

(No Model.)

L. T. LAWTON.  
SUSPENSION DEVICE.

No. 333,017.

Patented Dec. 22, 1885.

Fig. 1.

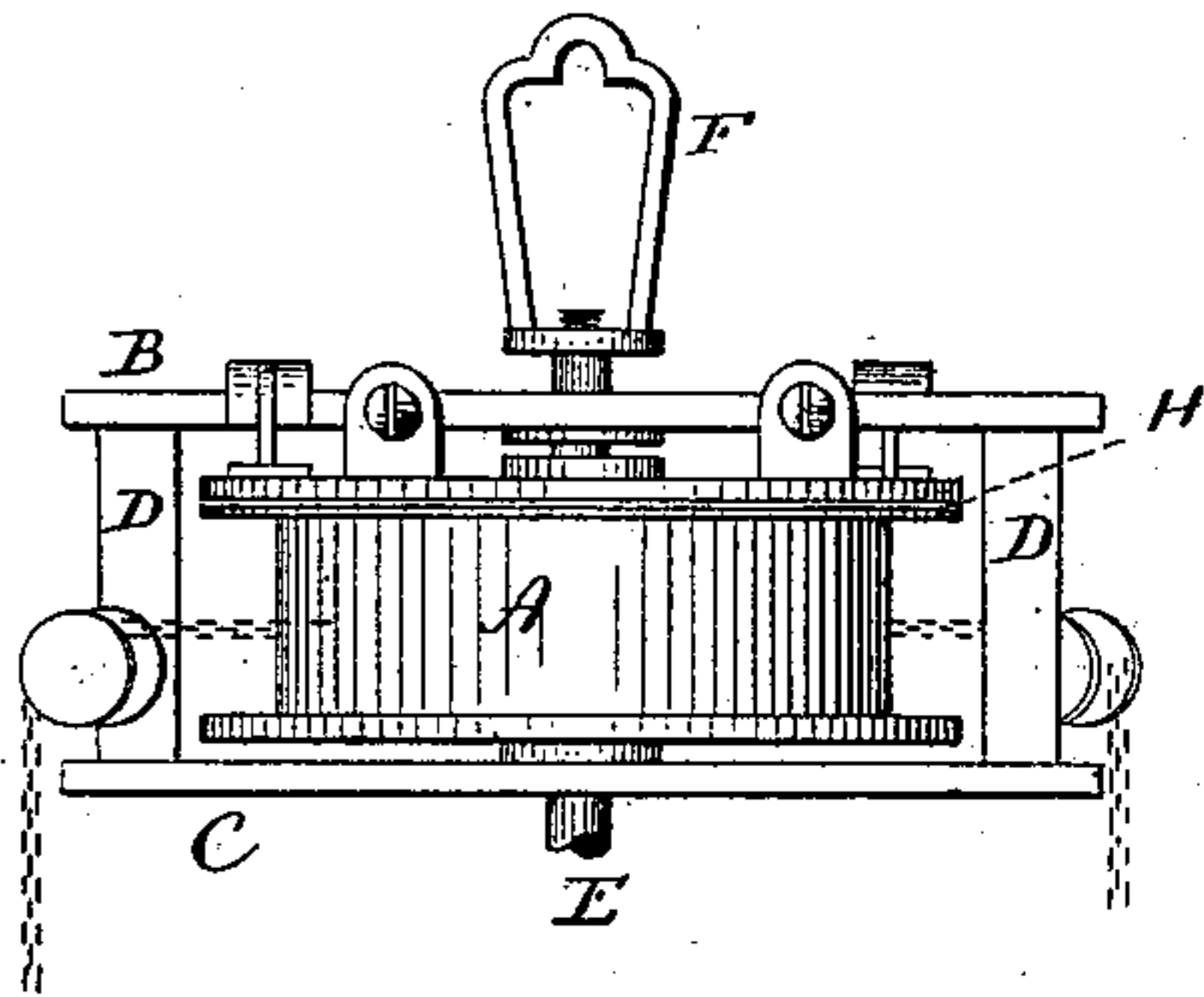


Fig. 2.

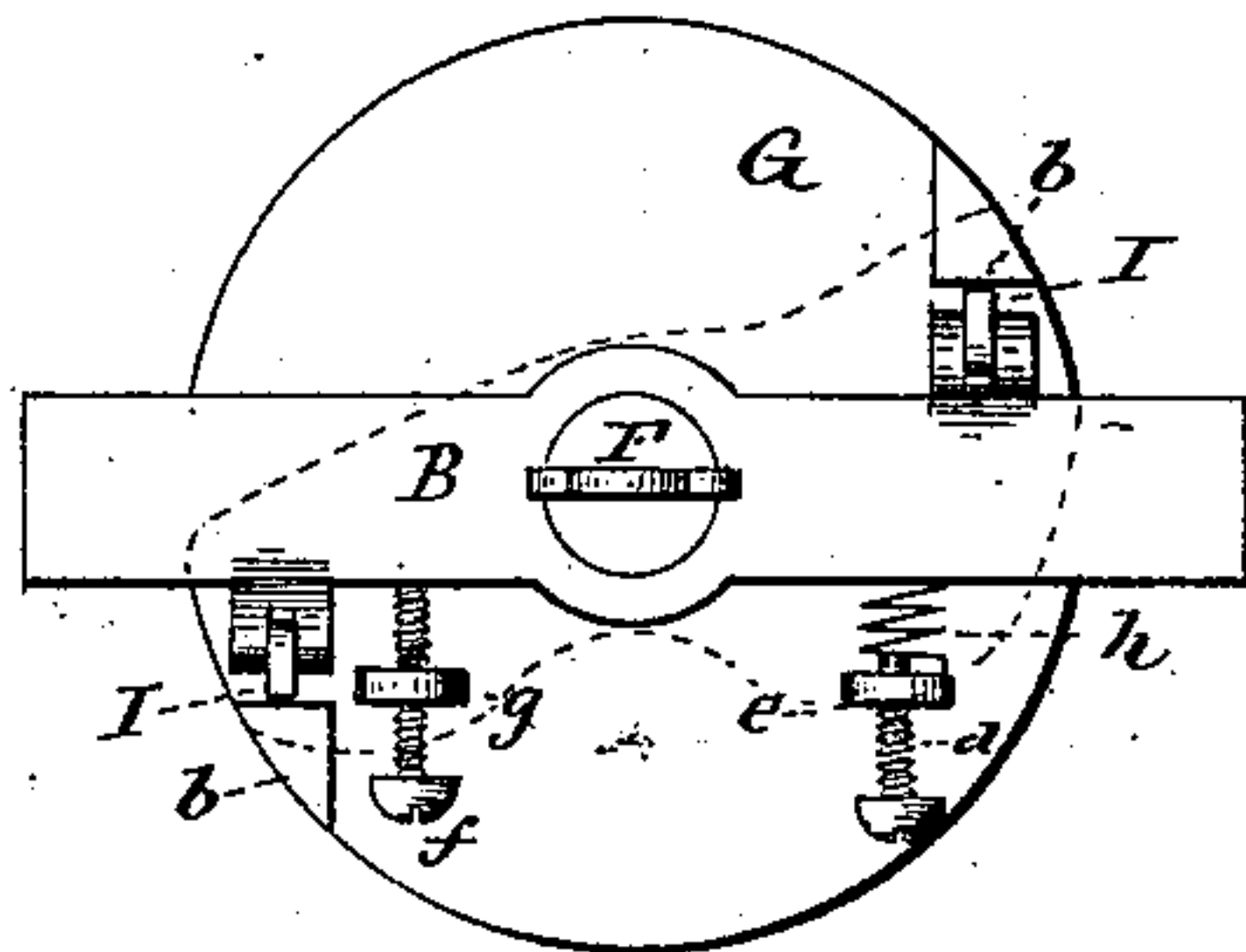
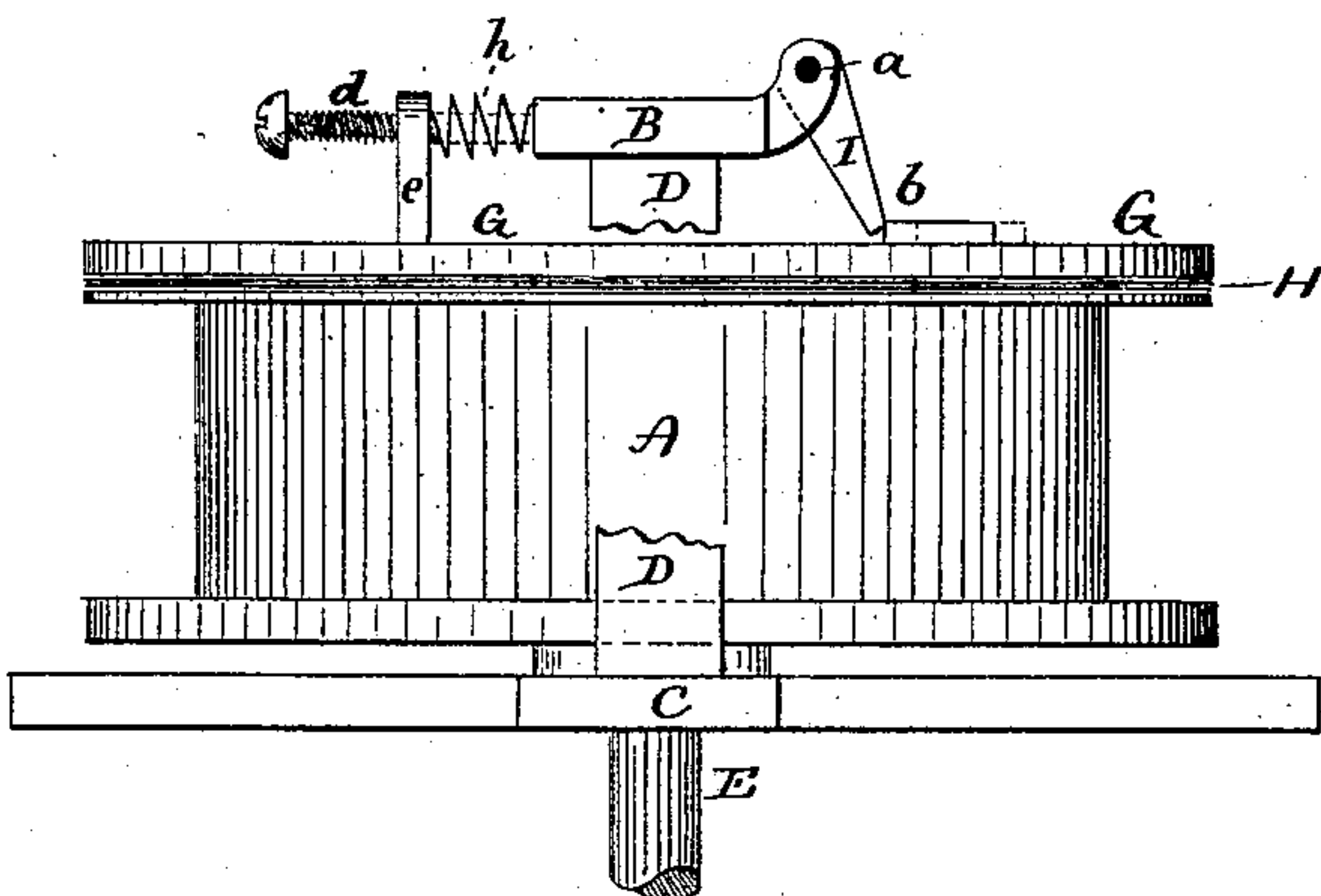


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## SUSPENSION DEVICE.

SPECIFICATION forming part of Letters Patent No. 333,017, dated December 22, 1885.

Application filed August 31, 1885. Serial No. 175,693. (No model.)

*To all whom it may concern:*

Be it known that I, LYMAN T. LAWTON, of Meriden, in the county of New Haven and State of Connecticut, have invented a new Improvement in Suspension Devices for Lamps, &c.; 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 side view; Fig. 2, top view; Fig. 3, side view at right angles to Fig. 1, part of the frame broken away.

This invention relates to an improvement in that class of apparatus employed in suspending lamps from ceilings, and so that the lamp may be adjusted to different elevations, and particularly to that class in which a drum is employed upon a fixed axle, with a coiled spring, one end of which is in connection with the fixed axle and the other with the drum, and so that as the drum is rotated in one direction it will wind the spring, then the reaction of the spring will return the drum, and in which one or more chains are applied to the drum as the connection between the drum and the lamp or thing to be suspended, so that the pulling down of the thing suspended will wind the spring, then the reaction of the spring will raise the thing suspended.

These suspending devices are manufactured and sold many times independent of the lamps or things to be suspended. The weight of the lamps is variable, owing to the construction of the fixture itself, or to different founts or shades, so that a suspending device adjusted for a given weight, if the thing to be suspended be above that weight, then the spring will fail to support it, except in its down position; or, if the power of the spring be considerably greater than the weight of the thing suspended, then it will lift such thing, and in either case the suspended thing will only rest at one of the two extremes. In some cases a constant friction has been applied to the drum, which must be overcome in drawing down the thing suspended as well as in lifting. While such construction permits the thing suspended to rest at any point, it requires considerable

force to be applied to overcome the friction and raise the article as also to overcome the friction in drawing down.

Other devices have been devised which would apply friction on the drawing down of the suspended thing—that is, in the winding of the spring—and which friction will be released as soon as the suspended thing is lifted, thereafter leaving the spring free to act as the lifting-power.

It is this latter class of lifting devices to which my invention particularly relates, and it has for its object a simple and easy application and release of the friction; and it consists in the construction as hereinafter described, and more particularly recited in the claims.

In the illustration I show the drum as arranged upon a vertical axis, with two chains running therefrom, one at each side, by which the lamp or thing is to be suspended, one chain running from one side of the drum and the other from the opposite side, so that as the drum is revolved in one direction it will wind both chains onto its surface, or, as the draft is made upon both chains, they will be equally drawn from the drum.

A represents the drum supported in a frame consisting of an upper bar, B, and a lower bar, C, with post-like connections D. In this frame is a fixed axis, E, upon which the drum may freely revolve. At the upper end or above the frame a loop, F, is applied, by which the lifting device may be suspended. The drum is of the usual character, and is provided with a coiled spring, one end of which is attached to the drum and the other end to the fixed axle, in the usual manner, too well known to require particular description in this application. Between the drum and the frame, and preferably upon the upper side, a disk, G, is applied, which is loose upon the axle, and also independent of the drum as to rotation. Between the drum and the disk I prefer to apply a flexible material, H, such as leather, india-rubber, or other suitable material, to increase the friction between the disk G and the end of the drum A. On the upper bar of the frame—that is, on the same side of the drum as the disk G—I hang one or more dogs, I, in length a little greater than the distance between the point a, where the



dogs are hinged, and the upper surface of the disk G, and so that hanging free they will be inclined to the surface of the disk. In the drawings I represent two of these dogs, one  
 5 hung upon one side of the bar B and the other upon the opposite side, and so that the nose of the dog stands near the periphery of the disk, as seen in Fig. 2. On the surface of the  
 10 disk is a shoulder, *b*, adjacent to the end of each dog, and so that the disk being turned will bring the shoulders *b* hard against the dogs I, as seen in Fig. 3. In such condition the dogs will resist turning the disk in one  
 15 direction. This brace-like action of the dog in connection with the disk occurs when the drum is turned in the direction of drawing the chains from the drum and of winding the spring. The frictional bearing between the  
 20 disk G and the drum is sufficient to thus turn the disk G against the dogs. Then as the thing suspended is raised, the drum is turned by its spring in the opposite direction, and so as to take the shoulders *b* away from the nose of the  
 25 dog, as indicated in broken lines, Fig. 3. The distance at which the disk may so move is limited by a stop on the disk. As here represented, this stop is in the form of a screw, *d*, through a lug, *e*, on the disk, arranged so that as the  
 30 disk is turned from engagement with the dogs the screw will come to a bearing against the frame, as indicated in broken lines, Fig. 3. This stop permits, therefore, only such an extent of rotation of the disk as is necessary to  
 35 relieve it from the action of the dogs and to bring it again into engagement with the dogs. The dogs being inclined, as before described, as the disk is turned toward them the shoulders *b* strike the nose of the dogs, tending to  
 40 throw the dogs into the vertical position, and the dogs, acting like cams upon the disk, increase the pressure of the disk upon the drum according to the extent to which the dogs are turned toward their vertical position—that is,  
 45 the greater the pressure upon the dogs the nearer they will approach the vertical position, and correspondingly increase the pressure upon the disk.

The extent of the pressure of the dogs may  
 50 be varied by adjusting the screw *f*, which is arranged in a lug, *g*, on the disk, so as to take a bearing against the bar B as the disk is turned toward the dogs. Accordingly as the screw is set the movement of the disk will be  
 55 arrested sooner or later.

To insure the engagement of the disk with the dogs, and so that it may partake of the movement of the drum in the drawing down of the lamp, I introduce a spring, *h*, between  
 60 the end of the screw *d* and the bar B. The tendency of this spring is to turn the disk and hold the shoulders *b* on the disk close up to their respective dogs, and the force of the spring *h* is sufficient to bring the dogs to bear  
 65 on the disk to such an extent as to produce friction between the disk and the drum, that

the slightest movement of the drum will be imparted to the disk. In this case the spring forms the yielding stop to arrest the oscillation of the disk and limit the extent of move- 70  
 ment of the shoulders from the dogs. The screw *d* is arranged to bear against the spring *h*, so that the pressure or power of the spring *h* may be increased or diminished by the turning of the screw. The spring, however, may 75  
 be omitted, as also the screw, and the lug *e* serve as the stop to limit the movement of the disk away from the dogs; or the spring *h* may be omitted and the screw retained to form an adjustable stop for so arresting the disk. 80

I have shown and prefer two dogs, substantially diametrically opposite each other, to act upon the disk at such opposite points; but one of the dogs may be omitted and a good result accomplished. 85

Instead of arranging the drum upon a vertical axis, it will be understood that the frame may be turned into a position at right angles thereto, so as to bring the axis of the drum into a horizontal position, an arrangement too 90  
 well known to require illustration.

Instead of making the disk of full circular form, as shown in the drawings, portions of the disk may be cut away, so as to make it substantially bar form, as indicated in broken 95  
 lines, Fig. 2.

I am aware that a drum and disk have been arranged in a frame substantially as in this application, and so as to produce friction between the disk and drum, but in such case 100  
 a cam or cams are formed on the disk or frame, and so that the rotation of the disk will force the cams into bearing contact. I therefore do not claim such construction. The dogs, which constitute the essential feature of my inven- 105  
 tion, readily yield on the return of the disk, and avoid the sticking liable in the use of cams.

I claim—

1. The combination of the supporting-frame, axle, and spring-drum, with an oscillating bar 110  
 or disk loose upon the axle between the frame and end of the drum, and one or more dogs hung to the frame adjacent to said disk, the said dogs greater in length than the distance between their hinging-point and the surface of 115  
 the said disk, whereby the said dogs are inclined from the pivot forward toward the disk, the disk constructed with a shoulder or shoulders corresponding to the said dog or dogs, and forward of the free end of said dogs, sub- 120  
 stantially as described, and whereby under oscillation of the disk in one direction the said dogs will be forced to bear upon said disk and force said disk onto the drum, or in the opposite direction will relieve said disk from 125  
 the pressure of said dogs, substantially as described.

2. The combination of the frame, axle, and spring-drum, with an oscillating bar or disk loose upon the axle between the frame and 130  
 end of the drum, one or more dogs hung to the frame adjacent to said disk, the said dogs



greater in length than the distance between their hinging-point and the surface of the said disk, whereby the said dogs are inclined from the pivot forward toward the disk, the disk  
5 constructed with a shoulder or shoulders corresponding to the said dog or dogs and forward of the free end of said dogs, and a screw on said disk whereby the extent of oscillation of the said disk may be adjusted, substantially  
10 as described.

3. The combination of the frame, axle, and spring-drum with an oscillating bar or disk loose upon the axle between the frame and end of the drum, one or more dogs hung to  
15 the frame adjacent to said disk, the said dogs greater in length than the distance between their hinging-point and the surface of the said disk, whereby the said dogs are inclined from the pivot forward toward the disk, the disk  
20 constructed with a shoulder or shoulders corresponding to the said dog or dogs and forward of the free end of said dogs, and a spring between the frame and dogs adapted to turn said disk toward the nose of the dog, sub-  
25 stantially as described.

4. The combination of the frame, axle, and spring-drum, the disk between said frame and drum loose upon the axle and adapted to oscillate thereon, dogs I I, hung to the frame at  
30 diametrically-opposite points, the said dogs greater in length than the distance between their hinging-point and the surface of the said disk, whereby the said dogs are inclined from the pivot forward toward the disk, the said  
35 disk constructed with shoulders *b* forward of the free end of the said dogs, and a stop ar-

ranged to arrest and limit the extent of movement of the shoulders from the dogs, substantially as described.

5. The combination of the frame, axle, and  
40 spring-drum, the disk oscillating between said frame and drum loose upon the axle and adapted to oscillate thereon, dogs I I, hung to the frame at diametrically-opposite points, the said dogs greater in length than the dis-  
45 tance between their hinging-point and the surface of the said disk, whereby the said dogs are inclined from the pivot forward toward the disk, the said disk constructed with shoulders *b* forward of the free end of the said dogs, 50  
and a spring, *h*, between said frame and disk, adapted to turn the disk and hold the said shoulders against the nose of the dogs, substantially as described.

6. The combination of the frame, axle, and  
55 spring-drum, the disk between said frame and drum loose upon the axle and adapted to oscillate thereon, dogs I I, hung to the frame at diametrically-opposite points, the said dogs greater in length than the distance between  
60 their hinging-point and the surface of the said disk, whereby the said dogs are inclined from the pivot forward toward the disk, the said disk constructed with shoulders *b* forward of the free end of the said dogs, and an adjustable  
65 stop arranged to arrest the movement of the disk toward the dogs, substantially as described.

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