular opening of the locking-piece and giving it a downward thrust, bringing its lower end into contact with the flange of the disk K and effectually preventing further rotation.

I do not claim, broadly, the employment of a locking-piece hung on a cam formed on the spindle and engaging with a fixed part of the roller, since my Patent No. 202,592, granted April 16, 1878, showed such combination, this part of my present invention being limited to the combination and arrangement of parts as herein stated. The patent to Buckley and Sawyer, dated May 21, 1878, also shows a locking-piece hung on the spindle at its inner end, which end is mounted in an eccentric bearing.

By preference I cover the end of the roller with a broad ferrule, M, which gives a better finish to the fixture, and may serve to hold all the metallic parts to the roller, in lieu of screws or nails through the disk K.

It will be observed that with the exception of the spring I i, which is self-fastening within the roller end, all the parts of the friction and locking mechanism are united in working position when the metal part d of the spindle is driven into the wooden part B. In assembling the parts the locking-piece is first slipped over the small end of the metal spindle to its place on the eccentric; then the disk K is placed in position adjoining it, after which the ratchet-ring is slipped on. The ferrule E, carrying the pawl F, is forced onto the end of the wood spindle, and the metal shank d, being driven in up to the cylindrical part d', secures all the pieces in their proper order.

It has long been common to provide, as a counter-balance at the bottom of the shade, a flat wooden stick deeply grooved from end to end, and almost to its lower edge, to receive a long narrow strip of metal and retain it as a weight. Among the objections to this plan is the fact that the metal strip is liable to slip out endwise, and that it interferes with inserting the screw centrally for the ring or tassel whereby the shade is manipulated, since there is so little depth of wood that the screw will hold but a short time. To permit such insertion, it has been the custom to employ strips of lead, into which it was possible to enter the screw; but the practice was unsatisfactory and the metal expensive as compared with iron.

My improvement consists in a slat, S, solid at the center and at each end, with two vertical pockets or slots, s s, through it from its upper to its lower edge, midway between its center and its ends, and a comparatively thick, broad, and short metal weight, W, in each of said slots. This plan has the advantages of a solid central part for secure insertion of the tassel-screws vertically or horizontally, and of solid ends retaining the weights in position, looking better, and not at all liable to split. Such construction also permits the use of short sections of merchantable band-iron for weights, which is very much cheaper than lead or than the narrow iron heretofore used in the groove of the slat, since with my improvement the iron may be wide enough to occupy the full width of the slat, and proportionately thick and short. The slots being short and of a breadth corresponding to the thickness of the iron, and the wood solid at each end of them, the weights will be grasped with sufficient pressure to hold them firmly in place. I am, however, accustomed to wrap the slat and weights in a sheet of paper secured in position by paste, thus concealing and securing the irons and preventing any ill effects from oxidation. The irons may each be papered before insertion.

I claim as of my invention—

1. As a new article of manufacture, a balance-weight for shade-rollers, consisting of a wooden slat solid at each end and at the center, and slotted vertically between the center and each end, as described, in combination with a metallic weight in each of said slots, for the purpose set forth.

2. The double-slotted slat herein described, provided with a weight in each slot, and papered, substantially as and for the purposes set forth.

3. The herein-described friction device for balance shade-rollers, consisting of the tubular roller A, properly mounted, and the sliding spring I i within it, in combination with the notched ratchet-ring and the ferrule and vertical pawl working within it, substantially as set forth.

4. The herein-described locking apparatus for spring-actuated shade-rollers, consisting of the flanged disk K, secured to the roller and forming a central bearing therefor, in combination with the locking-piece L, and with the metal spindle, having integral therewith a shank, d, a cylindrical portion, d', an eccen-

tric, d^2, and a collar, d^3, all arranged with relation to each other substantially as set forth.

5. The ferrule E, mounted on the end of the wood spindle, to prevent it from splitting when the metal shank *d* is driven in, formed with an angular opening to fit said shank, and having on one side of its center a vertical perforation inclosing a loose gravitating pawl, in combination with a ratchet-ring, with which said pawl engages, substantially as set forth.

In testimony whereof I hereto affix my signature in presence of two witnesses.

AI B. SHAW.

Witnesses:

A. H. SPENCER,

E. A. PHELPS.