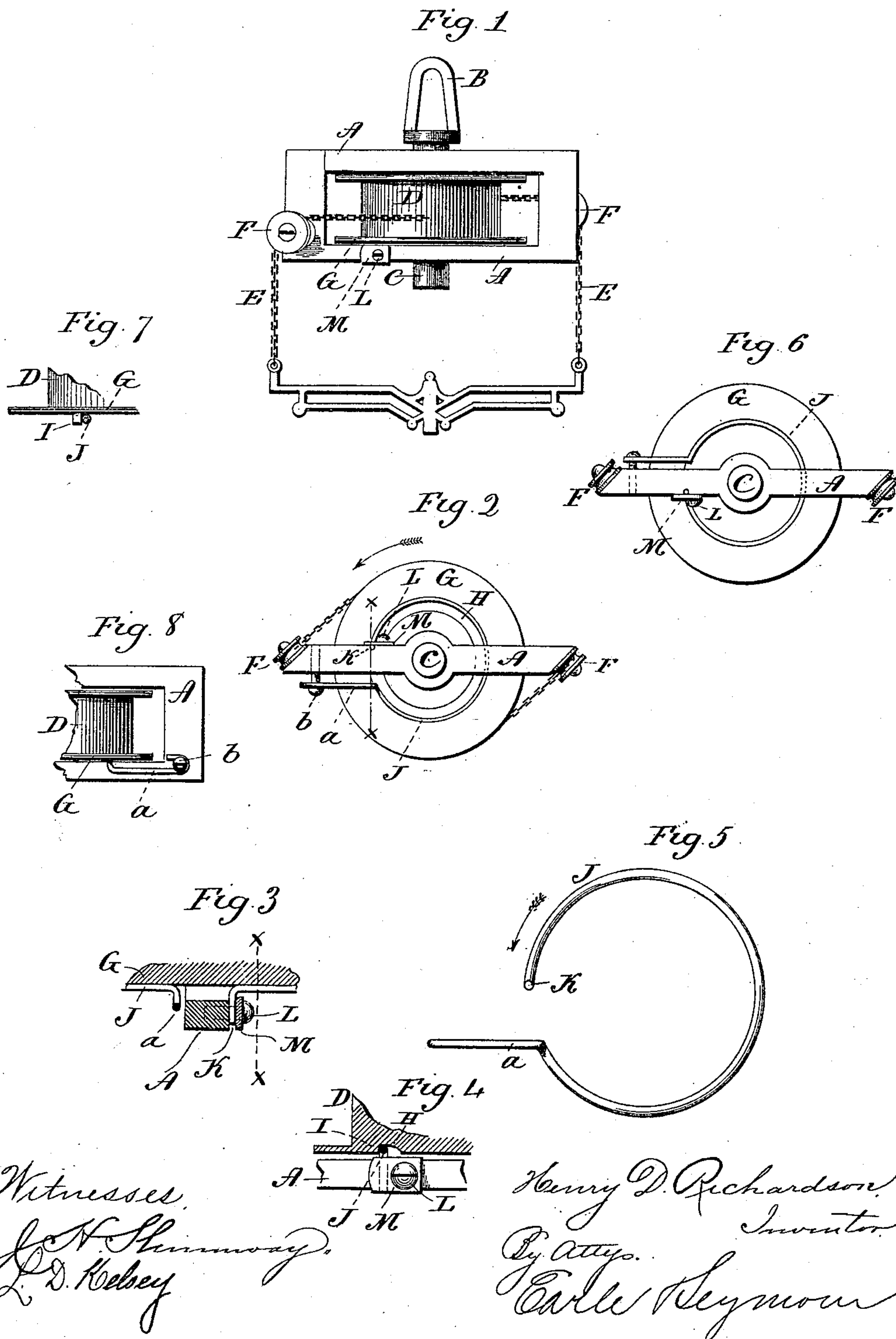


(No Model.)

H. D. RICHARDSON.  
SUSPENSION DEVICE FOR LAMPS, &c.

No. 464,763.

Patented Dec. 8, 1891.





# UNITED STATES PATENT OFFICE.

HENRY D. RICHARDSON, OF ANSONIA, CONNECTICUT, ASSIGNOR TO  
WALLACE & SONS, OF SAME PLACE.

## SUSPENSION DEVICE FOR LAMPS, &c.

SPECIFICATION forming part of Letters Patent No. 464,763, dated December 8, 1891.

Application filed November 21, 1890. Serial No. 372,150. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY D. RICHARDSON, of Ansonia, 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 of the device complete; Fig. 2, an under side view showing the frictional spring applied; Fig. 3, a section through the lower part of the frame and a portion of the head of the drum on line *xx* of Fig. 2; Fig. 4, a section cutting in line *xx* of Fig. 3; Fig. 5, the spring detached; Fig. 6, the same as Fig. 2, representing the frictional spring as arranged for reverse action from that of Fig. 2; Fig. 7, a modification in the construction of the spring-seat; and Fig. 8, a partial side view from the reverse of Fig. 1, showing the means for adjusting the spring.

This invention relates to an improvement in devices employed for suspending lamps from the ceiling, or for other purposes where an adjustable elevation is desired, and which devices consist of a frame by which the thing may be suspended, a shaft with a spring-drum arranged thereon, and chains wound upon the drum under the reaction of the spring, extending from the drum downward, and so that a pull upon the chains will produce a rotation of the drum and corresponding winding of the spring, and then the reaction of the spring will produce a corresponding return of the drum and rewind the chains upon the drum. Suspension devices of this character, particularly when employed for lamps, where there is great liability to variation in the weight of the thing suspended, require some mechanism to be applied between the spring and the thing suspended to overcome the variations in the weight, so that under such variations the spring will not give way to permit an overweight to fall or operate to raise the thing suspended when the weight is below a given point.

The object of this invention is to produce

a simple automatic frictional device upon the drum, which will produce this counterbalancing effect; and it consists in the construction as hereinafter described, and particularly recited in the claims.

In the illustrations the device is shown with the drum arranged upon a vertical shaft.

The frame A is of usual form, consisting of an upper and lower bar connected by vertical sides, and is provided with a hanger or loop B, by which it may be suspended.

Supported in the frame is a vertical shaft C, on which is arranged the spring-drum D. On the drum two chains E E are wound, running, respectively, over pulleys F from the drum, thence downward, connected in any suitable manner for the purpose of attaching the thing to be suspended, and so that the chains will draw alike upon the drum in running down and be alike rewound upon the drum as the thing suspended is elevated, all substantially in the usual manner for this class of lifting devices. The details of these devices are too well known to require particular description.

Upon one of the heads of the drum, herein represented as the under head G, a concentric groove H is formed, so as to produce a shoulder I substantially parallel with the axis of the drum. In this groove a divided ring-shaped spring J is arranged. The spring is shown detached in Fig. 5. It is made from wire and must be elastic. It is bent into a ring shape, corresponding to the shoulder I of the groove H, but of somewhat larger diameter, and so that it forms a divided ring, which may be contracted so as to be placed in the groove H of the drum and so that the natural reaction of the spring will cause it to expand against the shoulder I or outer surface of the groove H. One end of this spring J is made fast to the frame. As here represented, this is done by turning one end K of the spring outward, so as to bear against the one side of the frame A, as seen in Fig. 3, and it is there clamped by means of a screw L and a lug M, so that the spring is firmly held against rotation. The point of attachment between the spring and the frame is at that end of the spring toward which the drum revolves in descending. The other end of the spring lies



freely in the groove, except as to the means of adjustment hereinafter described.

The direction of rotation of the drum in drawing the chains therefrom is indicated by the arrow in Figs. 2 and 5. The spring, as before stated, lies in close frictional contact with the shoulder I or outer side of the groove H. Consequently, as the drum is revolved in the direction indicated by the arrow the friction between the drum and spring will tend to force the free end of the spring around and toward the fixed end, and such tendency causes an expansion of the spring against the shoulder of the drum and produces a corresponding frictional resistance to the rotation of the drum in that direction; but when the drum is revolved in the opposite direction, as by the elevation of the thing suspended and the rewinding of the chains upon the drum, the frictional action of the drum upon the spring is to force it circumferentially from the point of attachment and toward the free end of the spring; but as there is no resistance to the turning of the spring in this direction the spring naturally contracts under such rotation and frictional contact with the drum, and such contracting accordingly relieves the drum from frictional pressure of the said spring J. The power of the friction-spring J thus arranged is made sufficient for all possible variation of the thing suspended, and so that while the spring-drum will aid in raising the thing suspended and resist the descent of the thing so suspended the friction-spring J will automatically operate to resist such winding should the thing suspended be lighter than the normal power of the spring, and in like manner prevent the descent of the thing suspended should it be heavier than the normal power of the spring-drum.

In some cases it is desirable that the frictional device should oppose the rise of the thing suspended instead of the descent, as I have described. In such case the spring is secured by its other end, as seen in Fig. 6.

It will be understood that the shoulder or concentric bearing for the spring may be produced upon the drum without the necessity of cutting a groove. For illustration, as seen in Fig. 7, the drum may be constructed with a rib to produce the shoulder I, against which the spring will bear, it only being essential

that the bearing-surface upon which the spring rests shall be substantially parallel with the axis of the drum and spring, so that the spring may be firmly seated thereon; but I prefer the groove, as it permits the arrangement of the spring substantially flush with the surface of the head of the drum.

To make the friction of the spring adjustable, the free end is turned outward from the groove, so as to form an arm *a*, through which an adjusting-screw *b* passes into the frame, and so that that end of the spring may be drawn toward the frame or permitted to recede from the frame to vary the friction between the spring J and the drum—that is to say, if the free end be forced so far toward the frame as to practically take it out of contact with the groove or shoulder of the drum, then there would be no friction; but if the spring be released so as to bring the spring into contact with the drum, then the friction between the drum and the spring will be according to the circumferential play which is permitted to the spring, and that circumferential play will be limited by the adjusting-screw *b*. Hence the frictional power of the spring may be varied according to circumstances.

I claim—

In a suspension device for lamps and like purposes, the combination of a frame, a spring-actuated drum arranged upon an axis in the frame, chains running from said drum to the thing suspended, the drum constructed with a concentric internal shoulder or bearing-surface I in a plane substantially parallel with the axis of the drum, with a divided ring-shaped spring J, made from wire, arranged upon the drum against and so as to bear outwardly upon the said shoulder, one end of the said wire spring made fast to the frame, the other end of the wire spring turned outwardly to form an arm *a*, and a screw *b* through said arm into the frame, and whereby the spring is made adjustable with relation to the said shoulder, substantially as and for the purpose described.

HENRY D. RICHARDSON.

Witnesses:

F. L. GAYLORD,  
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