(No Model.) 2 Sheets—Sheet 1.

E. N. GRISWOLD.

SUSPENSION DEVICE FOR LAMPS AND OTHER ARTICLES.

No. 350,429. Patented Oct. 5, 1886.

Fig. 1.

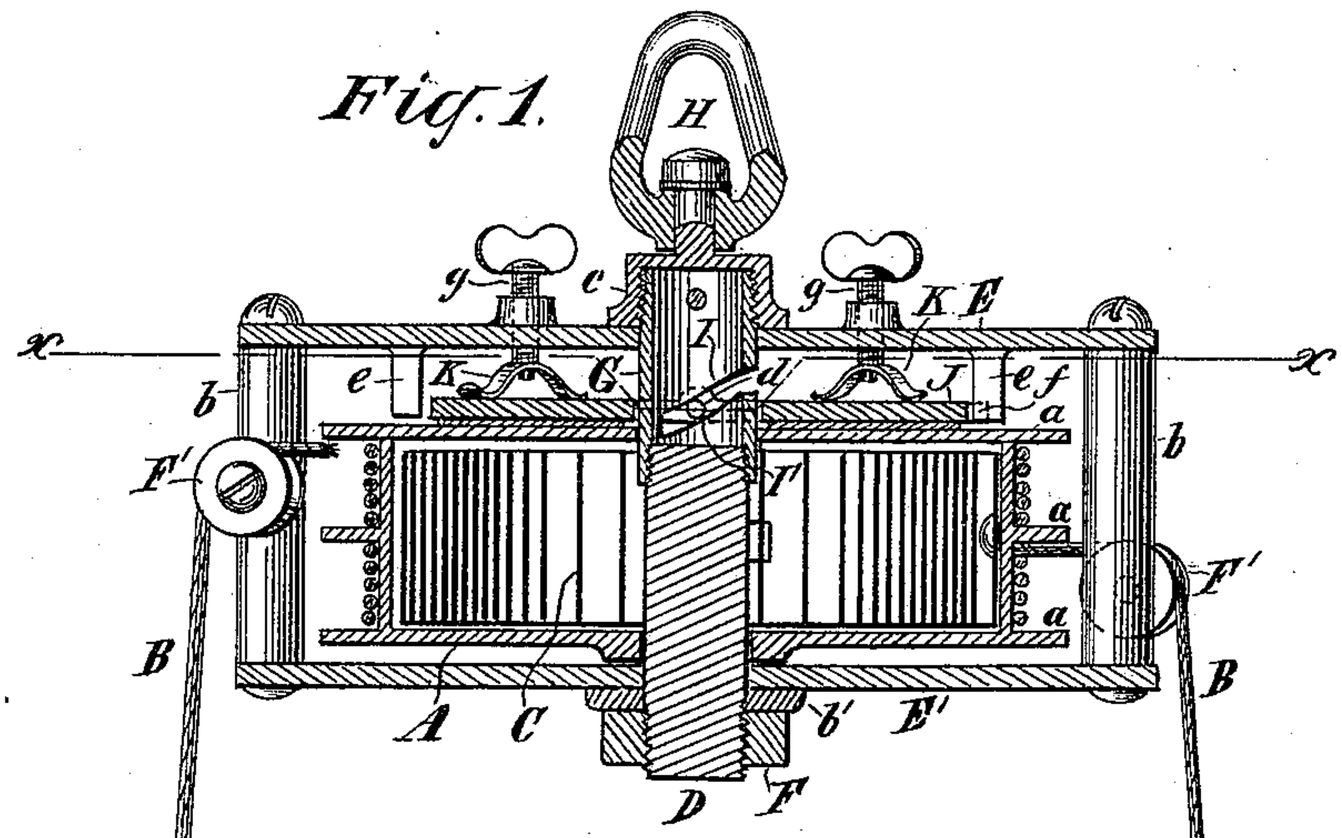


Fig. 3.

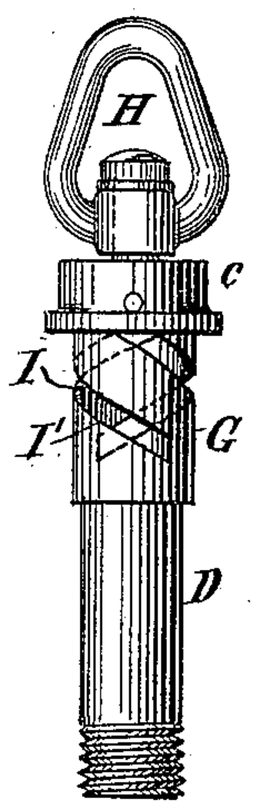
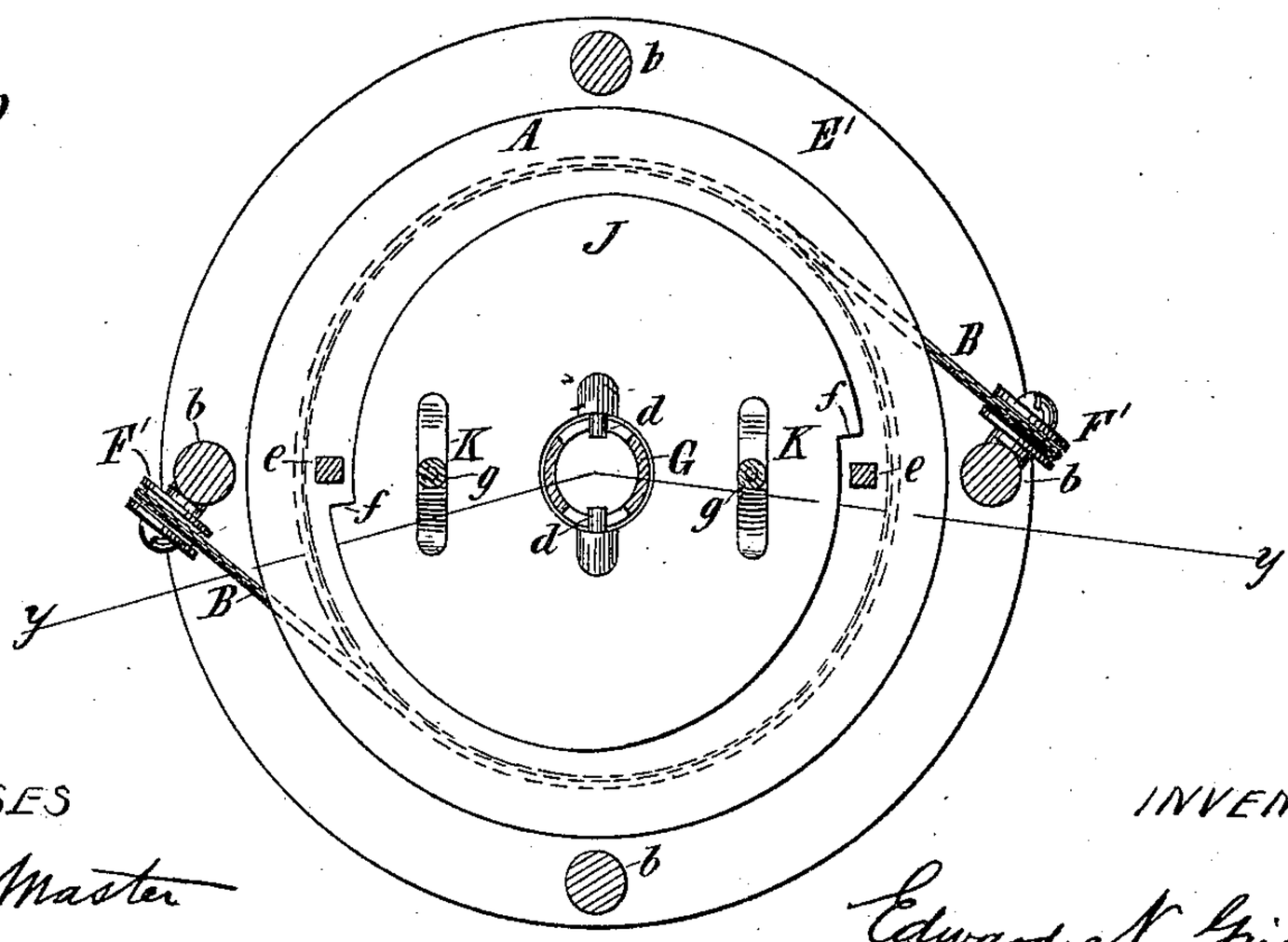


Fig. 2.



WITNESSES

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(No Model.) 2 Sheets—Sheet 2.

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SUSPENSION DEVICE FOR LAMPS AND OTHER ARTICLES.

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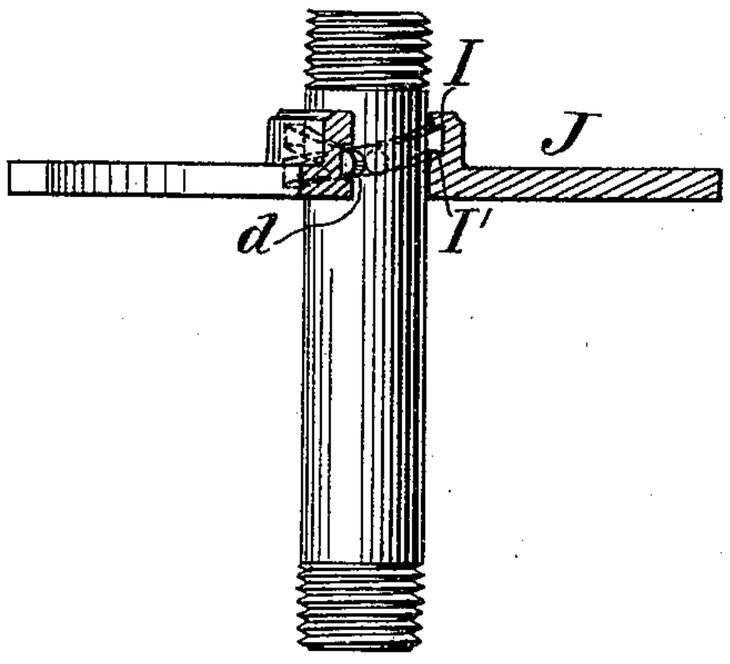
Fig. 4.

Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

EDWARD N. GRISWOLD, OF BROOKLYN, NEW YORK.

SUSPENSION DEVICE FOR LAMPS AND OTHER ARTICLES.

SPECIFICATION forming part of Letters Patent No. 350,429, dated October 5, 1386.

Application filed August 15, 1885. Serial No. 174,506. (No model.)

To all whom it may concern:

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

My invention relates to devices employed to counterbalance the weight of a lamp or other article suspended from a ceiling or other support, so that the lamp or other article will remain at any position into which it may be adjusted vertically, and yet can be easily raised.

I will describe in detail a suspension device embodying my improvement, and then point out the improvement in claims.

In the accompanying drawings, Figure 1 is a vertical section of a suspension device embodying my improvement. Fig. 2 is a plan or top view thereof, certain parts being removed to disclose features which would otherwise be hidden. Fig. 3 is a detail thereof. Fig. 4 is a view of an arbor of modified form which may be employed in the device. Fig. 5 is a view of an arbor and brake of modified form which may be employed in the device.

Like letters designate like parts in all the figures.

A designates a drum. This drum may be made of metal, and is hollow. It is provided with flanges *a*, extending circumferentially about the same. Between the flanges cords or chains B are wound upon the drum. I have shown two of such cords or chains; but one only need be employed, if desirable. A counter-balance is combined with the drum here shown. It consists of a convolute spring, C, coiled within the drum and about an arbor, D. One end of the spring is secured to the arbor D in any suitable manner, and the other end thereof is secured to the drum A. The spring C is intended to counterbalance the weight of a lamp or other article suspended from the cords or chains B. The arbor D passes centrally through the drum A, and the drum may turn freely about the same.

The drum A and arbor D are supported in a frame comprising two portions or plates, E E′, and posts or pillars *b*, extending between them, and securing them rigidly together. The portion or plate E is arranged above the drum, and the portion or plate E′ below the same. Said frame may be cast in one piece, if desirable. The arbor D extends through suitable apertures in said frame above and below the drum. The arbor does not rotate. It is prevented from rotation by a feather or spline arranged between the arbor and the portion or plate E′. Below the portion E′ of the frame is a collar or washer, *b*′. A nut, F, prevents the frame and drum from passing off from the arbor D. Guides consisting of pulleys F′ are mounted on pins or studs upon the pillars or posts *b* of the frame. The cords or chains B pass over the pulleys F′.

I prefer to construct the arbor D as follows: Near the upper end thereof the same is screw-threaded. This screw threaded end receives the internally-screw-threaded end of a hollow cylinder or tube, G, which may advantageously be made of brass, but may be made of other metal. The other end of the cylinder G is externally screw-threaded to receive a cap, *c*, to which is connected by a swiveling connection a loop, H, by means of which the device is suspended from a hook or other support. Wedges or cams I are arranged in the cylinder G, between the upper portion of the drum and the portion or plate E of the frame. In the example of my improvement shown the wedges or cams I are formed by the upper edges of inclined slots. It is advantageous to employ slots, because the same may be easily cut into the cylinder; but these wedges or cams may be stamped or cast in the cylinder, if desired, and need not necessarily extend through the wall of the cylinder or form part of slots. The wedges or cams are formed in the arbor, as the cylinder G is in effect part of the arbor. Where slots are employed, they will preferably extend spirally to the outer end of the cylinder, for reasons to be hereinafter explained.

Of course, the arbor may be made of one solid piece, instead of a solid piece and a cylinder forming an extension thereof, and then inclined grooves would be formed in them, as shown in Fig. 4 of the drawings.

J designates a brake. This brake consists of a disk, preferably of metal, provided with a central aperture and fitting about the tube or cylinder G of the arbor D, between the portion E of the frame and the drum. It may oscillate or vibrate freely about the arbor, and is, as here shown, guided thereby. Lugs or projections *d*, constituting abutments upon the edge of the brake adjacent to the arbor, bear against the wedges or cams I. Where slots or grooves are used, by extending them to the

outer end of the cylinder, the insertion and removal of the abutments *d* upon the brake is facilitated. I prefer to face the side of the brake nearer the drum with india-rubber, leather, or other suitable material to increase its frictional resistance.

The brake J is normally in contact with the drum. When the drum is rotated in the direction to unwind the cords or chains, or, in other words, against the resistance of the spring C, the brake J, owing to its frictional contact, rotates with the drum a short distance. The abutments *d* on the brake bear against the inclined wedges or cams I, which are therefore caused to exert a wedge-like action upon the abutments, which forces the brake downwardly, so that it will bear with greater force upon the drum. Stops *e* (here shown as lugs or pins) extend downwardly from the portion E of the frame, and into the path of teeth or projections *f* upon the outer edge of the brake. These stops prevent a too extended rotation of the brake in the direction in which it is rotated by the drum during the unwinding of the cords or chains. Obviously but one stop need be employed. When the cords or chains are being rewound, or, in other words, when the weight upon the cords or chains is relieved, the spring C operates to rotate the drum in a reverse direction to that just described. This operation reverses the direction of rotation of the brake. The position of the wedges or cams is therefore changed in such relation to the drum and abutments *d* that the pressure of the brake upon the drum will be relaxed, and the drum may then rotate freely. When slots or grooves are employed, there are, as a consequence, wedges or cams I′ formed by the lower edge of said slots or grooves, in addition to the wedges or cams I. These former, acting on the abutments, tend to move the brake upwardly or away from the drum.

In order to vary the initial pressure with which the brake shall act upon the drum, I provide springs K (here shown as flat) above the brake and between it and the portion E of the frame. These springs are bow-shaped, and have their ends bearing upon the brake. They may be adjusted toward and from the brake, so as to increase or decrease their resistance, by means of thumb-screws *g*, passing through tapped holes in the portion E of the frame. The thumb-screws *g* are rigidly secured to the springs K about midway in the lengths of the latter.

If the cylinder or tube G were rigidly secured to the brake, or the brake were otherwise provided with wedges or cams, and the abutments *d* were upon the arbor, the effect would be the same. In such case the brake would be forced to exert pressure upon the drum by the action against the abutments of wedges or cams acting upon the portions of the abutments which are the nearest to the drum. I have shown such an arrangement in Fig. 5.

It will be seen that by my improvement I am enabled to construct a suspension device which will operate very effectively to resist the rotation of the drum in the direction to unwind the cords or chains or when the weight of the lamp or other article is applied thereto, but will permit the drum to rotate freely when the cords or chains are being rewound or when the latter are relieved from the weight of the article suspended therefrom.

I am aware that a suspension device has been made in which a brake or brake-shoe is in contact with the interior of the drum, and a swinging rod or arm extends between the brake or brake-shoe and an abutment supported by the arbor. Such a suspension device is shown in United States Letters Patent No. 323,051, July 28, 1885. I do not herein lay claim to anything claimed in said Letters Patent.

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

1. The combination, with a frame and arbor constituting the fixed portion of the machine, of a spring-drum mounted on said arbor, cords or chains wound upon said drum and passing to the article to be suspended, a plate in contact with the drum and in close proximity to a part of the fixed portion of the machine, said plate and fixed portion being provided, the one with a wedge or cam and the other with a projection acting in conjunction with said wedge or cam, and stops projecting from the fixed portion of the machine engaging said plate, substantially as specified.

2. The combination, with a frame and arbor constituting the fixed portion of the machine, of a spring-drum mounted on said arbor, cords or chains wound upon said drum and passing to the lamp or other article to be suspended, a plate surrounding the arbor and in contact with the drum, said plate and fixed portion being provided, the one with a wedge or cam and the other with a projection acting in conjunction with said wedge or cam, and stops projecting from the fixed portion of the machine engaging said plate, substantially as specified.

3. The combination, with a frame and arbor constituting the fixed portion of the machine, of a spring-drum mounted on said arbor, cords or chains wound upon said drum and passing to the article to be suspended, a plate in contact with the drum and in close proximity to a part of the fixed portion of the machine, said plate and fixed portion being provided, the one with a wedge or cam formed by a slot or groove and the other with a projection acting in conjunction with said wedge or cam, and stops projecting from the fixed portion of the machine engaging said plate, substantially as specified.

EDWARD N. GRISWOLD.

Witnesses:
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CHAS. A. MURPHEY.