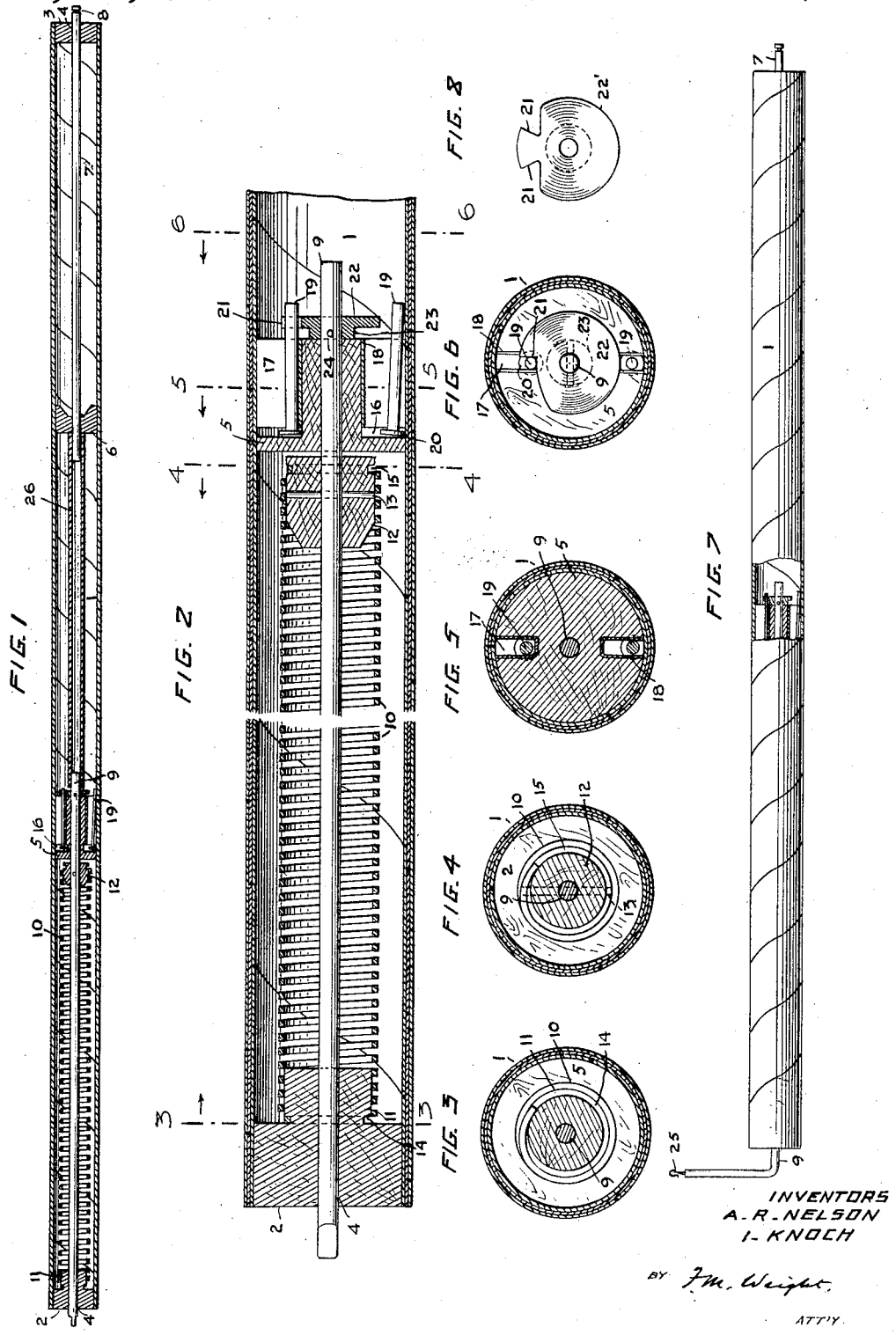
A. R. NELSON AND I. KNOCH.

WINDOW SHADE HOLDER.

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1,329,992. Patented Feb. 3, 1920.



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WINDOW-SHADE HOLDER.

1,329,992. Specification of Letters Patent. Patented Feb. 3, 1920.

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To all whom it may concern:

Be it known that we, ANTON R. NELSON and ISAAC KNOCH, citizens of the United States, residing in Susanville, in the State of California, have invented new and useful Improvements in Window-Shade Rollers, of which the following is a specification.

The present invention relates to improvements in the rollers of window shades, the object of the invention being to provide a roller which shall be simple and inexpensive in construction, noiseless in operation, and dust proof, and which can readily be fitted to windows of different widths.

In the accompanying drawing, Figure 1 is a longitudinal sectional view of the improved roller; Fig. 2 is an enlarged longitudinal sectional view of a portion thereof; Figs. 3, 4, 5, 6, are transverse sections on the lines 3—3, 4—4, 5—5, 6—6, respectively of Fig. 2; Fig. 7 is a broken side view of a modified form of the invention; Fig. 8 is a detail side view of a part used in said modified form.

Referring to the drawing, 1 indicates the hollow tube of our improved roller. A great improvement over prior shade rollers consists in making this hollow tube of paper, wound helically in three or four plies, as may be found desirable, and cemented together. The paper tube has the advantage of withstanding rough usage in handling and can be dented or marred without throwing the same out of alinement and is cheaper than either wood or tin, which are commonly used.

In the ends of said tube are driven, with a tight fit, plugs 2, 3, of wood, each having a central hole 4 to form a bearing for a metal shaft. Likewise in the mediate portion of the tube there are driven, with a tight fit, wooden plugs 5, 6. A metal shaft 7, extends through holes in the plugs 3 and 6, and has an annular groove 8 formed around its outer terminal portion to fit in the usual rounded hole in the supporting bracket at the adjacent end of the roller. The above construction permits of the length of the roller being readily varied to suit the width of a window. For it is only necessary to shorten the roller at the end in which is the plug 3, and also the shaft 7, and to again fit the plug 3 in the end of the roller. The plug 5 has a central bearing for the inner end of a metal shaft 9, in alinement with the shaft 7, the shaft 9 also extending through the bearing in the plug 2 and having a rectangular outer end, as is common with shade rollers, to fit in the usual rectangular recess in the bracket at the other end of the roller. A tube 26 fits closely around the inner ends of the shafts 7, 9.

Between the plugs 2 and 5 extends a helical spring 10, its ends being coiled, one around an inward extension 11, reduced in diameter, of the plug 2, and the other around a wooden sleeve 12, pinned, as at 13, to the shaft 9. The extreme terminal coils of the helical spring are received in grooves 14, 15, in the extension 11 and sleeve 12 respectively, while the adjacent coils fit around said extension and sleeve. The spring 10 is not, however, positively secured to said extension and sleeve, since it has been found to be sufficiently secured if coiled around the same with a fairly tight fit, because any rotary motion of the plug 2 and the sleeve 12 relative to the spring, which would tend to wind up the spring, operates by friction to contract the ends of the spring upon the extension and sleeve so that said ends grip said extension and sleeve tightly. This arrangement is very advantageous, as tending to simplicity and economy of construction, since it avoids the expenditure of material and labor required for positively fastening the ends of the spring upon the extension and sleeve.

Our invention also comprises an improved form of locking device for locking the roller in any position in which it is brought to rest. The plug 5 is formed, near its end next the sleeve 12, with a deep circumferential groove 16, and extending longitudinally from said groove 16 to the other end of the plug are diametrically opposite grooves 17, having metallic linings 18, the depths of said longitudinal grooves 17 being slightly less than that of the circumferential groove 16. In said longitudinal grooves are dogs 19, resembling small, round nails with their pointed ends cut off. Their heads 20 are contained in the circumferential groove 16 and are too large to pass into the longitudinal grooves 17. When the roller is turning very slowly in the direction to unwind the spring, one or the other of said dogs is arrested by a shoulder 21 of a disk 22 having a reduced portion 23, which serves as a washer to space the disk from the plug 5, and is pinned, as at 24, to said shaft 9. But, if said roller is rapidly turned against the

tension of said spring, the rapid rotary movement of the roller causes the dogs 19 to move outward by centrifugal force and avoid the shoulder 21, so that said roller can then also turn in the direction in which the spring is unwound until brought to rest by the hand of the operator controlling the further upward movement of the shade, whereupon one or the other of said dogs 19 drops and abuts against the shoulder 21, and said roller is again locked against a movement tending to unwind the spring.

Figs. 7 and 8 illustrate a modified form of mounting of a roller for use with a window shade which is adapted to be given a movement of translation or rotation, each independently of the other. In this form of the invention the shaft 9 is bent up at its outer end and formed into a hook 25, to which hook and to the outer end of the shaft 7 can be attached cords running around pulleys and carrying counterweights at the opposite sides of the window in the manner explained in our application for Letters Patent of the United States, filed May 1, 1916, Serial No. 94,627. Also in this form of the invention the disk 22′ has two shoulders 21 instead of one, and thus serves to lock the roller, when it has been brought to rest, against a slow movement in either direction.

The advantages of our invention are:—

1. Simplicity and cheapness of construction. The roller itself is made of paper, and can be produced in large numbers by machinery at a comparatively small expense. The plugs are of wood driven tightly into the roller. Thus it will be seen that there need be no metal parts except the shafts, spring, dogs and disk.

2. The shaft bearings are long, smooth and noiseless. The shade in being raised or lowered does not make sufficient noise to be heard by a person in the same room.

3. The roller can operate for a very long time without care or attention, since it is dust proof, both ends of the roller being plugged and the holes in the plug being filled by the shafts therein.

4. The roller is locked and unlocked very easily, because the dogs are very sensitive in their action, and the dogs have the further advantage that the ratchet mechanism can be mounted inside a very small tube.

5. The method of fastening the ends of the spring leads to great economy in construction.

We claim:

1. Gravity mechanism for locking a device rotatable about a shaft, comprising a disk secured to the shaft and having a shoulder, a device loosely surrounding the shaft adjacent to said disk and having therein a circumferential groove, and a groove leading longitudinally from said circumferential groove to the end of the device nearer to the disk, and a dog in said latter groove having a head in the circumferential groove, its end remote from said head projecting from the former groove and adapted to engage said shoulder of the disk.

2. Gravity mechanism for locking a device rotatable about a shaft, comprising a disk secured to the shaft and having a shoulder, a device loosely surrounding the shaft adjacent to said disk and having therein a circumferential groove, and grooves leading longitudinally from said circumferential groove to the end of the device nearer to the disk, and dogs in said latter grooves having heads in the circumferential groove, their ends remote from said heads projecting from the former grooves and adapted to engage said shoulder of the disk.

3. In means for controlling the rotation of a tube around a shaft therein, devices surrounding the shaft and attached respectively thereto and to the tube, and a coiled spring around the shaft and both devices, said devices having circumferential grooves, each terminal coil of the spring being contracted and received within one of said grooves, and the coils adjacent to said terminal coils surrounding said devices with a close fit and without being stretched.

4. A shade roller comprising a rigid tube, a stationary shaft extending longitudinally within the tube, and wooden bearings secured to and within the tube and fitting snugly around the shaft.

5. A window shade roller comprising a tube consisting of a plurality of coaxial paper helices, the edges of adjacent turns of each helix abutting against each other without overlapping, and cement securing the several helices together, bearings in the ends of the tube, and a shaft passing through said bearings.

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