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I. W. SMITH & J. B. HAYWARD.

CURTAIN FIXTURE.

APPLICATION FILED MAY 29, 1905.

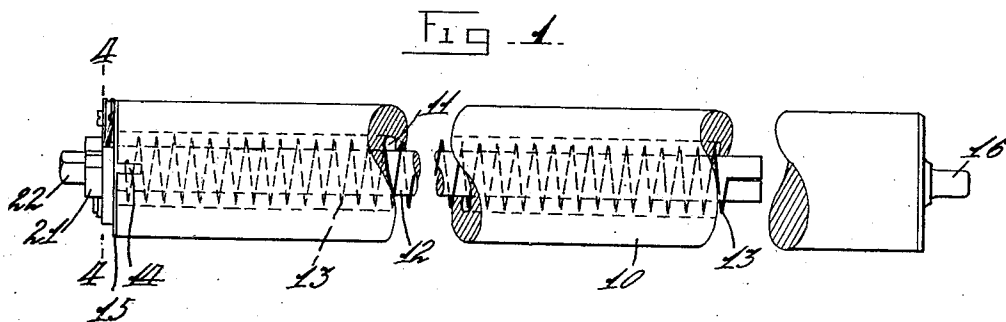
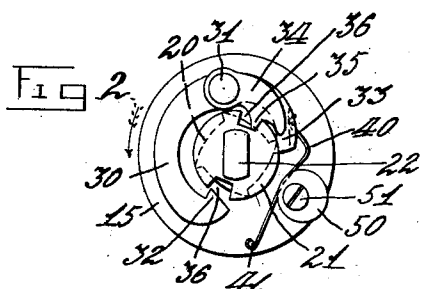
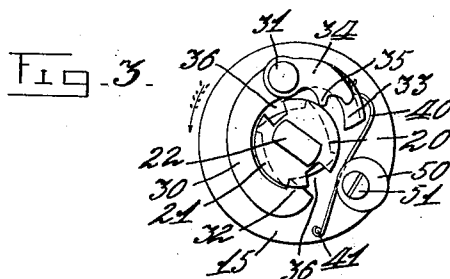


Fig. 4.

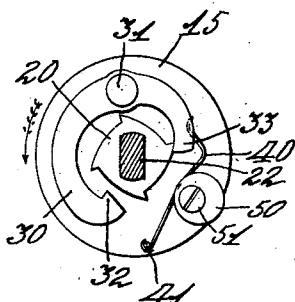
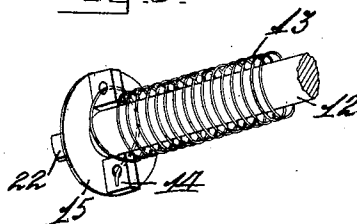


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

IRWIN W. SMITH AND JONATHAN B. HAYWARD, OF DAYTON, OHIO.

CURTAIN-FIXTURE.

No. 826,284.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, IRWIN W. SMITH and JONATHAN B. HAYWARD, citizens of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Curtain-Fixtures, of which the following is a specification.

This invention relates to improvements in curtain-fixtures, and has among its objects to provide such an improved form of device for such fixtures as will permit the curtain carried upon its spring winding-roller to be adjusted so as automatically to become latched in any desired position and at the same time associated with this latch-adjusting device a mechanism which will immediately check the curtain when it runs away under its spring tension, at which time these latching devices ordinarily become ineffective, and also to provide suitable adjusting means for regulating the quickness with which this checking device takes effect; also, to construct the entire mechanism which performs these various functions in a form which shall be compact and shall be economical and easy to manufacture and assemble.

With these and incidental objects in view the invention consists in certain novel features of construction and combinations of parts, the essential elements of which are set forth in appended claims, and a preferred form of embodiment of which is hereinafter specifically described with reference to the drawings which accompany and form part of this specification.

Of said drawings, Figure 1 represents a front view of the curtain-roller to which these improvements are attached, said curtain-roller being broken away in parts to reveal the internal construction thereof. Figs. 2 and 3 represent end views of the curtain-roller, showing the pawl-carrying head and various latching mechanisms. Fig. 4 represents a section parallel to the head and taken on a line 4 4 of Fig. 1, and Fig. 5 represents a perspective view of the internal spindle and the spring connected to the head.

Referring to said drawings, it will be seen that the curtain-roller 10 is of the ordinary and well-known cylindrical form having an internal boring 11 to receive an internal spindle 12, around which is coiled a curtain-winding spring 13, which spring at its inner end is fastened into a slot in the spindle 12

and at its outermost end is made fast to a lug 14, which projects inwardly into the curtain-roller from the head 15, which is made fast to the curtain-roller.

The head 15 is formed with an aperture through which the spindle 12 may extend, and this spindle is capped with three parts comprising a four-toothed ratchet-wheel 20, (shown best in Fig. 4,) on top of which is a latching-disk 21, (shown in Figs. 2 and 3,) and on top of which latching-disk 21 is the ordinary flattened spur 22, which is of the usual form in curtains for being inserted into a correspondingly-slotted socket forming a bracket for the roller, the other end of the roller having the pin 16 projecting therefrom to serve as a bearing for the other end of the curtain-roller. This spur 22, latching-disk 21, and ratchet-wheel 20 are all fast together as in one piece, and being all fast to the spindle 12 of course all remain stationary when the curtain-roller is put into its brackets, so that when the curtain is pulled down the rotation of the curtain-head 15 with the curtain-roller puts the spring 13 under tension, so as to tend to rewind the curtain up again in a well-known manner.

Pivoted upon the head 15 and lying adjacent to said head is a check-pawl 30, (shown best in Fig. 4,) the pivotal point 31 of this pawl being approximately the middle thereof, and this pawl is formed with curved arms ending in a head 32 and a tail 33, these arms circumscribing somewhat more than half of the ratchet-wheel 20. Pivoted at the same point 31 and mounted adjacent to the aforesaid check-pawl 30 is an ordinary form of latching-pawl 34, having a nose 35, which engages recesses 36, formed in the aforesaid latching-disk 21. This latching-pawl 34 is a gravity-pawl and intended to operate in a well-known manner to engage the recesses 36 when the pawl is brought around to its upper position in the course of the rotation of the curtain-roller, so as to thereby latch the curtain-roller from further movement by engagement with this stationary spindle 12. Of course it will be understood that the pawls 30 and 34 are carried upon and revolve with the curtain-roller, and the pawl 30 is in lateral alinement with its corresponding ratchet-wheel 20, while the pawl 34 is in lateral alinement with its corresponding latching-disk 21, and the purpose of the pawl 34 is simply to latch the curtain-roller in its ad-

justed position as soon as the pawl 34 has been brought to its upper position in the course of rotation of the roller, at which time it will drop down into engagement with its latching-disk 21 in a manner well known in the art.

The purpose of the check-pawl 30 will now be described. If by reason of rapid rotation of the curtain-roller under its spring tension the pawl 34 should fly around too rapidly to permit the same to drop into one of the recesses 36 to latch the roller, as very often occurs when by inadvertence the curtain is lost hold of and runs away from the grasp of the operator, the check-pawl 30 and ratchet 20 become operative immediately to check the curtain and stop the same automatically. The relative positions of the aforesaid head 32 and tail 33 of the pawl 30 are such that under ordinary movements of rotation of the curtain in the direction of the arrow shown in Fig. 4, (which is the direction of rotation when the spring is acting to wind up the curtain,) the teeth of the ratchet-wheel 20 will successively engage the tail 33 of the pawl 30 and in so doing will rock the tail 33 outward, and thereby carry the head 32 inward, so that the nose thereof will be in the path of the diametrically opposite tooth; but if the movement of rotation of the pawl 30 is slow the tail 33 will drop back again on the other side of its tooth in time to permit the head 32 to be withdrawn out of the path of the oncoming tooth on its side. A spring 40, attached to the head 15 at 41 and bearing upon the tail 33, tends to keep the tail 33 inward and the pawl 32 outward, so as to maintain the head of the pawl 32 from engagement with the teeth of the ratchet-wheel 20; but if the speed of rotation of the curtain-roller is very fast the oncoming tail 33 will strike the stationary tooth of the ratchet-wheel 20 with such force that the tail 33 will be carried outward against its spring tension and the spring tension will not be sufficient to carry the tail back again before the tooth on the opposite side has reached engagement with the head 32, and thereby the curtain-roller will be immediately automatically locked by this check-pawl, this locking position being shown in Fig. 3. It will thus be seen that this check-pawl serves to automatically check the curtain-roller in its running-away movement, and the curtain-roller can of course be immediately released therefrom by the ordinary movement of pulling down upon the curtain, which of course rotates the pawls in the other direction, so that the pawl 30 rides freely over its ratchet-wheel 20, and then the curtain may be adjusted at any other desired point by the aid of the ordinary latch-pawl 34. Since the tension of the spring 40 is what governs the inward return of the tail 33 after it is carried downward by the force of the blow struck by the teeth of the disk 20, the adjust-

ment of this spring to increase its tension will cause a more rapid return of the check-pawl 30 to its non-engaging position, and thus the curtain would run to a further extent and require more momentum before it is checked in the manner above described. This tension is adjusted by means of a disk 50, pivoted eccentrically about the screw 51, so that by releasing the screw and rotating the disk 50 by hand slightly the tension of the spring 40 may be increased or decreased, as desired, and, as above stated, if the tension is increased the speed at which the curtain-roller may run before the same will be checked may be greater, whereas if the tension is decreased the speed at which the curtain may run before being checked is decreased. Thus if it is desired to have the adjustment such that the curtain may be given a fairly rapid lifting movement to bring the same to the desired position before the ordinary gravity or latching pawl 31 is permitted to take effect this may be done by increasing the tension of the spring 40 in the manner described, and the checking will nevertheless immediately take place when the curtain runs away, and this speed of rotation is increased during such running-away movement, and if this checking is not as quick as may be desired the tension on the spring 40 may be decreased, in which place the checking will take place under a lower speed of rotation of the curtain, which would of course also effect somewhat the speed with which the curtain may be raised by hand; but this leaves the entire adjustment of these devices wholly within control, so that the checking effect will take place upon whatever speed of rotation may be desired.

From the above description of the operation of these devices it will be observed that the latching-pawl 34 is normally active to latch the curtain-roller in any desired set position and will take effect when a certain speed of rotation of the roller is maintained, whereas the checking-pawl 30 is normally inactive, but becomes active immediately to check the roller when an abnormal speed of rotation has developed and the said latching-pawl has thereby become inactive, and the adjustable device for adjusting the tension of the spring 40 controls the checking effectiveness of the pawl 30 relatively to the speed of rotation of the roller, these various parts being constructed with a view to insuring the greatest possible economy, simplicity, and efficiency for producing the results desired.

While the form of mechanism here shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form of embodiment herein disclosed, for it is susceptible of embodiment in various forms, all coming within the scope of the claims which follow.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a curtain fixture, the combination with the spring-actuated roller, of means for checking the roller when the speed of rotation exceeds a certain predetermined limit; and means carried on the roller for varying at will such predetermined speed limit.

2. In a curtain-fixture, the combination with the spring-actuated roller, of means for automatically latching the roller when the speed of rotation under its spring action exceeds a certain normal limit; and adjustable means carried on the roller for varying the quickness with which such latching means shall become effective.

3. In a curtain-fixture, the combination with the spring-actuated roller, of means under spring tension for automatically checking the roller when the speed of rotation exceeds a certain predetermined limit; and adjustable means for varying such spring tension whereby to vary the effectiveness of said checking means relatively to the speed of rotation.

4. In a curtain-fixture, the combination with the curtain-roller, of the stationary central spindle therefor; a winding-spring connecting said spindle and said roller; a ratchet-wheel carried upon the protruding end of said spindle; and a checking-pawl cooperating with said ratchet and carried upon one end of said roller, said pawl being pivoted centrally and comprising two arms partially encircling said ratchet, one of said arms formed with a checking-nose to engage said ratchet and hold the roller from rotation and the other arm being positioned to be struck by the teeth of said ratchet to force said nose into checking position.

5. In a curtain-fixture, the combination with the curtain-roller, of the stationary central spindle therefor; a winding-spring connecting said spindle and said roller; a ratchet-wheel carried upon the protruding end of said spindle; a checking-pawl cooperating with said ratchet and carried upon one end of said roller, said pawl being pivoted centrally and comprising two arms partially encircling said ratchet, one of said arms formed with a checking-nose to engage said ratchet and hold the roller from rotation and the other arm being positioned to be struck by the teeth of said ratchet to force said nose into checking position; a spring for normally forcing said pawl out of checking position; and adjustable means for varying the tension of said spring whereby to vary the quickness of such checking effect.

6. In a curtain-fixture, the combination with the spring-actuated roller, of a normally active latching-pawl for latching the curtain in any desired set position when a certain speed of rotation of the roller is maintained;

and a normally inactive checking means cooperating with provisions to give said checking means a positive impact to immediately check the roller when an abnormal speed of rotation is developed and the said latching-pawl has thereby become ineffective.

7. In a curtain-fixture, the combination with the spring-actuated roller, of a normally active latching-pawl for latching the curtain in any desired set position when a certain speed of rotation of the roller is maintained; a normally inactive checking means which becomes active to immediately check the roller when an abnormal speed of rotation is developed and the said latching-pawl has thereby become ineffective; and means carried on the roller for varying at will the effectiveness of said checking-pawl relatively to the speed of rotation of the roller.

8. In a curtain-fixture, the combination with a curtain-roller, of a latching-pawl and a checking-pawl carried upon one end thereof; a stationary central spindle having a spring connection for actuating the roller and also having a protruding extension common to said two pawls and formed with projections to be engaged thereby, said latching-pawl being normally active to engage said common extension to latch the roller in any desired position and said checking-pawl being normally inactive but having provisions to cause the same to engage the common extension and check the rotation of the roller when an abnormal speed of rotation is developed.

9. In a curtain-fixture, the combination with a curtain-roller, of a stationary central spindle therein having a spring connection to said roller for winding the latter; a ratchet-wheel fast upon the protruding extension of said spindle at one end of said roller; a latching-disk also fast to said spindle and adjacent to said ratchet-wheel, said disk being formed with latching-notches; a checking-pawl pivoted upon said end of said roller and in lateral alinement with said ratchet-wheel and having provisions for engaging said wheel to check the roller upon abnormal speed of rotation; and a latching-pawl pivoted coaxially with and adjacent to said checking-pawl and in lateral alinement with said latching-disk, said latching-pawl being positioned to engage said latching-notches to latch the roller in adjusted position upon normal speed of rotation of the roller.

10. In a curtain-fixture, the combination with a curtain-roller, of a stationary central spindle therein having a spring connection to said roller for winding the latter; a ratchet-wheel fast upon the protruding extension of said spindle at one end of said roller; a latching-disk also fast to said spindle and adjacent to said ratchet-wheel, said disk being formed with latching-notches; a checking-pawl centrally pivoted upon said end of said roller and in lateral alinement with said

ratchet-wheel, said pawl comprising partially - encircling arms partially encircling said ratchet-wheel and one arm positioned to be struck by said wheel to force the other arm into checking engagement with the wheel upon abnormal speed of rotation; and a latching-pawl pivoted coaxially with and adjacent to said checking-pawl and in lateral alinement with said latching-disk, said latching-pawl being positioned to engage said latching-notches to latch the roller in adjusted position upon normal speed of rotation of the roller.

11. In a curtain-fixture, the combination with a curtain-roller, of a stationary central spindle therein having a spring connection to said roller for winding the latter; a ratchet-wheel fast upon the protruding extension of said spindle at one end of said roller; a latching-disk also fast to said spindle and adjacent to said ratchet-wheel, said disk being formed with latching-notches, a checking-pawl centrally pivoted upon said end of said roller and in lateral alinement with said ratchet-wheel, said pawl comprising partially - encircling arms partially encircling said ratchet-wheel and one arm positioned to be struck by said wheel to force the other arm into checking engagement with the wheel upon abnormal speed of rotation; a latching-pawl pivoted coaxially with and adjacent to said checking-pawl and in lateral alinement with said latching-disk, said latching-pawl being positioned to engage said latching-notches to latch the roller in adjusted position upon normal speed of rotation of the roller; a spring attached to said roller end and bearing upon one arm of said checking-pawl to hold the pawl normally out of checking position; and an adjustable

device carried upon said roller end and bearing upon said spring whereby the tension of said spring may be varied to regulate the checking effectiveness of said checking-pawl.

12. In a curtain-fixture, the combination with the spring - actuated roller, of speed-checking means for the roller, said means co-operating with provisions for giving the checking means a positive impact to immediately check the roller when an abnormal speed of rotation is developed.

13. In a curtain-fixture, the combination with the spring-actuated roller, of a checking-pawl having a checking-nose to arrest the rotation of the roller and also having an extension coöperating with provisions for giving a positive impact to said checking-pawl to immediately check the roller when an abnormal speed of rotation is developed.

14. In a curtain-fixture, the combination with the curtain-roller, of the stationary central spindle therefor; a winding-spring connecting said spindle and roller; a checking-pawl carried by said roller and having a checking-nose to engage said spindle and check the rotation of the roller; with provisions mounted on said spindle for giving a positive impact to said checking-pawl to cause the latter to immediately engage said spindle to check the rotation of the roller.

In testimony whereof we affix our signatures in presence of two witnesses.

IRWIN W. SMITH.
JONATHAN B. HAYWARD.

Witnesses:

WM. O. HENDERSON,
C. B. FOSTER.