



(No Model.)

2 Sheets—Sheet 2.

J. D. GRISWOLD.

SUSPENSION DEVICE FOR LAMPS AND OTHER ARTICLES.

No. 365,470.

Patented June 28, 1887.

Fig. 5.

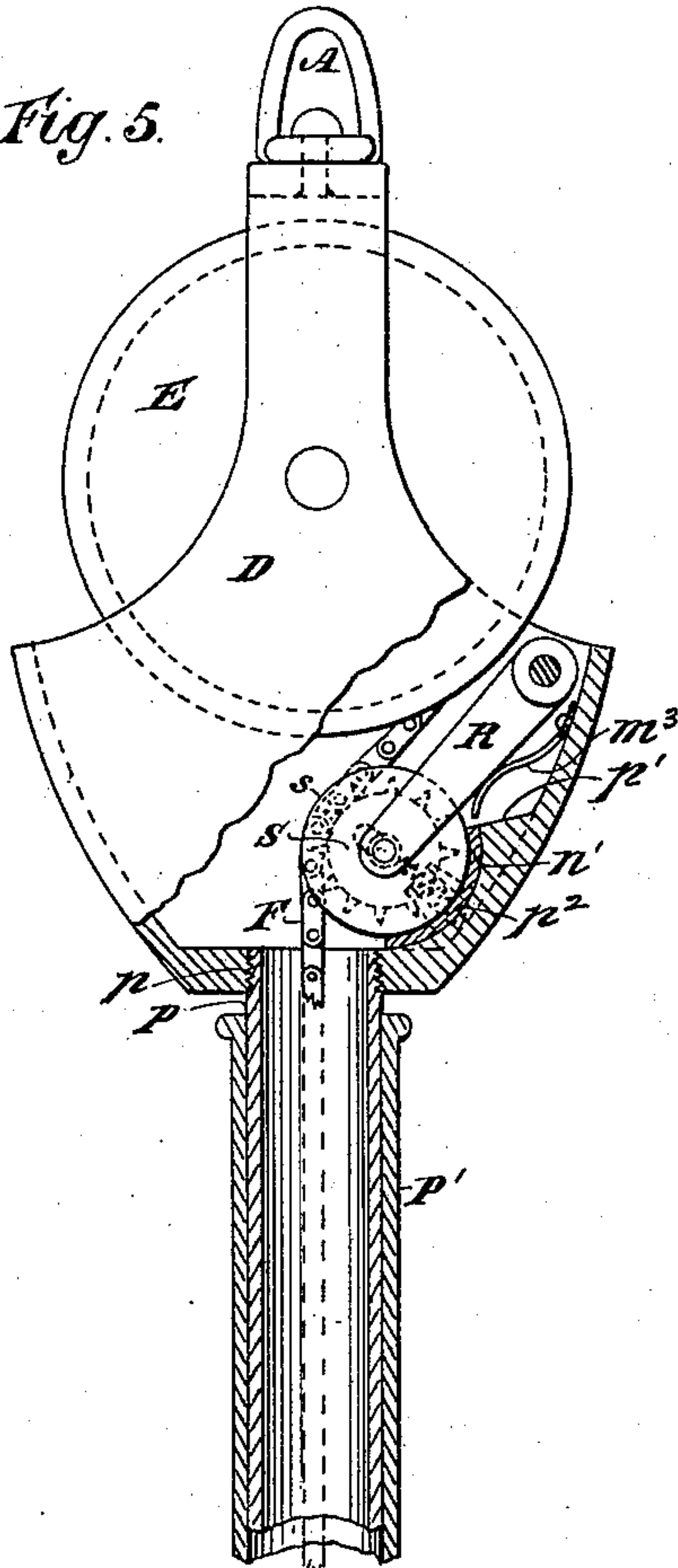
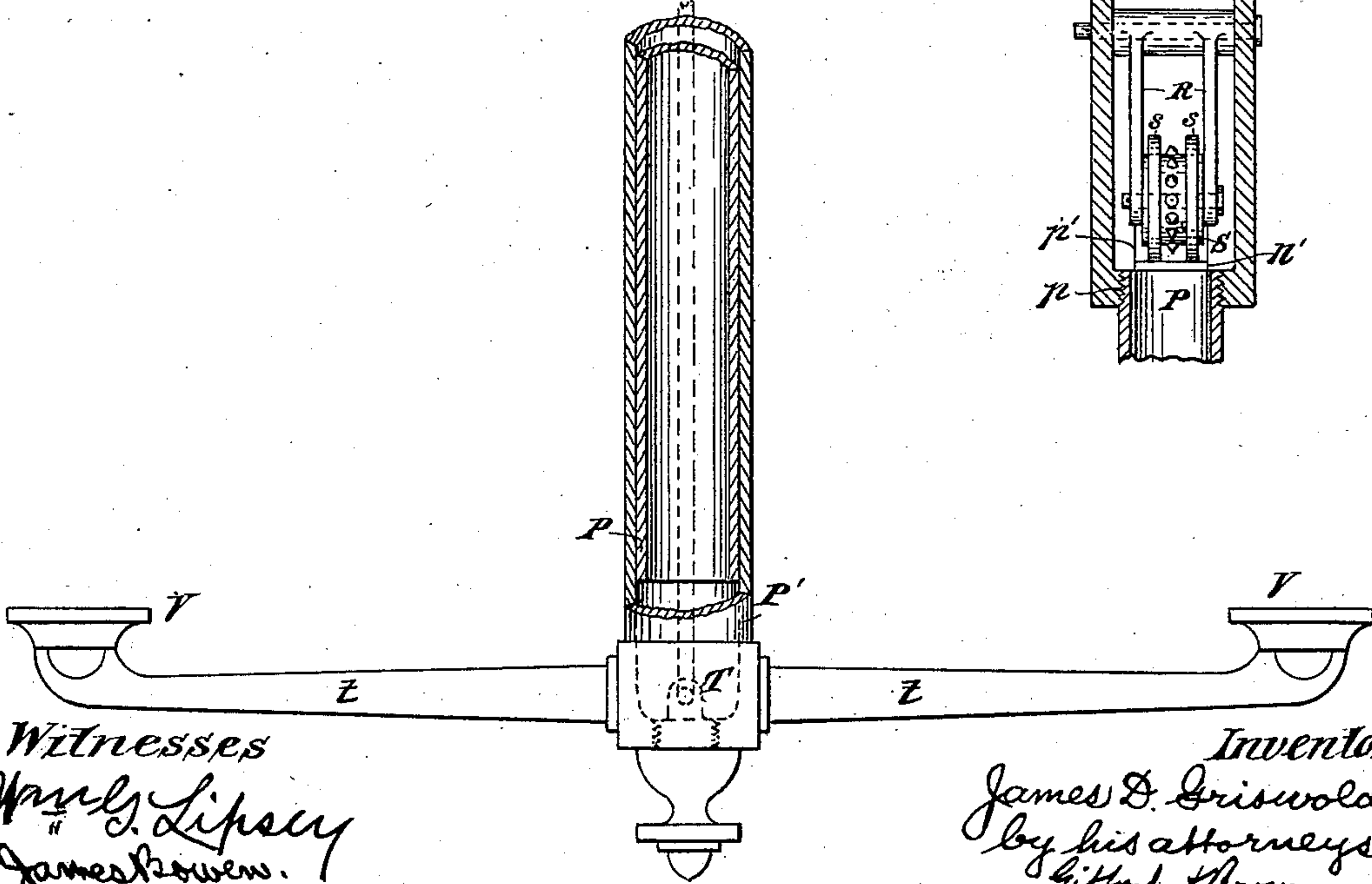
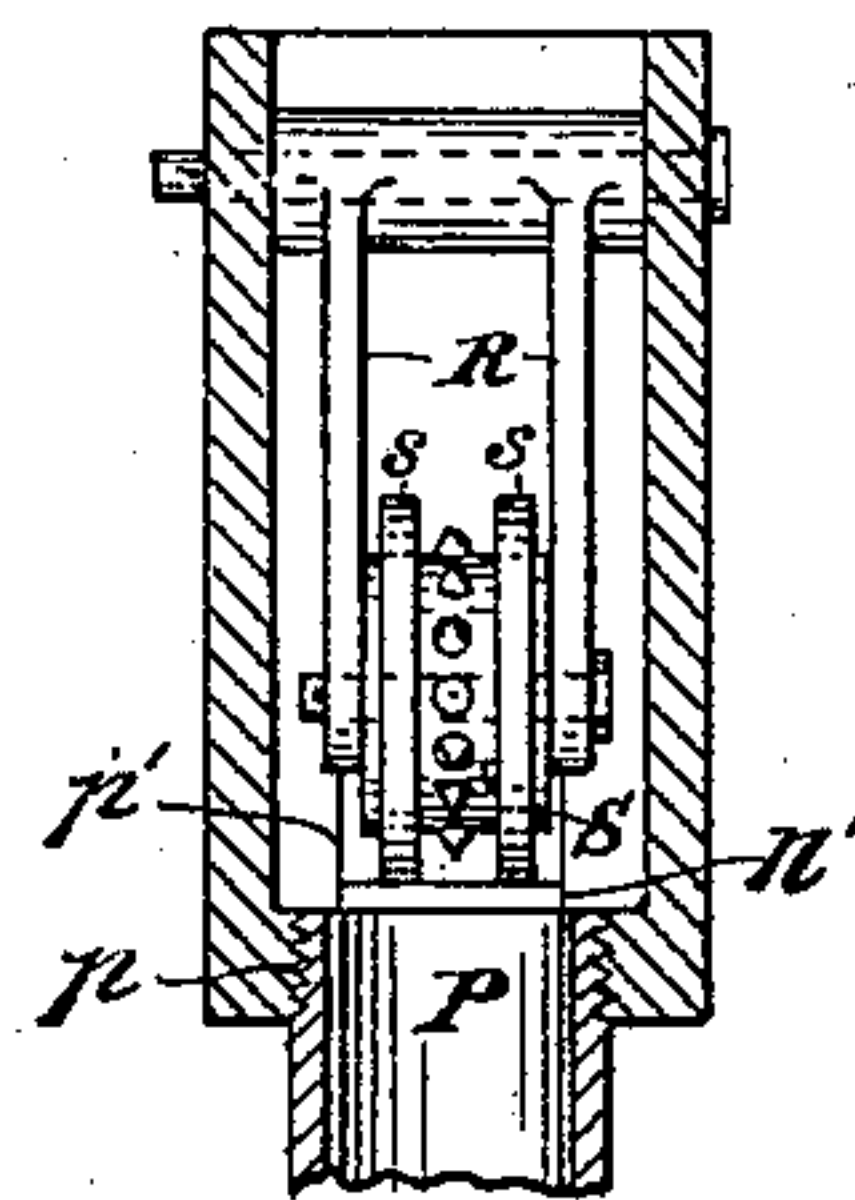


Fig. 6.



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## SUSPENSION DEVICE FOR LAMPS AND OTHER ARTICLES.

SPECIFICATION forming part of Letters Patent No. 365,470, dated June 28, 1887.

Application filed January 16, 1885. Renewed January 12, 1887. Serial No. 224,303. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES D. GRISWOLD, of Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Suspending Devices for Lamps and other Articles, of which the following is a specification.

I will describe a suspending device embodying my improvement, and then point out the novel features in claims.

In the accompanying drawings, Figure 1 is a plan of a suspending device embodying my improvement. Fig. 2 is a vertical section thereof. Fig. 3 is a detail section showing a modification thereof. Fig. 4 is a detail section showing another modification thereof. Fig. 5 is a view, partly in section, showing a modified form of my improvement applied to an extension-light fixture; and Fig. 6 is a sectional detail thereof.

Similar letters of reference designate corresponding parts in all the figures.

A designates a loop, which may be hung on a hook or other appendage of a ceiling or other object. This loop is connected to an arbor, B. As shown, the arbor B has at the upper end a neck, *a*, or portion of smaller diameter than the portion below it, and the loop A has a hole or eye, *b*, which receives the neck *a* within it. The neck is externally screw-threaded, and has a nut, C, applied to it. The nut C, as shown, has a cylindric body, *c*, which extends into the hole or eye *b* of the loop A, and a flange which extends above the lower portion of the loop A. After the nut has been applied to the neck *a* of the arbor, the end of the neck will preferably be upset to preclude the nut from coming off. Thus the loop and arbor are secured together with a swivel-joint. The arbor can be turned around relatively to the loop without becoming detached from it.

Immediately below the neck *a* of the arbor B the arbor has a cylindric body, *e*. Said body is provided with a longitudinal groove, *g*. I have shown the body *e* as extending through a sleeve or tube, *a'*. At the upper end said sleeve is provided with a laterally-extending flange or collar, *a''*, rigidly secured thereto.

At its lower end the sleeve is provided with a head or flange, *f*. Below the head or flange *f*

the arbor B is provided with a nut or head *a'''*.

D designates a frame, shown as having a portion, *d*, extending approximately parallel to the upper part of a drum, E, and downwardly-extending portions or arms *d'*. Near its center the portion *d* is provided with a hole adapted to receive the screw-threaded neck *a* of the arbor B. By this means the arbor B may be rigidly secured to the frame D, and the frame is supported upon the cylindric portion *e* of the arbor B.

E designates a cylindric drum having flanges *i*, between which are wound cords or chains F, whereby a lamp or other article may be suspended. This drum, as shown, is closed at the top, with the exception of a central hole, enabling it to fit upon the sleeve *a'*. It is provided at the bottom with a cross-piece, *j*, through a central aperture, in which also extends the sleeve *a'*. Said cross-piece is rigidly secured to the drum. Instead of one of such cross-pieces I may use two or more. The head or flange *f* is below the cross-piece *j*, and in this example of my improvement is unconnected therewith. The drum E is adapted to rotate about the sleeve *a'*.

The drum is rotated by the unwinding of the cords or chains F from it. A counter-balance is intended to be combined with the drum for the purpose of resisting the unwinding of the cords or chains, and thereby sustaining the article attached to the cords or chains. I have shown in this example of my improvement a counter-balance, G, consisting of a convolute spring. This spring is coiled around the sleeve *a'*. One end is secured to the sleeve *a'* by a rivet or otherwise. The rivet preferably extends through the side of the sleeve *a'*, thereby forming a projection within the sleeve entering the groove *g* of the body of the arbor. The other end of the spring is fastened to the interior of the drum by rivets or otherwise. When the drum is rotated in one direction, the spring will be coiled up more closely. When relieved of the force which coiled it and kept it coiled up, it uncoils and rotates the drum in the reverse direction.

The portions *d'* of the frame D are provided with guides, over which the cords or chains F pass to the lamp or other article to be sus-



pended. As shown in the example of my improvement, illustrated in Figs. 1 and 2, these guides consist of pulleys M, mounted on shafts  $m$ , which are journaled in elongated bearings  $m'$  in the portion  $d'$  of the frame D. I have shown these pulleys as provided with flanges  $m^2$ , by which means the cords or chains F are held in position on them. I prefer to make the opposite faces of these flanges flare outwardly.

N designates pulleys or wheels mounted on shafts  $n$ , likewise journaled in bearings in the portion  $d'$  of the frame D. I prefer to arrange the pulleys N below the pulleys M, and a little farther outward from the center of the drum. The peripheries of the pulleys N are adapted to enter between the flanges  $m^2$  of the pulleys M. I may, if desired, place a covering of rubber, leather, or analogous material,  $n'$ , upon the peripheries of the pulleys N.

When the weight of the lamp or other article is brought to bear upon the cords or chains F, it operates to draw the pulleys M downwardly. The cords or chains F are then bound tightly between the pulleys M and N, which thereby constitute a brake. I have shown springs  $m^3$ , secured at one end to the shafts  $m$  and at the other end to the portion  $d'$  of the frame D. These springs operate to move the pulleys M upwardly when the weight is removed from the cords or chains F. The drum E may then rotate freely to rewind the cords or chains.

In the example of my improvement illustrated in Fig. 3 I have shown three pulleys, M, N, and O, mounted upon shafts which are journaled in bearings in the portion  $d'$  of the frame D. The bearings for the pulleys N are shown as elongated. I prefer to arrange these pulleys in an approximately triangular position. I mean so that their axes will be in the position of apexes of a triangle. The pulleys N occupy a position intermediate the pulleys M and O, and all are arranged in approximately the same vertical plane. The cords or chains F pass first over the pulleys M, thence over and beneath the pulleys N, and thence over the pulleys O to the lamp or other article to be suspended. The peripheries of these pulleys are grooved to receive the cords or chains and prevent lateral movement thereof. In this example of my improvement the springs  $m^3$  are secured at one end to the shafts of the pulleys N and at the other to the portion  $d'$  of the arbor D. The tendency of these springs is to draw the pulleys N away from the pulleys M and O when the weight is relieved upon the cords or chains F. The weight of the lamp or other article upon the cords or chains F causes the pulleys N to be brought into contact with the pulleys M and O. The tendency of the pulleys M and N is to rotate in such direction that their adjacent surfaces move in reverse directions. Consequently when the peripheries of said pulleys are brought into contact friction is generated, which tends to prevent the rotation of said

pulleys. A brake is thereby effected, and the further unwinding of the cords or chains prevented. When the weight is removed from the cords or chains F, the drum may rotate freely to rewind the same.

In the example of my improvement shown in Fig. 4 H designates levers pivotally connected near one of their ends upon the portion  $d'$  of the frame D, which, as here shown, consist of two portions extending downwardly and parallel with each other. The levers H are pivoted between these two downwardly-extending portions, and may swing freely therein. The levers H, I prefer to form of two parallel portions united at a point near the ends, at which they are pivoted to the portions  $d'$  by cross-bars  $h'$ . Wheels or pulleys N are journaled in the levers H near their outer ends. These wheels are preferably sprocket-wheels.

H' designates other levers, which are fulcrumed at  $h^2$  upon the portions  $d'$  of the frame D below the levers H. The short arms of the levers H' are shown as curved upwardly. They bear upon the cross-bars  $h'$  of the levers H, and constitute the fulcrums of said levers H. The long arms of the levers H' are also shown as curved upwardly near their outer or free ends. They are adapted to bear upon the peripheries of the wheels or pulleys N. I prefer that said levers be hollowed out at the point where they bear against the wheels or pulleys; and I may, if desired, secure pieces of india-rubber, leather, or similar material to said levers within the hollowed-out portions. Springs  $m^3$  tend to move the levers H in one direction.

When the weight of the lamp or other article is brought to bear upon the cords or chains F, it operates to swing the levers H downwardly. The wheels or pulleys N are then brought to bear strongly against their seats within the levers H', thereby operating to cause the short arm of the levers H' to exert force against the cross-bars  $h'$  of the levers H. By this means a compound leverage is produced, which causes the levers H' to act as powerful brakes upon the wheels or pulleys N, and the passage of the cords or chains is thereby retarded.

Instead of using sprocket-wheels, I may face the grooves in the wheels or pulleys through which the cords or chains pass with india-rubber or similar material to retard the passage of the cords or chains.

In the example of my improvement illustrated in Figs. 5 and 6 I have shown the same as applied to an extension-light fixture. The frame D in this example of my improvement is arranged so as to inclose the drum E, as is usual, and the said drum and frame are suspended by a loop similar to that hereinbefore described, or in any other suitable manner. Upon the portion of the frame which is opposite said loop is an aperture,  $p$ , in which is secured, by screw-threads or otherwise, one end of a tube, P, forming the stationary part of



the light-fixture. Upon the inner surface of the frame D below the drum is a projecting portion,  $p'$ . To the under side of the frame D is hung, by pivots or otherwise, a frame, R, bearing at its free end a sprocket-wheel, S. (Shown in detail in Fig. 6.) Said sprocket-wheel has upon its rims  $s$ , preferably made integral therewith. These rims have broad peripheral surfaces adapted to bear upon the surface of a portion of the projecting part  $p'$ . I prefer to hollow out the portion of the projecting part  $p'$  upon which the sprocket-wheel bears, as shown at  $p^2$ , in order to increase the bearing-surface which the sprocket-wheel will have upon the projecting part  $p$ . The chain F passes from the drum E over the sprocket-wheel S and thence through the tube P to a loop, T, within another tube, P', forming the extensible part of the light-fixture, where it is secured. The tube P' is arranged outside the tube P.

V designates lamp-holders supported upon arms  $t$  extending from the tube P'.

The weight of the lamp or other article upon the chain F causes the rims of the sprocket-wheel to bear heavily upon their seat in the projecting part  $p'$ , whereby a brake is effected and the rotation of said wheel stopped. The extensible portion of the fixture and its appurtenances are then firmly held in any position into which they may be adjusted. When the weight is removed from the chain F, the sprocket-wheel may rotate freely and the drum will then rewind the chain.

I prefer to secure in any suitable manner a piece of india-rubber, leather, or analogous material,  $n'$ , upon the portion of the projecting part  $p'$  upon which the sprocket-wheel bears, to act as a brake upon said sprocket-wheel.

I may arrange a spring,  $m^3$ , beneath the frame R, which will tend to move the sprocket-wheel out of contact with the brake when the weight is removed from the chain F.

I may, instead of using the frame R, connect the wheel S directly to the projecting part  $p'$  by means of slots which receive the journals of the wheel and constitute bearings therefor. In that case the springs  $m^3$  would preferably be arranged bearing against the outwardly-extending ends of the journals of the wheel, which would tend to move said wheel away from the brake. I have shown such an arrangement in dotted lines in Fig. 5.

Obviously the sleeve  $a'$  may be omitted, in which case the counterbalance-spring G would have its inner end secured to the arbor in any suitable manner.

All the various parts of this suspending device may be made of metal, except, possibly, the piece  $n'$ .

In my device it is of course desirable to employ a drum of as large diameter as is consistent with symmetry and comeliness, because thereby a few rotations only of the drum will be necessary to wind or unwind considerable of the cord or chain, and the counterbalancing-spring is not coiled and uncoiled to the

extent of so many convolutions as it would be with a drum of small diameter.

It will be observed that the brake is not applied to the drum at all, but to a guide-pulley which has no connection whatever with the drum, except through the cords or chains.

I do not limit myself to an arrangement of parts consisting of a drum, cords or chains wound upon the drum and passing from thence over wheels or pulleys to the lamp or other article to be suspended, and wherein the wheels or pulleys over which the cords or chains pass are moved toward brakes, as any arrangement of parts whereby brakes were moved toward the wheels or pulleys would obviously be the equivalent of my device.

I consider my invention, broadly, to be the application of a brake directly to the wheels or pulleys over which the cords or chains pass from the drum upon which they are wound to the lamp or other article to be suspended, and the operation of such brake by the tension on the cords produced by the weight of the lamp or other article.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a suspension device for a lamp or other article, the combination of an arbor, a frame supported by said arbor, a rotary drum mounted upon said arbor, a counterbalance-spring acting in conjunction with the drum, a cord or chain wound upon the drum, a guide wheel or pulley around which the cord or chain passes directly from the drum to the article to be suspended by it, and a brake arranged adjacent to said wheel or pulley upon a fixed portion of the suspending device, and against which the said wheel or pulley will be forced by the cord or chain when the latter is influenced by the weight of the suspended article, said guide wheel or pulley being loosely supported between said cord or chain and the brake, so as to be bodily movable, substantially as and for the purpose specified.

2. In a suspension device for a lamp or other article, the combination of an arbor, a frame supported by said arbor, a rotary drum mounted upon said arbor, a counterbalancing-spring acting in conjunction with the drum, a cord or chain wound upon the drum, a guide-wheel or pulley around which the cord or chain passes directly from the drum to the article to be suspended by it, a spring for moving said wheel or pulley bodily in one direction, and a brake arranged adjacent to said wheel or pulley upon a fixed portion of the suspension device, and against which the said wheel or pulley will be forced by the cord or chain when the latter is influenced by the weight of the suspended article, said guide wheel or pulley being loosely supported between said cord or chain and the brake, substantially as and for the purpose specified.

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