

No. 773,134.

PATENTED OCT. 25, 1904.

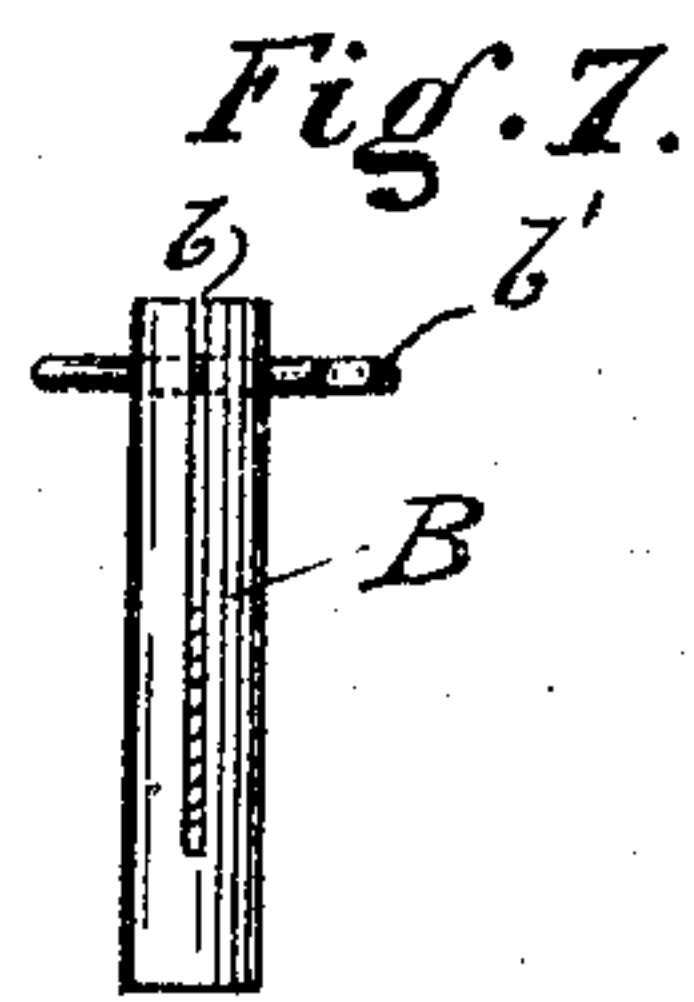
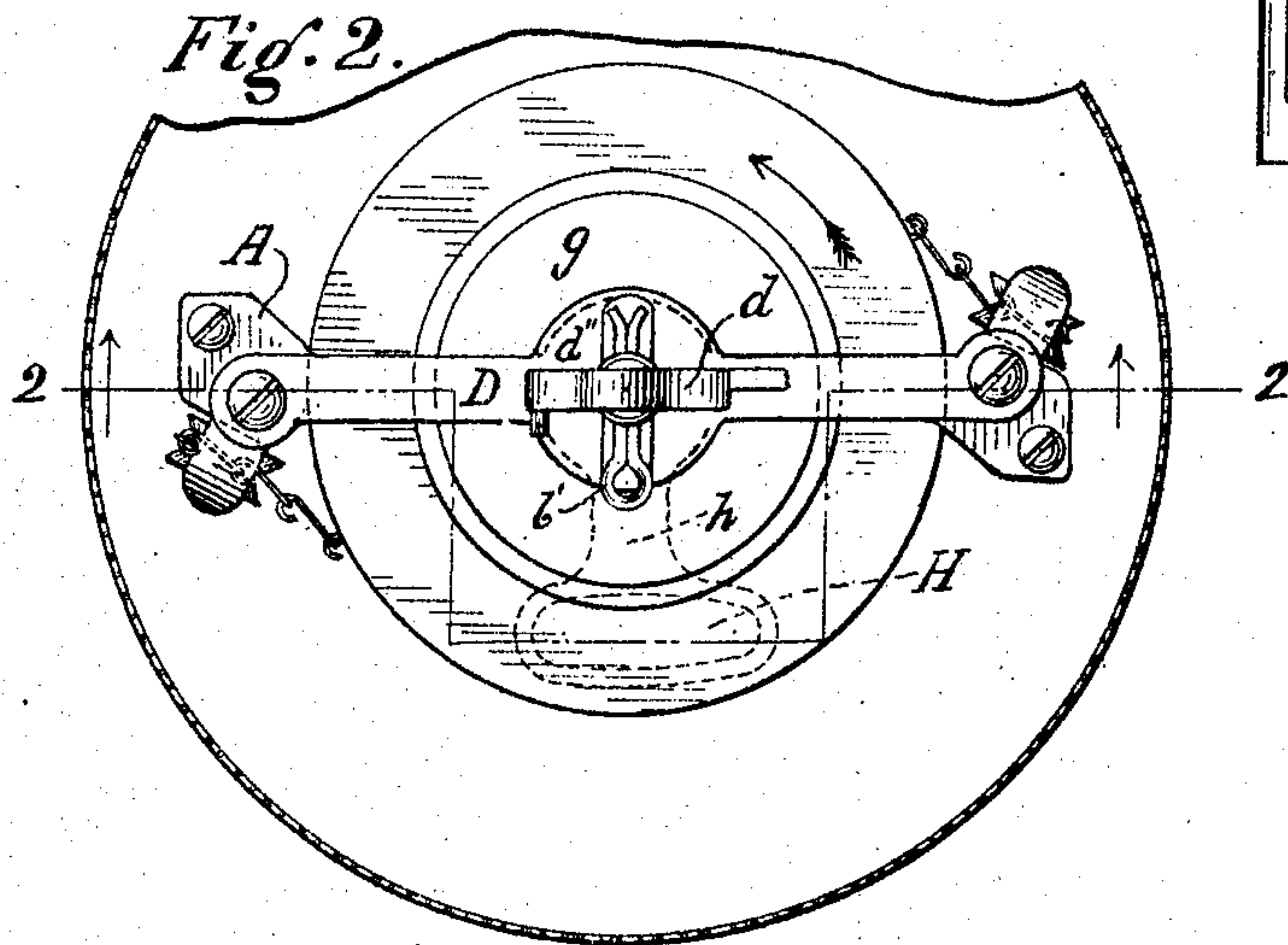
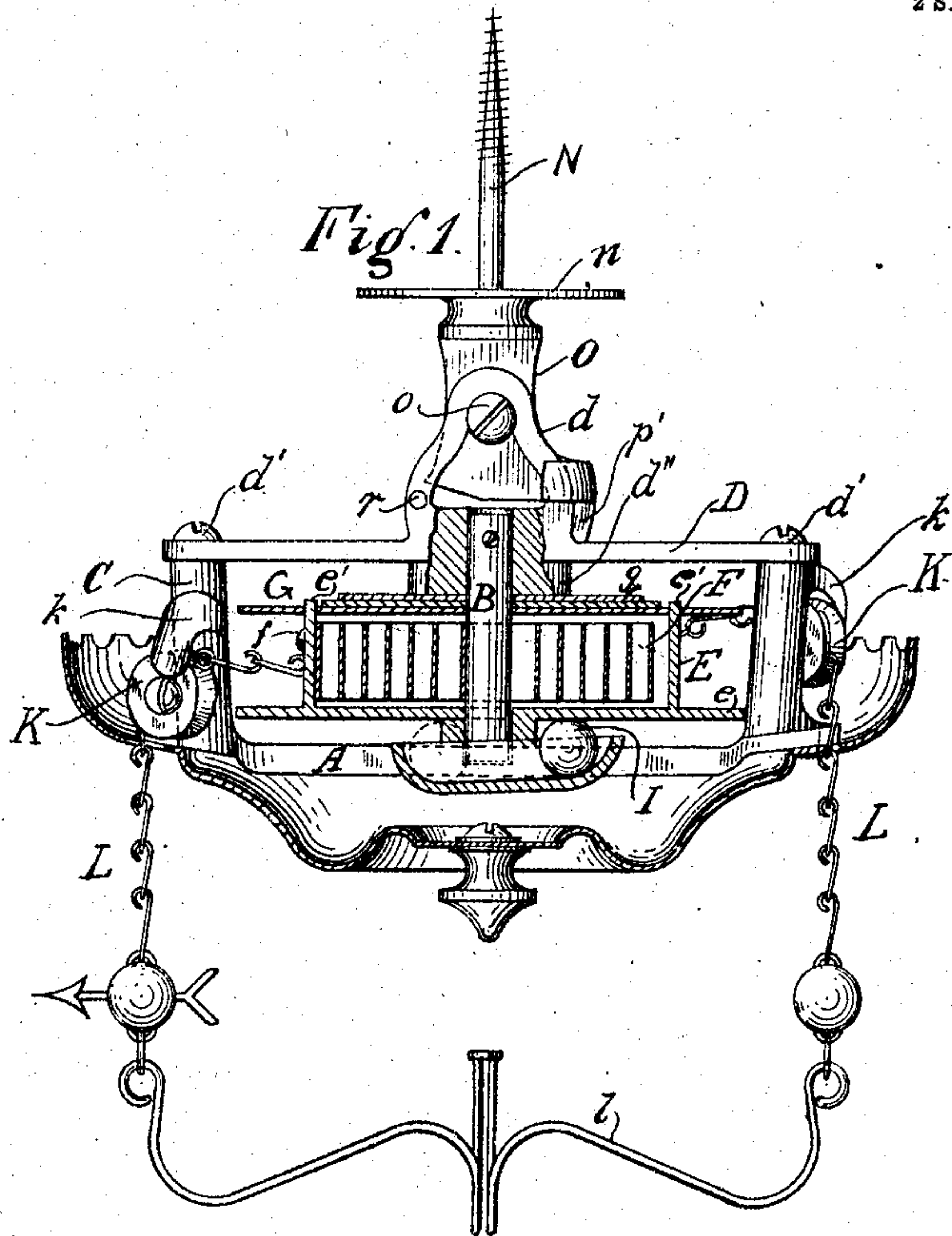
B. A. ESTEP.

SPRING SUSPENSION SUPPORT.

APPLICATION FILED MAY 7, 1902. RENEWED MAR. 17, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
Otto E. Johnson.
A. J. Phillips

By

Inventor
Blair A. Estep
Clarence M. Mainwain
Attorney

No. 773,134.

PATENTED OCT. 25, 1904.

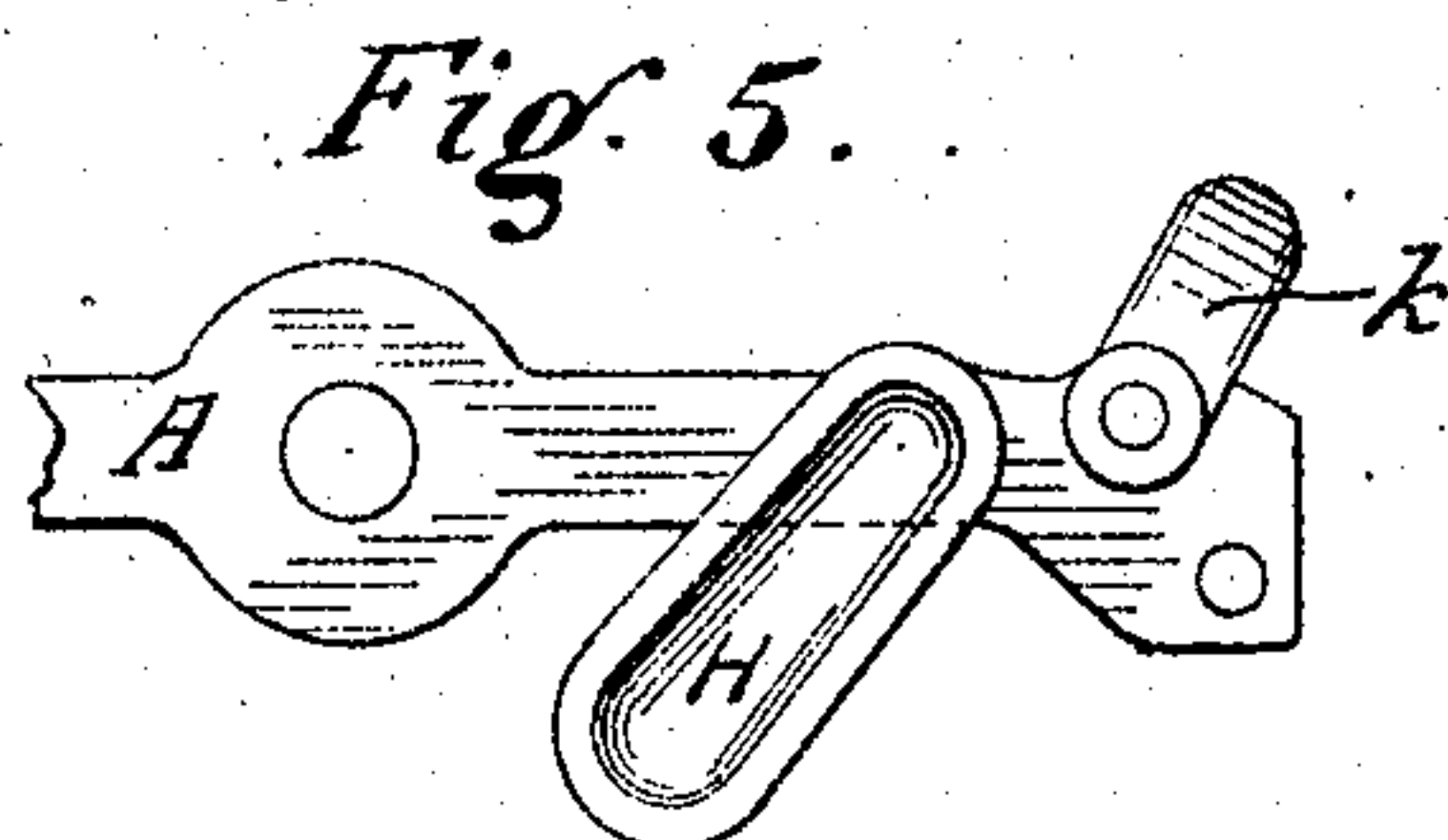
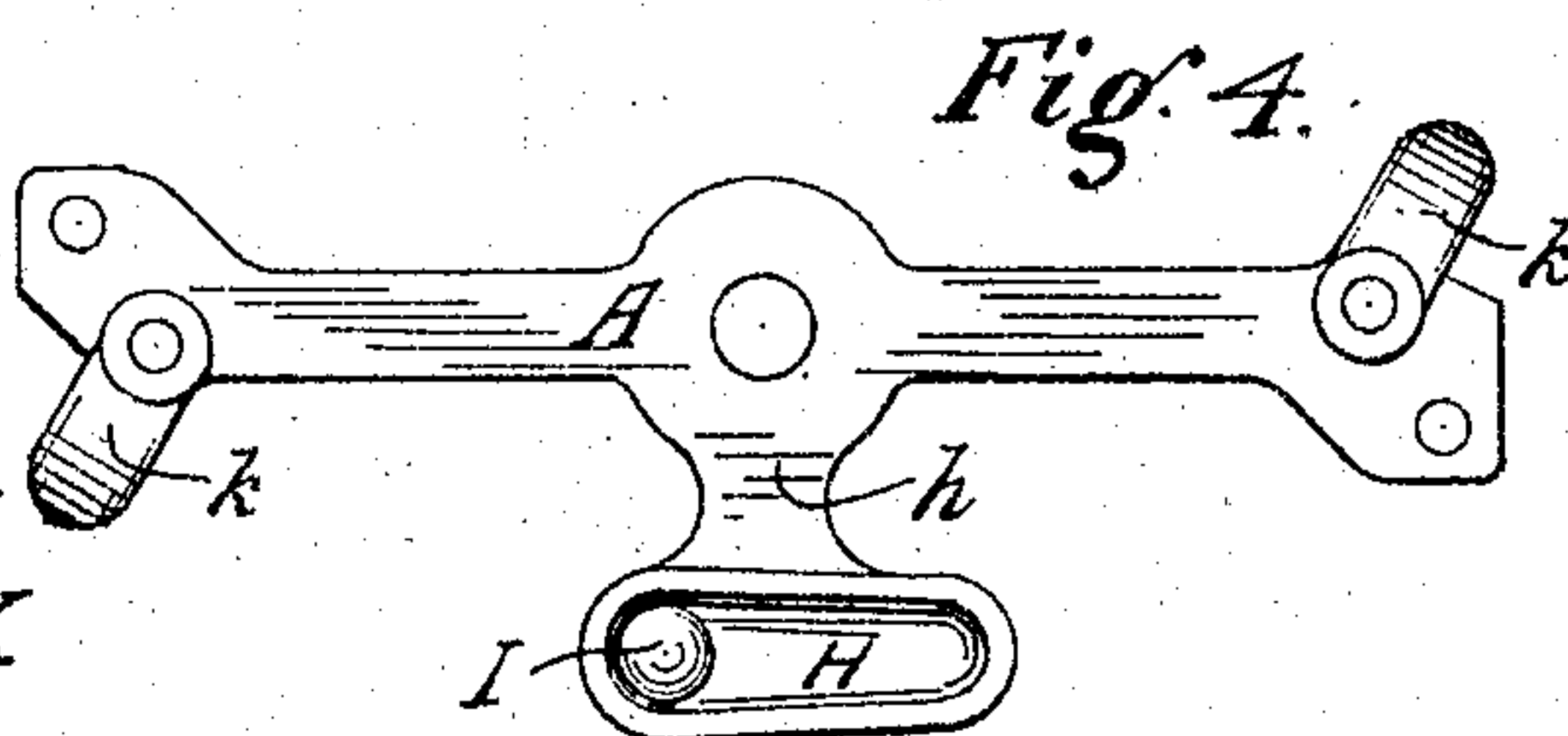
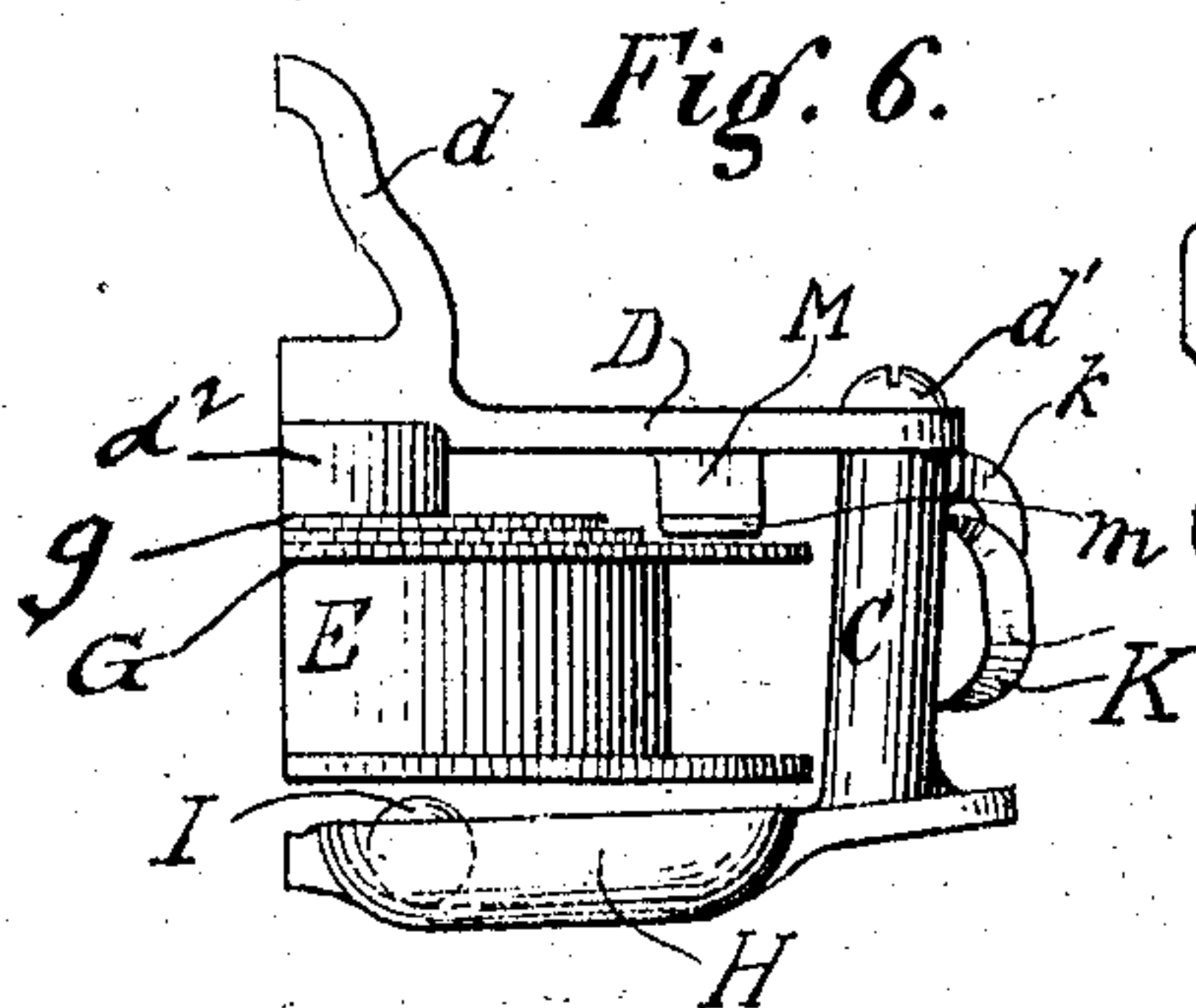
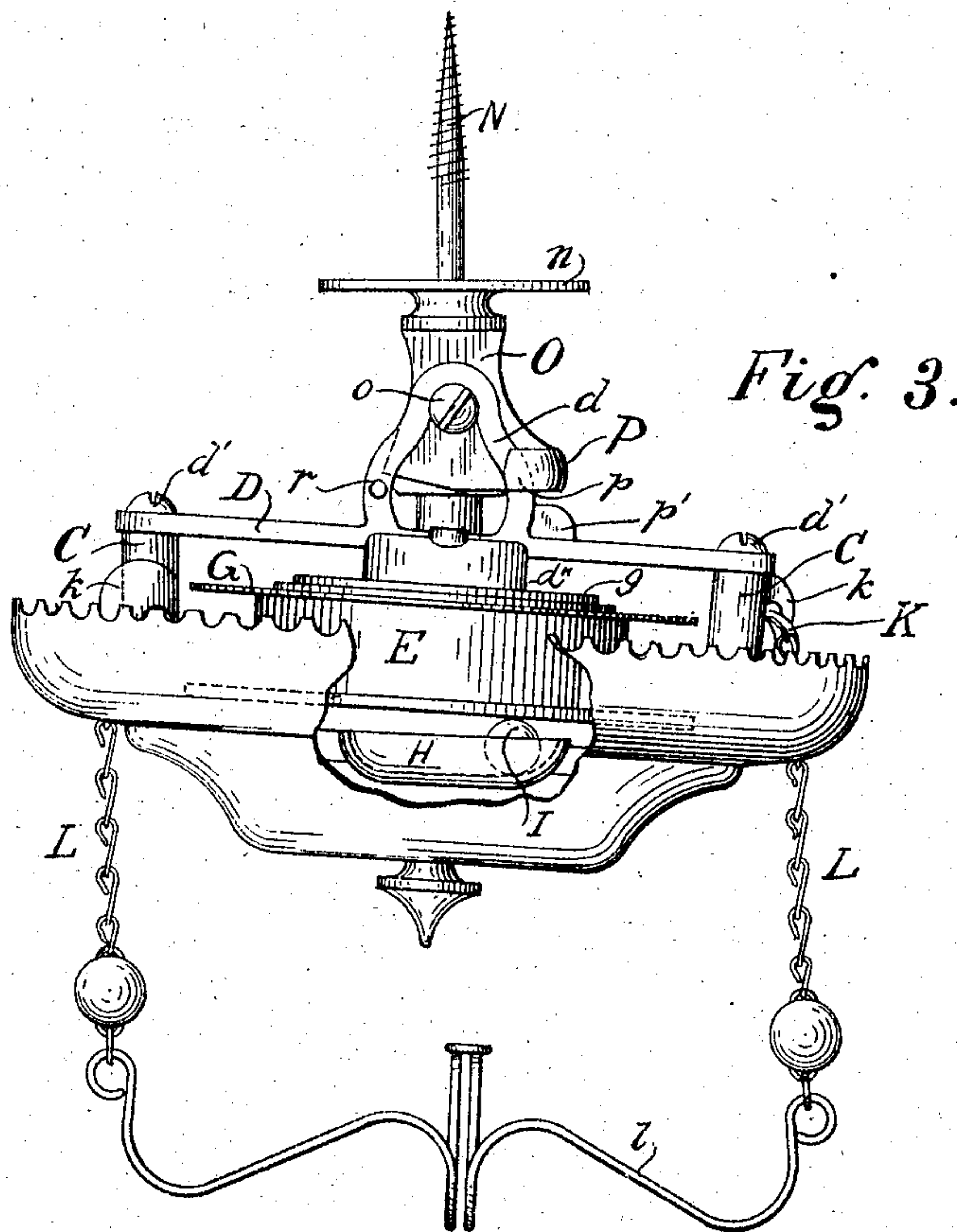
B. A. ESTEP.

SPRING SUSPENSION SUPPORT.

APPLICATION FILED MAY 7, 1902. RENEWED MAR. 17, 1904.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses.

Otto & Johnson.

A. S. Phillips

By

Inventor

Blair A. Estep

Натансон Владимир

Attorney.

UNITED STATES PATENT OFFICE.

BLAIR A. ESTEP, OF CHICAGO, ILLINOIS, ASSIGNOR TO SEARCH LIGHT MANUFACTURING COMPANY, A CORPORATION OF ILLINOIS.

SPRING SUSPENSION-SUPPORT.

SPECIFICATION forming part of Letters Patent No. 773,134, dated October 25, 1904.

Application filed May 7, 1902. Renewed March 17, 1904. Serial No. 198,660. (No model.)

To all whom it may concern:

Be it known that I, BLAIR A. ESTEP, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Spring Suspension-Supports, of which the following is a specification.

My invention relates to adjustable suspension devices by which a lamp or other article may be suspended against the winding action of spring-actuated sheave; and the object thereof is to obtain a perfectly smooth action of the winding device normally free from the braking mechanism, but to which the latter may be applied, as desired, without shock or jar to the suspended article or to hold against the action of the spring when the suspended article is removed. Many inventions of similar character have been devised and are in use in which the suspending-chains are attached to and wound upon a spring-actuated sheave. In most of these a locking device against the action of the spring has been provided by some form of pawl or stop. Such locking devices being positive in their action or being mounted upon the sheave itself make the operation thereof subject to more or less shock and jar. Such operation is objectionable when the device is used for the suspension of wick-using lamps, but does not wholly destroy their usefulness; but the modern development in illumination, in which a "mantle" which is the residual ash of a fabric impregnated with refractory metallic salts is heated to incandescence, demand a suspending device of a different character and one which is free from the objections above noted. Such mantles are very fragile and easily broken by a shock or jar.

It is the object of my invention to provide a means by which the lamps to which they are attached may be conveniently suspended, and the action of which will be smooth and uniform during the vertical movements thereof. I provide means by which the spring may be controlled and stopped at any point. Danger of accidental engagement of the parts is eliminated, so that shock or vibration cannot be communicated to the mantle, and the action

of the parts is controlled when the lamp is entirely removed. These results are provided for by the construction and relation of the parts when the device is properly suspended, and my invention further provides means by which suspension in other than the correct position is made impossible, and also by which movement in other than the proper plane is prevented.

The general principles of my invention are illustrated in the drawings, in which—

Figure 1 is a vertical section thereof on the line 2 2 of Fig. 2. Fig. 2 is a top view of the same. Fig. 3 is a side view thereof, the same being tilted into the locking position. Fig. 4 is a sill with integrally-formed posts and ball-race. Fig. 5 is an alternative form of a portion of the latter. Fig. 6 shows the application of the construction in Fig. 5 and the counter-bearing thereagainst. Fig. 7 is a detail of the central post or pivot.

Further describing my invention with reference to the drawings in which like characters of reference denote like parts throughout, A is a beam or sill in which is socketed the arbor B. Posts C are attached thereto, and a yoke or cross-piece D, with suspending-eye *d*, is secured to the top of the posts C by the screws *d'*. The arbor B is provided with a slot *b*, and the upper end thereof takes into the cross-piece D, being secured in place therein and against rotation, if desired, by the spring-key *b'*. A sheave or barrel E, with the integrally-formed flange *e*, is mounted on the arbor. A coiled spring F is inclosed within the barrel, one end thereof being passed through the slot *b* in the arbor and the other end being attached to the barrel by the rivet *f* or in any suitable manner. Lugs *e'*, formed on the barrel, which is preferably of malleable iron, pass through corresponding openings in the disk G and are headed down thereupon to form a substantial structure. The edges of said disk project sufficiently to form an upper flange corresponding to the lower flange *e*. A broad bearing *d''* is formed on the cross-piece D, and between this and the disk G may be interposed a disk *g*, which is preferably of non-metallic or resilient material, such as wood fiber. A

ball-race H, with supporting-arm *h*, may be formed integrally with the sill A and supported thereby. Such ball-race is set at an incline, so that the ball or pawl I will be normally at the left and lower end thereof when the sill A, to which it is attached, is in the horizontal position. The ball I is of such size that when at the point last described it will be out of engagement with the sheave, but that when at the upper and right-hand end of the ball-race it will be in engagement therewith. Grooved pulleys K, which should be of wood, wood fiber, or similar resilient material, are attached to the posts C, and on the latter, and preferably integral therewith, are guides *k*, which project over and beyond the pulleys K. Suspending-chains L, which support the yoke *l*, are passed over the pulleys K to the barrel E and wound upon the same in a direction contrary to that of the spring inside.

In practice the tension of the spring F should be approximately sufficient to support the weight carried by the yoke *l*. This may be given by turning the arbor B to the desired extent and securing it in that position by the key *b'*. When the disk is properly suspended, so that the sill A is in a horizontal position and the proper tension is given to the spring, the pawl I will roll to the lowest point of the ball-race and remain there, allowing free motion of the weight up and down, the same being balanced by the tension of the spring; but if the tension of the spring is greater than that of the weight, or if it is desired to remove the weight altogether, a slight tilting downward of the right side of the yoke and upward tilting of the left side thereof places the parts of the suspending device in a similar position. The pawl I rolls to the previously higher end of the ball-race and locks the sheave against rotation by the spring. The lock is a gradual and sliding one and is the result of clamping the sheave between the sliding pawl and the bearing *d''*, and the interposition of the resilient disk *g* effectually deadens the shock which might otherwise be communicated to the parts and to the mantle which is supported thereby.

A construction involving the same principles as that above described is shown in Figs. 5 and 6, in which the ball-race may be mounted directly on the sill or made a part thereof. Being set at an angle to the sill corresponding to the periphery of the wheel the race may be given inclination enough to free the contained ball when the suspension device is tilted. The point of engagement of the ball with the sheave being the highest point of the ball-race is at the sill and in line therewith and with the frame. A lug M projects downwardly from the yoke immediately above the highest point of the ball-race, so that the ball when in engagement with the sheaves forces the latter upwardly against the lug, which should have resilient material *m* be-

tween it and the sheave, the line of stress being directly therethrough. The sheave being thus rigidly and evenly clamped the shock of engagement is completely avoided. In order that the proper action of the parts may be had, it is important that the tilting action in the proper direction should be provided for as described and that other action should be prevented. To this end I provide the ceiling attachment shown in Figs. 1 and 3, which acts in combination with the yoke D and eye *d*. This ceiling-attaching device includes the screw N, with the usual ceiling-protecting disk *n*. The portion O depending therefrom has a suspending point or lug *o*, which may be formed on or attached thereto in any way most convenient adapted to support the eye *d*. On one side of the depending portion is formed an engaging flange or hook for the eye. The configuration of the said flange is such that it stops the eye and holds the yoke so that it cannot be tilted in the wrong direction, and in passing around the eye to the front thereof provides a guide in the proper plane during the normal tilting movement and a guard against slipping or jumping off the suspending-lug. While the engaging flange P itself forms or may form a stop against motion in the wrong direction, a lug *p'* may be formed in the yoke D to produce this result, if desired. As a precaution against improper suspension of the device, a small pin or projection *r* is formed on one side of the eye *d*, being so placed that when proper suspension is had it projects outwardly therefrom, but that if an attempt is made to reverse the cross-bar and hang it in the wrong position it will engage the depending portion O and prevent any operative suspension whatever.

I have described my invention with reference to practical and operative examples thereof. I do not, however, limit myself to the constructions shown; but

I claim, and desire to secure by Letters Patent, the following:

1. In a suspension device having a spring-actuated drum, a brake comprising a ball and a supporting means therefor adapted to engage one side of the said drum, and a resilient disk on the other side of said drum, substantially as set forth.

2. In a suspension device having a spring-actuated drum, a brake for the latter comprising a ball and a supporting means therefor, a counter-bearing therefor, and resilient material interposed between the counter-bearing and the drum, substantially as set forth.

3. In a suspension device having a spring-actuated drum, a brake mounted directly beneath said drum, and adapted to engage the lower side thereof whereby said drum is moved upwardly and a resilient disk adapted to bear on the other side of said drum, substantially as set forth.

4. In a suspension device a spring-actuated

drum, a gravity-actuated brake under the drum, a counter-bearing above the drum and a disk of resilient material on the upper side of the drum between the same and the counter-bearing, substantially as set forth.

5 5. In a suspension device having a horizontal spring-actuated drum, a beam under the drum, a ball-race formed integral with said beam and being downwardly slanted from one end to the other and a ball-pawl in said race gravity-impelled to be out of engagement with the drum when the latter is in its normal horizontal position, and means whereby the said device can be tilted to hold said ball
10 out of engagement with the drum, substantially as set forth.

6. In a suspension device having a horizontal spring-actuated drum, a ball-race under the drum, a gravity-impelled pawl in the said race normally out of engagement with the said drum, and a disk adapted to bear on the other side of said drum, substantially as set forth.

7. In a suspension device having a horizontal spring-actuated drum, a ball-race under the drum, a gravity-impelled pawl in the said race normally out of engagement with the said drum, and a resilient disk on the other side of said drum, substantially as set forth.

30 8. In a suspension device, a horizontal spring-actuated drum, a ball-race under the drum, a pawl in the race gravity-impelled to be normally out of engagement with the drum, means for tilting the drum so that the pawl will engage the same, and means for preventing the device from being tilted in the opposite direction, substantially as set forth.

9. In combination with a suspension device having a spring-actuated drum, a gravity-lock adapted to engage the same when tilted in one direction, and a suspending-eye; ceiling-attaching means having a depending portion, a suspension-point thereon to engage the eye, and means to engage the eye against tilting in

one direction or out of its proper plane, substantially as set forth.

10. In combination with a suspension device having a spring-actuated drum, a gravity-lock adapted to engage the same when tilted in one direction, and a suspending-eye; ceiling-attaching means having a depending portion, a suspension-point thereon to engage the eye, means to engage the eye against tilting in one direction or out of its proper plane, and a lug on the eye to engage the depending portion against improper suspension, substantially as set forth.

11. The combination with a suspension device having a suspending-eye, of a ceiling attachment having a depending portion, a suspension-point thereon adapted to engage the eye, and a lug on the eye adapted to engage the depending portion against improper suspension; substantially as set forth.

12. The combination with a suspension device having a horizontal spring-actuated drum, a gravity-impelled pawl normally out of engagement therewith and a suspending-eye, of a ceiling attachment having a suspension-point for the eye, a stop to engage the eye and a lug on the eye to engage the same against improper suspension, substantially as set forth.

13. The combination with a stationary counter-bearing, of a sheave slidable into engagement with said counter-bearing, a pawl for forcing said sheave into engagement with said counter-bearing, and a supporting means having an inclined inner face on which said pawl is movable.

In witness whereof I have hereunto set my hand, this 2d day of May, 1902, in the presence of two subscribing witnesses.

BLAIR A. ESTEP.

Witnesses:

C. K. CHAMBERLAIN,
ANNIE S. PHILLIPS.