(No Model.) 2 Sheets—Sheet 1.

G. H. FORSYTH.

SHADE HOLDING MECHANISM.

No. 583,365. Patented May 25, 1897.

Fig. 1.

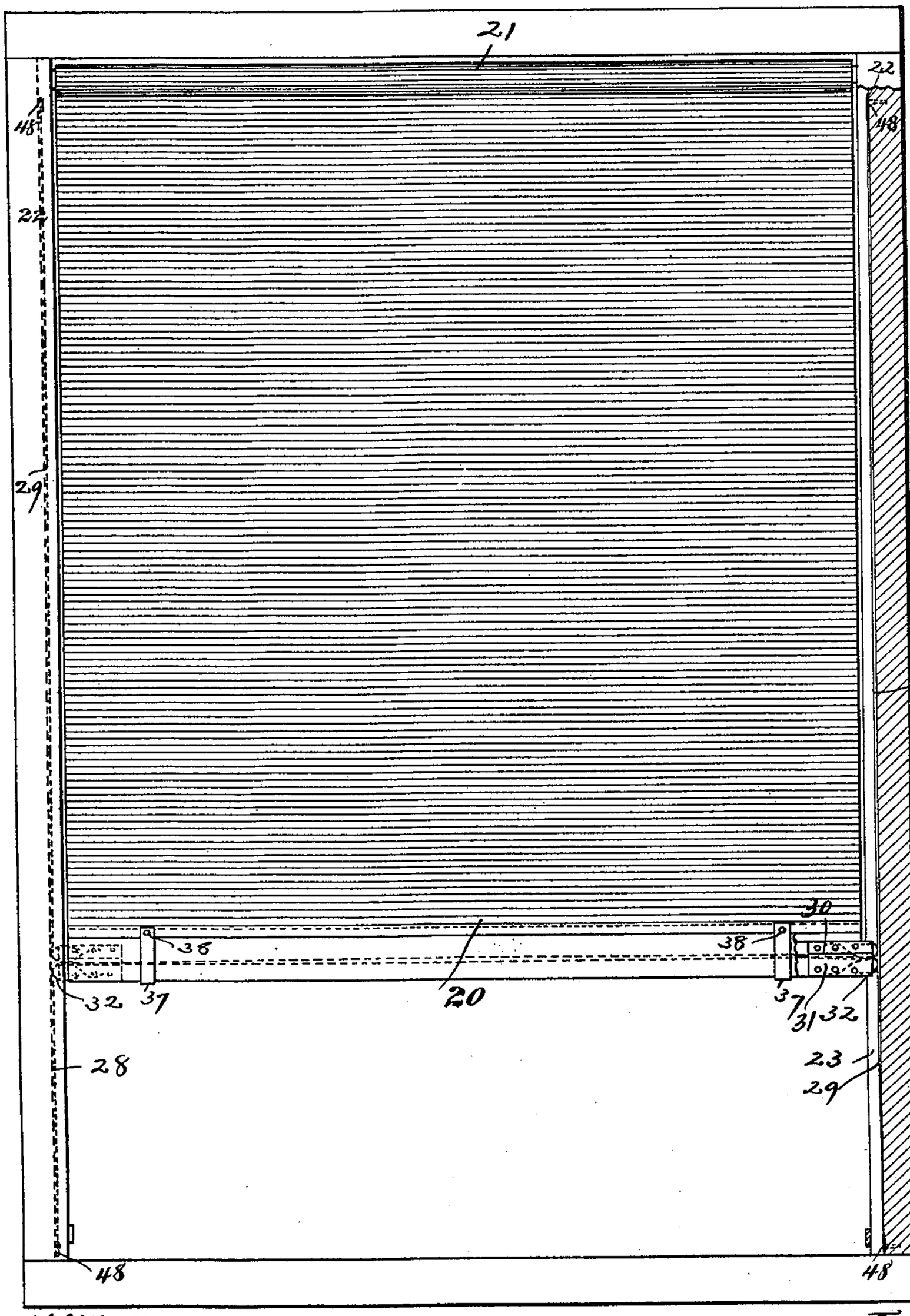
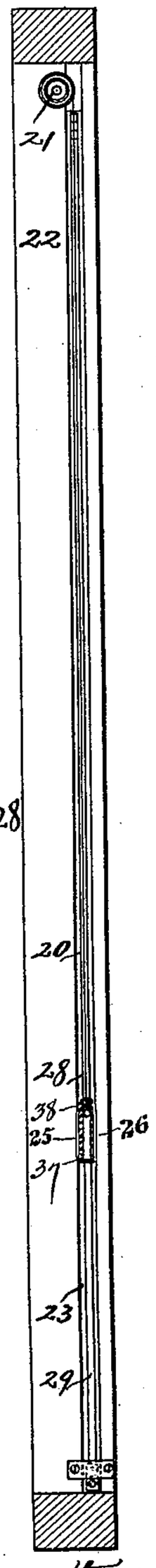


Fig. 2.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

G. H. FORSYTH.

SHADE HOLDING MECHANISM.

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Fig. 13.

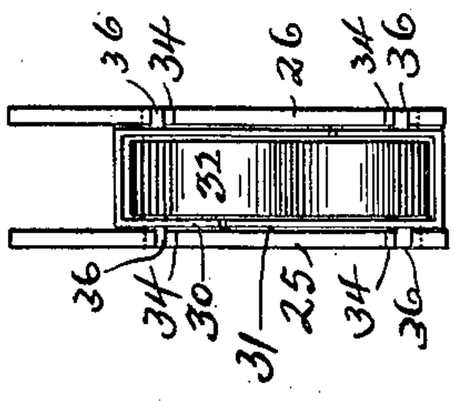


Fig. 17.

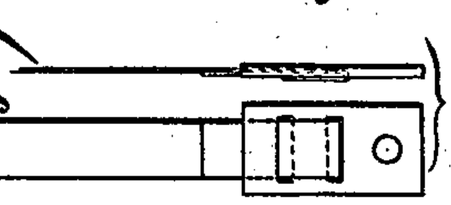


Fig. 16.

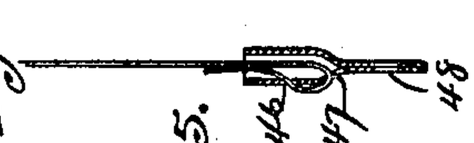


Fig. 15.

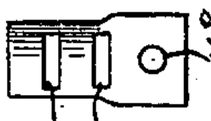


Fig. 14.

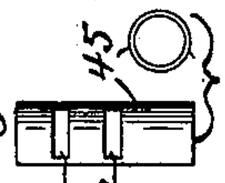


Fig. 5a.

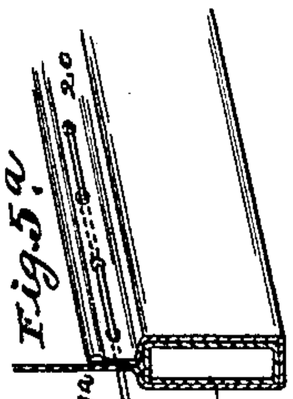


Fig. 4.

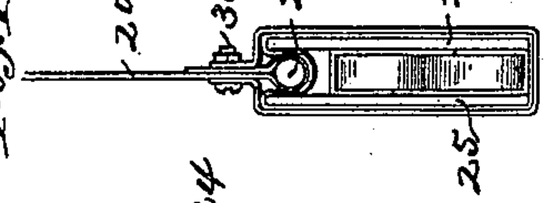


Fig. 5.

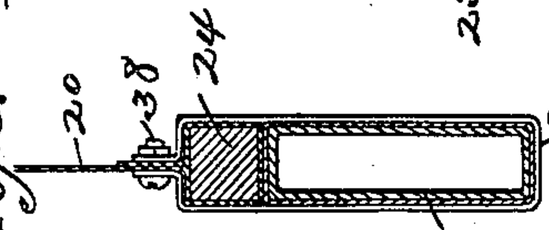


Fig. 10.

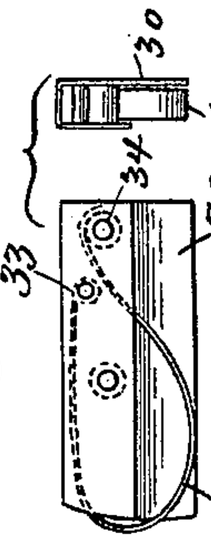


Fig. 11.

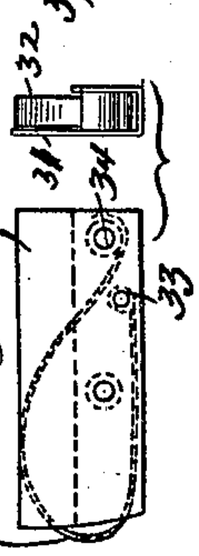


Fig. 3.

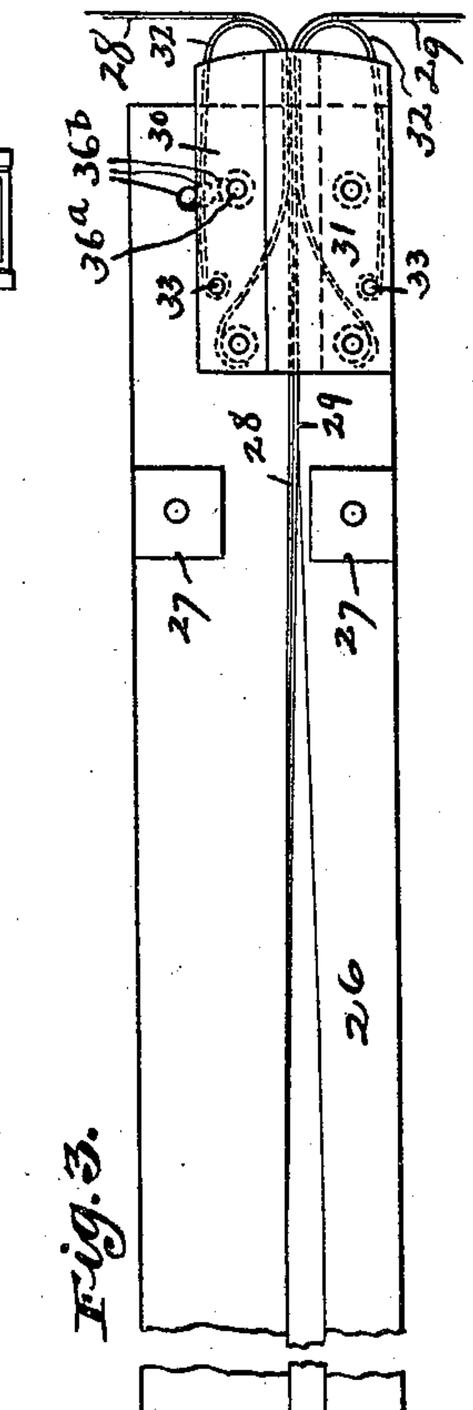


Fig. 12.

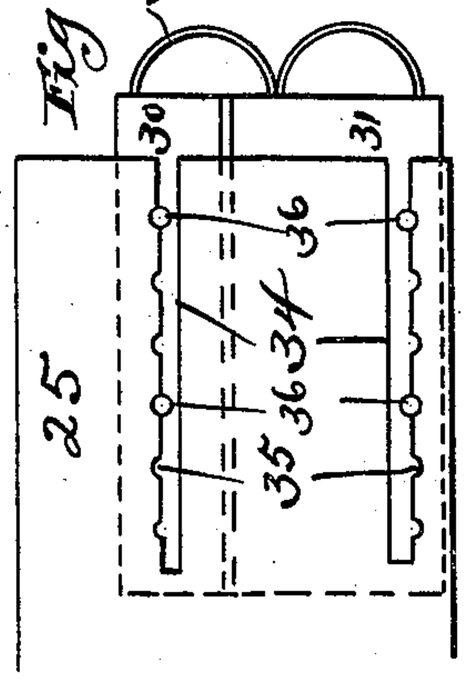


Fig. 9.

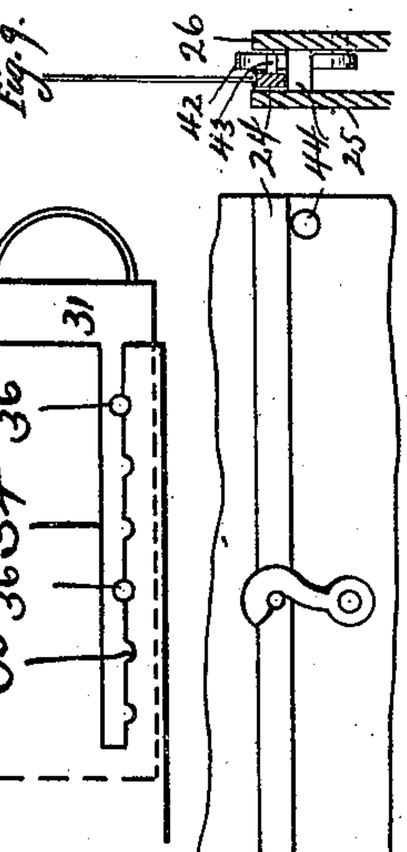


Fig. 7.

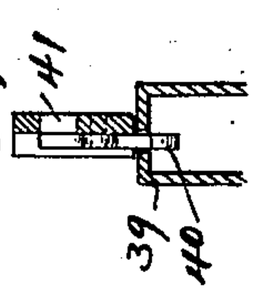


Fig. 6.

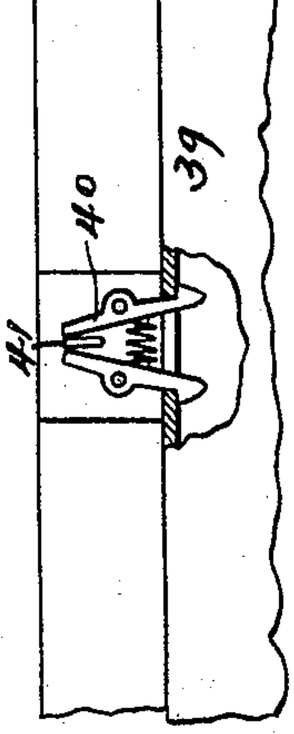
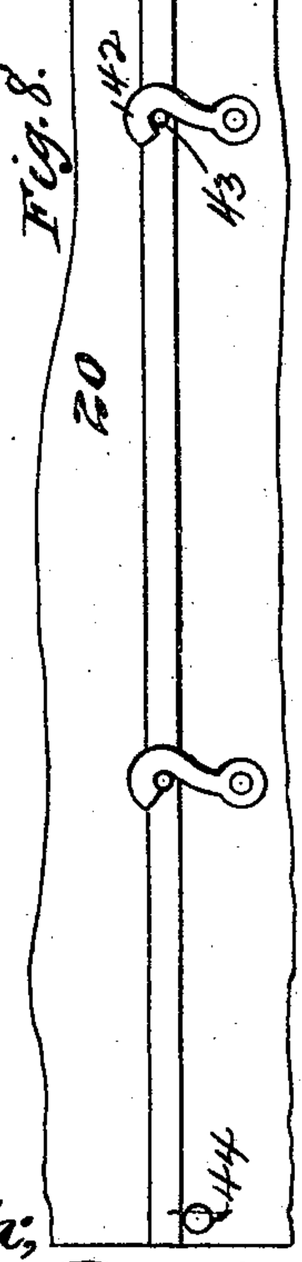


Fig. 8.



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UNITED STATES PATENT OFFICE.

GEORGE H. FORSYTH, OF CHICAGO, ILLINOIS.

SHADE-HOLDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 583,365, dated May 25, 1897.

Application filed March 19, 1897. Serial No. 628,290. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. FORSYTH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Shade-Holding Mechanism, of which the following is a specification.

This invention relates to that class of shade-holding mechanism wherein a flexible shade or curtain is mounted at one end upon a spring-actuated roller, while its opposite end is controlled by friction-holding devices working in opposition to the pull of the spring of the roller, so that the shade may be adjusted to any desired position manually and there held by the friction devices.

My invention relates more particularly to that class of shade-holding mechanism wherein the shade is controlled by a flexible tape or tapes secured to the frame of the window and between the fixed points lying in the grooves of the frame, strands of the tape or tapes being deflected across the window transversely to the plane of movement of the shade, such deflected portions being contained within a guide carrying friction devices and moving with the shade.

The leading feature of my invention relates to a novel construction of the tape-guide and friction devices and to a novel arrangement of the tape-strands within the guide whereby the strands of the tape are prevented from edgewise contact and the deflected portions are maintained in the plane of the points of support. By this novel construction and arrangement certain objections to the use of metal tapes are overcome—namely, the rectilinearity of the tapes is preserved, the unequal elongation of their edges and the consequent distortion is prevented, and the tendency to tilt or rock the bottom of the shade during adjustment is avoided.

Another feature of my invention relates to a provision whereby the shade may be readily removed. These shades when employed in open street-cars require removal periodically to be washed and are preferably removed during the winter season, when the cars are not in use, as otherwise they are damaged by mildew because of being rolled tightly in a confined place. Many other causes might be assigned which would render the provision of means for ready removal of these curtains highly desirable, and it is one of the objects of my invention to provide a convenient means to this end. Heretofore these friction-holding cords or other flexible strands have been run through a guide inclosed in a pocket or casing in the lower end of the shade or curtain, and in order to remove the shade the flexible strands must be disconnected and drawn out of the guide. To avoid this, I have provided a construction whereby the flexible friction cords, tapes, or bands, or chains are run through a guide which is detachably connected to the lower margin of the shade, so that by detaching it the curtain can be removed without otherwise disturbing the fixture, and thereby provision is made for the ready removal of the shade whenever desired for renewal, repairs, or cleaning.

My invention also relates to certain details of construction as, will be hereinafter described, and fully pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation of a window-frame, partly in section, with a shade mounted therein. Fig. 2 is a vertical sectional elevation transversely of the shade-roller, shade, and tape-guide. Fig. 3 is a side elevation of the detachable tape-guide, one side thereof removed and the central portion thereof broken away. Fig. 4 is an end view of a tape-guide of the construction shown in Fig. 3 and showing the curtain or shade removably connected thereto. Fig. 5 is a sectional view of a slightly-modified construction of the tape-guide and means for detachably connecting it to the shade. Fig. 5[a] is a perspective detail showing the lower end of the shade doubled around the tape-guide and held by a lacing-cord. Figs. 6 and 7 are respectively an elevation and section showing spring-actuated latches for connecting the tape-guide to the shade. Figs. 8 and 9 are similar views of another modification, wherein pivoted latches are shown for the same purpose. Figs. 10 and 11 are respectively side elevations and end views of the friction and tension devices for the metal tapes. Figs. 12 and 13 are respectively side and end elevations of the tape-guide, showing the casings of the tension devices adjustably mounted therein. Figs. 14 to 17, inclusive, are detail views

showing a tape-clamp in its various stages of construction and its mode of application.

In the drawings, 20 represents a shade which is mounted upon the spring-actuated shade-roller 21, which is journaled in the frame 22, the latter being provided with the usual grooves 23 in the faces of its side members. It is usual to provide these shades with shade-sticks, and where flexible guides are used these shade-sticks are made tubular or hollow and the guides are run through the tubular shade-stick, and the removal of the shade requires their disconnection. To avoid this, I preferably employ a solid shade-stick—for example, as shown at 24, Figs. 4 and 5—and detachably connect a tape-guide thereto. Said tape-guide may be constructed in various ways. The preferred construction is shown in Figs. 3, 4, 8, 9, 12, and 13. As therein shown, the tape-guide consists of two flat bars 25 26, which may be arranged parallel to but separated from each other and secured together through the spacing-blocks 27. These bars are separated from each other a distance slightly greater than the width of the tape or flexible guide employed, but as one object of my invention is to render the employment of metal tapes in fixtures of this kind more desirable I will refer to these flexible guides as "tapes," but state that my invention is not limited to their use.

The tapes are marked 28 29, and where two separate tapes are employed their ends are connected, respectively, to diagonally opposite corners of the window-frame. Said tapes between their secured ends pass through the tape-guide. In order to tension these tapes, as well as to apply friction to and properly deflect them at the ends of the tape-guide, I employ the devices shown in detail in Figs. 10 and 11 and in application in Figs. 3 and 4. This device consists of a casing, preferably made in two parts, (marked 30 31,) and which parts overlap each other and in each of which is mounted a spring 32. Said spring may be a strip of spring steel or brass, one end secured as at 32 and the other end being passed under a pin 34, so that the curved body of the spring is slightly compressed when the two parts of the casing are joined. As shown in the end views in Figs. 10 and 11, the curved sides of the springs act upon the tapes with considerable friction, and they therefore form a guide for the sides of the tapes, while the sides of the casing form a guide for the edges of the tapes. Said tapes are turned or deflected around these curved springs, and the tension may be adjusted by adjusting the spring, which will be found much more efficient than the deflecting of the tape over a fixed or unyielding point—that is to say, any desired friction may be produced without injury to the tape itself. These springs, it will be observed, operate to frictionally hold the tape under yielding and adjustable tension, and they also serve to position the tapes, to deflect them, and to direct them. Furthermore, these springs and their casings are contained within the bounds of the guide itself, and therefore the shade may be lowered to the window-sill. It will be seen that the tapes 28 29 must cross each other, and this crossing must be effected within the tape-guide itself. To enable the tapes to cross and yet avoid contact of the edge of one with the body or edge of the other, I twist the tapes between the friction devices and confine such twisted portion to the interior of the tape-guide. As shown in Fig. 3, each tape has a half-twist, so that the bodies of the tapes run flatwise upon each other, and also by reason of such half-twist the ends of the tapes run in the proper direction. By this simple construction the tapes may be in contact with each other throughout the length of the tape-guide and yet not cross or contact with each other edgewise, and therefore cutting or fraying of the edge and the distortion or elongation of the edges of the tape unequally, whereby its rectilinearity would be destroyed, are entirely obviated. Furthermore, by this arrangement the crossed portions of the tapes are within the plane of their fixed points or supports and pass one above the other at their points of deflection between the limits of a guide of substantially the same width as one of the strands, and the tape may be of the full width of the groove. All tilting or tipping of the tape-guide is avoided, as the strain at both sides of the shade is in the same vertical plane, and this plane, as before described, passes through the points of support.

In order to hold the spring-casings within the tape-guide, I may provide the sides of the latter with slots 34, having notches or seats 35, as shown in Figs. 12 and 13. The walls of the casings have pins 36, and the ends of said pins project into the slots 34 and are held by the springs 32 in the seats or notches 35, and thereby the casing is fixedly held in any position in which it may be placed, and the tapes may be tensioned and impinged upon the bottom of the grooves, so as to increase the friction and prevent endwise movement of the tape-guide and lower margin of the curtain.

Instead of using the slots with their seats the casing may be confined by the transverse pins 36^a, inserted through any one of the series of apertures 36^b, and thus the position of the casing may be changed and the tension of the springs varied. The spring-casings are not essential, as the springs may be mounted on the bars directly or on pins carried by the bars.

The tape-guide may be detachably connected to the bottom of the shade in various ways. I have shown several ways in which this might be done. Thus in Figs. 1, 2, 4, and 5 metal straps 37 are shown, which embrace the tape-guide and whose ends are secured to the shade above the shade-stick in any convenient way—as, for example, by the small screw-bolts 38. In Fig. 4 the shade-stick 24 is em-

braced between the side plates 25 26 of the tape-guide. In Fig. 5 the rectangular shade-stick 24 is clamped on the upper side of the tape-guide, which in this construction is of rectangular tubular form and is marked 39. In Fig. 5ª the shade material is folded around the tape-guide and held by a lacing-cord 39ª.

In Figs. 6 and 7 is shown another modification, in which the shade-stick is detachably connected to the tape-guide by the spring-latches 40, which enter through an aperture in the top wall of said guide. Such latches may be encased by the shade material and operated by a key thrust through a slit 41 in the shade material and stick.

In Figs. 8 and 9 a further modification is shown, wherein the latches or hooks 42 are pivoted on the inside of the bar 26 and engage pins 43, passing through the shade-stick 24, these attaching devices being concealed by the upper edges of the bars 25 26. In this construction the stop-pins 44 are employed at the ends of the tape-guide, and the ends of the shade-stick rest thereon, the stick being sufficiently flexible to permit the hooks 42 to be engaged with the pins 43 and tightly secure the shade to the tape-guide.

I have shown a novel and useful tape-clamp in Figs. 14 to 17, inclusive. This clamp is made from a metal tube, as 45, which has one of its walls transversely slotted or cut out, as shown at 46 47. The end of the tube below the slot 47 is then flattened and provided with an aperture 48 for a fastening-screw, while the portion of the tube above said slot or from the lower end of said slot to the opposite end is flattened, but to a less degree, so as to provide a longitudinal aperture through which the tape may be run, as shown in Fig. 16. After the tape has been run through and its end doubled upon its body, as seen in Fig. 16, the remainder of the tube may be flattened by a blow from a hammer, thus securely clamping the tape. In use this clamp while in the stage shown in Fig. 16 can be secured in the groove of the window-frame and then the end of the tape passed down through the central opening and returned through the slits and adjusted as to length and finally clamped by flattening the upper end of the tubular clamp. This clamp is not only much stronger than a clamp made out of a sheet of metal, but it affords convenient means for adjusting and firmly securing the ends of the tape after the clamp has been fastened to the groove.

Other modifications may be made than those above pointed out. As, for example, I have shown the springs as bearing directly on the tapes to produce the friction, but instead of this friction blocks or shoes might be interposed between the springs and the tapes, and the form and arrangement of the springs might be varied. In the use of the word "tape" I design to include equivalent flexible connections—as, for example, flexible bands, tapes, or chains.

Instead of employing two tapes a single tape might be used, and some of the features of my invention might be used in shade-holding mechanisms wherein a flexible tape or tapes run with the shade. In this suggested use the crossed portions of the tape are twisted between their points of support at the top or bottom of the window, or both, and are confined to the same vertical plane.

While I prefer to maintain the crossed portions of the tapes with their faces in contact, as thereby the necessary friction and even smooth action may be conveniently obtained and the rusting of the tapes prevented by the rubbing contact, yet it is within the scope of my invention to pass the tapes without actual contact, and instead of giving both of the tapes a half-twist one may be twisted spirally around the other, thus allowing the edges of one to cross the face of the other, but preventing contact between their edges.

I claim—

1. In a friction holding mechanism for spring-actuated shades, the combination with a flexible tape for controlling the shade of means at the side of the shade for retaining the face of the tape in a horizontal plane, a portion of the tape intermediate said sides being spirally twisted.

2. The combination with a spring-actuated shade of flexible tapes secured to the corners of the frame and the intermediate portions thereof crossed upon each other, a guide inclosing said crossed portions and said tapes being twisted between the ends of the guide, substantially as described.

3. In a shade-holding mechanism the combination with flexible tapes for holding the shade, of a tape-guide with friction devices at its ends between which the tapes are held flatwise upon each other and the intermediate portions of the tapes being crossed upon each other and spirally twisted in their crossed portions, substantially as described.

4. In a shade-holding mechanism the combination with tapes for controlling the shade of a tape-guide having a longitudinal passage through which the tapes extend and yielding friction devices at the ends of the guide, between which the tapes are passed, substantially as described.

5. In a shade-holding mechanism, the combination with flexible tapes for holding the shade, said tapes having fixed points of support, of a tape-guide having a longitudinal passage for the tapes and friction devices between which the tapes pass and whereby they are confined flatwise upon each other and in the vertical plane of the points of support, substantially as described.

6. In a shade-holding mechanism, the combination with flexible tapes for holding the shade of a tape-guide through which the intermediate portions of the tapes pass, springs arranged within the ends of the guide and adapted to bear upon the tapes, whereby the

latter are held in contact and the intermediate portions of the tapes being spirally twisted, substantially as described.

7. In a shade-holding mechanism, the combination with flexible tapes for holding the shade of a tape-guide and springs supported within the guide and adapted to frictionally bear on the tapes and the spring-supports being movable, whereby the friction may be increased, substantially as described.

8. In a shade-holding mechanism the combination with a flexible tape for controlling the shade, said tape having strands thereof extending parallel to the sides of the shade and strands thereof deflected and extending transversely to the shade, of means for deflecting the tape, said means being adapted to maintain the strands of the tape face to face at their points of deflection and the bodies of said strands being spirally twisted between said points, substantially as described.

9. A tape-clamp constructed from a metal tube having transverse slots in its wall through which the end of the tape may be doubled and secured by flattening the tube, substantially as described.

10. A shade-holding mechanism comprising in combination with the shade, a flexible tape for controlling the shade, and a tape-guide detachably connected to the shade, substantially as described.

11. A shade-holding mechanism comprising in combination a flexible tape or tapes having intermediate portions thereof crossed and the crossed portions extending parallel to the lower margin of the shade, a guide through which said crossed portions run, and means for detachably connecting said guide to the shade, substantially as described.

12. The combination with a spring-actuated shade, of a rigid guide detachably connected to the shade and the shade being adapted to be detached from the guide without removal of the latter from the grooves, substantially as described.

13. A flexible tape for controlling a shade, said tape having its body deflected and strands crossing each other and one or both of said strands being spirally twisted whereby said strands may pass at their points of deflection, one above the other and within the limits of a space, substantially equal to one of the strands, substantially as described.

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