June 17, 1924. 1,497,849

A. L. HART

WINDOW SHADE ROLLER

Filed Sept. 13, 1921

Fig. 1.

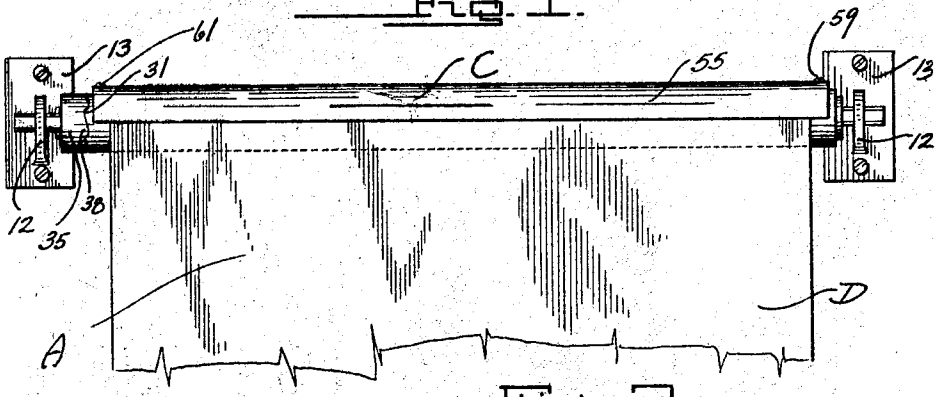


Fig. 2.

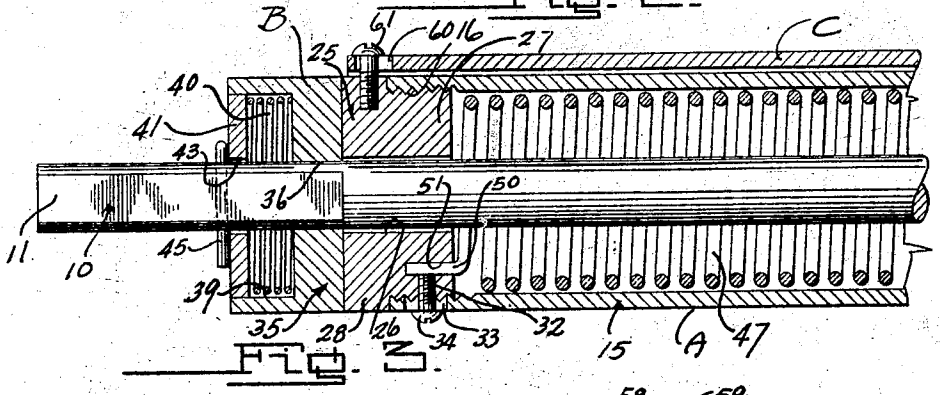


Fig. 3.

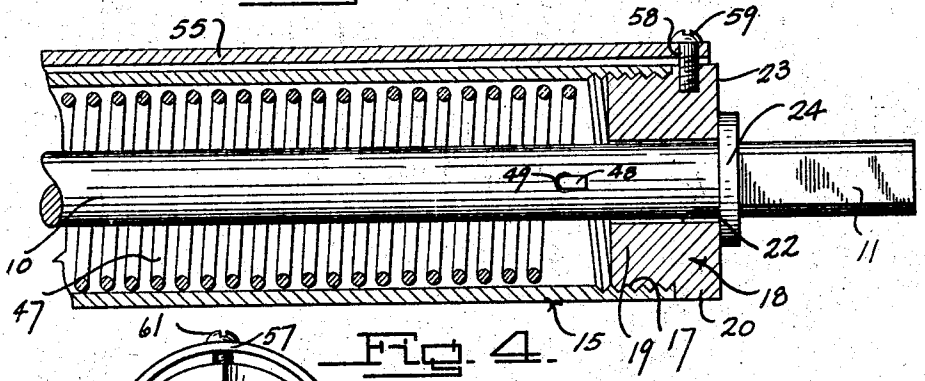
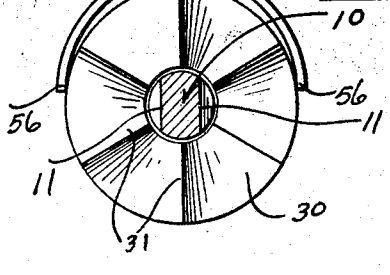


Fig. 4.



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UNITED STATES PATENT OFFICE.

AMOS L. HART, OF SAFETY HARBOR, FLORIDA.

WINDOW-SHADE ROLLER.

Application filed September 13, 1921. Serial No. 500,311.

To all whom it may concern:

Be it known that I, AMOS L. HART, a citizen of the United States, residing at Safety Harbor, in the county of Pinellas and State of Florida, have invented certain new and useful Improvements in Window-Shade Rollers, of which the following is a specification.

This invention relates to improvements in shade supporting devices.

The primary object of the invention is the provision of a shade roller of novel type, including a clamping apparatus for supporting a shade in detachable manner, without liability of injury to any details of the shade roller.

A further object of the invention is the provision of a shade roller including a clutch element of novel design, and of an adjustable nature to compensate for wear incident to use.

A further object of the invention is the provision of a shade roller device of the above described character, the details of which have been constructed in view of durability, and ease of operation.

Other objects and advantages will be apparent during the course of the following detailed description.

In the accompanying drawing, wherein similar reference characters designate corresponding parts throughout the several views,

Figure 1 is a front elevation of the improved shade controlling device, showing a shade in operative attachment therewith.

Figure 2 is an enlarged cross sectional view of one end of the shade roller, showing the clutch mechanism thereon.

Figure 3 is an enlarged cross sectional view of the end of the roller opposite to the end shown in Figure 2.

Figure 4 is an end elevation of the roller, showing certain details of the clutch mechanism removed.

In the drawing, wherein for the purpose of illustration is shown a preferred embodiment of my invention, the letter A designates the improved shade control and supporting device, including the novel clutch mechanism B; and shade supporting device C.

The supporting rod 10 is provided, as part of the shade roller, extending for the entire length thereof, and the body portion of which is circular in cross section, the ends thereof being flattened, on diametrically opposed sides thereof at 11, for reception within the hanger elements 12 of suitable bracket structures 13, whereby the supporting rod 10 may be maintained in stationary position. A roller casing 15 is provided, of metal, wood or any preferred material, the same being tubular in formation and having the opposite ends thereof internally screw threaded, as at 16 and 17. A plug 18 is provided for attachment in the screw threaded end 17 of the roller 15, and includes a screw threaded shank portion 19 for engagement in detachable manner in the end 17, a head 20 being provided upon the plug 18, whereby the exterior circumferential surface of said head may lie flush with the outer circumferential surface of the casing 15. In position on the supporting rod 10, the circular body portion of said rod 10 is axially extended through an aperture 22 in the plug 18; the exterior end face 23 of the plug 18 contacting the annularly extending flange 24, formed integral on the supporting rod 10, and whereby said plug 18 may be rotated with respect to the supporting rod 10. Thus, an end portion of the supporting rod 10 having the flattened sides 11 thereon projects outwardly from the flange 24 and plug 18, for reception in the bracket 13.

The clutch device B preferably includes a plug element 25 having an axial aperture 26 therethrough, whereby the same is disposed over the circular portion of the rod 10 for rotation thereon. The plug 25, moreover, includes the internally screw threaded shank 27 for engagement in the internally screw threaded end 16 of casing 15, and having a head 28, the circumferential surface of which is adapted for lying flush with the outer circumferential surface of casing 15, when said plug 25 is assembled thereto. The plug 25 is the essential jaw element of the clutch B, and is provided upon the end face 30 thereof with the teeth 31, which radiate in any approved manner from the center of the plug; the apexes of said teeth 31 being rounded. It is preferred, that the plug 25 be made adjustable in the casing 15, in a positive manner. To this end, a screw threaded aperture 32 has been provided radially in the shank 27. A slot 33 has likewise been provided through the screw threaded end 16 of casing 15, and adapted to co-act with the aperture 32, to receive a detachable screw 34, whereby the plug 25 may be ad-

justed outwardly or inwardly in the casing 15, by relative rotation therewith, the screw 34 being provided to hold said plug 25 in the desired adjustment.

A clutch jaw member 35 is provided for cooperation with the plug 25, the same having a central aperture 36 therein, of such design as to conform to the flattened sides 11 of the supporting rod 10 and to permit relative sliding longitudinally of the supporting rod 10 and on a flat end thereof; and the member 35, however, being prevented from relative rotation upon the supporting rod 1—, through conformity of the aperture 36 to the flattened sides 11. The outer circumference of the member 35 is struck from the same radius as that of the casing 15, and lies flush with the outer surface of said casing 15. The side of the jaw member 35 facing toward the toothed side 30 of plug 25, is provided with teeth 38 formed in radial manner thereon for cooperation with the teeth 31 of plug 25. A recess 39 is provided inwardly from the end face of the jaw member 35, and extends annularly around the projecting end of the supporting rod 10, and for receiving a clutch spring 40. A washer or disc 41, is provided for reciprocation within the recess 39, and is of sufficient size to fit snugly therein for sliding movement, in order to compress the spring 40 under an initial compression. An aperture 43 is provided, in the washer 41, for receiving the flat end of supporting rod 10. A cotter pin or other split pin 45 is provided, extending transversely through a suitable aperture in the flattened end of the supporting rod 10, and normally bearing against the outer surface of the washer 41, to maintain the spring 40 under compression, whereby the jaw member 35 is forced into engagement with the jaw plug 25, thereby holding the teeth 38 into engagement with the teeth 31.

A spiral main spring 47 is provided, extending longitudinally through the interior of the roller casing 15, one end 48 of said main spring 47 being affixed transversely through an aperture 49 in the supporting rod 10 and adjacent the attaching plug 18. The opposite end 50 of the spring 47 is bent outwardly, and seated within an aperture 51, whereby the locking screw 34 serves a second purpose in bearing upon this end 50, and maintaining the main spring 47 in proper position in the casing 15, and under an initial compression.

In operation, it can readily be seen that the casing 15, as well as the end plugs 18 and 25 therein, are rotatably mounted with respect to the supporting rod 10. As before mentioned, the jaw member 35, is non-rotatably mounted on the rod 10. Consequently, when a shade B attached to the roller 15 is properly wound thereabout, and then pulled down in the ordinary manner, the casing 15 will be rotated relative to the supporting rod 10 and the main spring 47 placed under additional compression. The jaw member 35 being forced by its spring 40 into engagement with the plug 25, will, due to the cooperating series of teeth 38 and 31, hold the shade in a desired position against the compression in spring 47. The points of the teeth 38 and 31 have been rounded, whereby when the shade B is quickly released, said teeth will be moved relative on each other, for raising the shade B. As the teeth of the clutch device B become worn, the plug 25 may be fed outwardly in desired position to cooperate with the compression on the spring 40 in providing an effective clutch structure.

Referring now to the shade clamping means C, the same mainly include a strip 55, arcuated in cross section for the entire length thereof, and greater in length than the width of shade D, preferably projecting over the ends of the shade it is attached to the shade roller A. It is preferred, that the arcuation of the strip 55, be formed on a radius which is less than the radius of the external surface of casing 15. Thus, when the strip 55 is placed over the casing 15, the extreme ends 56 thereof will contact the sides of said casing or roller A throughout the strip 55, the central portion 57 of the strip 55 being spaced above the external surface of the roller A throughout the length thereof. One end of the strip 55 adapted for adjacent placement with respect to the plug 18 is provided with an aperture 58, whereby an adjusting screw 59 may be disposed therein for engagement in an aperture of the head 20 of plug 18, substantially as illustrated in Figure 3 of the drawings. Similarly, the opposite end of the strip 55 is provided with a slotted aperture 60 extending longitudinally in the central portion 57 thereof, and adapted for receiving an adjusting screw 61, whereby said adjusting screw 61 may be inserted therethrough and into an aperture in the head portion 28 of the plug 25, substantially as indicated in Figure 2 of the drawings.

In applying the shade D to the improved roller appliance A, the same is wrapped about the casing 15 for a complete turn. The strip 55 is next placed in the manner above described onto the device A, whereby the extreme longitudinal edges 56 of said strip 55 frictionally engage the portion of shade D, which is wrapped about the roller A. Upon adjustment of the screws 59 and 61, the strip 55 will be distorted to force the longitudinal edges 56 into clamping engagement with the roller A and whereby the shade D will be frictionally clamped throughout its length by said edges 56. Attention is directed to the fact that the width of the shade D is such that the marginal

edges thereof fall within the space between the adjusting screws 59 and 61, as can be readily seen from Figure 1 of the drawings, thereby preventing any attaching elements from tearing or puncturing shade D.

Various changes in the shape, size and arrangement of parts, may be made to the form of the invention herein shown and described, without departing from the spirit of the invention or the scope of the claims.

I claim:

1. A device of the class described, comprising in combination a supporting rod, a tubular casing, detachable plugs in each end of said casing rotatably supporting said casing about said supporting rod, a clutch member on said supporting rod non-rotatable thereon but slidable longitudinally thereof to engage one of said plugs, spring means normally forcing said clutch member into engagement with said plug, and a main spring in said roller casing connecting said rod and one of said plug members.

2. A device of the class described, comprising in combination a supporting rod circular in cross section and having diametrically opposed flattened surfaces upon each end thereof, a tubular casing being internally screw threaded on each end, a plug detachably mounted in one end for rotation about said rod, a plug detachably and adjustably mounted in the other end of said casing and rotatable about said rod, a screw connecting said roller casing and said last mentioned plug for positive adjustment of said plug and casing, said plug having teeth formed on the outer end face thereof, a clutch jaw slidably and non-rotatably mounted upon the flattened end of said supporting rod and having teeth for cooperation with the teeth on said last mentioned plug, a spring means within said clutch jaw for normally forcing the same into engagement with said adjustable plug, said rod when mounted in assembled position having the flattened ends thereof projecting outwardly whereby the rod may be supported in stationary position.

3. A window shade fixture comprising a supporting rod, a roller for rotatable mounting upon said rod so that the ends of the rod extend outwardly of the roller, spring means normally tending to maintain the roller in one position upon the rod, means at one end of the rod preventing the roller from moving endwise off the rod, and clutch means at the other end of the roller including a clutch part longitudinally slidable upon said rod and non-rotatable thereon having a pocket therein, a washer slidable on said rod and normally within the pocket of said clutch part, an abutment rigid with said rod against which said washer bears exteriorly of the pocket of said clutch part, and a spring compressed within the pocket of said clutch part acting upon said clutch part and against said washer, whereby the clutch part is frictionally held in engagement with its adjacent end of the roller, said spring acting longitudinally upon the roller to normally force the same axially of the rod upon which it is positioned.

AMOS L. HART.