No. 698,620. Patented Apr. 29, 1902.

C. A. BAKER.

SHADE ROLLER AND BRACKET THEREFOR.

(Application filed Feb. 25, 1901.)

(No Model.)

Fig. 1.

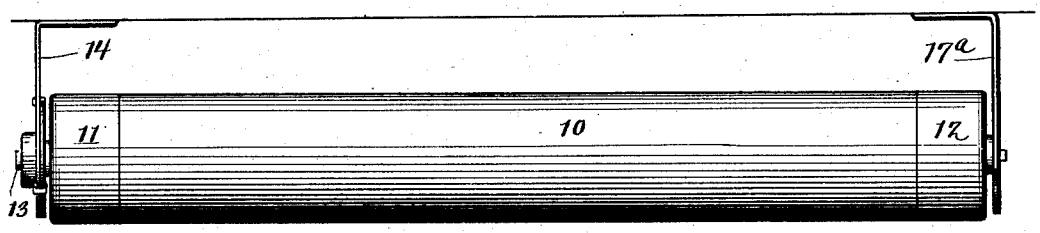


Fig. 2.

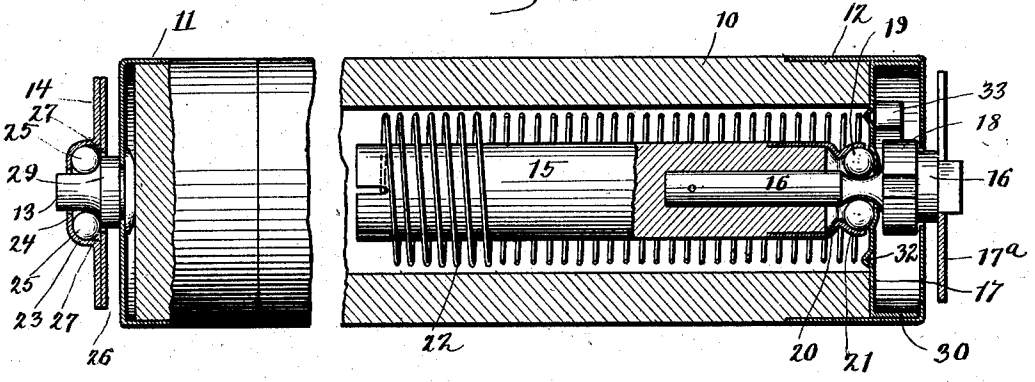


Fig. 3.

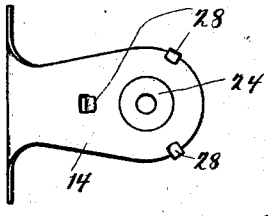


Fig. 4.

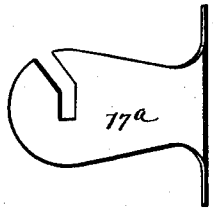
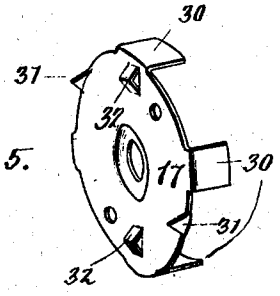


Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES A. BAKER, OF WAUKESHA, WISCONSIN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO STEWART HARTSHORN COMPANY, A CORPORATION OF NEW JERSEY.

SHADE-ROLLER AND BRACKET THEREFOR.

SPECIFICATION forming part of Letters Patent No. 698,620, dated April 29, 1902.

Application filed February 25, 1901. Serial No. 48,686. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. BAKER, a resident of Waukesha, in the county of Waukesha, in the State of Wisconsin, have invented certain new and useful Improvements in Shade-Rollers, of which the following is a full, clear, and exact description.

The object of my invention is to provide an improved form of ball-bearing shade-roller, and in particular to provide a suitable form of ball-bearing spring shade-roller whereby ease of operation is secured, the jamming of the roller in its fixtures and of the operating-spring and all wearing and rattling of the parts are prevented, and a smooth even rotation of the roller is secured.

The invention consists of the features of novelty hereinafter described, illustrated in the accompanying drawings, and particularly pointed out at the end of the specification.

In the drawings, Figure 1 is a plan view of the roller and its supporting-brackets. Fig. 2 is a view in vertical section of the same. Fig. 3 is an end view of the left-hand bracket. Fig. 4 is an end view of the right-hand bracket. Fig. 5 is a perspective view of the end plate of the roller.

The roller 10, whereon the shade is mounted, may be of any usual or suitable construction; but I have illustrated the ordinary form of wooden shade-roller provided with the usual cap-pieces 11 and 12. The roller could, however, be formed of a cylinder of sheet metal in the manner well understood in the art. The left-hand cap-piece 11 is provided with a central stud 13, secured thereto, which stud engages an opening in the left-hand supporting-bracket 14. The opposite end of the roller is provided with the usual longitudinal cavity within which is located the spring-carrying spindle 15, provided with a projecting stud or spur 16. To the end of the roller, inside of cap 12, is secured a plate 17, having a central opening through which projects the stud or spur 16. A bracket 17^a is provided for the end of the roller, having a rectangular slot which is engaged by the rectangular end portion of the spur 16, so that when the roller is in position the stud and spindle are held stationary in the usual manner, while the body of the roller and the end plate 17 revolve about the fixed spindle and stud, which serve as a bearing. In constructions heretofore used considerable friction has been developed between the fixed and revolving parts of this bearing, particularly if the shade-roller is held too tightly within its end brackets or if the end plate 17 is jammed between the end of the spindle 15 and the usual shoulder 18 upon the spur or stud 16, which is often the case if the stud or spur is driven too far into the end of the spindle. Moreover, the bearing between the supporting spur or stud and the thin end plate as usually constructed is easily worn, soon becomes loose, and the operation of the roller noisy and uneven. Friction will also be developed if, for example, the opening in the end plate 17 is too small. This friction so developed often interferes with the proper operation of the roller, necessitating a heavy spring and causes considerable wear of the various parts, and in prior constructions parts often become jammed together, so that the spring will fail entirely to operate. It has been the practice to overcome these obstacles by providing an unnecessarily large opening for the stud in the end plate 17 and by providing for considerable play of the plate 17 between the end of the spindle and the shoulder 18. The operation of such constructions is, however, necessarily accompanied by considerable rattling and wear, and even in such a construction the roller may be jammed so tightly within its supporting-brackets that the spring will fail to properly operate. To overcome these difficulties, I have provided a suitable form of ball-bearing between the fixed and rotating parts. The central opening in the plate 17 is sufficiently large to enable the spur or stud 16 to readily pass through without coming into contact with such end plate, and bearing-balls 19 are interposed between the end of the spindle 15, its stud 16, and the end plate 17. The end of the spindle 15 is provided with a ferrule 20, having a cup-shaped flange 21, projecting beyond the end of the

spindle and which engages the bearing-balls 19, whereby the latter are securely held in place between the end of the spindle and the plate 17. The stud or spur 16 and the plate 17 are provided with suitable annular grooves or raceways forming tracks for the bearing-balls 19. If desired, the spherical flange 20 may extend beyond the center of the balls, so that the balls will be retained in place upon the end of the spindle. Such a construction is not, however, necessary, since the operating-spring 22, secured at its inner end to the spindle 15 and at its outer end to the roller, will serve to urge the spindle 15 toward the right, and thereby secure the balls in position. By my improved construction all jamming, unnecessary wear, and rattle of the parts are prevented, a light operating-spring may be used, and a smooth even action of the roller is secured.

In order to further obviate the jamming of the operating-spring by positioning the roller too tightly within its brackets, I provide a peculiar form of bracket and supporting-stud for the opposite end of the roller. This bracket 14, of plate metal, is provided with an opening in the body of the bracket for receiving the stud 13. About the opening is formed a depression or cup-shaped annular groove or chamber on one side of the bracket 23, having an inwardly-extending flange 24. Within this depression is located the bearing-balls 25, which are held in place by a cover-plate 26, having an inwardly-extending flange 27, engaging the bearing-balls 25. Cover-plate 26 is held in place upon the bracket in any suitable manner—as, for example, by means of the bent lugs 28. The stud 13 is provided with a suitable annular shoulder or collar 29 to form a track for the bearing-balls. The end plate 17, as illustrated in perspective in Fig. 5, is of peculiar formation. It is stamped up from a piece of sheet metal and formed with the outwardly-turned peripheral lugs 30 for engaging the cap-piece 12 and with the inwardly-turned peripheral lugs 31 for engaging the end of the roller. By these lugs the plate is securely held and accurately centered upon the end of the roller. The lugs 31 are preferably pointed, whereby they may bite into the end of the wooden roller. V-shaped strap-loops 32 are stamped up from the body of the metal at diametrically opposite points, through which loops pass the end of the spring 22 and by which the spring is conveniently and firmly secured to the end plate 17. To the end plate 17 are pivoted the usual catch-pawls 33, which engage notches in the shoulder 18 in the manner well understood in the art.

It is manifest that the precise details of the construction above set forth may be varied within wide limits without departure from the spirit of the invention.

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

1. In spring shade-rollers, the combination with a roller having a cavity in one end, of a plate fixed to said end having a central opening, a spring-carrying spindle within said cavity having a roller-supporting spur extending freely through said opening, bearing-balls interposed between said end plate and said spur and means for holding said balls in position about said central opening.

2. In spring shade-rollers, the combination with a roller having a cavity in one end, of a plate fixed to said end having a central opening, a spring-carrying spindle within said cavity having a roller-supporting spur extending freely through said opening, bearing-balls interposed between said plate and said spur, said plate and spur being provided with grooved raceways for said bearing-balls, and means for holding the same in position about the central opening.

3. In spring shade-rollers, the combination with a roller having a cavity in one end, of a plate for said end having a central opening, a spring-carrying spindle within said cavity having a supporting-spur extending through said opening, bearing-balls interposed between said plate and said spur, said plate and spur being provided with grooved raceways for said bearing-balls and said spindle being provided with a ferrule having a cup-shaped end flange for retaining said balls in position.

4. In spring shade-rollers, the combination with a roller having a cavity in one end, of a plate fixed to said end having a central opening, a spindle within said cavity carrying a spring secured at its inner end to said spindle and at its outer end to the roller, said spindle having a roller-supporting spur extending through said central opening and balls interposed between the end of said spindle and said plate and bearing upon said spur, and means for holding said balls in position about said central opening.

5. In spring shade-rollers, the combination with a roller having a cavity in one end, of a plate fixed to said end having a central opening, a spring-supporting spindle within said cavity having a roller-supporting spur extending freely through said opening, bearing-balls interposed between said plate and the end of said spindle, and means for holding said balls in position about said central opening.

6. In spring shade-rollers, the combination with a roller having a cavity in one end, of a plate fixed to said end having a central opening, a spring-supporting spindle within said cavity having a roller-supporting spur extending freely through said central opening, a ferrule on the outer end of said spindle having a cup-shaped end flange, and bearing-balls within said cup-shaped flange and held in position thereby against said end plate and about the central opening therein.

7. In spring shade-rollers, the combination with a roller having a cavity in one end, of a plate fixed to said end provided with a cen-

tral opening and having a grooved raceway about said opening, a spindle within said cavity carrying a spring secured at its inner end to said spindle and at its outer end to the roller, said spindle having a roller-supporting spur extending freely through the opening in said end plate, a ferrule on the outer end of said spindle provided with a cup-shaped end flange and bearing-balls within said cup-shaped flange and held in position thereby in engagement with the grooved raceway in said end plate.

8. In a fixture for shade-rollers, the combination with a roller having a shouldered stud fixed to one end thereof, of a bracket for said end adapted to be rigidly held in position and provided with an opening for receiving said stud, said bracket being formed of two separate sheet-metal sections having inwardly-extending annular flanges forming the periphery of said opening, an annular depression in the body of one of said sections forming a ball-chamber intermediate said flanges, and bearing-balls in said chamber, said sections being rigidly secured together whereby said bearing-balls will be permanently retained in position between said flanges and about the periphery of said opening.

9. A bracket for shade-rollers provided with an opening for receiving the end stud of a roller said bracket being formed of two separate sections having inwardly-extending annular flanges forming the periphery of said opening, bearing-balls retained in position between said flanges about the periphery of said opening and lugs upon one of said sections for engaging the other section, whereby said parts are secured together.

10. In a spring shade-roller having an end cap-piece, an end plate 17 stamped up from sheet metal and having the outwardly-extending peripheral lugs 30 for engaging the end cap-piece of the roller, the inwardly-extending peripheral lugs 31 for engaging the end of the roller, a central opening and the V-shaped strap-loops 32, substantially as described.

11. In a shade-roller having an operating-spring, an end plate 17 therefor, stamped up from sheet metal and having the inwardly-extending peripheral lugs 31 for engaging the end of the roller, a central opening and the V-shaped, spring-supporting strap-loops 32, substantially as described.

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