

(No Model.)

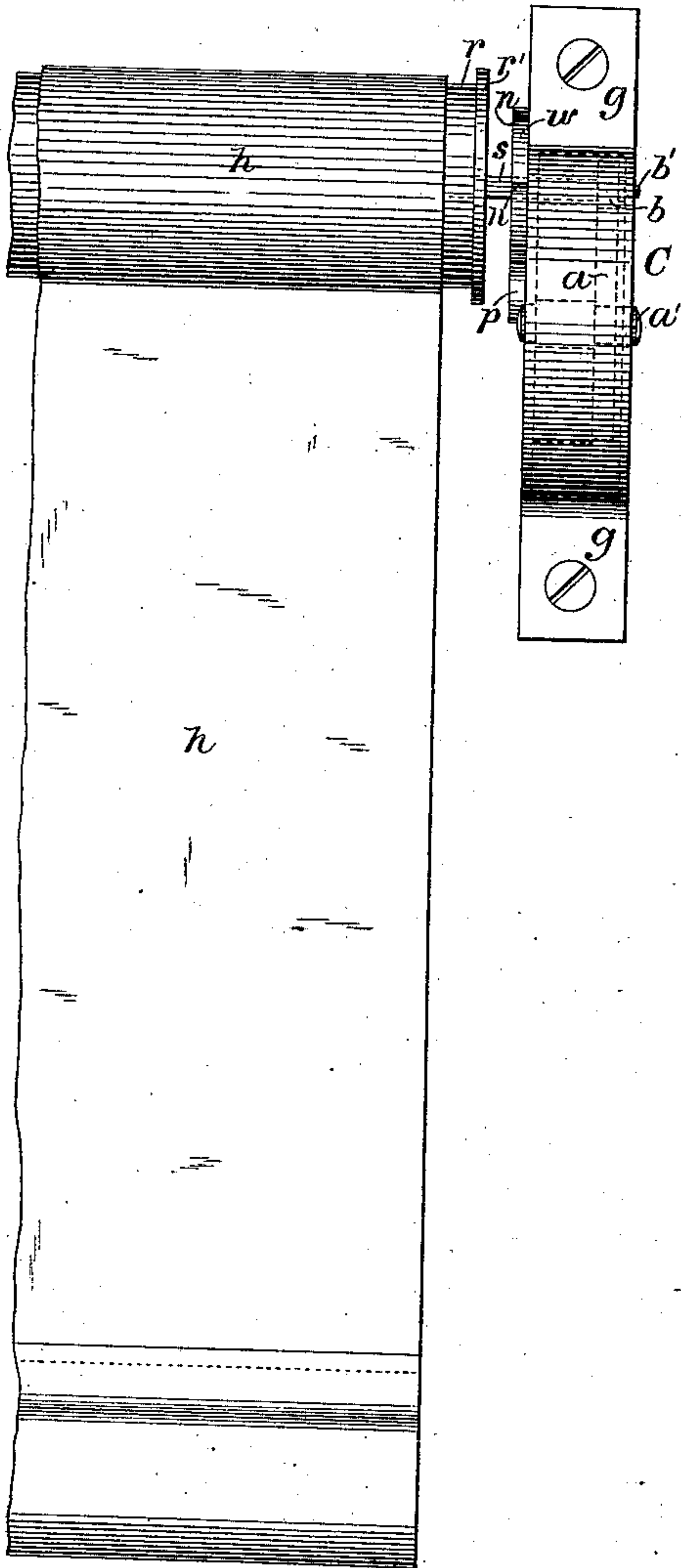
D. R. STEDMAN.

SHADE ROLLER.

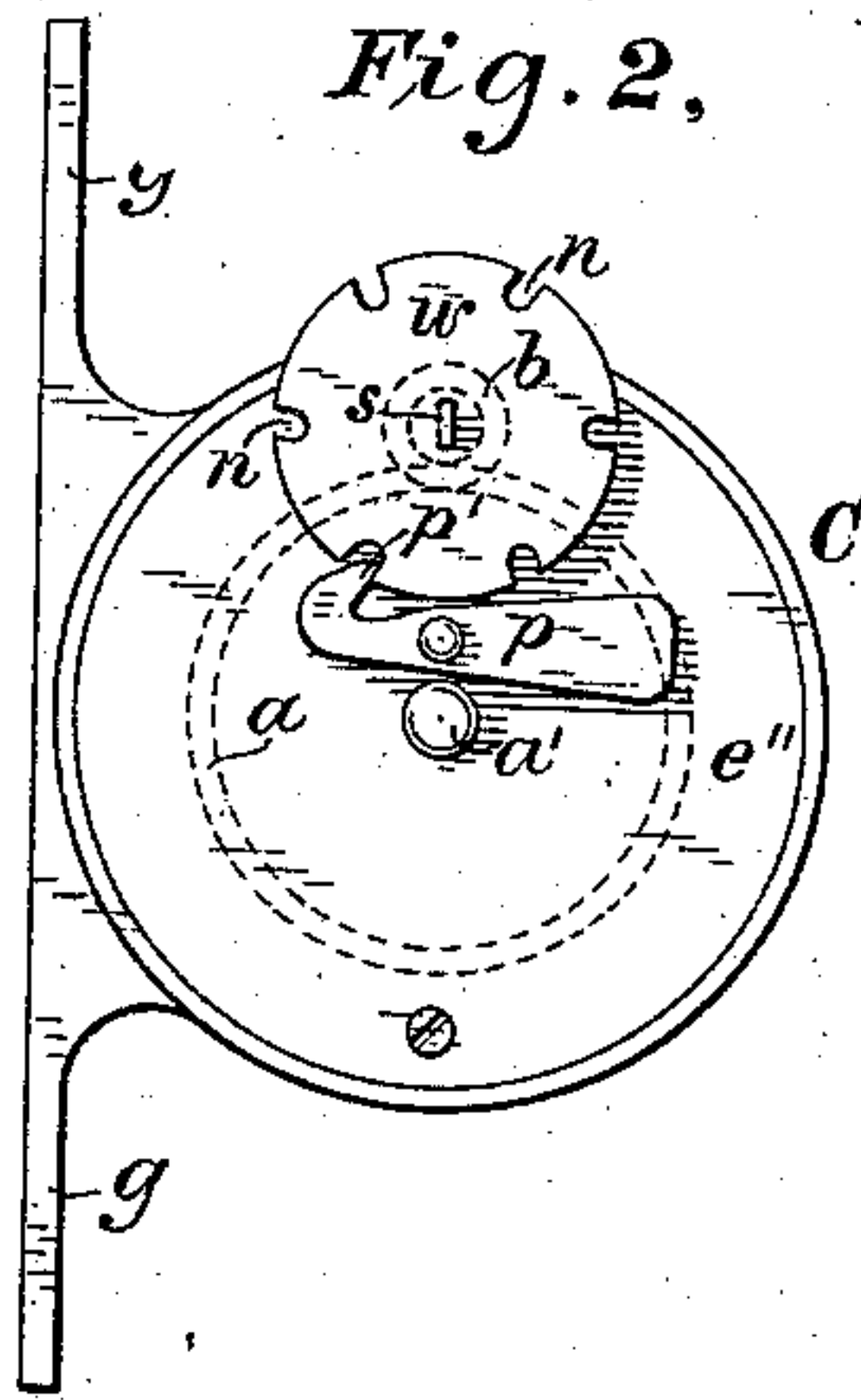
No. 294,414.

Patented Mar. 4, 1884.

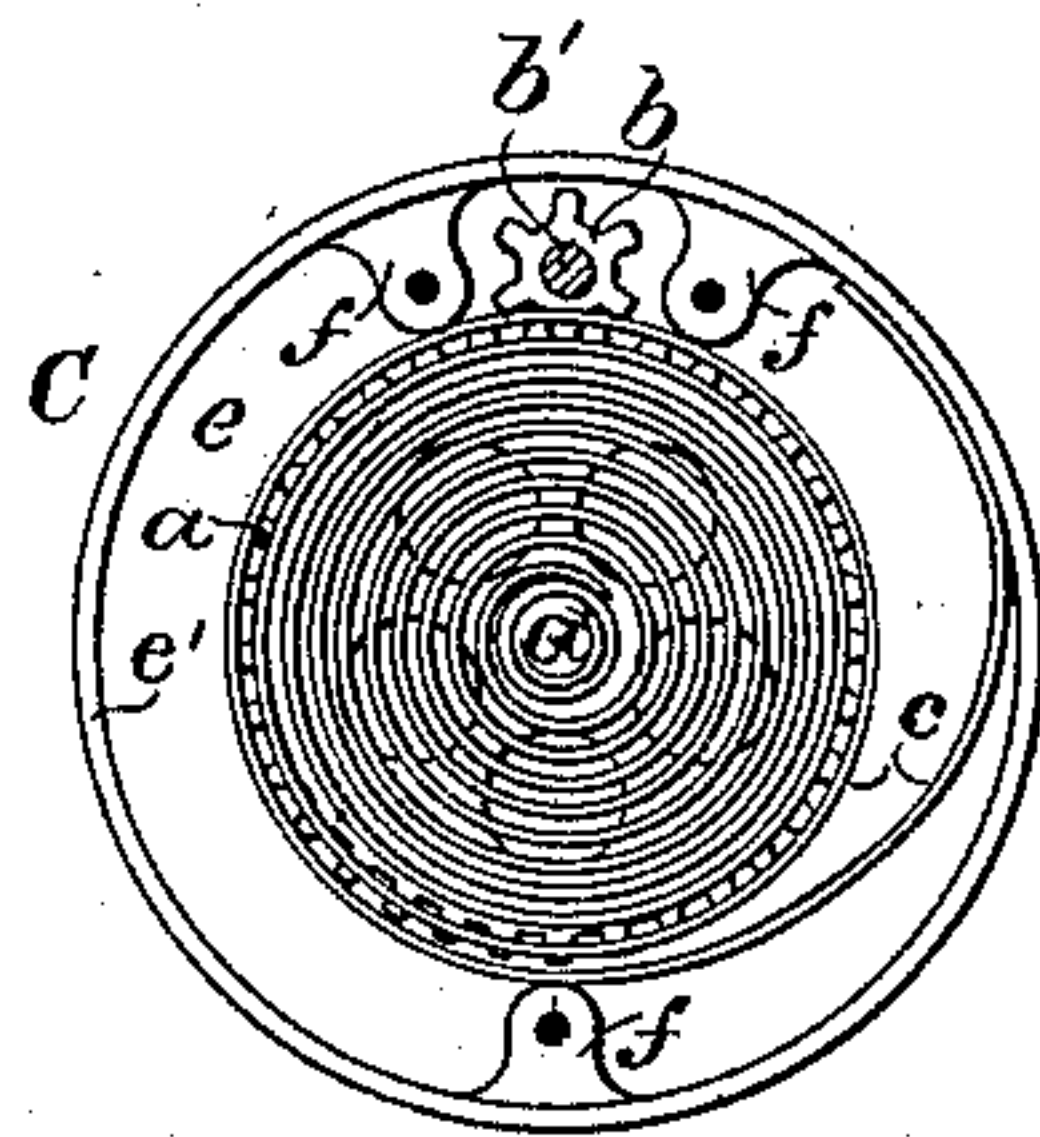
*Fig. 1,*



*Fig. 2,*



*Fig. 3,*



WITNESSES

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# UNITED STATES PATENT OFFICE.

DAVID R. STEDMAN, OF ELIZABETH, NEW JERSEY, ASSIGNOR OF ONE-HALF  
TO ROBERT J. BOWEN, OF SAME PLACE.

## SHADE-ROLLER.

SPECIFICATION forming part of Letters Patent No. 294,414, dated March 4, 1884.

Application filed November 6, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID R. STEDMAN, a citizen of the United States, and a resident of Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Self-Acting Shade-Rollers, of which the following is a specification.

My invention relates to that class of shade-rollers and fixtures therefor in which the shade is raised and wound upon the roller automatically by means of spring or other self-acting mechanism arranged to revolve the roller.

My present improvements consist in the construction of the mechanism for arresting the roller and holding the shade in the desired vertical position, by means of which improved mechanism certain advantages and improvements in the action of the roller are obtained, as will be hereinafter fully explained.

In the accompanying drawings, Figure 1 is a front elevation of a shade-roller and mechanism embodying my invention. Fig. 2 is a view in elevation of the side of the inclosing-case adjacent to the end of the roller, showing the stop mechanism. Fig. 3 is a similar view with the side of the casing and stop mechanism removed, and showing the driving spring and gearing which I prefer to employ as a motor for the roller.

Similar letters of reference appearing in different figures indicate corresponding parts.

Referring to Figs. 1 and 3, *a* represents a gear-wheel, and *b* a pinion engaging therewith. A convolute spring, *c*, of the form ordinarily employed in clock-works, is rigidly secured at one end to the spindle, with which the wheel *a* rotates, so that the revolution of the wheel *a* coils and uncoils the spring, according to the direction of such revolution. The pinion *b* is connected directly with one end of the roller *r*, upon which the shade is wound by means of a stem, *s*, forming a continuation of the spindle *b'*, upon which the pinion *b* is mounted. This stem is formed with flat sides, as shown, and projects into a plate, *r'*, upon the end of the roller, as shown in Fig. 1. The plate *r'* is firmly fixed, by screws or otherwise, to the end of the roller *r*, and is centrally perforated with an oblong hole, corresponding approximately in shape with the cross-section of the stem *s*.

(See Fig. 2.) The stem *s* fits into this hole in the plate *r'*, and is thus rigidly connected with the roller with respect to its lateral motion. The relative diameters of the pinion *b* and gear-wheel *a* may preferably be such that the pinion and roller will complete five revolutions during one complete revolution of the wheel, and consequently the motion caused by the coiling or uncoiling of one convolution of the shade upon the roller will correspond with one-fifth of one revolution of the wheel *a* and convolution of the spring *c*. The spring *c*, wheel *a*, and pinion *b* are inclosed within a casing, *C*, which may be composed of a flat side, *e*, and a rim, *e'*, cast together, of any suitable metal. A circular plate, *e''*, is formed to cover the open side of the case, and it may be secured to the latter by being riveted or screwed to the lugs *f f f*, which lugs may be cast with the side *e* and rim *e'* of the casing *C*. The spindle *a'*, upon which the gear-wheel *a* and spring *c* are mounted, as well as the spindle *b'* of pinion *b*, turn in circular apertures formed in the sides *e* and *e''* of the casing. The spring *c* is securely riveted at its inner end to the spindle *a'*, and at its opposite or outer extremity to the inner side of the rim *e'*, and therefore all the strain upon the casing *C*, caused by the coiling of the spring *c*, is borne by the side *e* and rim *e'*, which are solidly cast together. Lugs *g g* are cast with or otherwise rigidly secured to the rim *e'* of the casing *C*, and by means of these lugs the entire case, with its inclosed mechanism, may be screwed to the window-casing, where it should be secured in proximity to the end of the roller, as shown in Fig. 1. The end of the roller *r* (shown in the drawings) may be supported entirely by the stem *s*, and the opposite extremity may be supported in the usual manner by being pivoted to a metallic bracket secured to the window-casing.

In connecting the parts the shade *h* is wound entirely upon the roller before the latter is connected with the spring and stop mechanism, and is wound so as to hang from the side of the roller nearest the window-casing in the usual manner. It will therefore be seen that by pulling the shade *h* downward for lowering the same the roller will be revolved, the pinion *b* rotated to the left, the wheel *a* rotated,



with its spindle, to the right, and the spring *c* consequently coiled or wound up, and that by allowing the spring to recoil the wheel *a*, pinion *b*, and roller *r* will be revolved in opposite directions and the shade automatically wound back upon the roller.

The stop mechanism which I employ for arresting the roller in its automatic revolution and holding the shade in its lowered position is shown in Figs. 1 and 2, and consists of the disk or wheel *w* and pawl *p*. The periphery of the wheel *w* is indented by a series of notches, *n*, which notches are separated by peripheral sections of convex shape, and which form segments or arcs of a true circle of which the axis of the wheel *w* constitutes the center, as will be readily understood upon reference to Fig. 2. The wheel is rigidly mounted upon the stem *s* on the outside of the casing *C*, and therefore rotates upon the same axis as the pinion *b* and roller *r*. The notches *n* extend inwardly from the periphery of the wheel *w*, preferably in tangential directions, as shown. The pawl *p* is pivoted to the side *e''* of the casing *C*, and has its engaging extremity *p'* formed into a hook, as shown, which hook is adapted to enter the notches *n* and hold the wheel *w*, and consequently the roller, and prevent them from rotating to the right when the shade is lowered and winding up the same. The opposite end of the pawl is of sufficient weight to overbalance the extremity *p'* and cause it to normally engage with one of the notches *n* of the wheel *w*, as illustrated. When the wheel *w* is rotated to the left, as in lowering the shade, it will not be arrested by the pawl *p*, owing to the tip of the hook *p'* being turned in the direction of rotation of the wheel, as the sides of the notches will, by impinging upon the outer-side of said hook, force it out of the notch, thus allowing the latter to slip by, as will be readily understood. When, however,

the wheel *w* is rotated at a slow speed in the opposite direction—*i. e.*, to the right, as in the case of the ascent or winding up of the curtain—the hook *p'* will enter one of the notches *n* and assume the position shown in Fig. 2, and thus lock the wheel *w* against the force of the spring *c*, as will be readily understood.

I have found that by forming the periphery of the wheel *w* between the notches *n* of convex shape, or in the form of arcs or segments of a circle of which the axis of the wheel *w* forms the center, a very easy action is given to the pawl *p* upon the stop-wheel *w*, since the periphery of said wheel is formed into a perfect circle, which is only broken by the notches *n*; and this form of periphery allows the pawl to impinge upon it during the wheel's revolution with much less jouncing, and consequently much less friction and wear, than is liable to attend the manipulation of the corresponding parts of rollers in which the pawl acts directly upon the teeth of a pinion or gear-wheel, or upon a stop-wheel having a less regular periphery, while at the same time my improved stop mechanism efficiently serves its purpose of checking and locking the roller.

What I claim herein as my invention is—

In a self-acting shade-roller, the combination, with spring or other motive mechanism and a pawl for arresting and locking the roller, of the wheel *w*, having its periphery indented by the series of notches *n*, the intervening spaces between said notches being formed into convex sections or segments of a circle of which the axis of said wheel forms the center, substantially as herein shown and described.

Signed by me this 2d day of November, A. D. 1883.

DAVID R. STEDMAN.

Witnesses:

MILLER C. EARL,  
GEORGE H. HORNING.