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C. O. BULOCK.

SHADE ROLLER.

APPLICATION FILED FEB. 19, 1908.

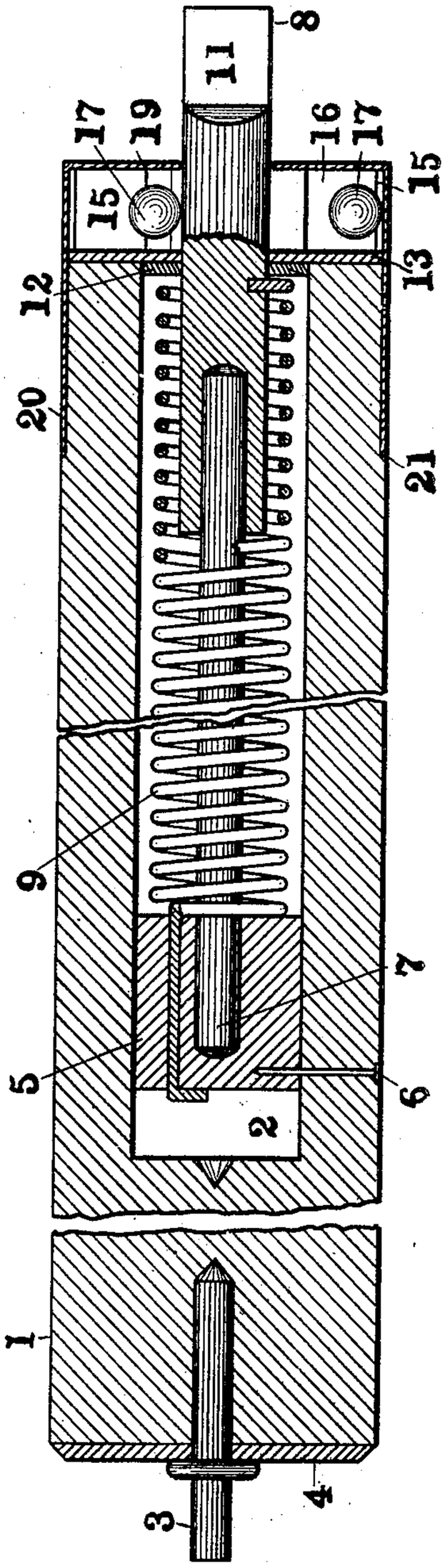


Fig. 1

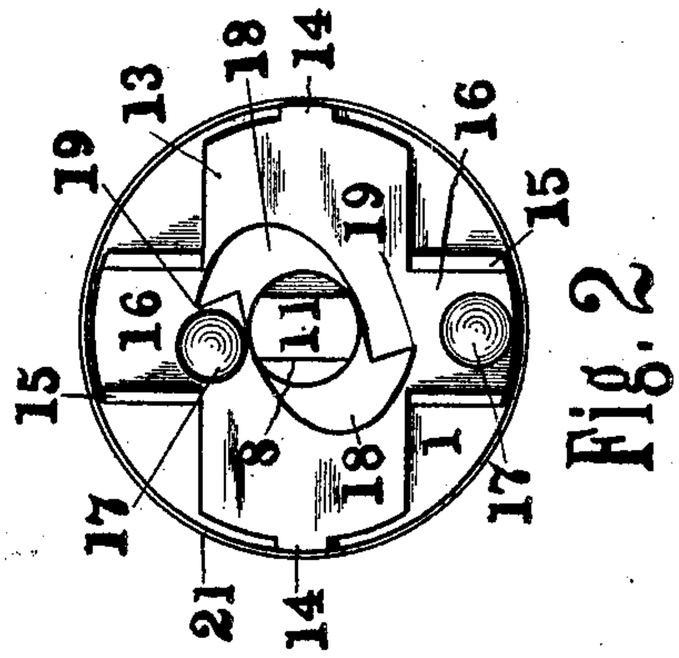


Fig. 2

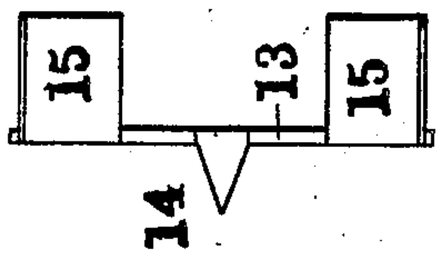


Fig. 3

Witnesses:

Glenara Fox

Elma Blinn

INVENTOR—

Charles O. Bulock,

By C. E. Humphrey

ATTORNEY.

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES O. BULOCK, OF AKRON, OHIO.

SHADE-ROLLER.

No. 896,889. Specification of Letters Patent. Patented Aug. 25, 1908.

Application filed February 19, 1908. Serial No. 416,702.

To all whom it may concern:

Be it known that I, CHARLES O. BULOCK, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented new and useful Improvements in Shade-Rollers, of which the following is a specification.

This invention relates to improvements in shade-rollers of the general type wherein the winding up of the shade is performed by a resilient element contained within the body of the roller.

The object of this invention, broadly speaking, is to provide a new and improved means for temporarily locking the roller against movement on its spindles which will be strong, durable, efficient in use, readily set up, easy to manufacture and comparatively cheaply produced.

Specifically the object of this invention is to provide the roller with suitable pockets for containing a plurality of balls constituting detents adapted to engage abutments carried by one of the spindles of the roller for preventing motion of the latter, said abutments provided with curvilinearly-formed rear faces designed to hold and force the balls backward into the pockets and maintain them in inoperative position during the rapid rotation of the roller but so constructed that when the roller is revolved slowly one of the balls will fall by gravity between one of the walls of the pockets in which it seats and an abutment carried by the spindle.

Further objects of this invention consist in so constructing the various parts that the engaging of the balls by the abutments while in position against one of the walls of the pockets and their release from engagement to permit motion of the roller will be as nearly perfect as possible.

Other advantages constituting objects of this invention will more fully appear in the subjoined description.

A practical embodiment of this invention is illustrated in the accompanying drawings in which similar reference numerals indicate like parts in the different figures.

In the drawings, Figure 1 is a view in longitudinal central section showing my improved locking device in connection with a shade roller. Fig. 2 is a view in end elevation looking from the right of Fig. 1 with the ferrule of the roller removed, and, Fig. 3 is a view in side elevation of a disk employed for holding the balls in position on the end of the roller.

Referring to the drawings in detail, 1 is a shade-roller provided with a chamber or recess 2 extending inwardly from one end thereof. The opposite end of the roller is provided with a fixed spindle 3 having a cylindrical end adapted to be freely rotatable in a bracket commonly employed for supporting this type of roller. The end of the roller containing the spindle 3 is preferably provided with an end plate 4.

In the chamber 2 is a block 5, held against movement by means of a pin 6 and provided with a central recess in which is mounted a longitudinal shaft 7 the opposite end of which is rotatatively mounted in the recessed inner end of a spindle 8. Surrounding the shaft 7 and spindle 8 is a coiled spring 9 one end of which is anchored in the block 5 and its opposite end is securely held by being received in an opening in the spindle 8. The outer extremity 11 of the spindle 8 is flattened in order that it may enter a vertical slot in a bracket usually employed to receive the spring-actuated spindles of spring shade-rollers. The spring 9 when mounted in the chamber 2 is necessarily compressed and bears against the block at one end and against a loosely-mounted washer 12 on the spindle 8 placed there to receive the wear incident to the action thereof.

Mounted on the chambered end of the roller 1 and constituting a stop for preventing lateral shifting of the washer 12 is a ball carrying disk 13, shown best in Figs. 2 and 3 consisting of a plate provided with inwardly-bent points 14 arranged to enter the end of the roller for maintaining it in position. This disk is further provided with a central opening to freely receive the spindle 8. On diametrically opposite sides of the disk 13 are a pair of outturned lugs 15 preferably formed by bending up the portions of the material of which the disk itself is composed and forming when so bent a pair of pockets 16 radial to the axis of the spindle 8 with the lugs 15 constituting parallel walls and with its outer, inner and front portions open and adapted to be closed by means to be later described. Positioned in the pockets 16 are a pair of balls 17 of such a diameter that when resting on the periphery of the spindle 8 they

cannot pass through the space existing between the spindle 8 and the inner ends of the walls 15.

Mounted on or formed integral with the spindle 8 immediately in alinement with the inner open ends of the pockets 16 are a pair of oppositely-disposed members 18, hereinafter designated as dogs having flat rearwardly-inclined faces the front edges 19 of which constitute abutments to severally engage the balls 17 and clamp them against the surface of the spindle 8 and the inner ends of the walls 15 for locking the roller against movement. From the edge 19 the remaining portions of the dogs are extended rearwardly upon curvilinear lines gradually sloping inwardly until they coincide with the outer periphery of the spindle 8. These dogs are approximately the same width as the width of the walls 15 so that the front edges 19 will engage the balls 17 in whatever position they may occupy in the pockets 16.

To assist in maintaining the disk 13 in position on the end of the roller and also to serve to close the outer and front portions of the pockets 16 I employ a ferrule or cap 20 of the same exterior diameter as the roller 1 which is properly rabbeted to receive the same and is provided with a shoulder 21 to receive the inner edge of said ferrule. This ferrule 20 is provided with a central opening in its outer face to freely receive the spindle 8.

The roller 1 when mounted in brackets in the usual manner, with the spring in its normal condition, rotates in the proper direction to wind up the spring 9. The spring 9 when under tension is to be of sufficient strength to raise the shade when the engaging or locking portion thereof is in inoperative position. The working or operating portion of the roller 1 is so arranged that when it rotates at proper speed it will allow the balls to successively drop by gravity to the bottom of the pockets 16 onto the outer face or periphery of the spindle 8 when they successively form detents to hold the shade at any height by preventing the movement of the roller due to the fact that they are interposed between the edge 19 of one of the dogs 18 and the inner edge or corner of one of the walls 15 between which they constitute an arresting member or detent for preventing further revolution of the roller.

To disengage one of the balls from locking engagement with one of the walls of the pocket 16 and the edge 19 of one of the dogs the shade is pulled down sufficiently to permit the ball to drop into the outer portion of one of the pockets 16, thus allowing the shade to rotate and when the rotation is at high speed the balls will be thrown outwardly and be prevented from moving inwardly to the outer surface of the spindle 8 by centrifugal force and also by the outward throw or motion imparted to them by reason of encountering the outer curvilinearly-formed portions of the dogs 18 the tendency of which is to divert them outwardly and maintain them there until the rotation of the roller has been reduced sufficiently to permit one of them to fall by gravity into locking position. When the shade is released one of the balls will drop by gravity into operative position between the front edge or abutment of one of the dogs 18 and the inner corner of one of the walls of the pocket 16.

It will be observed that the central opening in the disk 13 and the opening in the ferrule 20 constitute bearings for preventing wabbling or distortion of the spindle 8 when in use and this is further aided by the fact that its inner end is recessed to receive the shaft 7. Furthermore, the shaft being in two pieces, one rotating upon the other, renders the manipulation of the entire device easier and more substantial. Furthermore, the interposition of the balls by gravity between a straight abutment such as is formed by the front edges of the dogs 18 and the inner edges of the walls 15 of the pockets 16 effects a perfect lock and one quicker in action than any form of dog that could be employed, the locking of the roller occurring at every semi-revolution when desired. It will be observed that the front edge 19 which engages the ball for locking the roller against movement is not radial to the axis of the spindle 8 but is on the contrary rearwardly-inclined so that it forms in a sense a sort of claw causing it to not only encounter the ball but grasp the same and prevent it from being thrown outwardly into such a position as to be beyond the reach of effective action therefrom.

The spring 9 mounted and anchored as described can be placed under tension by a very few revolutions of the roller thereby securing quicker action and as a consequence it runs very smoothly and the tension of the same is easily adjusted by reason of the perfect and effectual locking of the roller against movement at any desired point.

What I claim and desire to secure by Letters Patent, is:—

1. A device of the kind described comprising a rotatable roller having a recess at one end, a coiled spring in said recess secured to said roller, a non-rotative spindle extending into said recess connected with said spring, a member positioned on the end of said roller provided with an opening constituting a bearing for said spindle, said member further provided with projecting walls forming radial pockets, balls mounted in each of said pockets of such a diameter as to be prevented from falling therefrom by said spindle, a ferrule provided with an opening inclosing said spindle on the end of said roller, a loose washer on said spindle interposed between said spring and said member, dogs on said spindle provided with

forwardly-extending front edges arranged to engage said balls and force them against the inner edges of said walls for locking said roller against movement, the balance of the outer surface of said dogs being formed upon curvilinear lines gradually sloping inwardly to the periphery of said spindle whereby when said roller is rotated in one direction said balls will be forced into inoperative position by the curvilinear shape of said dogs.

2. A device of the class described comprising a rotatable roller having a recess in one end, a member provided with a central opening constituting a bearing positioned on and covering the recessed end of said roller, said member further provided with projecting walls formed by bending up the metal thereof constituting radially-placed pockets, a ball mounted in each of said pockets, a fixed spindle mounted in said roller and bearing, a coiled spring having one end anchored in said recess and connected at its opposite end with said spindle for causing rotative action of said roller, a ferrule inclosing said spindle positioned on the end of said roller and adapted to close the outer and lateral portions of said pockets, dogs on said spindle disposed within said member in alinement with said pockets provided with forwardly-projecting front edges arranged to engage said balls when said roller is rotated in one direction and force them against the inner edges of the walls of said pockets for locking the roller against movement, the rear portions of said dogs formed upon curvilinear lines gradually sloping to the periphery of said spindle, whereby when said roller is revolved in a reverse direction said balls will be forced into inoperative position in said pockets.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES O. BULOCK.

Witnesses:
C. E. HUMPHREY,
GLENARA FOX.