June 24, 1930. W. F. HECKMAN 1,766,746

SPRING ROLLER CONTROLLING DEVICE

Filed March 1, 1929

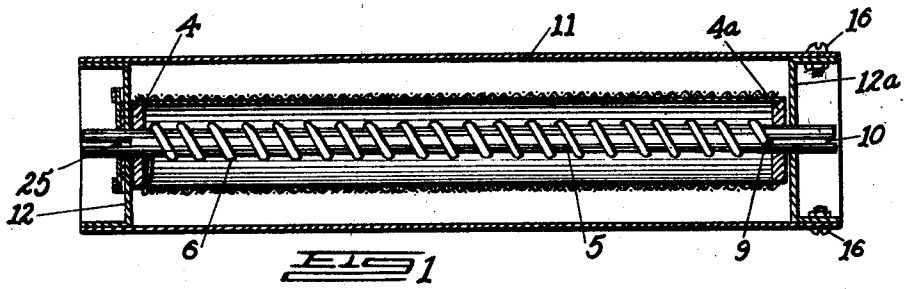


FIG 1

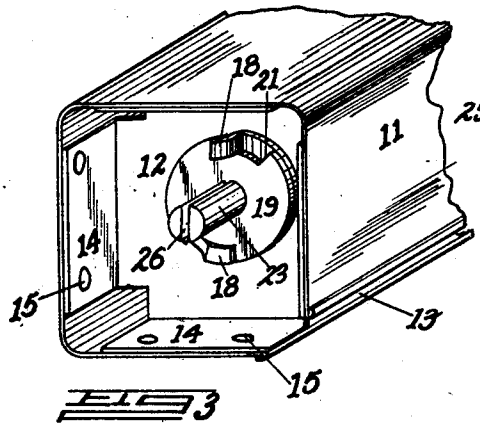


FIG 3

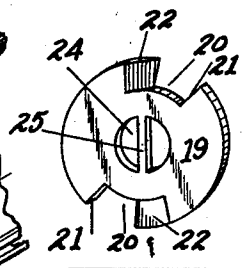


FIG 4

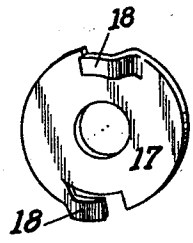


FIG 5

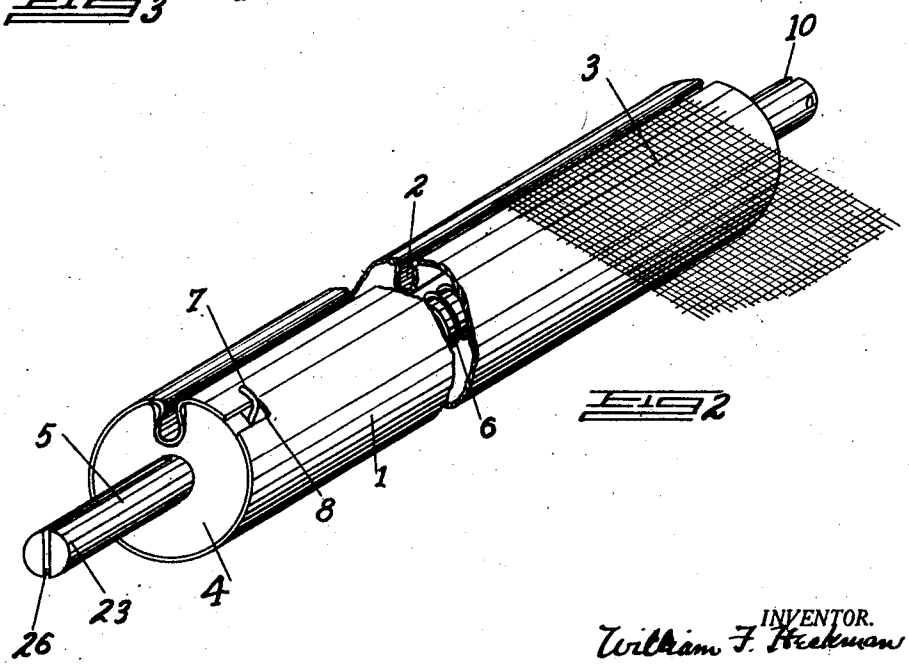


FIG 2

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UNITED STATES PATENT OFFICE

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SPRING-ROLLER-CONTROLLING DEVICE

Application filed March 1, 1929. Serial No. 343,748.

My invention has to do with devices for controlling the spring rollers of roll closures, and particularly roll screens, in connection with which I shall describe a preferred embodiment of my invention, it being understood that it is equally adaptable to roll closures of other types.

In roll screens there is a spring roller upon which the screen is wound. This roller is mounted within a housing, usually at the top of a window opening. The free end of the screen passes through a slit in the housing and is fastened to a draw or tension bar. By means of this bar, which rides in guides at the sides of the window, the screen cloth may be withdrawn from the housing until it covers the window opening, the bar being fastened at the end of its travel or along the guides as desired. This of course, obviates the necessity of a ratchet mechanism to hold the roller at various positions so that the screen may stand at varying heights, as is common in blinds. Means must be taken, however, to control the minimum tension on the roller so that the screen may, when desired, be fully redrawn into the housing.

It is an object of my invention to provide a means for controlling the preliminary or minimum tension on the spring roller, which means shall form part of the mounting thereof.

It is an object of my invention to provide control means which shall serve to retain the parts of the spring roller in operative relationship.

It is another object of my invention to provide control means which are easily operable, positive in engagement, but readily adjustable to vary the tension when desired.

It is still another object of my invention to provide control means which are inexpensive to construct and do not add appreciably to the cost of the roll screen.

These and other objects of my invention, which will be apparent upon reading these specifications, I accomplish by that certain construction and arrangement of parts of which I shall now describe a preferred embodiment, reference being had to the drawings accompanying these specifications.

In the drawings:

Figure 1 is a section through a spring roller and its housing.

Figure 2 is a perspective of the spring roller.

Figure 3 shows the end of the roller housing with my controlling means in place.

Figure 4 is the movable washer.

Figure 5 is the fixed washer.

Spring rollers commonly comprise a metallic cylindrical member with a channel 2 therein for the attachment of the screen cloth 3. Metal plugs or closure members 4 and 4ª are fitted into each end of the cylinder and may be held in place therein in any manner desired. These plugs are bored centrally to receive the shaft 5 about which the roller rotates. A coil spring 6 surrounds the shaft. One end of it, 7, is brought through a hole 8 in the cylinder and bent over so that this end of the spring is effectually prevented from rotating with respect to the cylinder. The other end 9 of the spring is brought through a slot 10 in the shaft so that it is effectually prevented from rotating with respect to the shaft. It will now be clear that the roll proper may rotate with respect to the shaft, but only against the resilience of the spring 6.

The slot 10 in the shaft terminates within the cylinder just beyond the plug 4ª, and the bent over end 7 of the spring, passing through the slot and abutting the end thereof, forms a shoulder or stop to prevent the removal of the shaft from the cylinder toward the right in Figure 1. No such stop exists upon the left end of the shaft, so that the shaft could be withdrawn from the cylinder toward the left.

One purpose of my controlling mechanism is to hold the parts in operative relationship and to prevent the removal of the shaft, in a manner hereinafter to be described.

The roller is mounted in a housing having a box-like enclosing section 11 and end members 12 and 12ª. The section 11 is commonly made of a single piece of metal bent to form four sides with a slot or opening 13 for

the passage of the screen at the juncture of two sides. The end members have bent up flanges 14 which lie along the sides of the box section. The member 12 is conveniently fastened into the box section by spot welding as at 15; but the member 12a and the end of the box section into which it fits are provided with holes for the passage of the bolts 16, so that after the assembly of the roller in the housing, the end member 12a may be inserted and bolted in place. It will be understood that the end members 12 and 12a are perforated to receive the ends of the shaft.

To the member 12, on the outside, I fasten a fixed washer 17, perforated to receive the shaft, and provided with tongues bent so as to have their ends parallel to, but offset from the plane of the washer by the thickness of a second washer hereinafter to be described. The washer 17 may conveniently be attached to the member 12 by spotwelding; but it is to be noted that I may otherwise attach the washer, or instead of using a washer, I may strike the tongues 18 up from the body of the end member 12. The use of a separate washer is advantageous and preferable because it makes possible the use of heavier metal in the tongues 18 (which have to stand considerable strain) than it is convenient to use in the end member itself.

I next provide a second or slidably movable washer 19 having notches 20 to admit the tongues 18, and forming shoulders 21 against which the offset portions 18a of the tongues may bear to prevent rotation of the washer. The portions opposite the shoulders 21 are tapered off as at 22 to facilitate the engagement thereof under the tongues 18. This washer is also perforated to receive the end 23 of the shaft as at 24; but the perforation is traversed by an integral solid rib 25. The end 23 of the shaft is slotted as at 26; and the rib fits into the slot so the washer 19 is slidably but not rotatably mounted upon the shaft.

The various parts are assembled in operative relation as is shown in section in Figure 1 and in perspective in Figure 3. As has already been explained, the washer 17 is secured to the end closure member 12 and the washer 19 engages the shaft and overlies the washer 17. It will be clear that if a key or handle be attached to the end 23 of the shaft 5, that the shaft may be rotated in a counter clockwise direction. When this is done, the portion 21 will ride over the tongues 18. When the desired rotation has been accomplished, the washer 19 may be pushed or allowed to fall back against the washer 17 and the chamfered portions 22 will engage beneath the tongues 18 and rotation in a counter-clockwise direction will be impossible. In this way a preliminary tension is built up in the spring 6, since the screen 3 holds the cylindrical member 1 against rotation. This is true whether the screen be withdrawn from the housing or not, since, when it is retracted into the housing to its fullest extent, a draw bar (not shown) lies outside the housing and against the slot, preventing a further movement of the screen. Furthermore, the washer 19 prevents the rotation of the shaft during the withdrawal of the screen from the housing, and after it is withdrawn.

When the portions 22 are engaged beneath the tongue 18, it will be obvious that the washer 19 will be held in contact with the washer 17 and prevented from longitudinal motion along the shaft. I terminate the slot 26 in the end 23 of the shaft just inside the housing. If an attempt be made to remove the shaft toward the left in Figure 1, the bar 25 will inhibit such withdrawal as soon as it abuts the end of the slot 26. Thus the washer 19 not only serves to prevent the rotation of the shaft but also to prevent its endwise withdrawal in one direction and thus to hold the parts in operative relationship. Various modifications of my invention may be made by those skilled in the art without departing from the spirit thereof.

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

1. In a controlling device for spring rollers, a shaft, a support through which said shaft extends, a member mounted on said shaft to rotate therewith, and engaging means on said support to engage said rotatable member to prevent the rotation thereof and to prevent the longitudinal movement thereof along said shaft.

2. Controlling means for spring rollers comprising a shaft and support therefor, a non-revolvable member affixed to said support, a member on said shaft to rotate therewith in relation to said fixed member, an engaging means on said fixed member to inhibit said rotation and to prevent longitudinal movement of said member on said shaft.

3. Controlling means for spring rollers comprising a shaft and support therefor, a non-revolvable member affixed to said support, a member on said shaft to rotate therewith in relation to said fixed member, and engaging means on said fixed member to inhibit said rotation and to prevent longitudinal movement of said member on said shaft, said means comprising tongues offset from said fixed member and portions in said rotatable member adapted to be engaged by said tongues.

4. In a controlling device for roll closures, a shaft and a support therefor, a member on said shaft revolvable therewith and comprising a washer with notches therein, tongues affixed to said support and adapted

to extend through the notches in said washer and to overlie said washer when in engaged position whereby the rotation of said washer is inhibited and whereby the withdrawal of said washer from said support is inhibited.

5. In a controlling device for roll closures, a shaft and a support therefor, a fixed washer on said support having tongues, a movable washer on said shaft having notches to be engaged by said tongues, said movable washer non-rotatable but slidable with respect to said shaft.

6. In a controlling device for roll closures, a shaft and a support therefor, a fixed washer on said support having tongues, a movable washer on said shaft having notches to be engaged by said tongues, said movable washer non-rotatable but slidable with respect to said shaft, and stop means limiting endwise movement of said shaft against said movable washer when said washer is engaged by said tongues.

7. In a controlling device for spring rollers, a shaft and a support therefor, a fixed washer having tongues fastened to said support, a movable washer having notches fastened to said shaft so as to be non-rotatable therewith, said shaft having a slot therein and said movable washer having a bar fitting into said slot whereby rotation of said movable washer with respect to said shaft is inhibited.

8. In a controlling device for spring rollers, a shaft and a support therefor, a fixed washer having tongues fastened to said support, a movable washer having notches fastened to said shaft so as to be non-rotatable therewith, said shaft having a slot therein and said movable washer having a bar fitting into said slot whereby rotation of said movable washer with respect to said shaft is inhibited, said tongues offset from said fixed washer a distance equal to the thickness of said movable washer and having portions parallel to said fixed washer said portions adapted to engage portions of said movable washer whereby movement of said washers away from each other is inhibited when they are in engaged position, said slot in said shaft terminating in an abutment engaging said bar whereby, when said washers are engaged, longitudinal movement of said shaft in one direction is inhibited.

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