Sept. 24, 1929. H. W. SHONNARD 1,729,133

CURTAIN ROLLER

Filed June 4, 1925 2 Sheets-Sheet 1

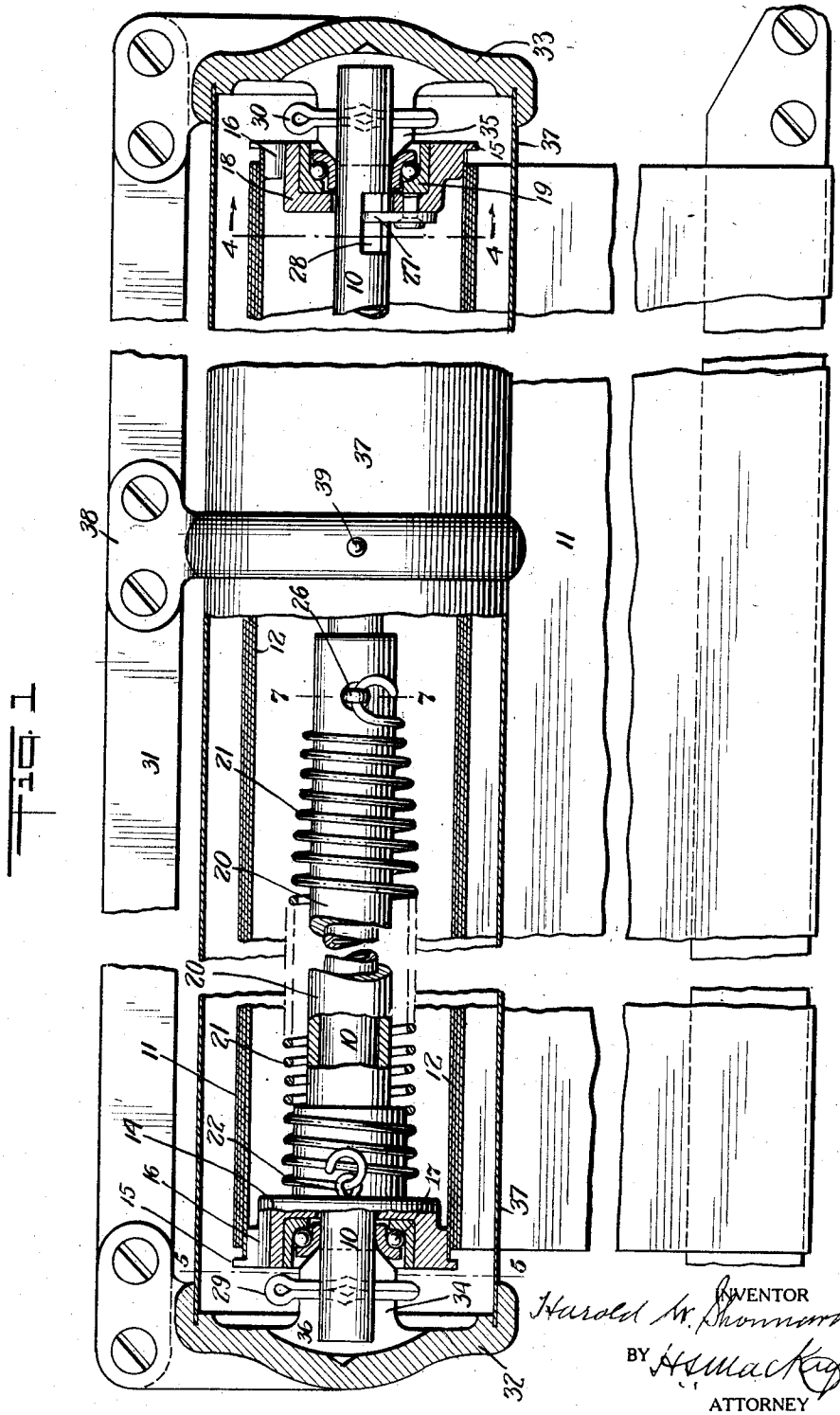


FIG. 1

INVENTOR
Harold W. Shonnard
BY Hamilton Kaye
ATTORNEY

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CURTAIN ROLLER

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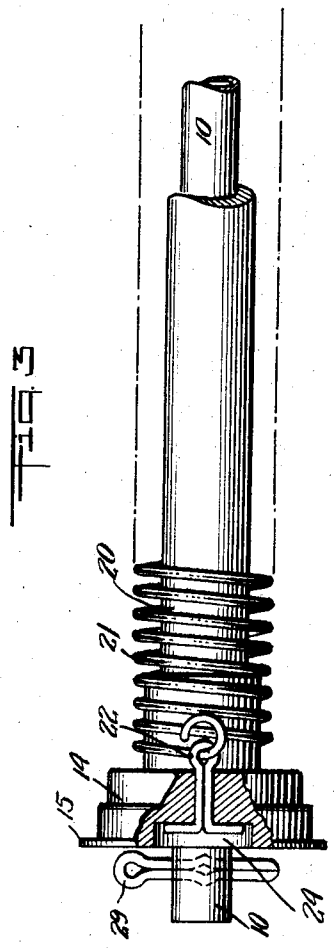


FIG. 3

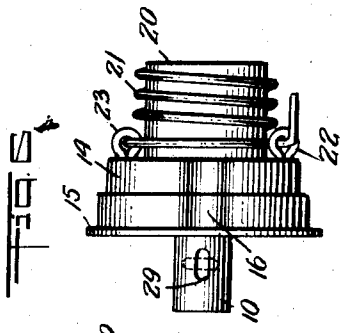


FIG. 5

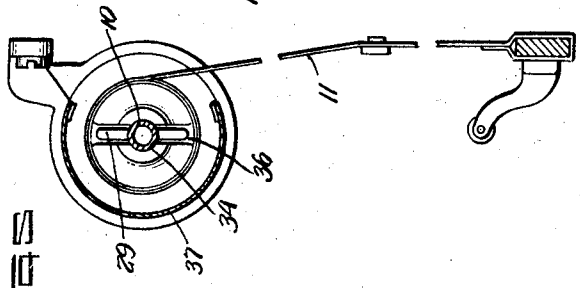


FIG. 6

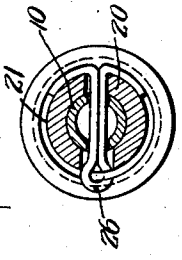


FIG. 7

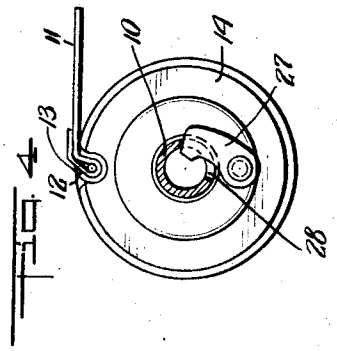


FIG. 4

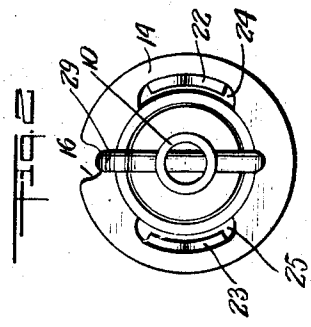


FIG. 2

Harold W. Shonnard
INVENTOR

BY Hamack & Co.
ATTORNEY

Patented Sept. 24, 1929 1,729,133

UNITED STATES PATENT OFFICE

HAROLD W. SHONNARD, OF MONTCLAIR, NEW JERSEY, ASSIGNOR TO ELEVATOR SUPPLIES COMPANY, INC., A CORPORATION OF NEW JERSEY

CURTAIN ROLLER

Application filed June 4, 1925. Serial No. 34,756.

The present invention relates to an improved form of spring roller for shades and curtains, and more particularly to a device of this kind specially adapted for use in connection with the automatic flexible guard for elevator doors, shown described and claimed in my pending application for patent, Serial Number 16,214, filed March 17th, 1925.

The principal object of this invention is to provide a construction for the purpose mentioned which shall be as simple as possible, and be easily assembled, adjusted and taken apart by anyone without using special tools. Further objects and advantages of the invention will appear hereinafter.

The invention is illustrated in the accompanying drawings wherein Figure 1 is a view partly in elevation and partly in longitudinal section of my improved roller as used in connection with elevator doors, the same being shortened materially to bring it within the limits of the sheet, Figure 2 is an end view of the roller and shaft removed from their supports, Figure 3 is a view in elevation, partly broken away of one end of the fixed shaft together with a bearing support or end collar and spring and sleeve, Figure 4 is a transverse sectional view on the line 4—4 in Figure 1, Figure 5 is a similar view on the line 5—5 in Figure 1, Figure 6 is a view in plan of one end collar and spring as seen at right angles to the aspect of Figure 3 and Figure 7 is a transverse sectional view on the line 7—7 in Figure 1.

In the preferred form herein shown, my improved roller forms part of a unitary structure in which the roller and its support are adapted to be applied to or removed from a door or window together. Accordingly I shall describe the invention as so embodied, although some features herein claimed are not necessarily used in a complete unitary structure of this kind.

It is one of the advantages of my invention that the roller proper, spring and shaft are formed of few pieces which are easily put together, taken apart and adjusted by unskilled persons.

As shown in Figure 1 the roller proper is supported by and turns upon a fixed central shaft 10 preferably tubular in form.

The curtain 11 rolls up on a cylindrical shell 12 made of a thin metal sheet whose meeting edges are turned inward to form a channel or rib 13 (see Figure 4). This channel not only serves to fasten the edge of the curtain 11, as shown in Figure 4, but also presents a point of engagement for the two end collars. Moreover a cylinder thus constructed has a certain amount of elasticity, so that, when the end collars are introduced they can be given a tight lasting fit without having to resort to expense in machining them.

At the spring end of the roller, the collar 14 is fitted tightly into the end of the cylinder 12, the squared end of which abuts against a flange or shoulder 15. The bent-in channel or rib 13 is snugly accommodated in the notch 16 on one side of the collar 14. A removable ball-bearing fitting 17 of any well known character is accommodated in a cavity outside of the collar 14, and this ball-bearing fits one end of the shaft 10.

The opposite end of the cylinder or shell 12 is fitted with a collar 18 and ball-bearing fitting 19, similar to the collar 14 and fitting 17, save for certain details clearly shown in Figure 1 and hereinafter described.

Surrounding the shaft 10 and abutting against the inner face of the collar 14 is a sleeve 20, around which is coiled the spring 21 by which the curtain is coiled upon the cylinder 12. The turn of the spring next the collar 14 is threaded through the heads of two cotter pins 22, 23, diametrically placed, and these cotter pins pass through portions of the collar 14 into cavities 24, 25, in which they are bent open as shown in Figures 2 and 3. This forms a firm connection for the end of the spring with the collar making it possible at the same time to remove the spring from the collar with ease whenever desired.

The opposite end of the spring 21, together with the sleeve 20, is fixed to the shaft 10 by means of a cotter pin 26, through which the hooked end of the spring is passed (see Fig. 1). This cotter pin passes through

the sleeve and shaft and is bent apart on the opposite side, as shown in Figure 7.

The initial winding tension on the spring is adjusted and maintained preparatory to assembling by means of the pivoted pawl 27 on the inner face of the collar 18, which drops into an opening 28 in the shaft 10, and is so shaped as to permit turning of the roller shell only against the tension of the spring (see Figures 1 and 4). This tension is applied with the curtain fully rolled up on the cylinder 12. When the roller is set up vertically, the unrolling of the curtain against the spring tension causes the pawl 27 to ride up on the outside of the shaft 10, and thereafter the roller can be revolved freely in either direction, always preserving the initial spring tension, however, when the curtain is fully rolled up.

The roller parts having been assembled with the supporting shaft as above described, the shaft is secured against withdrawal in either direction in the following manner.

Just outside of the collar 14 a cotter pin 29 is passed through transverse openings in the shaft 10 until it protrudes about equally on both sides (see Figures 1 and 3). The cotter pin is inserted in the position shown in dotted lines in Figure 6, and, by means of a pointed instrument the two halves of the pin are bent apart within the tubular shaft 10 as shown in dotted lines in Figure 3. This secures the cotter pin in place, and it can then be twisted through an angle of ninety degrees to assume the position shown in Figures 1, 2, 3 and 6, when it is ready to assist in the fixed mounting of the shaft 10 as hereinafter described.

Just outside of the collar 18 at the opposite end, another cotter pin 30 is used in a similar manner in connection with the shaft 10, and for the same purpose as the pin 29.

The preferred unitary mounting for the combined roller and shaft preferably comprises a longitudinal bar 31 for attaching the whole to a door or gate or the like, and at the opposite extremities of this bar are removably fixed the parallel brackets 32 and 33. The inner faces of these brackets are provided with central bosses 34, 35, which are bored centrally in mutual alignment to receive the two extremities of the shaft 10, as shown. In order to prevent the shaft from revolving, both bosses are slotted transversely as clearly shown in Figure 5 at 36, and the cotter pins 29 and 30 fit snugly into these slots so as to prevent revolution of the shaft 10 in either direction.

In order to prevent longitudinal movement of the roller, the bosses 34 and 35 are made conical at their tops to fit into the roller bearing fittings 17 and 19.

In the particular construction herein, intended for use on an elevator door, as in my aforesaid pending application for patent, a thin metal shield 37 is provided, the end edges of which enter curved grooves in the brackets 32 and 33 as shown in Figure 1. A curved arm 38 is fixed to the arm 31 and extends around the outside of the guard shell 37, being suitably secured thereto as by the rivet 39 (see Figure 1).

From the above description it will be clear that my improved curtain roller can be easily assembled without expert attention or special tools. In taking apart, either tightly fitted collar 14 or 18 may be readily removed from the shell 12 by removing the cotter pin next it from the central shaft, letting the free end of the shaft drop through the collar, and then using the end of the shaft as a ram to push out the collar.

What I claim is—

1. A curtain roller of the type described comprising a cylindrical shell composed of thin metal bent inward to form a longitudinal channel, and collars inserted in the ends of said shell having grooves for receiving said channel.

2. A curtain roller of the general type described comprising a fixed shaft, a cylindrical shell, a collar mounted revolubly on the shaft and fitting said shell, said collar having a cavity on its outer face, a spring fixed at one end to said shaft and surrounding the same, and a pin having a head looped around said spring, said pin extending through a portion of said collar and turned against the bottom of said cavity.

3. A curtain roller of the general type described comprising a fixed shaft, a sleeve thereon, a cylindrical shell revolubly mounted on said shaft, a helical spring surrounding said sleeve and a pin passing through said sleeve and shaft, said pin being bent against said sleeve at one end, and having an eye at its opposite end.

4. A curtain roller of the general type described comprising a central tubular shaft, a cylindrical shell revolubly mounted thereon, and a pin extending transversely through said shaft outside of said shell and expanded within the tubular shaft.

5. A curtain roller of the general type described comprising a collar having a groove and a circular flange, and an expansible cylindrical shell having an internal rib, said shell fitting over said collar by expansion of the shell and abutting against said flange with the end of its rib in the groove in the collar.

6. A curtain roller of the general type described comprising an expansible cylindrical shell, a collar fitting in one end thereof by expansion of the shell and having a cavity in one face of the same, and a roller bearing fitting occupying said cavity.

7. In a curtain roller, two brackets having internal bosses with cavities in alignment and having transverse slots, a fixed shaft fitting said cavities, a cotter pin passing

through the slots in said bosses and through said shaft, and a roller revolubly mounted on said shaft.

8. Apparatus as in claim 7 wherein the roller has female conical ends and the bosses on the brackets have male conical ends fitting the ends of the roller.

9. A unitary mounting for a combined roller and shaft comprising a longitudinal bar having parallel brackets attached to the opposite ends thereof, said brackets having aligned slotted bosses, a shaft mounted revolubly in said bosses, and pins passing through the ends of said shaft and lying in the slots in said bosses.

In testimony whereof I have hereto affixed my signature on this 26th day of May, 1925.

HAROLD W. SHONNARD.