J. C. LAKE.

Spring Shade-Rollers.

No. 223,595. Patented Jan. 13, 1880.

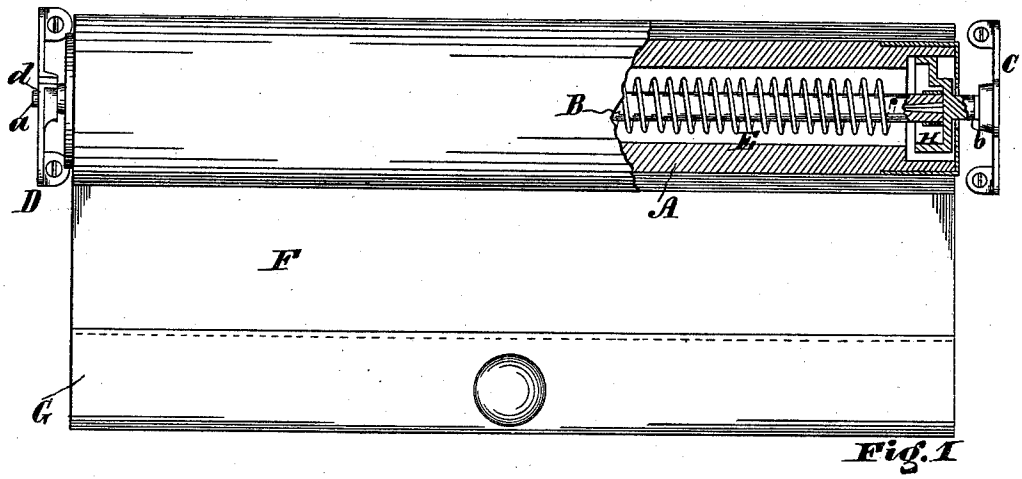


Fig. 1

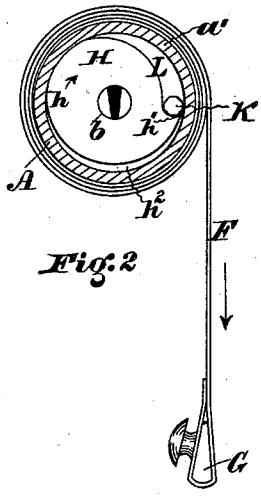


Fig. 2

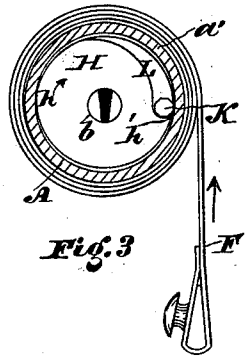


Fig. 3

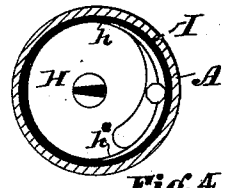


Fig. 4

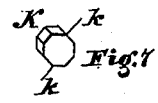


Fig. 7

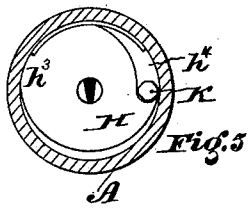


Fig. 5

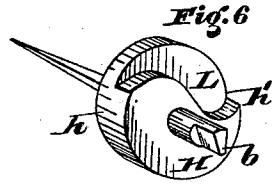


Fig. 6

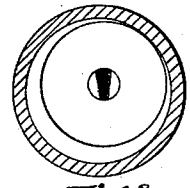


Fig. 8

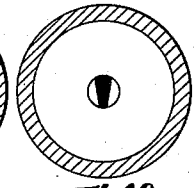


Fig. 9

WITNESSES:

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UNITED STATES PATENT OFFICE.

J. CHRISTOPHER LAKE, OF PHILADELPHIA, PENNSYLVANIA.

SPRING SHADE-ROLLER.

SPECIFICATION forming part of Letters Patent No. 223,595, dated January 13, 1880.

Application filed December 2, 1879.

To all whom it may concern:

Be it known that I, J. CHRISTOPHER LAKE, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Spring-Balance Shade-Rollers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is an elevation, partly in section. Fig. 2 is a transverse vertical section of the same, showing shade being drawn down. Fig. 3 is a like view of said parts. Fig. 4 is a transverse vertical section of the roller removed from the brackets with the spring locked. Fig. 5 is a transverse vertical section with spring released. Figs. 6 and 7 are, respectively, perspective details of spindle and its friction-cam and of the spring locking-cylinder. Figs. 8 and 9 are illustrative diagrams.

My invention has relation to that class of spring-rollers which are adapted for use with weighted shades, the spring serving to wind up the shade on the roller when such shade is relieved of its weight, the latter serving to counterbalance the spring when the shade is at a state of rest.

My invention has relation to a friction-brake for assisting the spring in sustaining the weight; and my improvements relate to means whereby adequate friction by the contact of hard surfaces—metal against metal, or metal against wood, for example—may be obtained, thereby dispensing with the employment of felt or equivalent soft material for that purpose.

A further object of my invention is to provide a brake which shall operate automatically to secure the desired friction when the shade is descending and the spring being wound up, and shall in like manner relieve itself when the shade is ascending and the spring being unwound.

My invention resides in the peculiar construction of the brake, which consists of a rigid collar on the roller-spindle, such brake being cam-shaped, as hereinafter set forth, so as to obtain an extended surface-contact with the surrounding portion of the roller or with a bushing therein, or contact on two or more points of such roller or bushing.

Referring to the accompanying drawings, A indicates a shade-roller having a spindle, B, with angular end *b*, which rests in a bracket, C, the opposite end of said roller having a trunnion or journal, *a*, which rests in a bracket, D, having a bearing, *d*. E is a spiral spring, whose opposite ends are secured to the roller and spindle, respectively. F is a shade, secured to the roller in the usual manner, and G is a weighted slat attached thereto. These parts, in themselves, form no part of my present invention.

H is a rigid collar on the spindle B. Said collar is a cam whose periphery, from *h* to *h'*, being about one-half of its circumference, is a segment of a circle whose diameter is the same or just a fraction less than the diameter of the circularly-recessed end *a'* of the roller, so that such portion of said periphery will rest in frictional contact with the contiguous portion of said recessed end. The remaining portion of the collar is cam-shaped or of any irregular outline which will leave the periphery on the under side (or side opposite the segmental part *h h'*) some distance away from the roller, or out of frictional contact therewith, and with a space, h^2, for play; or the collar may be of the shape shown in Fig. 5, whereby two of its points of surface, h^3 h^4, shall be in contact normally with the roller, or of substantially the same radius as the portion *h h'* in Figs. 2 and 3.

The operation is as follows: When the shade is at a state of rest the roller is in contact with the segmental portion *h h'*, or with the points h^3 h^4, thereby producing friction, which aids the spring in counterbalancing the weight, and when the shade is drawn down this friction is slightly increased, the effect of drawing down the shade being to cause the roller to bind more strongly against the segmental portion *h h'* of the collar, or against the points h^3 h^4. When, however, the weight is raised and the spring permitted to roll up the shade, the roller, having play by reason of the space h^2, rises from binding contact with the collar and relieves the friction.

The difference between this construction and that of a perfectly circular collar is shown in Figs. 8 and 9. In the former the collar is of less diameter than the recessed end of the roller, and hence touches at only one point. This fails to procure as much friction as is desired. In Fig. 9 the collar is of the same diameter as the inside of the roller, and hence binds all around, producing too much friction and permitting no play.

If desired, a bushing may be inserted in the end of the roller, consisting of a metal ring, I, against which the collar will act in the same manner as against the wood of said roller.

To lock the spring when the roller is removed from the bracket, I provide a small polygonal-sided cylinder, K, which fits in a tapering recess, L, formed in the collar H. This cylinder is inoperative when the roller is in its brackets, as shown in Figs. 2 and 3, but operates as a lock or wedge when such roller is removed from said brackets, as shown in Fig. 4. A round cylinder or ball, designed to operate for the same purpose and in a manner similar to this, is shown in a pending application of mine, wherein I have claimed the same, and hence do not claim it now. In the present case, however, owing to the cylinder having polygonal sides, it presents sharp edges *k k*, which serve to indent the wood when engagement takes place, and thereby maintains a better hold, or secures one more quickly than does a round cylinder.

I am aware that it is not new, broadly, to employ a frictional bushing or hub upon the spindle operating in the end of the roller, and hence do not mean to be understood as claiming in this instance to be the inventor thereof.

What I claim as my invention is—

1. The cam-shaped collar H, having a segmental portion or two or more points or edges of its periphery adapted to secure frictional contact with the roller or a bushing therein, substantially as set forth.

2. The combination of the roller A, spindle B, and cam-shaped collar H, the latter having a segmental portion, *h h'*, or two or more points or edges, h^3 h^4, whose radius is substantially the same as the recessed end of the roller or a bushing therein, so as to obtain extensive frictional surface or frictional contact at two or more points, the remainder of the periphery being of less radius, so as to leave a play space, h^2, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 15th day of November, 1879.

J. CHRISTOPHER LAKE.

Witnesses:

W. W. DOUGHERTY,

M. D. CONNOLLY.