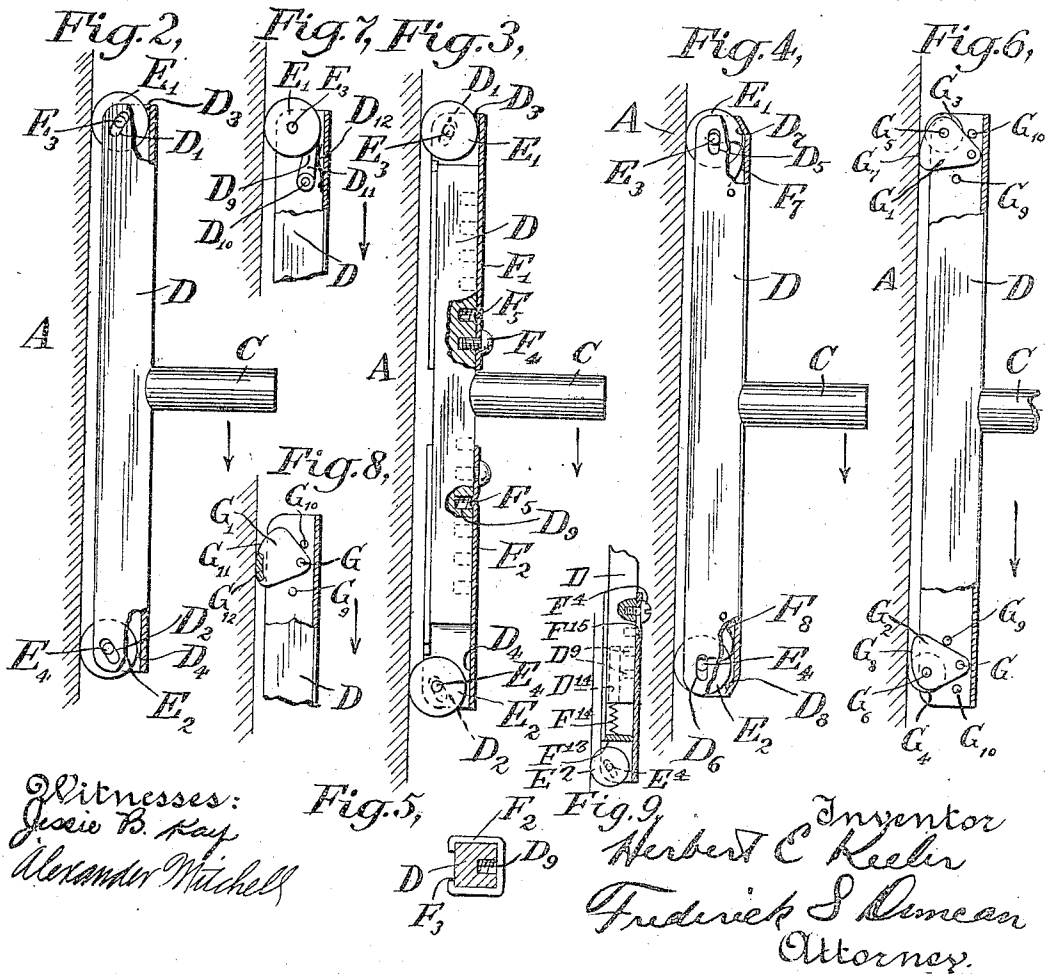
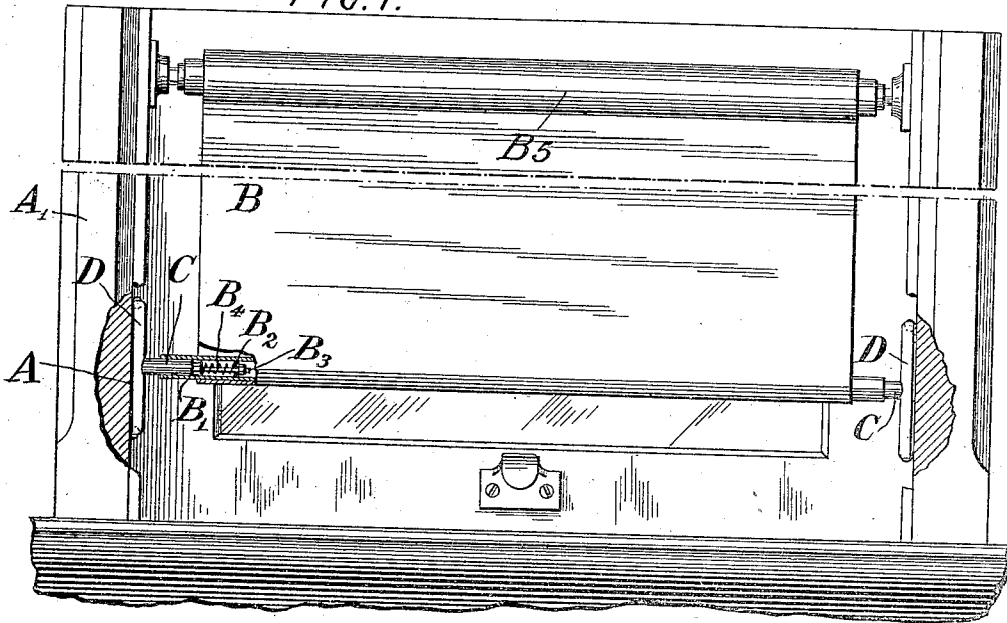


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CURTAIN FIXTURE.
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FIG. 1.



UNITED STATES PATENT OFFICE.

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CURTAIN-FIXTURE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HERBERT E. KEELER, a citizen of the United States, and resident of New York, in the county and State of New York, have invented certain new and useful Improvements in Curtain-Fixtures, of which the following is a specification, taken in connection with the accompanying drawing, annexed to and forming part of the same.

This invention relates to curtain fixtures, such as are especially adapted to be used in connection with spring-actuated curtains to hold the curtain in any desired position and in which the curtain is maintained in parallel position as it is raised and lowered so as to be self-aligning.

In the accompanying drawings in which the same reference character refers to similar parts in the several figures, Figure 1 shows this fixture as applied to a curtain. Fig. 2 is a view on a large scale showing one form of shoe, parts being broken away. Fig. 3 is a similar view of another form of shoe. Fig. 5 is a transverse sectional view of the shoe shown in Fig. 3. Figs. 4, 6, 7, 8 and 9 show other modifications.

The window frame A_1 is formed with suitable guideways A of the ordinary construction by which the free end of the spring-actuated curtain B is guided. This curtain, the upper end of which is connected in the usual manner with a constantly acting spring roller B_s , carries the tube B_1 at its lower end, this tube extending transversely across the free end of the curtain. This curtain tube serves to support the shoes D which are preferably spring-pressed into contact with the guideways A on either side of the curtain.

Each shoe has secured to it the spindle C and this spindle fits loosely within the end of the curtain tube so as to guide the shoe accurately as it reciprocates longitudinally of the curtain tube. As indicated in Fig. 1, the curtain tube B_1 is provided with the internal collar B_2 rigidly secured to the same, the short rod B_3 is provided with a head at its inner end and passes loosely through the collar B_2 . The outer end of this rod is firmly secured to the shoe spindle C in any desired way. The spiral spring B_4 acting between the collar B_2 and the outer end of the rod B_3 serves to press this rod and the

shoe D connected thereto outward, the shoe being thereby spring-pressed against the guideway A. The shoe secured to the other end of the curtain tube may be mounted therein in a similar manner. Instead of mounting the shoes in the curtain tube as has been described, they may be mounted as is described in patent to Keeler and Duncan, 689,195, December 17, 1901, or, indeed, the shoes may be mounted on a curtain in any desired way.

In order to secure the best operation of a curtain fixture of this class, it is necessary that the curtain be securely held in any position and that it move up and down readily while the lower end of the curtain is maintained in all conditions in a horizontal position. As these curtains are ordinarily operated, it is very common that the curtain tube or adjacent parts of the curtain are grasped near one side of the curtain. If the curtain is operated in this manner it will be evident that there is a tendency to cant the curtain out of horizontal position. This invention relates particularly to means by which this undesirable action is prevented and by which the curtain is maintained at all times in proper engagement with the guideways. To accomplish this result, the ends of the shoes are provided with means in engagement with the guideways which as the shoes are moved in either direction have a varied freedom of movement along the guideways. The guiding member in the forward end or tip of a shoe always has a greater freedom of movement along the guideway than the trailing or rear tip. If, therefore, the trailing tip of a shoe of this character is raised out of engagement with the guideway the shoe at once has an increased freedom of movement along the guideway while if the trailing guiding member alone is in engagement with the guideway the shoe has a decreased freedom of movement along the guideway. The freedom of movement of the guiding members is automatically varied so that as soon as the movement of the shoe takes place in either direction the leading tip at once has a greater freedom of movement along the guideway than the trailing tip. This construction has a very beneficial action since it will be seen by reference to Fig. 1 that if the curtain rod is grasped at the right hand end of the same and moved downward that

side of the curtain and the right hand shoe is positively moved downward to the proper extent, while the other side of the curtain and the left hand shoe connected to the same have a tendency to remain in their original position, so that the curtain tends to assume an inclined position. Since, however, the shoes are accurately supported by their spindles in the curtain tube as soon as the curtain tube assumes a slightly inclined position, the lefthand shoe is tilted to such an extent as to remove the upper or trailing guiding member from engagement with the guideway. Then since the lower or leading guiding member has a very much greater freedom of movement along the guideway the lefthand side of the curtain and the shoe attached to the same at once move downward until the curtain once more assumes a horizontal position. The spring-actuated roll attached to the curtain assists in restoring the curtain tube to proper position, since as soon as one side of the curtain moves downward a greater upward pull is at once exerted by the spring roller upon this side of the curtain which tends to restore the curtain to proper position. If the right hand side of the curtain is moved in an upward direction a similar action will take place, since under these conditions the upper guide member of the opposite shoe will be the leading member and will have a greater freedom of movement along the guideway than the lower or trailing guide member. Therefore, as soon as the left side of the curtain becomes the lower so as to tilt the trailing guide member out of engagement with the guideway, the greater freedom of movement of the leading guide member allows that side of the curtain to move upward until both guide members again come into engagement with the guideway.

It will be understood, of course that only a very slight canting of the curtain is necessary in order to sufficiently remove the guide members from their engagement with the guideway to sufficiently vary the freedom of movement of the ends of the curtain so that it is restored to parallel position. A very slight variation in the pressure with which the guide members bear on the guideway is enough to bring about this result and in consequence the curtain fixture is self-aligning and automatically keeps the lower end of the curtain in horizontal position.

The construction of shoe by which the guide members have this varying freedom of movement along the guideway is illustrated in Figs. 2 to 8. In the form of shoe shown in Fig. 2 the spindle C is permanently secured to the channeled casing D. This casing is provided at either end with the inclined slots D_1 D_2 , the slots in both sides of the casing being similar so as to support both ends of the pivots of the guide rolls.

The guide rolls E_1 E_2 are mounted in either end of the casing, since the pivots E_3 and E_4 preferably rigidly secured to these guide rolls are loosely mounted in the slots D_1 and D_2 respectively. Since the spindle is pressed outward in the operation of the shoe the guide rolls are pressed into engagement with the guideway A. This action is sufficient to cause the pivots of the guide rolls when the shoe is stationary in the guideway to move from the free or inner ends of the slots to the outer or gripping ends so that the peripheries of the guide rolls come into contact with the grips D_3 and D_4 formed on the casing D and preferably integral therewith, although these grips may be formed of separate pieces of material of any desired character to secure the requisite engagement of these grips with the coating guiding members. If this shoe is moved downward as indicated by the arrow in Fig. 2, the guide roll E_1 which is the trailing guide roll is forced into engagement with the grip D_3 by the spring pressure acting upon the spindle and also by the engagement of the guide roll with the guideway A which operates to move the pivot E_3 of this roll into the upper or gripping end of the slots D_1 . The lower guide roll E_2 engages the guideway A in its downward movement but the engagement of this roll with the guideway tends to move the pivot E_4 of this roll toward the free end of the slots D_2 , so that the periphery of the roll tends to move out of engagement with the grip D_4 . It will, of course, be understood that the inclination of the slots D_1 and D_2 may be varied considerably from what has been indicated in the drawings, and furthermore, it will be understood that the guide rolls may be formed of any desired material to engage the guideways and the grips in the proper way so as to secure the desired variation in the freedom of movement of the guide rolls.

It is desirable in many cases to have a shoe of adjustable length in order to accommodate curtains of different widths. In Fig. 3, the spindle C is secured to the crosshead D of rectangular cross-section, as indicated in Fig. 5. This crosshead is formed with a series of holes D_5 which are preferably threaded as indicated. The sectional casing F_2 used in this case surrounds the crosshead D and the flanges F_3 serve to secure this casing accurately in position on the crosshead. The casing is provided with suitable depressions or catches F_4 cooperating with the holes D_5 in the crosshead to hold the casing in position on the crosshead. If desired, also, suitable other means to adjust the length of the shoe in the form of clamping screws F_4 may be passed through holes in the casing and into engagement with the threaded holes D_5 to firmly secure the casing in position. If desired also the sectional

casing may be mounted on the crosshead so as to reciprocate freely and the casing may be forced outward constantly under the action of a spring which tends to hold the casing in extended position. Such a sectional casing may be telescopingly mounted on either end of the crosshead indicated in Fig. 3, for instance on the lower end as illustrated in Fig. 9, the casing in this instance reciprocating freely on the crosshead D, the screw F_4 passing through the slot F_{15} and cooperating with any one of the threaded holes D_9 in the crosshead. The casing as indicated may be forced outward constantly under the action of a suitable spring such as F_{14} engaging the portion F_{13} of the casing and having its other end suitably engaging the crosshead and located if desired in a suitable aperture D_{14} therein. This casing may, of course, be provided with any suitable guiding member, such as E_2 , to cooperate with the guideway. The pivoted guide rolls E_1 and E_2 are mounted at the ends of the casing in the inclined slots D_1 and D_2 , their construction and operation being substantially the same as what has been already disclosed.

It is not necessary in all cases to form the slots on either side of the casing at the ends of the same in which the pivots of the guide rolls are mounted inclined, as has been described. These slots may be, if desired, formed parallel to the length of the shoe and it is not necessary in all cases that these slots should be straight. The guide rolls E_1 and E_2 shown in Fig. 4 are loosely mounted by their pivots E_3 and E_4 in these straight slots and the light springs F_7 , F_8 engaging the pivots of the guide rolls normally press the rolls out toward the ends of the shoe. The peripheries of the rolls under these circumstances engage the grips D_7 , D_8 so that they properly grip the peripheries of the rolls when the roll pivots are in the outer or gripping ends of the slots. In this case, the trailing guide roll E_1 as the shoe is moved in a downward direction as indicated is forced by its engagement with the guideway toward the upper or gripping end of the slot D_5 , this action cooperating with the pressure of the springs in forcing the guide roll into engagement with the grip D_7 . This guide roll is, therefore, allowed less freedom of movement when it is the trailing roll than it has when stationary. The engagement of the guideway with the leading roll E_2 tends to move it upward to bring its pivot E_4 into the free end of the slot D_6 . Any movement of this kind tends to release the guide roll from engagement with the grip D_8 and therefore to allow this guide roll a greater freedom of movement along the guideway. It is not always necessary, however, to have the guide rolls movably mounted in the shoes so that they move into

engagement with the grips. If desired, the grips may be movably mounted in the shoe and the guide rolls may be mounted to revolve about fixed pivots in the shoe. This is indicated in Fig. 7, the guide roll E_1 being mounted to revolve about the pivot E_3 which may be, if desired, rigidly secured to the casing D. The grip D_9 cooperates with this roll, since the pivoted member D_{11} is moved about the pivot D_{10} under the action of the spring D_{12} . The operation of this device is such that the guide roll is allowed to rotate quite freely in a left-handed direction, the periphery of the roll slipping past the grip under these conditions, while if the roll rotates in a right-handed direction the engagement of the grip with the roll is at once increased through the wedging action taking place because of the proportion of the parts. Guiding members of this character may, of course, be used instead of the guide rolls illustrated in Figs. 2, 3 and 4 and instead of the particular construction of movable grip which has been described any other desired form of movable grip might be employed. Any desired number of guiding members may be employed in a shoe and guiding members of the construction described which automatically vary in their freedom of movement along the guideway may be used in a self-aligning shoe in connection with ordinary guiding members. Fig. 6 shows a modified form of shoe in which the spindle C and casing D are formed as has been described. The guiding members G_1 and G_2 are pivotally mounted in the ends of the casing so as to move about the pivots G which may, if desired, be rigidly secured to the casing. The guiding member G_1 is provided with the roll G_3 moving about the pivot G_6 . The portion G_7 of the guiding member G_1 is also adapted to engage the guideway A. The movement of this guiding member G_1 about its pivot is limited by the stop pin G_{10} and the releasing pin G_9 , the guiding member swinging about its pivot into engagement with one or the other of these pins according to the direction of movement of the shoe. The guiding member G_2 is pivoted in a similar manner about the pin G and is provided with a similar roll G_4 moving about the pivot G_6 in the guiding member. This guiding member is adapted to engage the guideway under some circumstances at the point G_8 . This guiding member is shown in engagement with the releasing pin G_9 since the shoe is indicated as moving in a downward direction. It will be seen that this construction allows the movable guiding members to assume such a position that the leading guiding member G_2 engages the guideway so that the roll G_4 gives this guiding member a greater freedom of movement along the guideway than the trailing guiding member

G₁. This trailing guiding member has moved against the stop pin G₁₀ and engages the guideway at the point G₇. It will, of course, be manifest that the movement of the shoe automatically varies the freedom of movement of these guiding members. It is not necessary in all cases to form guiding members of this character with a roll. If desired, the guiding member may be formed with a face G₁₂ of such material as to lessen the freedom of movement of the guiding member when this face comes into engagement with the guideway and also these movable guiding members may be mounted in the shoes in other ways than have been described. If desired, other constructions of shoes may be used.

It is not necessary in all cases that the guiding members provided with movable surfaces shall be given the form of rolls as indicated.

Many other modifications may be made in the construction of these devices without departing from the spirit of this invention. Furthermore, parts of this invention may be employed without using all of the same. I do not, therefore, desire to be limited to the disclosure which I have made in this case, but

What I claim as new and what I wish to secure by Letters Patent is set forth in the appended claims.

1. In curtain fixtures, a spring-actuated curtain, a curtain stick mounted in said curtain, shoes mounted on said curtain stick to reciprocate with respect to each other and normally pressed apart, said shoes comprising crossheads and tips slidably mounted on said crossheads and carrying guiding members to form adjustable length shoes.

2. In curtain fixtures, a curtain stick, shoes mounted on said curtain stick, means to normally press said shoes apart into cooperation with guideways, said shoes comprising crossheads, tips mounted on said crossheads to move longitudinally with respect thereto, means to hold said tips and crossheads in adjusted position and guiding members adjacent the ends of said tips.

3. In curtain fixtures, a shoe comprising a crosshead, tips slidably mounted on said crosshead, means to secure one of said tips in adjusted position with respect to said crosshead and guiding members carried by said tips.

4. In curtain fixtures, a shoe comprising a crosshead, tips mounted on said crosshead, one of said tips having a sliding adjustment with respect thereto and being provided with means to secure said tip and crosshead in adjusted position and guiding members mounted in said tips.

5. In curtain fixtures, a shoe comprising a crosshead, tips provided with guiding members secured to said crosshead, one of

said tips being adjustable with respect to the other to form a shoe of adjustable length.

6. In curtain fixtures, a shoe comprising a crosshead and guiding members, a tip carrying one of said guiding members and means to permit longitudinal adjustment between said tip and crosshead.

7. In curtain fixtures, a shoe comprising a crosshead and guiding members, one of said guiding members being mounted in a casing substantially inclosing said crosshead and having a sliding telescoping connection therewith.

8. In curtain fixtures, a shoe, guiding members mounted on said shoe to have relative sliding movement longitudinally of said shoe, and means to adjust the distance between said guiding members.

9. In curtain fixtures, a shoe provided with guiding members and means to allow the distance between said guiding members to be adjusted and to maintain them at substantially a constant distance from each other during the normal operation of said shoe.

10. In curtain fixtures, a shoe provided with guiding members adjacent its ends and means to allow the distance between said guiding members to be adjusted and to maintain them at substantially uniform distance apart during the normal operation of said shoe.

11. In curtain fixtures, a shoe provided with guiding members and means to allow the distance between said guiding members to be adjusted.

12. In curtain fixtures, an adjustable length shoe to be spring-pressed into engagement with a guideway.

13. In curtain fixtures, a stick, shoes mounted on said stick and pressed into engagement with guideways, said shoes being of adjustable length.

14. In curtain fixtures, a curtain stick, shoes mounted on said curtain stick, one of said shoes being mounted to reciprocate with respect to said stick and one of said shoes being of adjustable length and means to press said shoes apart.

15. In a curtain fixture, a shoe to cooperate with a guideway, said shoe comprising a spindle, a crosshead secured to said spindle, there being a series of holes formed in said crosshead, a sectional casing carrying guiding members to engage said guideway telescoping over either end of said crosshead and means cooperating with said holes to adjustably secure said casing in position.

16. In a curtain fixture, a shoe to cooperate with a guideway, guiding members mounted on said shoe to engage said guideway, one of said guiding members being carried by a casing adjustably mounted on said shoe to be movable longitudinally thereof,

and means to rigidly secure said casing to said shoe in adjusted position.

17. In a curtain fixture, a shoe to cooperate with a guideway, guiding members 5 mounted upon said shoe to engage said guideway, and means to adjust one of said guiding members longitudinally of said shoe with respect to the other guiding member and to firmly support said adjustable 10 guiding member in adjusted position.

18. In curtain fixtures, a shoe provided with guiding members adjacent its ends and means to allow the distance between said guiding members to be adjusted.

15 19. In curtain fixtures, a shoe comprising a crosshead, tips provided with guiding members mounted on said crosshead and means to allow an adjustable variation in the distance between said tips.

20 20. In curtain fixtures, a shoe provided with a portion having a sliding connection with said shoe the direction of movement of said sliding portion being longitudinal of said shoe and means to adjust the position 25 of said sliding portion.

21. In curtain fixtures, a shoe provided with a portion having a sliding connection with said shoe to vary the length of said shoe, the direction of movement of said sliding portion being longitudinal of said shoe. 30

22. In curtain fixtures, a shoe comprising a crosshead, tips provided with guiding members mounted on said crosshead and means to allow a variation in the distance 35 between said tips.

23. In curtain fixtures, a shoe comprising a crosshead, tips provided with guiding

members substantially inclosing the ends of said crosshead, the distance between said guiding members being adjustable. 40

24. In curtain fixtures, a shoe comprising a crosshead and guiding members, one of said guiding members being formed on a tip and means to longitudinally adjust said tip and crosshead. 45

25. In curtain fixtures, a shoe provided with guiding members adjacent its ends and means to adjust the distance between said guiding members.

26. In curtain fixtures, a curtain stick, 50 shoes mounted on said stick, one of said shoes being movable and pressed away from the other shoe and one of said shoes being longitudinally extensible.

27. In curtain fixtures, a spring-actuated 55 curtain, a curtain stick mounted in said curtain, shoes mounted on said curtain stick to reciprocate with respect to each other and means to normally press said shoes apart, said shoes comprising crossheads and tips 60 slidingly mounted on said crossheads and carrying guiding members to form adjustable length shoes.

28. In curtain fixtures, a shoe comprising a crosshead and guiding members, one of 65 said guiding members being mounted in a casing substantially inclosing said crosshead and having a sliding telescoping connection therewith.

HERBERT E. KEELER.

Witnesses:

HARRY L. DUNCAN,
JOHN N. MOORE.