No. 810,278. PATENTED JAN. 16, 1906.

C. L. HOPKINS.

CURTAIN FIXTURE.

APPLICATION FILED AUG. 21, 1903.

2 SHEETS—SHEET 1.

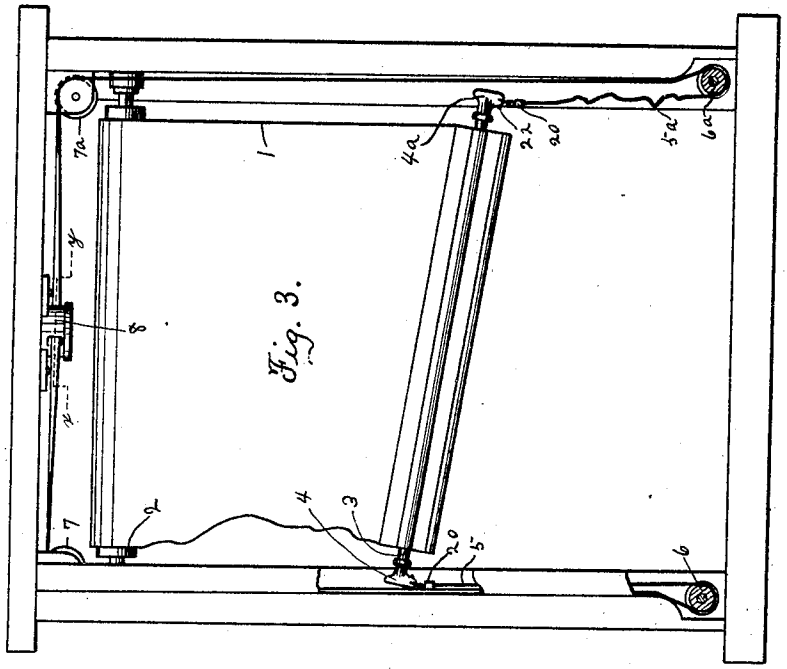


Fig. 3.

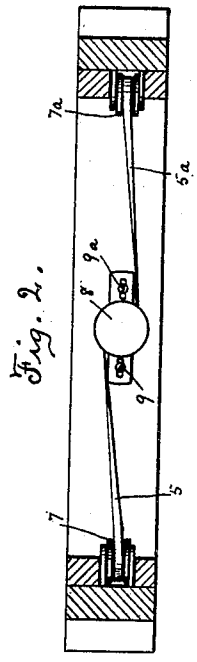


Fig. 2.

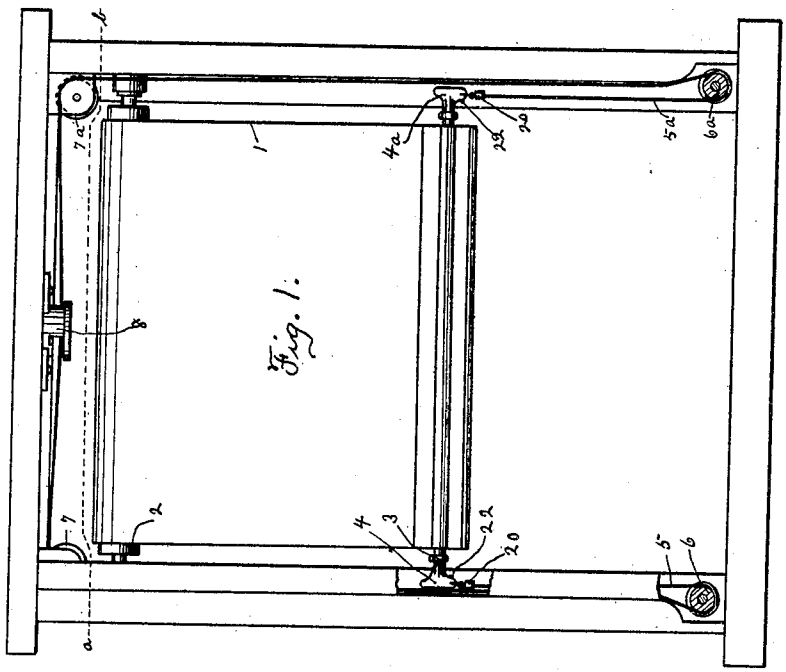


Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 4.

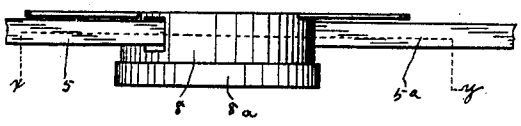


Fig. 5.

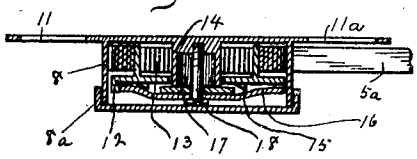


Fig. 6.

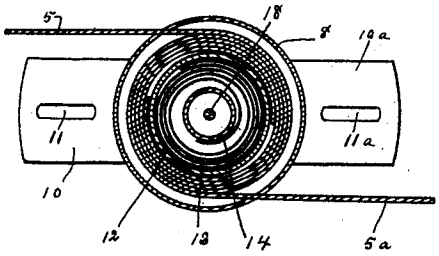


Fig. 8.

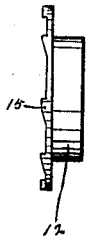


Fig. 7.

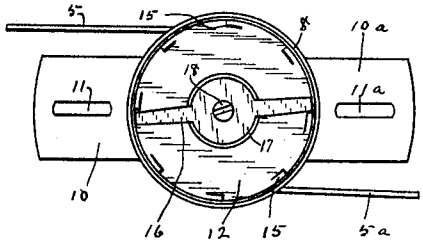


Fig. 10.

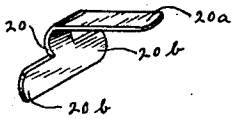


Fig. 11.



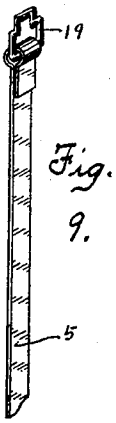


Fig. 9.

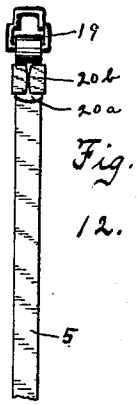


Fig. 12.

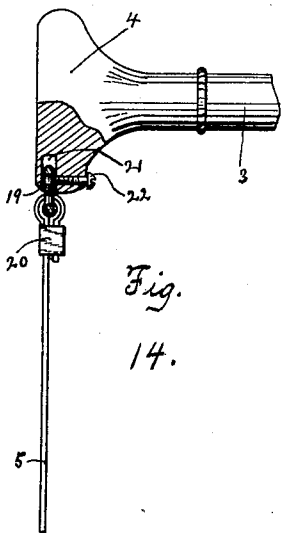


Fig. 14.

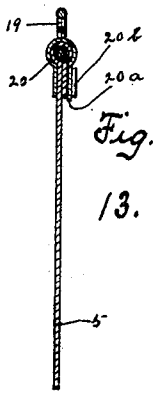


Fig. 13.

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UNITED STATES PATENT OFFICE.

CHARLES L. HOPKINS, OF ALBANY, NEW YORK, ASSIGNOR TO THE CURTAIN SUPPLY COMPANY, OF NEWARK, NEW JERSEY, A CORPORATION OF NEW JERSEY.

CURTAIN-FIXTURE.

No. 810,278. Specification of Letters Patent. Patented Jan. 16, 1906.

Application filed August 21, 1903. Serial No. 170,272.

To all whom it may concern:

Be it known that I, CHARLES L. HOPKINS, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Curtain-Fixtures, of which the following is a specification.

This invention relates to that class of curtain-fixtures in which is employed a flexible tape, cord, or the like for holding the shade or curtain against the tendency of the spring shade-roller to draw it up and to maintain the lower edge of the shade in parallelism with the shade-roller. In curtain-fixtures of this class as usually constructed the holding power of the device is dependent upon the friction of the tapes or cords or upon their resistance to bending. This is objectionable, as the cords or tapes are soon worn out or broken. For this reason devices of this class are usually employed only where another extensively-used class of devices having spring-pressed friction-shoes and pinch-handles would not be suitable—as, for instance, on open street-cars, where it is desirable to have a curtain which cannot be thrown out of the grooves in manipulation. Another objection to the ordinary tape or cord fixture is that it does not positively hold the curtain down after the cords or tapes are slightly worn or stretched. Furthermore, it is desirable that car curtains or shades be so arranged that they may be removed from the window-frame for cleaning. It has been found difficult to provide means whereby this may be done with the ordinary tape or cord fixture. These fixtures have, however, an important advantage to recommend their use on all classes of cars—viz., ease of manipulation by inexperienced persons.

The principal objects of the present invention are to provide a curtain-fixture employing tapes or cords for holding the curtain down and for maintaining the lower edge of the curtain in parallelism with the shade-roller, which does not depend for its holding power upon the friction of the tapes or cords or upon their resistance to bending, which will positively hold the curtain against the upward pull of the spring shade-roller, and which permits the curtain to be quickly and conveniently removed from the window-casing. The means by which I seek to accomplish these objects may be briefly described as follows: A curtain-stick, having its ends moving in grooves at the sides of the window, is carried by the shade at or near its lower edge. To each end of this curtain-stick is secured the end of a tape or cord, preferably a metal tape. At some convenient point, preferably at the upper part of the window-casing, is placed within a box, which may be a small round box of sheet metal, a winding-drum and a spring for rotating the drum. The tapes are led upwardly from the curtain-stick to the lower part of the window-casing under suitable pulleys and upwardly to the upper part of the window-casing and over pulleys to opposite sides of the box, entering openings in the box, and are secured to the winding-drum. The direction in which the spring in the drum tends to revolve the drum is that which would cause the tapes to be wound up when the shade is drawn down. In other words, the force of the spring in the winding-drum is opposed to that of the spring in the shade-roller, so that the curtain is held in a taut or tense condition between two springs, the one tending to draw up the shade by its upper part and the other tending to draw the lower part of the shade down. The stick is held in a horizontal position by reason of the fact that the two tapes wind on the same drum and are wound up or let out at the same time and to the same extent. Means are also provided whereby the winding-drum may rotate freely in the direction to take up the tapes, but is prevented from rotating easily in the opposite direction, whereby the device may hold the curtain down against a strong upward pull exerted by the shade-roller. This is found necessary in the case of long shades, as will be explained.

The invention comprises also means for detachably securing the tapes to the curtain-stick.

In the drawings, Figure 1 is a face view of a window-frame fitted with a curtain having my improved fixture fitted thereto, parts of the window-frame being cut away to show the working of the device. Fig. 2 is a section on the line *a b* of Fig. 1 looking upwardly. Fig. 3 is a view similar to Fig. 1, but showing the curtain-stick forced into an inclined position. Fig. 4 is an elevation of the box containing the winding-drum, showing the tapes issuing from opposite sides thereof.

Fig. 5 is a longitudinal section of this box and its contents. Fig. 6 is a section of the same on the line $x y$ of Figs. 3 and 4, looking upwardly. Fig. 7 is a view of the interior of the box as seen when the cover is removed. Fig. 8 is an elevation of the drum on which the tapes wind. Figs. 9, 10, 11, 12, and 13 show the method of securing a ring to the end of a tape. Fig. 14, which is partly in section, shows one end or "head" of the curtain-stick and the end of a tape, showing the method of detachably securing the tape to the head.

In the drawings, 1 is the curtain or shade, mounted upon the shade-roller 2. This roller is of the type usually employed upon car-windows and exerts a constant upward pull upon the shade. The shade carries the stick 3, having the heads 4 and 4^a. The tapes 5 and 5^a, secured to these heads, pass downwardly and under the pulleys 6 and 6^a, upwardly and over the pulleys 7 and 7^a, thence to the box 8, which they enter from opposite sides. The box 8 is secured in place by the screws 9 and 9^a. The box 8 has a wing-like projection 10 and 10^a at each side, having the slots 11 and 11^a, through which the screws 9 and 9^a pass. The object of having these screws pass through slots instead of round holes is to afford means for adjusting the box sidewise, so as to make the tapes 5 and 5^a draw evenly. The box 8 is fitted with a cover 8^a, which may be removed to give access to the interior. Within the box 8 is the winding-drum 12, upon which wind the tapes 5 and 5^a. Within the drum 12 is the spring 13, secured at one end to the drum 12 and at the other end to the post 14. This post may be solid or a hollow cylinder, as shown. The winding-drum 12 has the tooth-like projections 15 around its edge. A thin spring 16, made of sheet metal, held against the washer 17 by the screw 18, is arranged to bear lightly upon the drum 12 and to permit the teeth 15 to pass as the drum 12 revolves in the direction to wind up the tapes 5 and 5^a, but catches these teeth 15 and is carried around with the drum 12 when the drum is rotated in the opposite direction by the tapes 5 and 5^a being drawn out. By this arrangement the drum is permitted to rotate with but little friction when the curtain is being drawn down and the tapes are being wound up, but is held back when the shade is being pushed up and the tapes are being drawn out.

By referring to Figs. 1 and 3 the action of this curtain device may be readily understood. Suppose the curtain be grasped by its lower portion and drawn down. From the description which has been given it is evident that the curtain will be unwound from the roller 2 while the tapes 5 and 5^a will be wound up. Conversely, if the curtain be pushed up the tapes will be unwound while the curtain will be wound up. Now it is wholly immaterial whether the curtain be grasped at a point midway between the ends of the stick or at one end of the stick. Suppose the curtain be grasped at the right-hand end of the stick and drawn down. The strain on the tape 5^a will be removed and the whole force of the tape-winding spring 13 in the box 8 will be transmitted (through the tape 5) to the left-hand end of the stick and the curtain will descend level. Suppose the curtain be pushed up at the right-hand side. The tape 5^a will be drawn out of the box 8, the drum 12 will be revolved, and the other tape 5 will be let out. The whole force of the spring curtain-roller 2 will be applied to draw up the left-hand end of the stick, as is well understood in this art, and the curtain will ascend level. The action of the whole device depends upon the fact that both tapes are wound up or let out at the same time and to the same extent and that the same is true of both edges of the curtain.

In Fig, 3 the curtain is represented as being pushed up at one side and pulled down at the other, so as to force the stick into an angular position. The force of the tape-winding spring 13 is applied wholly to the higher or left-hand end of the stick, tending to draw it down, while the force of the spring shade-roller is applied wholly to the lower or right-hand end of the stick, tending to draw it up. When released, the stick will instantly fly into a horizontal position.

With long curtains, as is well known, when the curtain is drawn down to its full length the spring in the shade-roller is wound up to a greater degree and exerts a much greater upward pull upon the shade than when the curtain is drawn down but a small part of its length. With the arrangement here shown it is evident that the tapes 5 and 5^a are wound up to their greatest degree and the tape-winding spring 13 exerts the least pull upon these tapes when the shade is drawn down to its full length and requires the greatest power to hold it. If the springs be so adjusted as to balance each other when the curtain is drawn about half-way down, it is found that there is a tendency for the curtain to run up when drawn down to its full length and to run down when it is pushed up to the top of the window. This difficulty is not met with when the device is applied to curtains for short windows, because the relative strength of the two springs is not much altered by raising or lowering the curtain, especially if a shade-roller of large diameter is used. This difficulty mentioned as existing when this device is applied to long curtains has been overcome in a simple manner. The springs are so adjusted with relation to each other that a balance exists when the curtain is nearly rolled up. Means are provided, as has been described, whereby the winding-drum may rotate easily when the tapes are

being wound up, but is retarded or prevented from rotating when the tapes are being unwound and the curtain is being pushed up or when the curtain is stationary. By this means dependence is not placed wholly upon the spring 13 to hold the curtain down, but this spring is aided in resisting the upward pull of the shade-roller by this friction device and the curtain is securely held in any position. It will be observed that the friction required to maintain the curtain in any position is not applied upon the tapes, but is applied to prevent the free rotation of the winding-drum 12 upon which these tapes wind, there being merely an endwise pull upon the tapes. This is not destructive of the tapes, which is of great importance in constructing a device for general use upon car-curtains.

That the tapes may be readily disengaged from the heads of the stick I secure rings to the ends of the tapes. The method of doing this is shown in Figs. 9, 10, 11, 12, and 13. Fig. 9 shows the end of the tape 5 passed through the ring 19 and bent down. Fig. 11 shows the ring 19 detached. It is made of a piece of wire of the proper diameter. The piece of sheet metal 20 (shown in perspective in Fig. 10) is placed against the back of the tape 5 with the long end 20^a projecting through the ring. The end 20^a is then bent down and the other ends 20^b are turned over, as shown in Figs. 12, 13, and 14. Fig. 12 is a face view of a tape with a ring secured thereto. Fig. 13 is a sectional view of the same. This particular method of securing a ring to the end of a metal tape is not claimed as of my invention, as it has been used in other fields of invention.

In Fig. 14 is shown the method of detachably securing the ring to the head of the curtain-stick. An opening 21 is made in the lower side of the head 4, into which the upper part of the ring 19 is inserted. The screw 22, passing into the opening 21, is then screwed in, passing through the ring 19, preventing the ring 19 from being withdrawn from the opening 21. When it is desired to remove the curtain from the window-casing, it is only necessary to back the screws 22 out until the tapes may be detached from the heads.

I have shown an arrangement of parts in which the tape-winding device is placed at the top of the window-casing above the shade-roller. While this is convenient and satisfactory in certain cases, the tape-winding device may of course be placed at some other point, if necessary or desirable, without departing from the spirit of the invention.

I claim—

1. In a curtain-fixture, the combination of a window-frame, a roller mounted therein, a spring for rotating the roller, a curtain winding upon said roller, a winding-drum mounted upon the window-frame, a spring for rotating the winding-drum, a tape, winding upon said winding-drum, the end of the tape, being secured to the curtain, the power of the springs being opposed the one to the other whereby the curtain and tape are maintained in a tense condition, substantially as described.

2. In a curtain-fixture, the combination with a curtain, of flexible connections secured to the lower edge of the curtain, a rotatable drum upon which the flexible connections wind, means for impeding the rotation of the drum in one direction, the said drum having free rotation in the opposite direction, and spring means for rotating the drum, for the purpose set forth.

3. In a curtain-fixture, the combination with the curtain, of tapes secured to the curtain, a rotatable drum for taking up said tapes, a spring for rotating the drum, and means for frictionally resisting the rotation of the drum when the said drum is rotated in the direction to let off the tapes, substantially as and for the purpose described.

4. In a curtain-fixture, the combination of a window-frame, a spring-actuated roller mounted therein, a curtain winding upon the roller, a spring-rotated drum mounted upon the window-frame, a pair of tapes each having an end secured to the curtain, the other ends of the tapes being brought to the drum and winding thereon from opposite sides of said drum, for the purpose described.

5. In a curtain-fixture, the combination of a window-frame, a spring-actuated roller mounted therein, a curtain winding upon said roller, a curtain-stick for said roller, a spring-rotated drum mounted upon the upper portion of said window-frame, a pair of pulleys mounted on the lower portion of said window-frame, a pair of tapes each passing around one of said pulleys and having one end secured to one end of said curtain-stick, the other ends of the tapes being brought to the drum and winding thereon from opposite sides of said drum, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES L. HOPKINS.

Witnesses:
ARTHUR REDMOND,
ROBERT J. CRAIG.