(No Model.)

C. BUCKLEY.

CURTAIN FIXTURE.

No. 382,509. Patented May 8, 1888.

Fig. 1

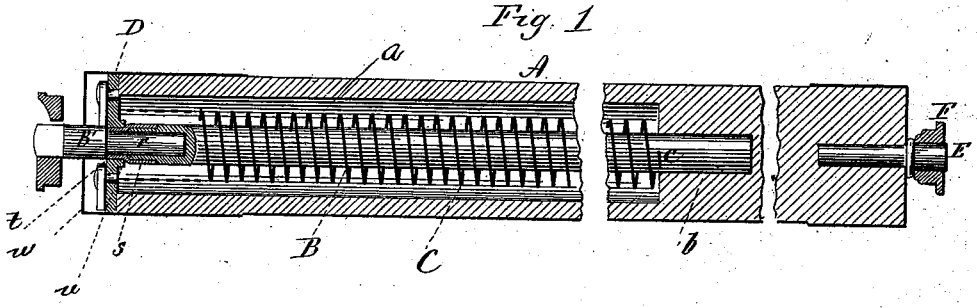


Fig. 2

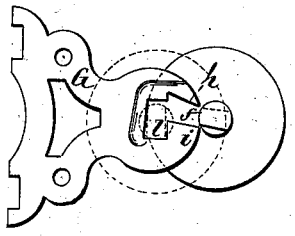


Fig. 3

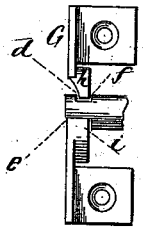


Fig. 4

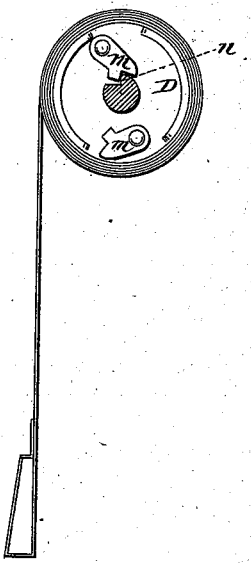
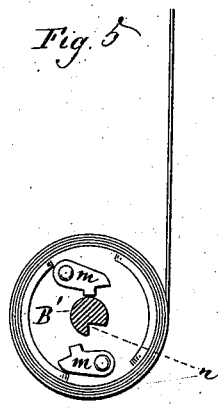


Fig. 5



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UNITED STATES PATENT OFFICE.

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CURTAIN-FIXTURE.

SPECIFICATION forming part of Letters Patent No. 382,509, dated May 8, 1888.

Application filed February 14, 1887. Serial No. 227,519. (No model.)

To all whom it may concern:

Be it known that I, CHAUNCEY BUCKLEY, of Meriden, in the county of New Haven and State of Connecticut, have invented a new Improvement in Curtain-Fixtures; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a longitudinal central section of a roller, showing the spindle and spring; Fig. 2, an end view looking toward the bracket G and illustrating the method of introducing the roller to the bracket; Fig. 3, a front view of the bracket and the spindle as entering the recess *f*; Fig. 4, an end view of the roller, the cap removed, showing the spindle in transverse section at the shoulder *n* and in a position for the shade to be drawn downward; Fig. 5, the same section as Fig. 4, but in inverted position, as for drawing the shade upward.

This invention relates to an improvement in that class of window shade or curtain fixtures in which the roller has combined within it a spring, one end of which is attached to the roller, so as to revolve with it, and the other end fixed at a stationary point upon the spindle, so that as the shade is drawn from the roller it will wind the spring; then, when free, the reaction of the spring will rewind the shade upon the roller.

In this class of fixtures a spindle is introduced concentrically within the tubular portion of the roller, the spindle being held stationary while the roller revolves, and a pawl or equivalent device is arranged in connection with the roller or spindle, so that as the roller is permitted to revolve rapidly the centrifugal force will prevent the engagement of the pawl so as to arrest the revolution of the roller; but when the shade is held against rapid revolution then, the centrifugal force being thereby reduced, the pawl will be permitted to engage between the spindle and roller, so as to arrest and hold the roller that the shade may be set at any desired elevation, and also so that the spring may be wound before the roller is placed in the brackets, the winding of the spring being held by the said pawl, and so that at any time when it is desired to take the roller from the brackets the pawl will make the same engagement, so that as the roller passes from the bracket the spring cannot unwind, as would be the case were there not some preventive introduced. Devices for accomplishing these objects are numerous.

The object of my invention is to simplify the construction and to adapt the shade to either a pull-down or a pull-up shade—that is, to be arranged above so that the shade will be drawn down to cover the window or arranged below so as to be drawn up to cover the window.

A represents the roller, which is usually made of wood, and is bored out from one end to form the spring-chamber. The diameter of this chamber should be considerably larger than the spring, so as to allow perfect freedom of working of the spring.

B is the spindle, which is arranged concentrically through the spring-chamber. This spindle has an extension outward to take a bearing in one of the brackets. Its inner end must be so connected with the roller as to permit the roller to revolve freely. In some cases this has been done by making the diameter of the chamber the size of the spring, and so that the spring fixed to the spindle will form a bearing, as it were, on which the roller will revolve. In other cases a block has been introduced into the spring chamber at the inner end, into which the inner end of the spindle extends, the block being made fast to the roller.

To obviate the necessity of introducing a block to form the bearing for the spindle, and at the same time leave the spring perfectly free in its chamber, I bore into the solid roller at the inner end of the spring-chamber a concentric hole, *b*, corresponding in diameter to the inner end of the spindle B. This hole is readily formed by first boring the spring-chamber, and then with a bit having a concentric guide the smaller seat, *b*, is formed for the spindle, and the seat is an integral part of the roller, requiring no adjustment or attachment.

C represents the helical spring, the inner end of which is secured to the spindle, as at *e*.

The other end is fixed to the roller, say as by means of a metal head, D, through which the spindle extends, and which is made fast to the roller, it being understood that the spindle is held firmly at the outer end. The inner end of the spring is correspondingly held, while the outer end, in connection with the roller, will be permitted to revolve; hence as the roller is turned in one direction the spring will be wound, and then, the roller left free, the reaction of the spring will impart revolution to it in the opposite direction, and therefore cause the shade to be wound onto the roll or permit it to be drawn therefrom, as the case may be.

The spindle near its outer end is constructed with a transverse notch, *d*, on one side. Upon the opposite side the spindle is cut away to the extreme outer end to form a recess, *e*, as seen in Fig. 3. At the opposite end of the roller the usual gudgeon, E, is introduced, adapted to enter a corresponding seat in the bracket F.

G represents the bracket at the spindle end of the cylinder, constructed so as to be secured to the jamb in the usual manner. The head of the bracket is constructed with a horizontal recess, *f*, which in height corresponds to the distance between the recess *e* on one side and the notch *d* on the opposite side of the spindle, as seen in Fig. 3. The upper part of the head of the bracket—that is, the part *h* above the spindle—in thickness corresponds to the width of the notch *d*, as seen in Fig. 3, while the other part, *i*, below is thicker and so as to extend outward upon the recess in the opposite side, as also seen in Fig. 3.

The recess in the head of the bracket extends inward, and then turns downward to form a seat, *l*, for the spindle, the thickness of the upper part, *h*, continuing the same around to the back side of the seat *l*, while the front *i* also retains the same thickness—that is, greater than that of the side *h*. Because of this difference in thicknesses of the upper and lower parts of the head, it will be observed that the spindle can only pass into the bracket with the notched side toward the thinner part, *h*, of the head, as seen in Figs. 2 and 3. Thus introduced, the spindle will pass inward, then by a partial rotation turn into the seat *l*, and there be held so as to prevent rotation, so that the spindle can only be introduced one side up.

On the head D, which is fixed to the roller and which is free to revolve on the spindle, one or more pawls, *m*, are hung so as to swing in a plane at right angles to the axis. On one side of the spindle, in the plane of the pawls, a shoulder, *n*, is formed, with which the pawls are adapted to engage when permitted to fall therein. This notch is on the upper side of the spindle when the roller is to be used at the top of the window, or so that the shade may be drawn down from it, and in this case is on the same side of the spindle as the notch *d*. Under rapid revolution of the roller the pawls will be thrown outward by centrifugal force, as represented by the lower pawl in Fig. 4. When the shade is drawn down, the pawls successively pass the shoulder *n;* but when the pulling down of the shade ceases the pawls are adapted to engage the shoulder *n* on the return of the roller under the reaction of the spring, and so that if the revolution of the shade be slow the first pawl will engage that shoulder, as seen in Fig. 4; but if the roller be permitted to revolve rapidly in winding the shade then the pawls will escape the shoulder by centrifugal force and not interfere with the winding revolution of the roller, and as usual in this class of fixtures, and so that the shade may be adjusted to any desired elevation.

The arrangement which I have described is for the position of the roller at the top of the window.

In many cases it is desirable that the roller be placed at the bottom of the window, and so that the shade may be drawn upward in covering the window, as seen in Fig. 5. In a shade thus arranged there is no occasion for engaging the spindle and the roller so as to prevent rotation of the roller, for the reason that the shade must be supported by some mechanism above or it would fall of its own gravity. It therefore becomes necessary to prevent the engagement of the pawls with the roller. To do this the spindle is inverted, as seen in Fig. 5, bringing the shoulder *n* below, and so that the pawls cannot engage with that shoulder, for the reason that they fall away from it of their own gravity when beneath the spindle. In inverting the spindle the bracket G is also necessarily inverted, so that the same bracket and all the parts are adapted for position either at the top of a window or below, and so that the shade may be either drawn downward or upward from the roll, as the case may be. I have said the bracket must necessarily be inverted, and such is the fact, as the roller is necessarily inverted in order that the shade may be drawn up instead of down. The spindle cannot enter the bracket until the bracket is correspondingly inverted, so that there is no liability of mistake in arranging the roller and bracket, and the same fixture is without any change or manipulation in its mechanism adapted either to be placed above or below, as the case may be.

If the spindle be made of iron, it adds very considerable weight to the roller, which it is desirable to dispense with. To this end I make the body of the spindle of wood and introduce into this an extension, B′, as seen in Fig. 1. This extension is of metal, and in its end the notch *d* is formed upon one side and the recess *e* upon the opposite side. This extension is constructed with a shank, *r*, adapted to be set into the end of the wood spindle, as shown; but the wood spindle without some protection would not be sufficiently strong to sustain the extension. To strengthen the spindle, as well as to form a metal bearing on the spindle, I apply at its outer end a metal ferrule, *s*, which

incloses the end of the spindle, and at the outer end this ferrule is reduced, as at *t*, corresponding to the opening through the head D, and is of cylindrical shape, so as to revolve freely therein. As a bearing upon which the spindle may revolve, the internal diameter of the end portion, *t*, of the ferrule corresponds to the shank *r*, and so that the shank *r* is driven through it into the wood. The reduction of the ferrule forms a shoulder, *u*, upon the inner side of the head D, to prevent movement of the spindle in an axial direction, and this protection of the spindle prevents any liability of splitting or loosening of the extension and serves every purpose of a metal spindle without its weight and at no increased expense. The head D is inclosed by a cap, *w*, in the usual manner for this class of fixtures.

The arrangement of the spindle in a bearing in the roller, forming an integral part of the roller, may be used whether or not there be a stop or check between the roller and spindle, and in place of the pawl which I have illustrated many of the well-known checks may be introduced between the spindle and roller, so as to automatically make the engagement between the roller and spindle which I have described, such checks being too well known to require illustration or description.

The wood spindle, with its ferrule, may be employed to advantage in other spring-rollers of this class.

It is immaterial which side of the recess in the bracket is made thin and which thick; but the notch and recessed side of the spindle must be made accordingly.

I claim—

The combination of the roller A, having a concentric chamber extending from one end of the roller inward, a concentric spindle in the said chamber extending through a bearing at the end of the roller, a spring in said chamber, one end fixed to said spindle and the other to the roller, the spindle constructed with a shoulder, *n*, on one side, and the roller provided with a corresponding stop adapted to engage or pass said shoulder, as the case may be, the outer end of said spindle constructed with a notch, *d*, upon one side, and with a recess, *e*, in the opposite side longer than the width of the notch on the other side, with a bracket adapted for attachment to the window-jamb, and constructed with a horizontal recess, *f*, and with a vertical recess opening from said horizontal recess and forming the seat *l*, the thickness of the bracket on one side of said horizontal and vertical recesses corresponding to the width of the notch in the spindle, and the other side of said horizontal and vertical recesses broader than said notch, all substantially as and for the purpose described.

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