

(No Model.)

2 Sheets—Sheet 1.

E. H. WHEELER.
SPRING BALANCE LAMP.

No. 343,093.

Patented June 1, 1886.

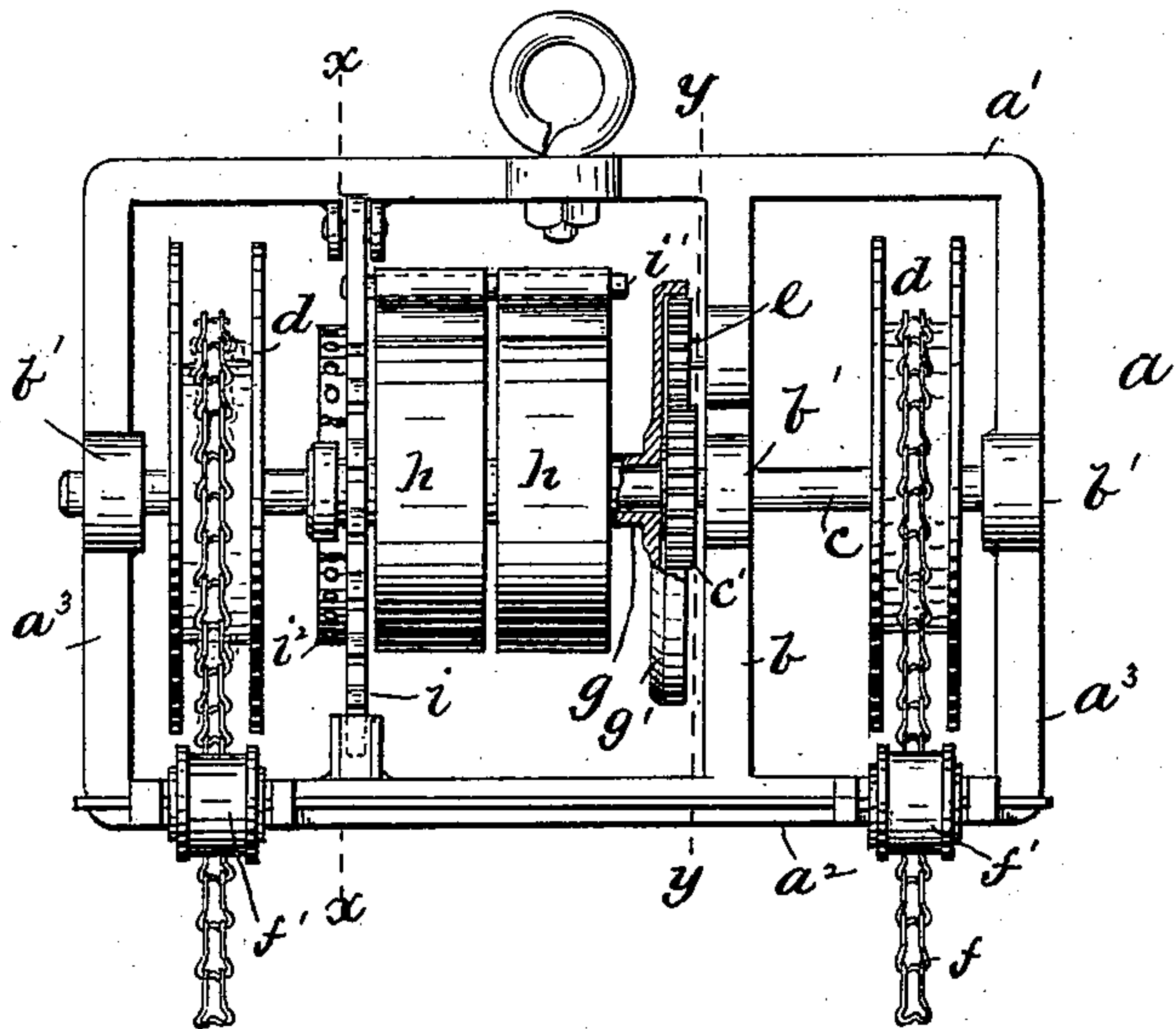
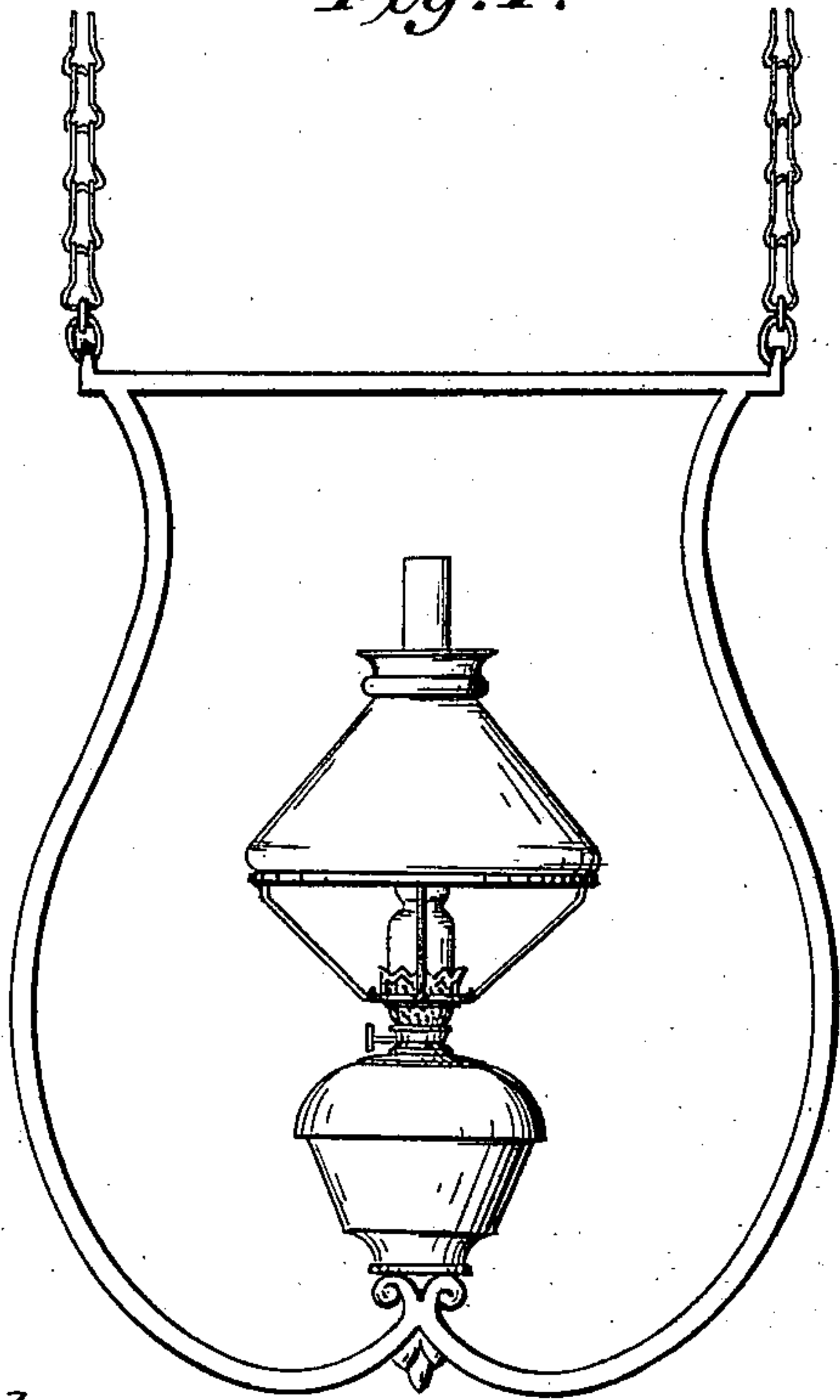


Fig. 1.



Witnesses.

A. B. Zupm.
Rotta Specht.

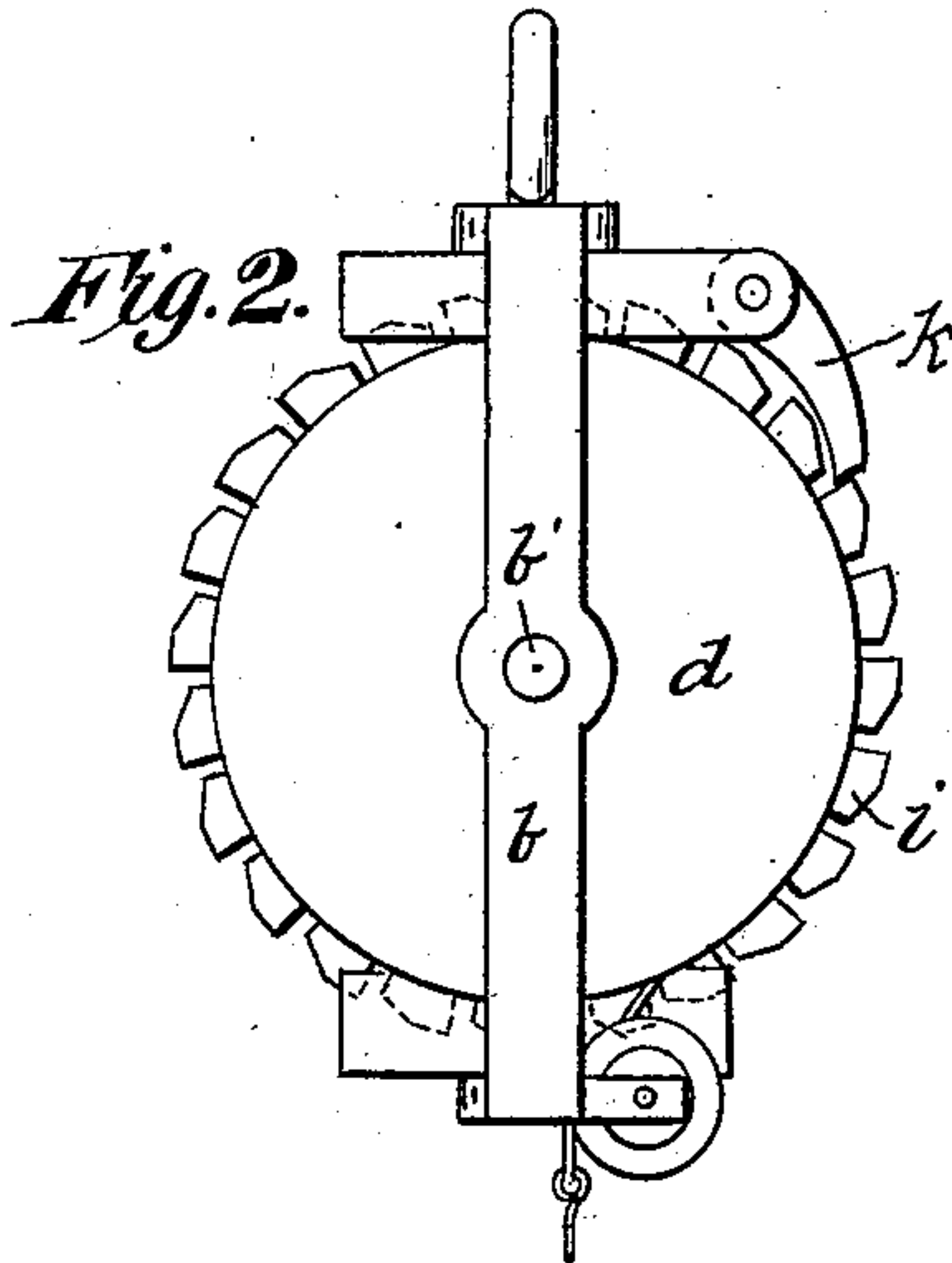


Fig. 2.

Fig. 3.

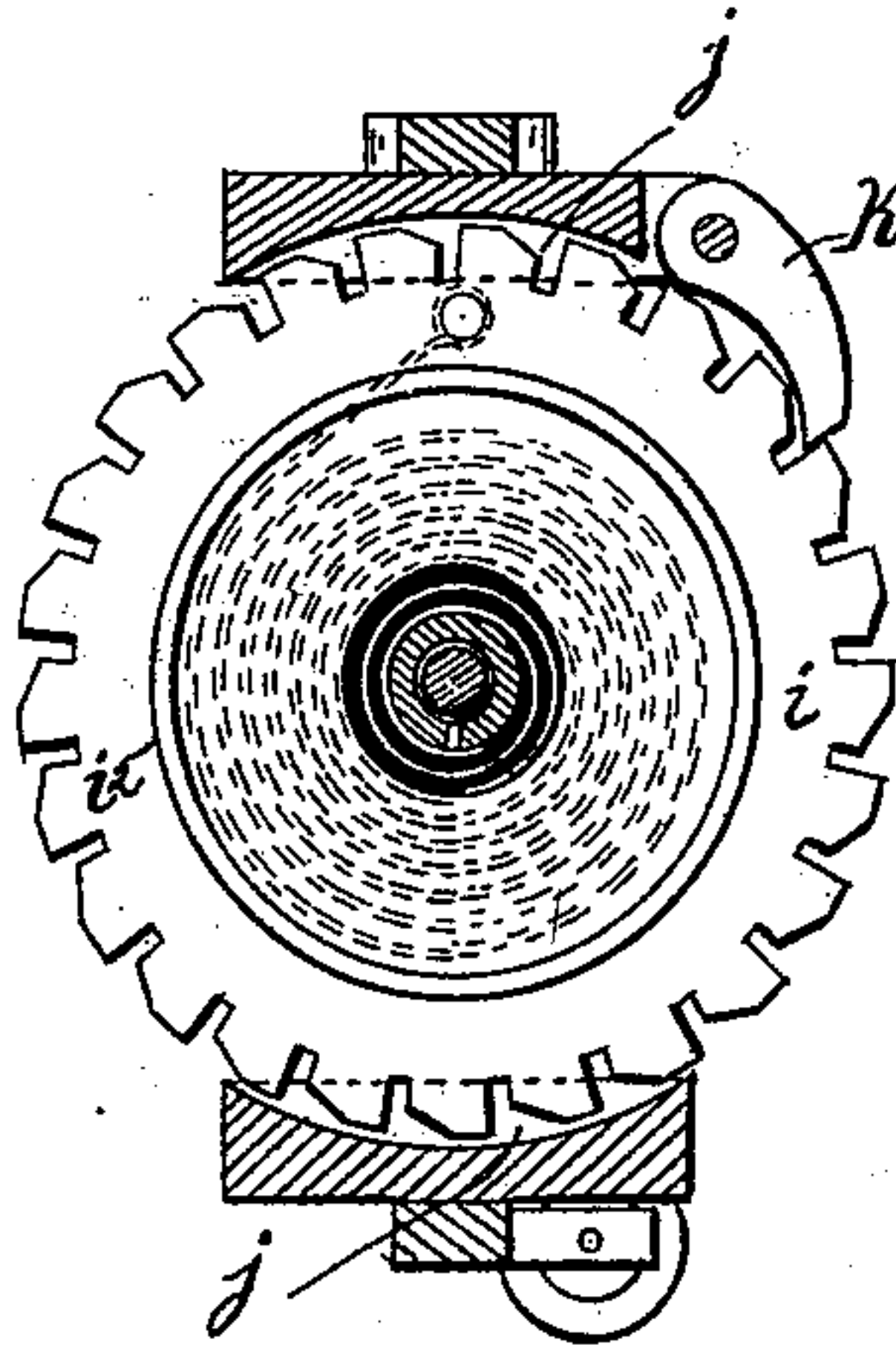


Fig. 4.

Inventor.

Edward H. Wheeler
By R. S. & A. Lacey
Attys.

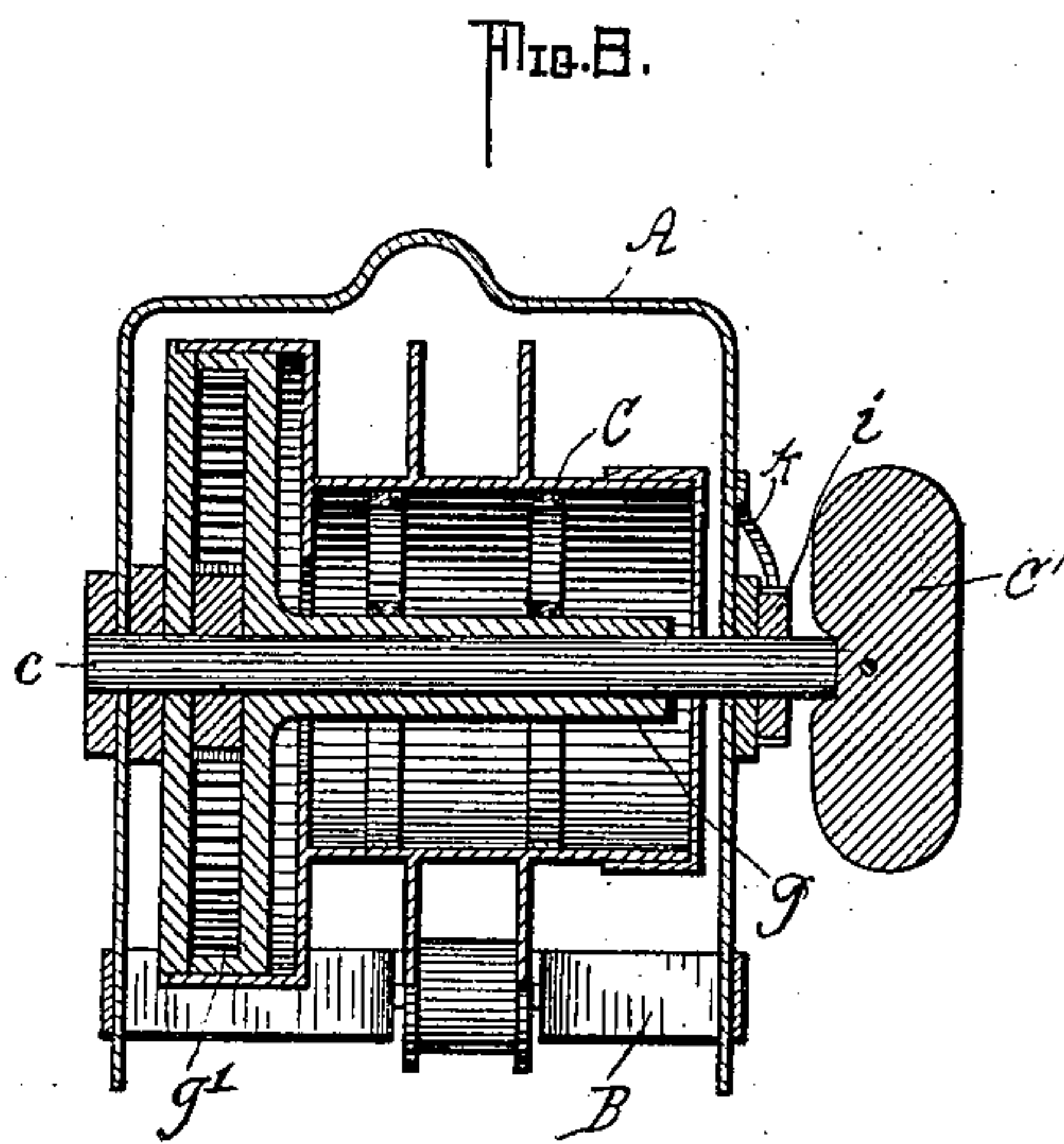
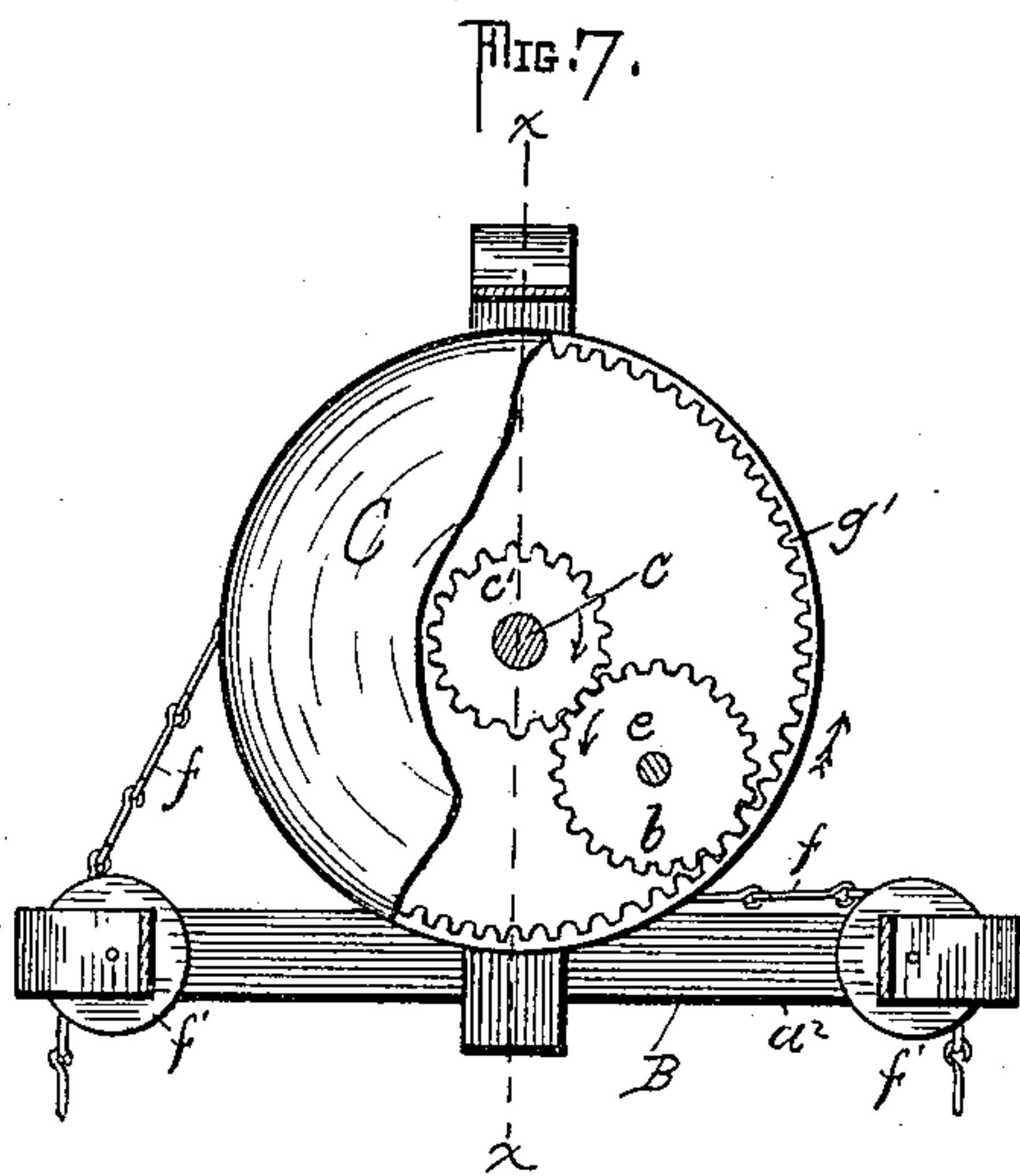
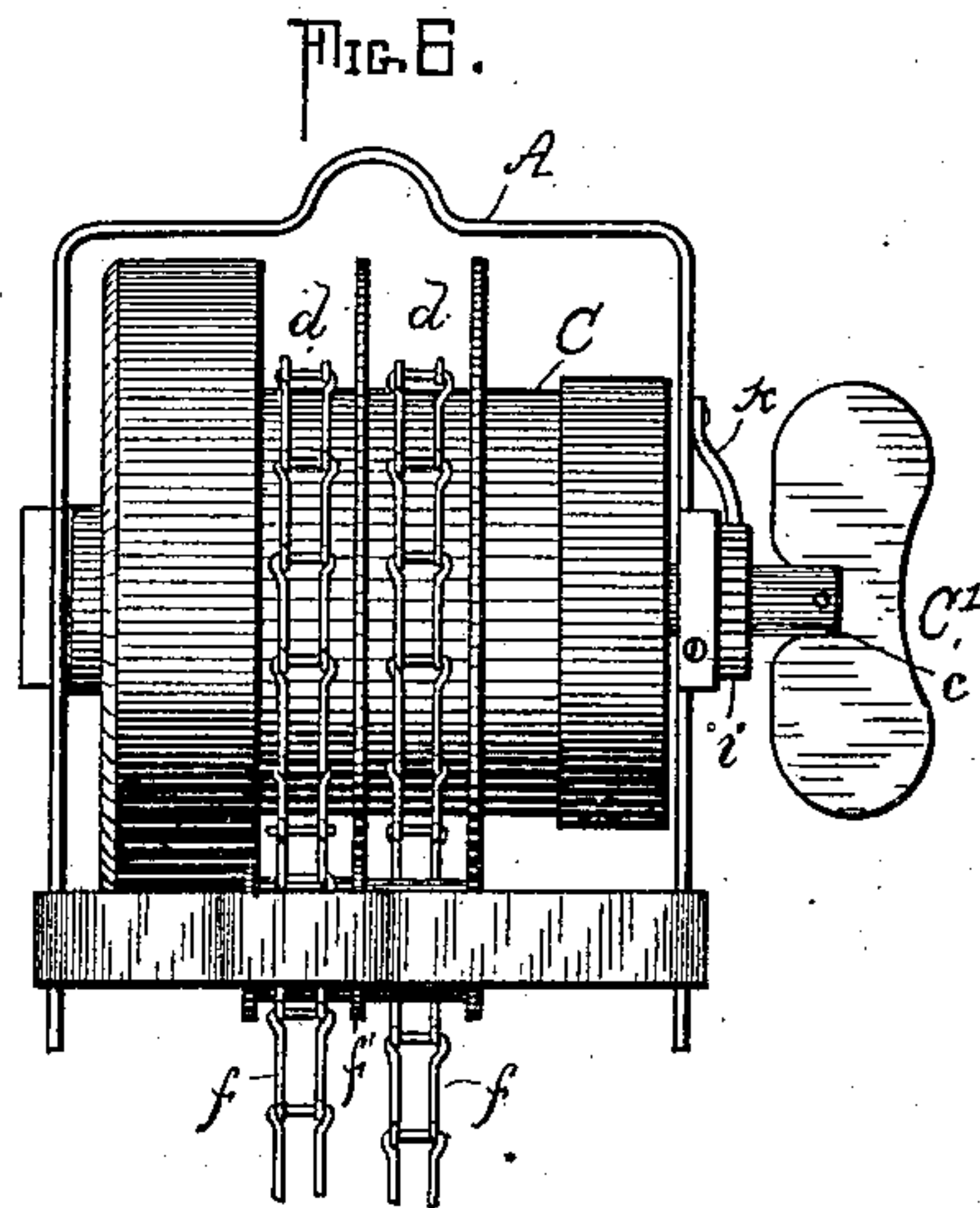
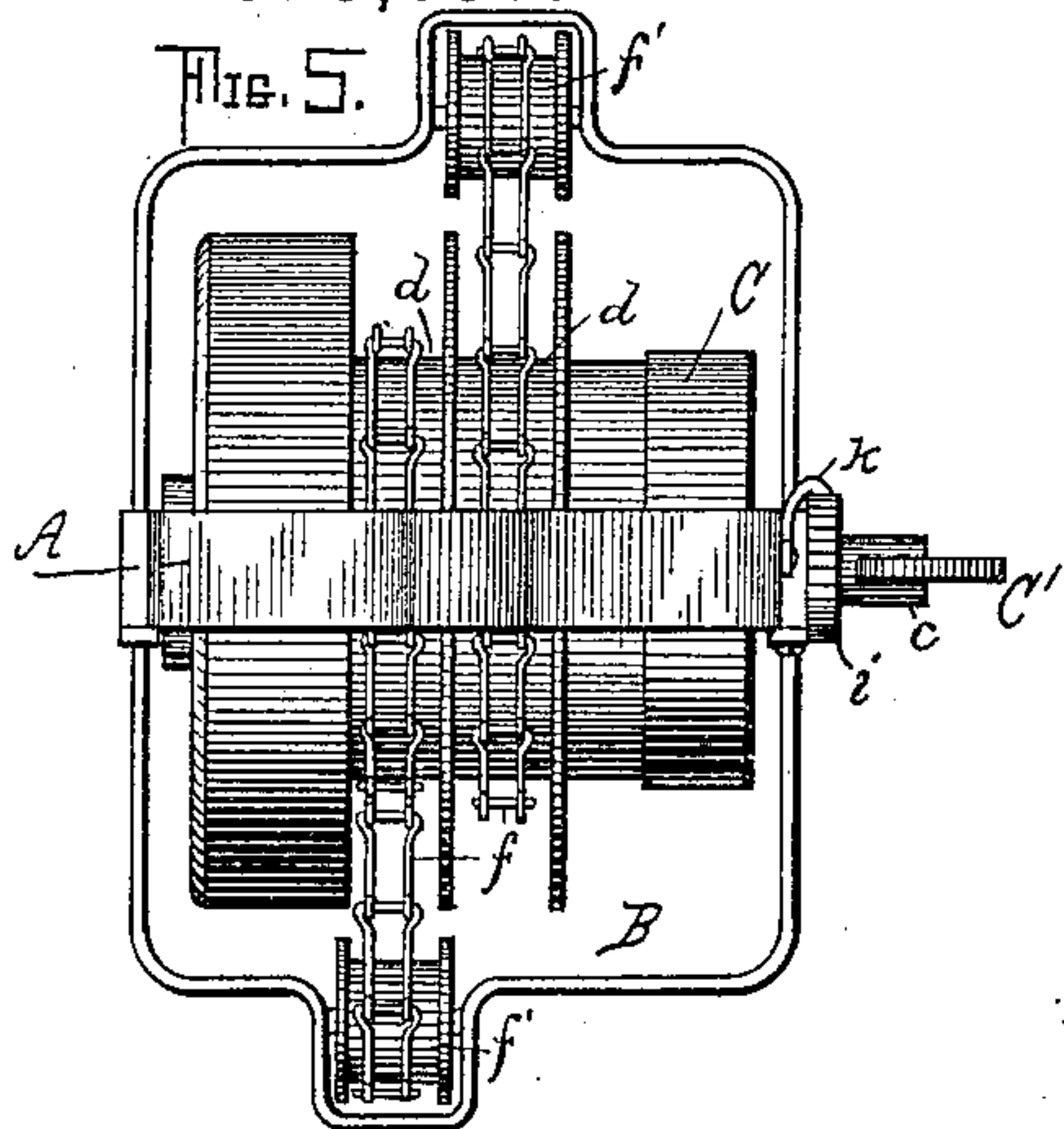
(No Model.)

2 Sheets—Sheet 2.

E. H. WHEELER.
SPRING BALANCE LAMP.

No. 343,093.

Patented June 1, 1886.



Witnesses
Wm. Rheem.
A. W. Bishop.

Inventor
Edward H. Wheeler
By his Attorney
R. S. & A. T. Lacey.

UNITED STATES PATENT OFFICE.

EDWARD H. WHEELER, OF WATERBURY, CONNECTICUT.

SPRING-BALANCE LAMP.

SPECIFICATION forming part of Letters Patent No. 343,093, dated June 1, 1886.

Application filed September 3, 1885. Serial No. 176,085. (No model.)

To all whom it may concern:

Be it known that I, EDWARD H. WHEELER, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Spring-Balance Lamps; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention is an improvement in spring-balance supports for hanging lamps; and it consists in certain novel constructions and combinations of parts, which will be hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a front view of my improvement with a lamp suspended therefrom. Fig. 2 is an end view of the improvement. Fig. 3 is a vertical section on the line X X, Fig. 1. Fig. 4 is a section on line Y Y, Fig. 1. Fig. 5 is a plan view of a modified form. Fig. 6 is an end view. Fig. 7 is a side view with parts broken away; and Fig. 8 is a sectional view on the line X X of Fig. 7.

The supporting-frame *a* is composed of top bar, *a'*, bottom bar, *a''*, and end bars, *a'''* *a'''*. This frame also has a bar, *b*, parallel with and intermediate between the end bars, *a'''* *a'''*. These bars *a'''* and *b* are provided with bearings *b'* for the main shaft *c*. This shaft is provided, close to the inner side of bar *b*, with a pinion, *c'*, and it is provided with a drum or drums, *d*, preferably two in number and located near the opposite ends of the shaft. To the bar *b* is journaled a pinion, *e*, which meshes with the pinion *c'*, and also with the gear on the hollow shaft, presently described.

The lamp support or bands *f* are secured to and wound on drums *d*, and pass thence down around guide-pulleys *f'*, which are journaled to the lower bar, *a''*, of the supporting-frame and with their inner edges in a vertical line, approximately, with the hook or eye by which the supporting-frame is suspended. By this arrangement of the guide-pulleys *f'* the weight of the lamp is supported in a line with the point of suspension of the supporting-frames,

and such frame is thereby held in true vertical position, as is desirable. A hollow shaft, *g*, is journaled on the shaft *c*, and is provided at one end with an internally-toothed gear-wheel, *g'*, which is geared with the wheel *c'*, preferably through the intervention of an intermediate pinion, *e*, as shown most clearly in Figs. 1, 4, and 7. A spring, *h*, is secured at its inner end to a hollow shaft, *g*, around which it is wound, and has its other end connected with the supporting-frame. This spring may be formed of a single strip, or two or more strips, as desired, and operates to give a rotary tension to the hollow shaft, and thereby to the main shaft, by means of the gearing before described.

By reason of the internal gear and pinion, *c'*, the revolution of the shaft *c* does not accomplish so considerable a contraction or expansion of the spring *h* as though such spring were connected directly to the main shaft, and I am thereby able to employ a shorter spring than would otherwise be practicable; also, by the gearing I get a greater power by the same spring, and by not applying such power directly to the main shaft the force is such that the lamp, when adjusted up or down, will ordinarily rest at the point to which it is set without the necessity of locking mechanism by which to secure it at such point.

While the outer end of the spring *h* might be secured directly to the supporting-frame, I preferably connect it therewith through the medium of the ratchet-wheel *i*, which fits loosely on the shaft, and is provided with a lateral pin, *i'*, or other suitable construction by which the spring may be conveniently connected therewith. Radial pins may be secured on the shaft, by which to prevent the lateral displacement of the ratchet; but I preferably secure such end by forming grooves *j* in one or both of the upper or lower bars of the supporting-frames or in boxes secured thereto. I preferably employ two of these boxes and project the ratchet-wheel thereinto, as shown in Fig. 3, thus forming a bearing of the said ratchet, as well as preventing its longitudinal displacement on the shaft. A pawl, *k*, is pivoted to the supporting-frame, usually at the outer end of the upper grooved box, and engages with the ratchet *i* in such manner as to secure said ratchet from being revolved by the

tension of the spring *h*. This ratchet may, by releasing pawl *k*, be turned back or forth to increase or diminish the tension of the spring *h*, to suit the apparatus to lamps of different weight, and may be held at any desired point by the pawl *k*, as will be understood.

The ratchet may be grasped by the hand and set back or forth; but I preferably provide it with a lateral cylindrical flange, *i*², provided with perforations fitted to receive a pin, by which the ratchet may be more easily turned.

It is manifest that the supporting-frame, with its devices before described, may be manufactured and sold to the trade and the lamp-supporting bands be applied by the purchaser.

In the modifications shown on Sheet 2 of the drawings the supporting-frame consists of a bail, A, and a horizontal frame, B, and the drums are formed on the exterior of a casing, C, which incloses the gearing, the hollow shaft, and the spiral spring, one end of the latter being attached to the interior of the casing, the other end being attached to the exterior of the hollow shaft *g*. By rotating the shaft *c* in either direction, through the medium of the thumb-piece C' on its outer end, the hollow shaft will be correspondingly rotated in opposite direction by reason of the peculiar arrangement of the gearing, thus increasing or diminishing the tension of the spiral spring. When the proper tension of the spring has been obtained the same may be held in its adjusted position by the engagement of the pawl *k* on the bail, with a ratchet-wheel, *i*, keyed on the shaft *c*, or by any other suitable means which will readily suggest itself to a skilled mechanic.

The modified form is far preferable in some instances, as it is more compact, and the parts are inclosed by a casing, which latter is made to perform the function of a drum.

The guide-pulleys are set in offsets or bends formed in the frame B, and the bands pass over the rollers in such a manner as to preserve an equilibrium of the frame B and keep the latter in a horizontal position.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of the supporting-frame, a shaft carried thereby provided with a pinion, a drum mounted on said shaft, a hollow shaft journaled on the aforesaid shaft and provided with an internally-toothed rim, intermediate gearing connecting the latter rim with the said pinion, and a spiral spring connecting the hollow shaft with a fixed relative point, substantially as and for the purposes specified.

2. The combination of a supporting-frame, a shaft journaled therein and provided with a drum, a pinion on said shaft, a hollow axle journaled on the shaft and provided with an internal gear-wheel geared with the pinion on the shaft, and a drive-spring secured at one end to the hollow shaft and connected at its other end with the frame, substantially as set forth.

3. The combination of the supporting-frame provided with a guide-groove opening toward the center thereof, the main shaft, a hollow shaft on said main shaft, intermeshing gearing connecting the two, a ratchet-wheel having its periphery projected into the guide groove and held thereby from lateral movement, a pawl supported on the framing in position to engage the ratchet-wheel, and a drive-spring secured at one end to the hollow shaft and at its other end to the ratchet-wheel, substantially as set forth.

4. The combination of the supporting-frame, the boxes provided with inwardly-facing grooves and secured to the upper and lower bars of said frame, a pawl pivoted to the end of said boxes, a main shaft journaled in the frame and provided with a drum and with a pinion, a hollow shaft journaled on the main shaft and having an internal gear geared with the pinion on the shaft, a ratchet-wheel having its edge projected into the grooved boxes and arranged in position to be engaged by the pawl, and a drive-spring secured at one end to the hollow shaft, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD H. WHEELER.

Witnesses:

FRANZ DIETMEIER,
EUGENE SWEENEY.