May 26, 1931. O. E. LOVEN 1,807,161

SPRING ROLLER CURTAIN

Filed Oct. 8, 1927 2 Sheets-Sheet 1

Fig. 1

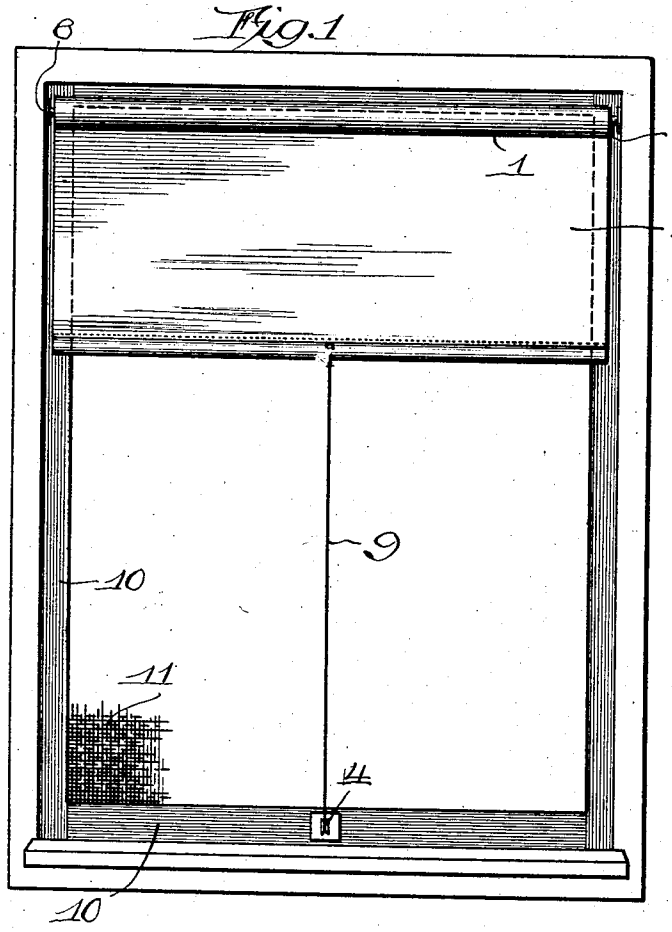
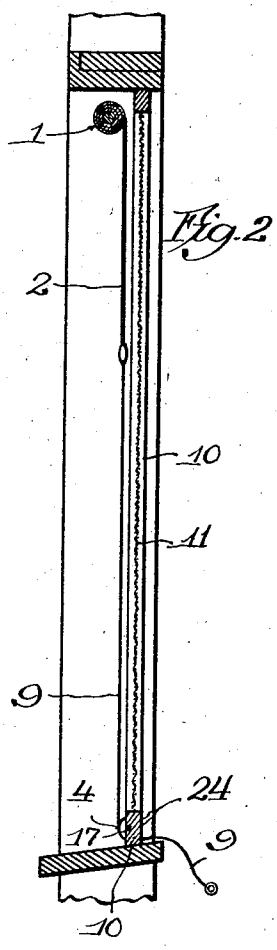


Fig. 2



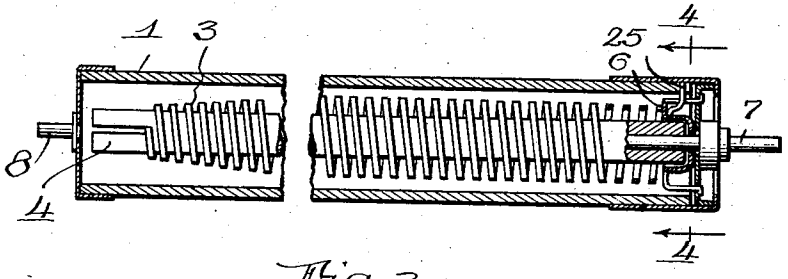


Fig. 3

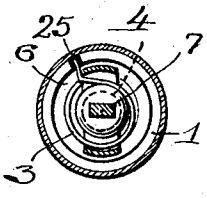


Fig. 4

Witness:
Chas. R. Kourse.

Otto E. Loven. Inventor,
Walter A. Scott Atty.

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SPRING ROLLER CURTAIN

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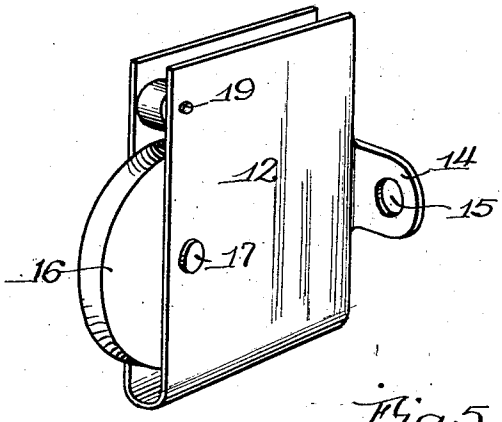


Fig. 5

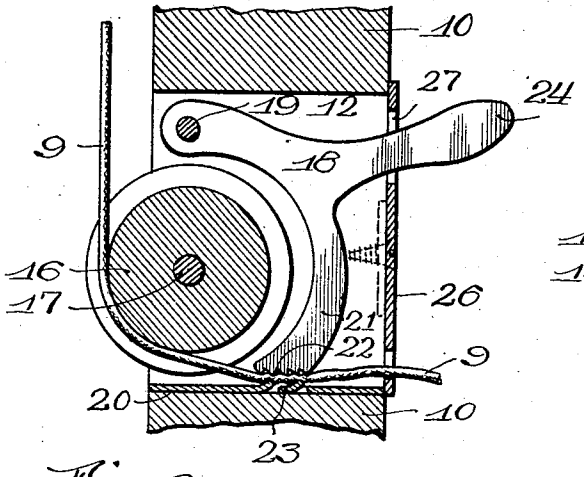


Fig. 6

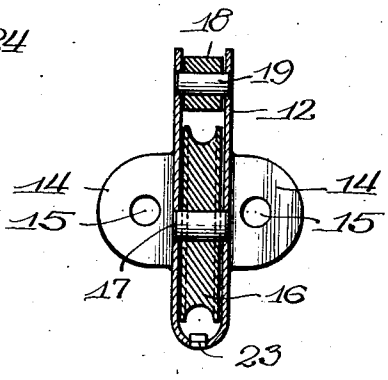


Fig. 7

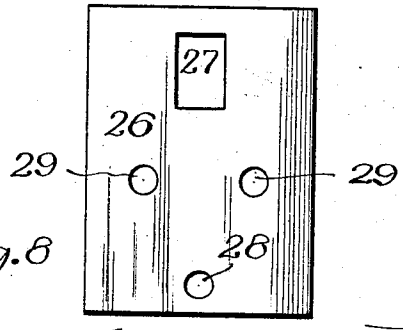


Fig. 8

Witness:
Chas. R. Kourish.

Otto E. Loven Inventor,
Walter A. Scott Atty.

Patented May 26, 1931 1,807,161

UNITED STATES PATENT OFFICE

OTTO E. LOVEN, OF FOREST PARK, ILLINOIS

SPRING ROLLER CURTAIN

Application filed October 8, 1927. Serial No. 224,822.

The object of my invention is to provide a roller shade or curtain hung upon the outer side of a window frame with means operable from the inside for raising and lowering and automatically holding the same in position without opening the wire screen, glass or other closure of the window. The invention is intended more particularly for use in sleeping porches or other rooms having the window openings closed only by wire or other open mesh screen, or wherever it is desired to provide a roller shade or curtain to exclude light and that will be free from disturbance by any ordinary wind and will also serve to exclude rain and afford protection against inclement weather.

In the drawings:

Figure 1 is an elevation of the outer side of a window equipped with my invention.

Figure 2 is a vertical central section through the structure shown in Figure 1.

Figure 3 is a longitudinal sectional view of a spring roller to which the shade or curtain is attached.

Figure 4 is a section on the line 4—4 of Figure 3.

Figure 5 is a perspective view of the detent and pulley mechanism.

Figure 6 is a section in a plane parallel to the plane of the pulley and lever.

Figure 7 is a section in a plane passing through the bearings of the pulley and lever and perpendicular to the section shown in Figure 6.

Figure 8 is a view of a face plate designed to be mounted upon the inside of the window frame to which the mechanism is attached.

The roller, 1, to which the curtain, 2, is attached may be of the type ordinarily used for interior window shades except that it is constructed without the usual gravity pawls which serve normally to restrain such shades from being wound on the roller by the action of the spring. As shown in Figure 3, one end of the spring 3 is attached to the inner end of the spindle 4 and the other end to a thimble 6, both the spring and thimble being prevented from rotating relative to the body of the roller by the engagement of the projecting end 25 of the spring with the thimble and external shell of the roller. The stud 7 is rigidly fixed to the spindle 4, which latter is rotatable relative to the thimble 6, and the stud 7 is designed to non-rotatably engage a slot in the usual form of roller bracket attached to the window frame, while the trunnion 8 fixed to the body of the roller at the opposite end rotatably engages the other bracket. All of this is the usual spring roller construction, but the roller used as part of my invention differs in that it is not provided with detent pawls to normally restrain the body of the roller 1 from rotation relative to the stud 7 and spindle 4. The roller, therefore, is constantly under the tension of the spring 3, and means acting upon the cord 9 attached to the curtain 2 are relied on to hold the curtain in any desired position against the tension of the spring. With outside curtains, especially when constructed of heavy water-proof material, more positive means of control are desirable than is necessary with the usual interior roller shades. It is for this reason that I omit the usual gravity detents on the roller and provide a detent mechanism at the lower part of the sash 10 upon which the wire screen 11 is secured.

The detent shown in Figures 5 to 7 is especially adapted for use with a roller curtain hung upon the outer side of a window frame with means operable from the inside for raising and lowering the same without opening the wire screen or other closure of the window. Roller curtains so mounted are advantageously used in screened sleeping porches where the windows are not glazed or where it is desired to secure the protection of the curtain from light and weather without closing a glazed window. When so used the spring roller is mounted at the top of the window on the outside and the curtain cord passes downward on the outside of the screen to the lower edge thereof and is then brought through an opening in the screen frame to the inside of the room or porch. It is desirable to make such exterior curtains of heavy waterproof material, but with such material it is necessary to provide controlling means more positive in action than the gravity pawls

usually used in the spring rollers of the interior roller shades.

In Figure 6, the lower, horizontal, member of the sash or frame on which the wire screen is mounted is indicated at 10, the view being a vertical section. The detent mechanism, shown in perspective in Figure 5, is mounted in an opening extending through the lower sash member 10 as indicated in Figure 6. The mechanism is mounted on a housing or plate 12 which preferably takes the form of a plate of metal bent into U-shape with the closed end downwards and two ears 14, 14 turned outwardly and provided with screw holes 15 for attachment of the structure to the inner side of the sash. A grooved pulley 16 has its bearing upon a trunnion 17 the ends of which are mounted in the opposite sides of the U-shaped housing 12 in such position that the periphery of the pulley projects beyond the outer side of the sash 10. A lever 18 is pivoted to the housing 12 on a bearing pin 19, the ends of which are mounted in openings in the opposite arms of the housing. The curtain cord 9, extending downward from the lower end of the roller curtain 2, engages the outer and lower part of the periphery of the pulley 16 and extends between the pulley and lower cross part 20 of the housing to the inside of the window. A downwardly projecting arm 21 of the lever 18 is provided preferably with teeth or serrations 22, and co-acting teeth 23 are formed upon the cross part 20 of the housing.

The cord 9 passes between the gripping members formed by the serrations 22, 23, and as the engaging part 22 on the lever 18 is located a considerable distance inward from a vertical line passing through the pivot 19 of the lever, outward movement of the cord due to the tension of the roller spring is arrested by the frictional engagement of the cord with the gripping teeth 22 causing the lever 18 to rotate and clamp the cord between the clamping members 22, 23. The cord may be drawn inward to lower the curtain by pulling on the part of the cord which extends to the inside of the window, such pulling serving by the frictional engagement of the cord with the engaging member 22, to rotate the lever 18 and separate the clamping members 22, 23, and when the cord is released it is automatically gripped as above described and the curtain thereby securely held in its adjusted position.

In order to permit the curtain to roll up under the tension of the spring roller, the lever is formed with a handle 24 which projects beyond the sash upon the inner side thereof where upward pressure may conveniently be applied to the lever to release the cord from the gripping members 22, 23 and permit the curtain to roll up. Immediately upon release of the upward pressure on the handle 24 gravity causes the lever to fall until the part 22 engages the cord whereupon the automatic gripping action above described takes place. I have shown a cover plate 26 which may be fixed to the inner side of the sash 10 to serve as a finish for the inner side of the mechanism. The cover plate is provided with openings 27, 28 for the lever handle and cord respectively and also with screw holes 29, 29 which for convenience may register with the screw holes in the ears 14 of the housing to permit the entire device to be held in place by the same screws.

It will be observed that the pivot 19 of the lever 21 is supported in the walls of the casing 12 at a point directly over the pulley, so that the gripping-lever 21 will of its own weight gravitate into gripping cooperation with the grip-teeth 23 formed on the lower wall of the casing 12 and also so that the handle 24 for releasing the lever from gripping position may be conveniently extended through a vertical slot in the inner wall 26 of the casing. This construction affords an inexpensive, compact and unitary device that may be installed as a whole by merely cutting a vertical slot in the lower bar of the screen, thus avoiding the necessity of mounting any of the parts on the window frame.

I claim:

In a device for holding taut the pull-cord of an outside window-shade, a casing mounted in a slot in the bottom bar of a window-screen frame, a pulley journalled in said casing at the outer edge thereof, the aforesaid pull-cord being adapted to pass under the pulley and through the casing so as to be accessible at a point inside of the screen, the bottom wall of said casing at a point inside of the pulley being provided with teeth for gripping the cord, and a lever pivotally mounted in said casing at a point above the pulley and extending inwardly and downwardly to a point where it may cooperate with said grip-teeth on the bottom wall of the casing by gravity, said lever being provided with a handle extending through the inner wall of said casing so as to be accessible inside the widow-screen.

In testimony whereof, I have subscribed my name.

OTTO E. LOVEN.