(No Model.)

# F. METZGER.

## SUSPENSION DEVICE.

No. 362,304. Patented May 3, 1887.

Fig. 1.

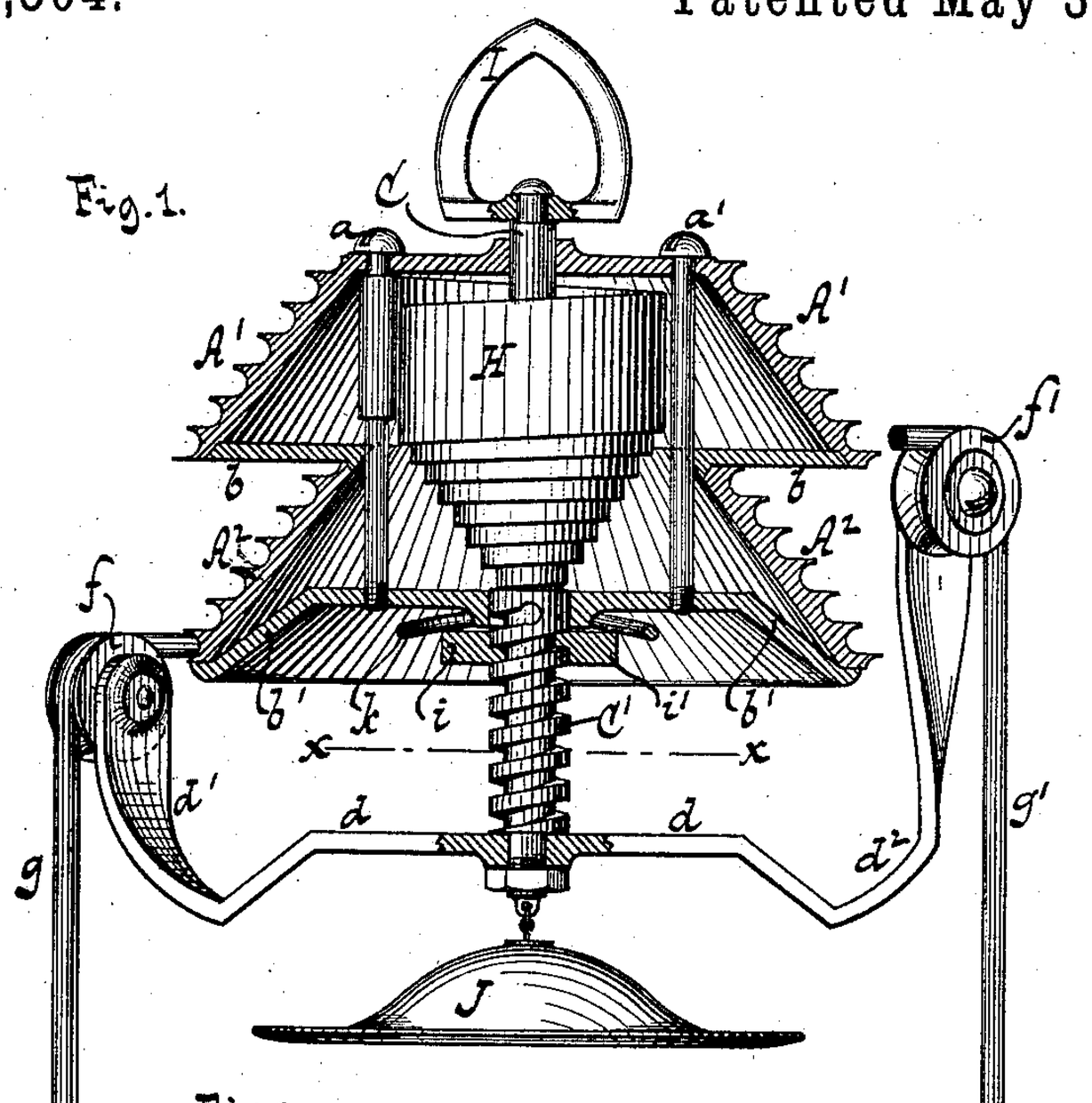



Fig. 2.

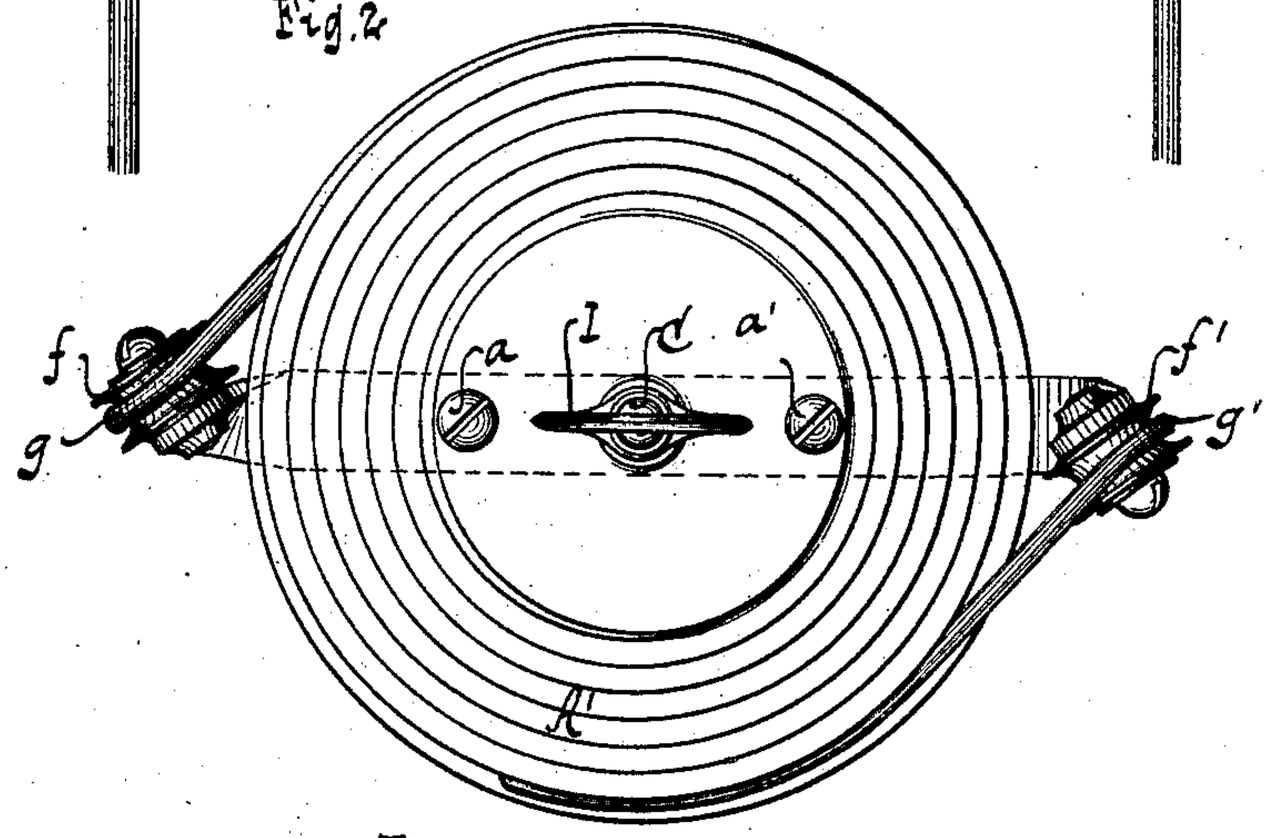
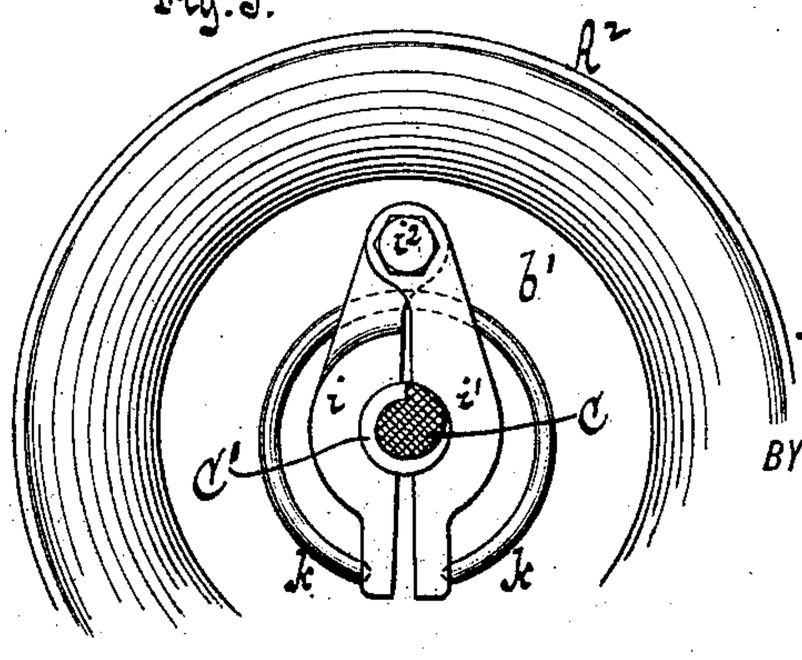



Fig. 3.

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# UNITED STATES PATENT OFFICE.

FERDINAND METZGER, OF PORT CHESTER, NEW YORK.

## SUSPENSION DEVICE.

SPECIFICATION forming part of Letters Patent No. 362,304, dated May 3, 1887.

Application filed November 18, 1886. Serial No. 219,291. (No model.)

*To all whom it may concern:*

Be it known that I, FERDINAND METZGER, a citizen of the United States, residing at Port Chester, in the county of Westchester and State of New York, have invented new and useful Improvements in Suspension Devices, of which the following is a specification.

The object of this invention is to provide a device for suspending lamps, flower-pots, and other articles; and the invention consists in the features set forth in the following specification and claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the device, partly in section. Fig. 2 is a plan view thereof. Fig. 3 is a section in the plane *x x*, Fig. 1.

Similar letters indicate corresponding parts.

The letters A′ A² indicate drums, adapted to turn on an axle or spindle, C. The spindle C does not turn with the drums A′ A². The drums A′ A² are suitably connected—as, for example, by screws *a a′*—so that the drums will revolve together. Diaphragms, disks, or plates *b b′*, suitably formed and applied, close the drums A′ A², and prevent entrance of dust, and also improve the appearance of the device.

In the drawings the plate *b* is shown as being held in place by the drum A² pressing said plate *b* into its seat on the drum A′. The plate *b′* is tapped for the reception of the screws *a a′*, and the heads of these screws sit against the top of the drum A′. By properly applying the screws *a a′*, the drums A′ A² and plates *b b′* will be secured to one another. From the drums A′ A² pass cords or chains *g g′* to pulleys *f f′*. These pulleys *f f′* are provided with suitable bearings—as, for example, in arms *d′ d²*, attached to a support, *d*.

In Fig. 1 the support is secured by suitable means—as, for example, a nut to the spindle C. To the spindle C is secured one end of a spring, H, the other end of said spring being suitably secured to the drums A′ A²—as, for example, by being secured to or looped about the screw *a*. The tension of the spring H has a tendency to wind the cords or chains *g g′* about the drums A² A′. As the cords or chains are unwound from the drums A′ A², the rotation of the drum about the stationary spindle C increases the tension of the spring H, so that said spring has a greater tendency to rotate the drums A′ A², so as to wind up the cords *g g′*.

To equalize the effect of the spring H on the cords *g g′* the drums A′ A² are made conical or cone-shaped, as shown. In the drawings said drums approximate in shape to cone-frustums. The result of this construction is that, as the tension of the spring increases through the cords being unwound from the drums, the points at which the pulls of the cords are communicated to the drums are removed farther from the centers of the drums, thus increasing the leverage of the pull of said cords upon the spring. As the tension of the spring decreases and the cords are wound up, the leverage of the pull of said cords is diminished, as will readily be understood. The action or pull of said spring upon the cords is thus equalized, instead of being greater, as the tension of the spring increases and less as the tension of the spring decreases.

By having the action of the spring thus equalized, as stated, an article can be suspended at any point in the path or range of the cords, which range can be attained by the cords winding upon or unwinding from the drums. For example, if an object—such as a lamp, flower-pot, fish-globe, or other article—is suspended from the cords *g g′* near to the support *d*, the tension of the spring may be sufficient to hold that article at that place; but if said article be drawn to a position farther away from the support *d*, the increased tension of the spring, if not counteracted, might move said article toward the support *d*. By equalizing the effect of the spring upon the cords as stated any object suspended from the cords can be moved to various positions required by the winding or unwinding of the cord, and such object will remain in such position. It is thus not necessary to apply any brake or stop mechanism to secure a fixed position for an article suspended from this device.

In the device shown in Fig. 1 the spindle C is provided with a screw-thread, C′, which is engaged by a female screw, *i i′*, on the drums A′ A². The female screw *i i′* can be conveniently formed by pivoting two arms to the drums, as seen in Fig. 3, where is shown a pivot, *i²*, and causing said arms to engage the screw-thread C′. A spring or holding device,

*k*, is adapted to keep the arms of the female screw *i i'* in engagement with the screw-thread C'. The female screw *i i'*, through its engagement with the screw-thread C' on the spindle, causes the drums A' A² to rise and fall on the spindle as said drums revolve. The points at which the cords *g g'* pass from the drums to the pulleys *f f'* is thus kept uniformly near to said pulleys, so that the cords *g g'* will not be liable to run off said pulleys.

In the device shown in Fig. 1 the spindle C is placed vertically, and said spindle carries the support *d*. In this device the action of the spring on the cords is equalized by the conic shape of the drum.

A hook or ring, I, suitably swiveled or attached, for example, to the spindle C, Fig. 1, enables the device to be attached to the ceiling of a room or at any other suitable place. The drums A' A² may be provided with grooves or channels, if desired, for guiding the cords or chains *g g'* during the motion of the drums.

In case the device is used for suspending lamps it is well to provide an attachment—such as a smoke-bell, J—to prevent the heat and flame from striking the device.

It is evident that an endwise movement of the drums A' A² or of the pulleys *f f'* is of advantage, whether the drums be of conical shape or of any other shape, such as cylindrical. The female screw *i i'* may be formed directly on the drum or one of its walls or diaphragms—such as the diaphragm or partition *b'*; but by having the screw-thread *i i'* detachably applied to the drum said screw-thread *i i'* can be removed, if desired—as, for example, for the purpose of repairing or replacing said screw-thread *i i'*.

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

1. The combination of a spindle, C, a drum or drums, A' A², a support, *d*, having guide-pulleys *f f'*, cords or chains *g g'*, and means, substantially as described, for moving the drum or drums endwise on the spindle as the cords or chains are wound or unwound.

2. The combination of a spindle, C, having a screw, C', a drum or drums, A' A², having a screw-thread engaging the screw, a support having guide-pulleys *f f'*, and chains or cords *g g'*, connecting with the drum or drums and passing over the guide-pulleys, substantially as described.

3. The combination, with a spindle, C, having a screw, C', of the drum or drums A' A², the support *d*, having arms *d' d²*, guide-pulleys *f f'*, the spring H, and the female screw *i i'*, pivotally mounted on the drums, substantially as described.

4. In a suspending device, the combination, with the spindle C, of a drum, cords or chains *g g'*, guide pulleys *f f'*, a screw-thread or its equivalent, C', on the spindle, a corresponding screw-thread, *i i'*, on the drum, and a spring or holding device, *k*, applied to the screw-thread *i i'*, substantially as set forth.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

FERDINAND METZGER. [L. S.]

Witnesses:
THOMAS KNOTT,
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