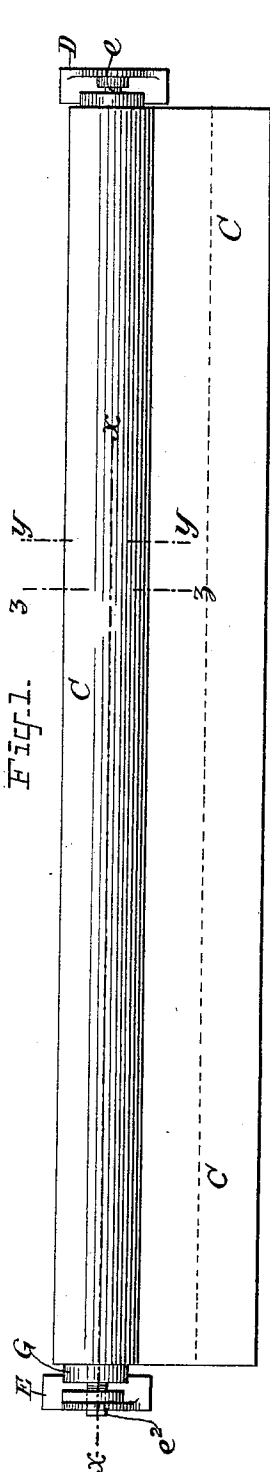


(No Model.)

J. C. PERKINS.
SPRING SHADE ROLLER.

No. 481,733.

Patented Aug. 30, 1892.



ATTEST:
J. A. Murdley
M. C. Coffey

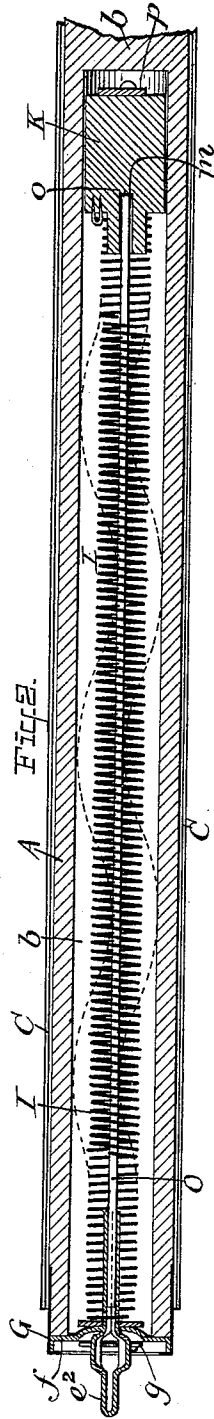


FIG. 5.

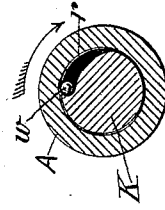


FIG. 4.

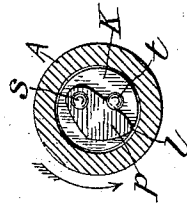
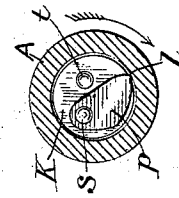


FIG. 3.



INVENTOR:
Judson C. Perkins
 By
J. N. M. Suture
 Attorney

UNITED STATES PATENT OFFICE.

JUDSON C. PERKINS, OF MERIDEN, CONNECTICUT, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE MERIDEN CURTAIN FIXTURE COMPANY, OF SAME PLACE.

SPRING SHADE-ROLLER.

SPECIFICATION forming part of Letters Patent No. 481,733, dated August 30, 1892.

Application filed January 13, 1892. Serial No. 417,935. (No model.)

To all whom it may concern:

Be it known that I, JUDSON C. PERKINS, of Meriden, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Spring Shade-Rollers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to that type of shade-rollers that is provided with an interiorly-arranged actuating-spring which operates to rotate the roller automatically in that direction which effectuates the winding up of the shade. In the use of shade-rollers of this type (whether of that species in which a ratchet-and-pawl mechanism is employed to effect the stoppage of the roller's revolution and thus the retention of the shade at any desired point, or of that species known as "balance" shade-roller fixtures) when made as they have been prior to my invention with one end of the spring fastened to the roller and the other end to the spindle or spindle-tip, a serious objection or practical defect has been found to exist in the liability of injury to or a derangement of the spiral or coiled actuating-spring in consequence of a turning or twisting of said spring in the unwinding direction (so to speak) after said spring may have been wholly relieved of the tension under which it is necessarily held for the purpose of rotating the roller in the proper direction and to the proper extent to wind up the pendent shade.

My present invention has for its object to provide a means for effectually overcoming this defect in or practical objection to spring shade-rollers as heretofore made; and to this end and object it may be said to consist in the use, in connection with the roller and its interiorly-arranged coiled spring, of means whereby whenever the roller may be revolved (by the pull thereon of the shade) in the direction designed to effectuate the winding up (more or less) of the actuating-spring, such an engagement between the spring and the bore of the roller within which said spring is incased will exist as will assure the turning together of said roller and said spring to wind

up the spring, as usual, and whereby whenever after the complete unwinding of the spring the roller shall continue to rotate in the direction necessary to so unwind it, said spring will instantly become wholly disengaged from said roller, leaving the latter free to thereafter rotate without exerting any tendency to untwist or otherwise injuriously effect the said spring, all as will be hereinafter more fully explained, and as will be more particularly pointed out in the claim of this specification.

To enable those skilled in the art to which my invention relates to make and use shade-rollers containing the same, I will now proceed to more fully describe my improvement, referring by letters to the accompanying drawings, which form part of this specification, and in which I have shown my invention carried into effect in the precise form of mechanism in which I have so far practiced my invention, though of course changes not affecting the novel principle of construction and mode of operation peculiar thereto may be made without departing therefrom.

In the drawings, Figure 1 is a view in elevation showing a shade-roller embracing my invention mounted in the usual manner in a pair of ordinary brackets and provided with a window-shade such as commonly used. Fig. 2 is a partial sectional view of the same, taken at a plane indicated by the dotted lines $x x$, but with the shade omitted and with the parts drawn to a scale of full size. Fig. 3 is a cross-sectional view, full size, of the parts seen at Fig. 2, taken at line yy of Fig. 1 and showing the step locked to the bore of the roller, so that these parts must rotate together in the direction indicated by the arrow. Fig. 4 is a similar view but showing the parts disengaged, as they are whenever the roller may be rotated in the opposite direction after the spring shall have been relieved of tension. Fig. 5 is a similar cross-section at the line $z z$ of Fig. 1, showing a modification of the means for automatically locking the step and the roller together.

In the several figures the same part will be found always designated by the same reference-letter.

A represents the ordinary wooden roller

having the usual central bore or cylindrical cavity *b* extending inwardly from one end thereof, and C represents part of the shade (attached to and wound on said roller) of that species of spring roller-shade fixture in which a ratchet-and-pawl mechanism is employed to hold the roller against the rotative effect of the actuating-spring.

D and E are respectively the usual perforated and slotted metallic brackets in which the shade-roller is mounted, as shown, by the engagement with the perforated bracket D of the journal or teat *e*, that projects centrally from one end of the roller and with the slotted bracket E of the polygonally-shaped end *e*² of a spindle-tip that projects from the other end of said roller, all in a manner substantially such as well known and heretofore used.

f is the end plate, and *g* the pawls pivoted to the outer face thereof and coacting with a ratchet-like device on (or a portion of) the spindle-tip, the said end plate being held in place (endwise of the roller) by the ferrule-like device G, all as clearly shown, and after a fashion well understood by those familiar with the manufacture and use of spring-roller fixtures of the species shown.

I is the helical or spiral actuating-spring, which, as seen, is of about the usual approved form, made, preferably, of a diameter considerably less than that of the bore or cylindrical cavity *b* of the roller within which it is arranged. The said spring I has its outermost end fastened to the metallic spindle-tip *e*², preferably by the passage of its end through a diametrically-located hole through the inner tubular portion of said spindle-tip and has its innermost end secured, in the case shown, to the step K, that is arranged at about the usual place or point within the bore *b* of the roller, but which is combined therewith in a novel manner, as and for a purpose to be presently explained. The said step K has a cylindrical cavity *m* in its outer teated end, into which is loosely stepped or socketed one end of a loose or free wire-spindle *o*, the other end of which is stepped or loosely fitted within the inner tubular portion of the spindle-tip, (see Fig. 2,) all as clearly shown, and in the case shown the inner end portion of the spring I surrounds the teat of said step and is fastened to the larger or body portion of the step by the passage of the extreme end of the spring through a small staple driven into the wood of the step, as illustrated. Of course these details as to the means of fastening the ends of the spring respectively to the step and to the spindle-tip are not material to my invention, and so far as the latter is concerned the arrangement shown, wherein the inner end of the spring is adapted to come automatically into engagement with the roller only when the latter turns in the direction explained, and to become wholly disengaged therefrom whenever, with the spring relieved of all tension, the roller turns in the opposite direction would

have to be reversed in the application of my improvement to that other known species of spring-roller in which, unlike the species shown, the inner end of the spring is permanently attached to a spindle which (through its connection with the spindle-tip) serves to hold stationary the inner end of said spring, while its outer end by engagement with the roller is turned to wind up the spring.

The spindle-tip *e*² shown is made of sheet metal after a novel fashion or construction, which, however, need not be described herein, as it constitutes no part of my invention, but, on the contrary, involves a joint invention by myself and another party that forms the subject of another application for Letters Patent, and, furthermore, so far as my present invention is concerned, the spindle-tip might be of any other form and material.

On the inner end of the wooden step K is pivotally attached thereto a metallic dog *p*, the pivot *s* of which is located between the center and the perimeter of the circular end or head of said step, and one edge of which swinging dog or plate *p* stops against another pin in the head of the step, (marked *t*.) The shape of said dog and the relative arrangement therewith and with the circular head of the step of the pivotal pin *s*, and the stop-pin *t*, are clearly shown at Figs. 3 and 4, in the first mentioned of which the dog *p* is shown as locking the step and roller together, so that as the latter turns in the direction indicated the step is forced to rotate with it, and thus wind up or increase the tension of the spring I, while in the other of said figures the dog is shown in a dormant condition, permitting the roller to freely revolve in the opposite direction without in the least turning or affecting the step K, and hence without causing or tending to cause any untwisting of the spring I after the latter shall have assumed its normal condition.

In the operation of my improved spring-roller whenever the roller with the spring wholly unwound is turned in the proper direction to wind up the spring the initial movement of the wall or surface of the bore *b* in slight contact with the point *l* of the dog or plate *p* will cause said plate to slightly oscillate on its pivot *s*, until the increasing bite of the said point *l* (turning in a curve eccentric to that of the periphery of the step K) on the bore *b*, quickly brings the step and roller to a dead-lock, enforcing the turning of these parts together, and hence effecting the winding up of the spring in precisely the same manner as if the step, as heretofore, were nailed fast within the bore of the roller, and so long as the spring is held under tension it and the roller will remain locked together, both in further winding up the spring and in allowing it to either partially or wholly unwind. When, however, the spring shall have become completely unwound, so that it is relieved of all tension in the winding-up direction and only

then, any rotation of the roller in an opposite direction will not influence the step *K* in the least, since the movement of the wall or surface of the bore *b* in this direction will simply exert on the point *l* of the dog *p* a tendency which will induce the dog to remain in contact with its stop-pin *t* and in a condition of disuse.

At Fig. 5 the modification shown of the automatic step-lock consists in the use of a loose or rolling sphere *w*, (in practice it may be a leaden shot,) arranged in a groove or circumferentially-formed housing *r*, cut in the step and of such shape, as shown, that the tendency of the friction-ball *w* will be to roll or wedge itself forcibly between the bore *b* and the inclined bottom of groove *r* whenever the roller is turned in one direction or the actuating-spring is under tension and to roll out of forcible contact with said bore whenever, with the spring under no tension, the roller is turned in an opposite direction, and of course it is not material what specific construction of automatic locking device is employed, my invention resting upon the broad idea of the combination, with the bore of the roller and the spring *I*, of some suitable means for effectuating the locking together of the roller and the said spring automatically under the conditions and for the purpose hereinbefore set forth.

Aside from the advantages due to my invention in the actual use or practical operation of my improved fixture great benefit is derived therefrom by the manufacturer, since, instead of having to detach and reattach the heretofore-permanently coupled or connected roller and its actuating-spring (or the step)

with considerable trouble in the event of the discovery of any defect when the assembled parts are subjected to the usual inspection or test, (before putting the fixture out for the market), the spring, together with its step, and the automatic locking device are easily removable from the bore of the roller, within which they have simply to be replaced in re-assembling all the parts of the fixture.

Having now so fully described my invention that those skilled in the art can make and use spring-roller fixtures containing the same in either the precise forms shown or under some modified form, what I claim as new, and desire to secure by Letters Patent, is—

In a spring-roller fixture for window-shades, the combination of the following-named instrumentalities, viz: first, the roller adapted to be mounted in brackets and to support the shade, as usual; second, the actuating-spring arranged within the roller and having one end held fast, as usual, but having its other end detached from the roller, and, third, means operating automatically to effect an engagement between the detached end of the actuating-spring and the roller whenever, with the spring in its normal condition, the latter rotates in the proper direction to wind up the spring and to maintain such engagement so long as the spring remains under tension, the combination being and operating substantially as hereinbefore set forth.

In witness whereof I have hereunto set my hand this 23d day of December, 1891.

JUDSON C. PERKINS.

In presence of—

DEXTER W. PARKER,
E. A. LEIGH.