

No. 865,629.

PATENTED SEPT. 10, 1907.

A. B. & R. F. CARTY.
TIME CONTROLLING MECHANISM.

APPLICATION FILED FEB. 6, 1907.

3 SHEETS—SHEET 1.

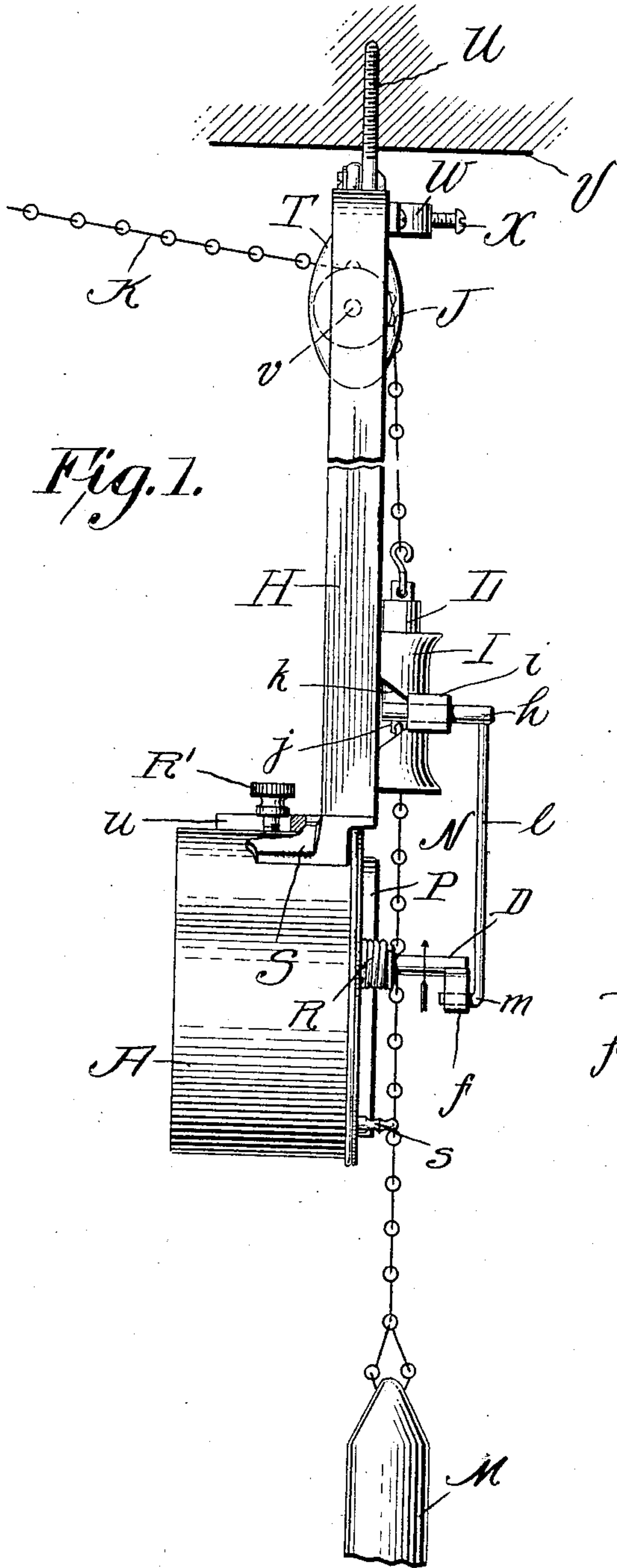


Fig. 1.

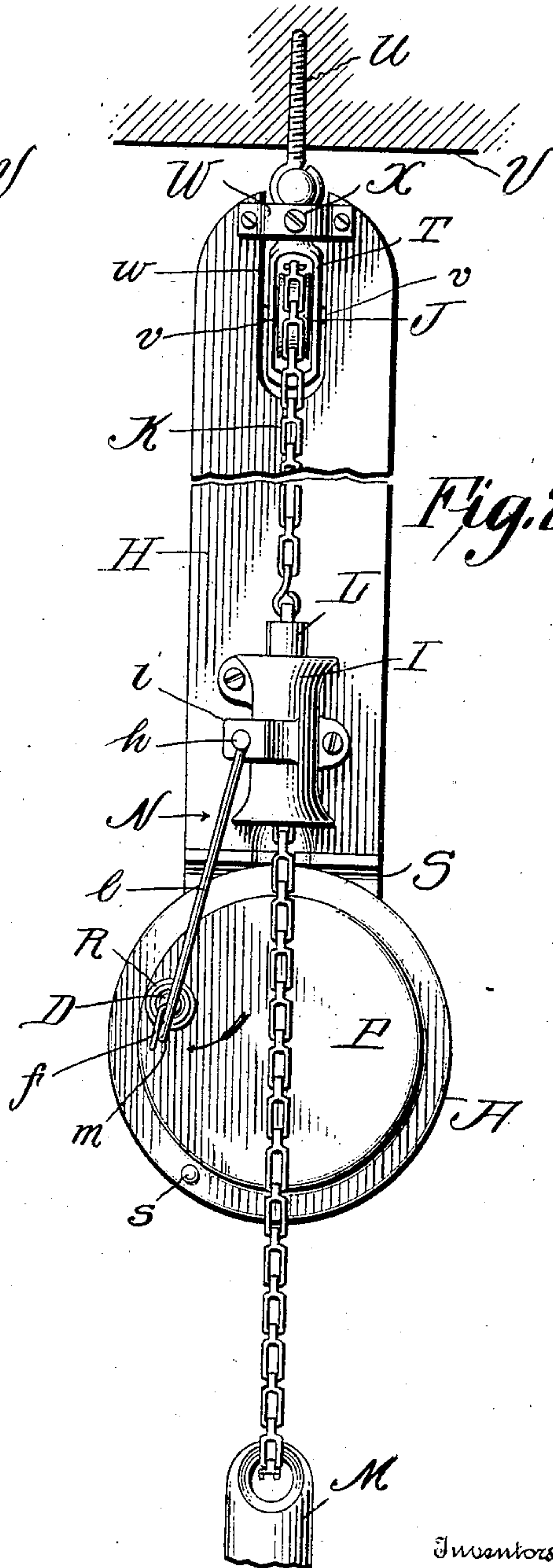


Fig. 2.

Witnesses
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3 SHEETS—SHEET 2.

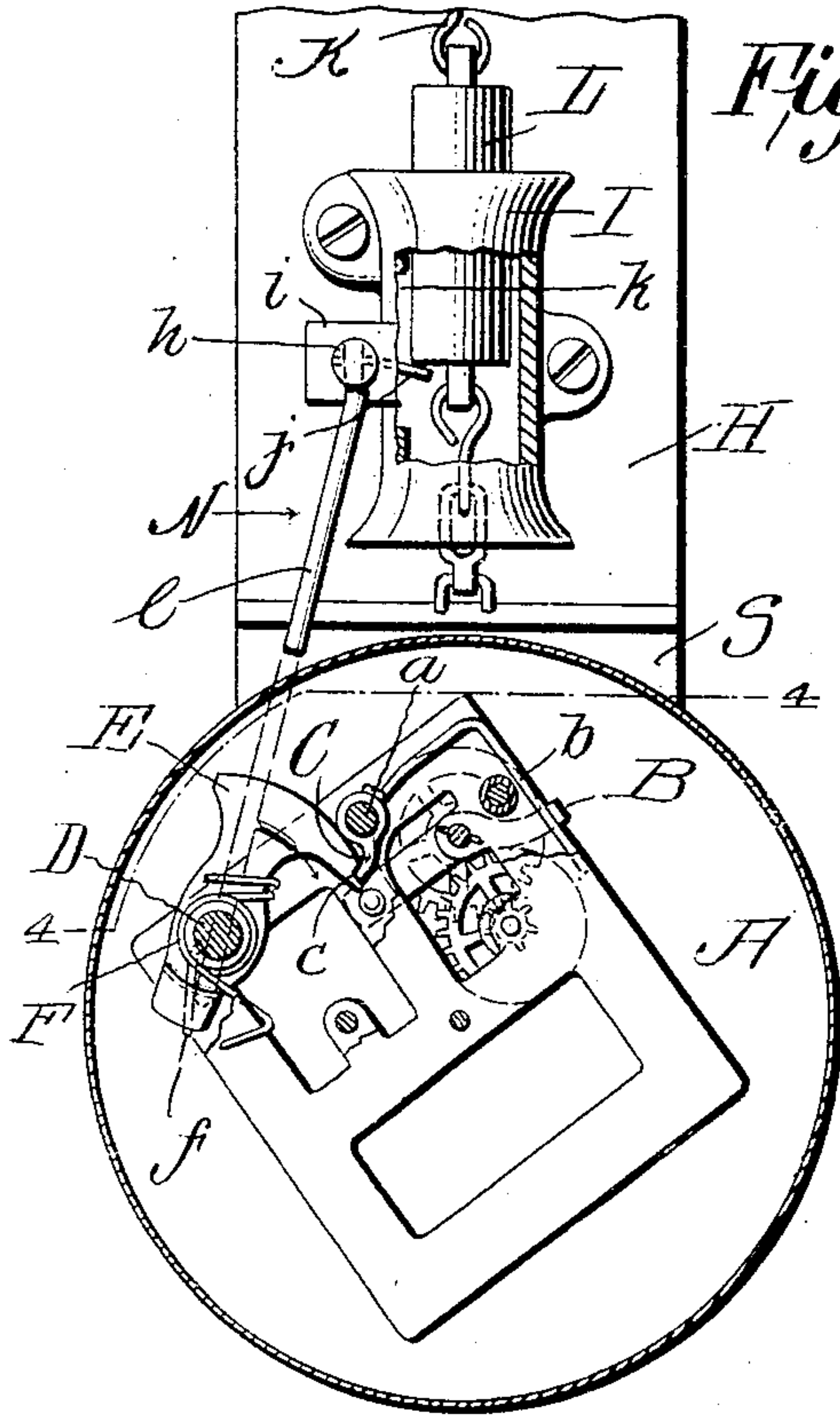


Fig. 3.

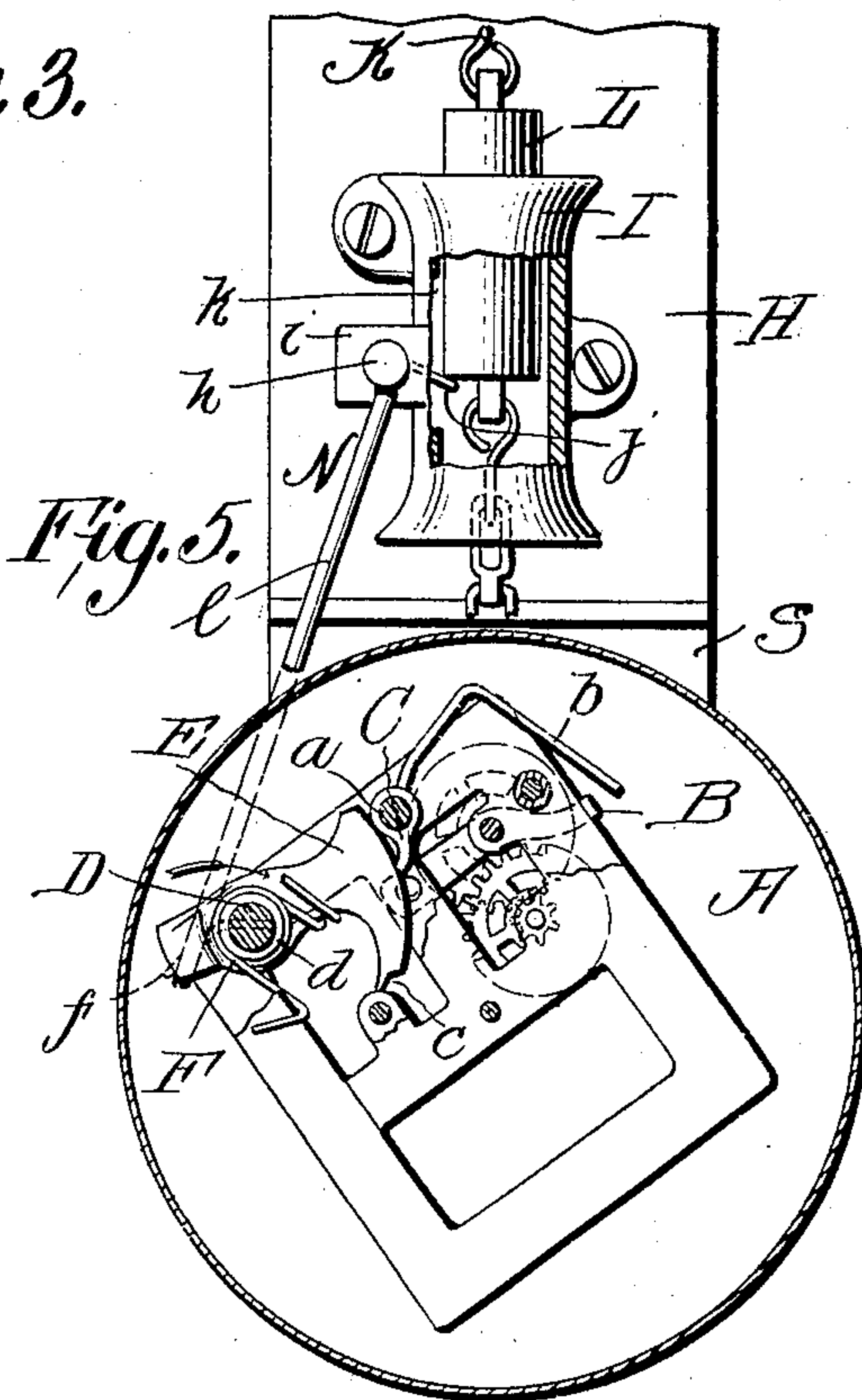
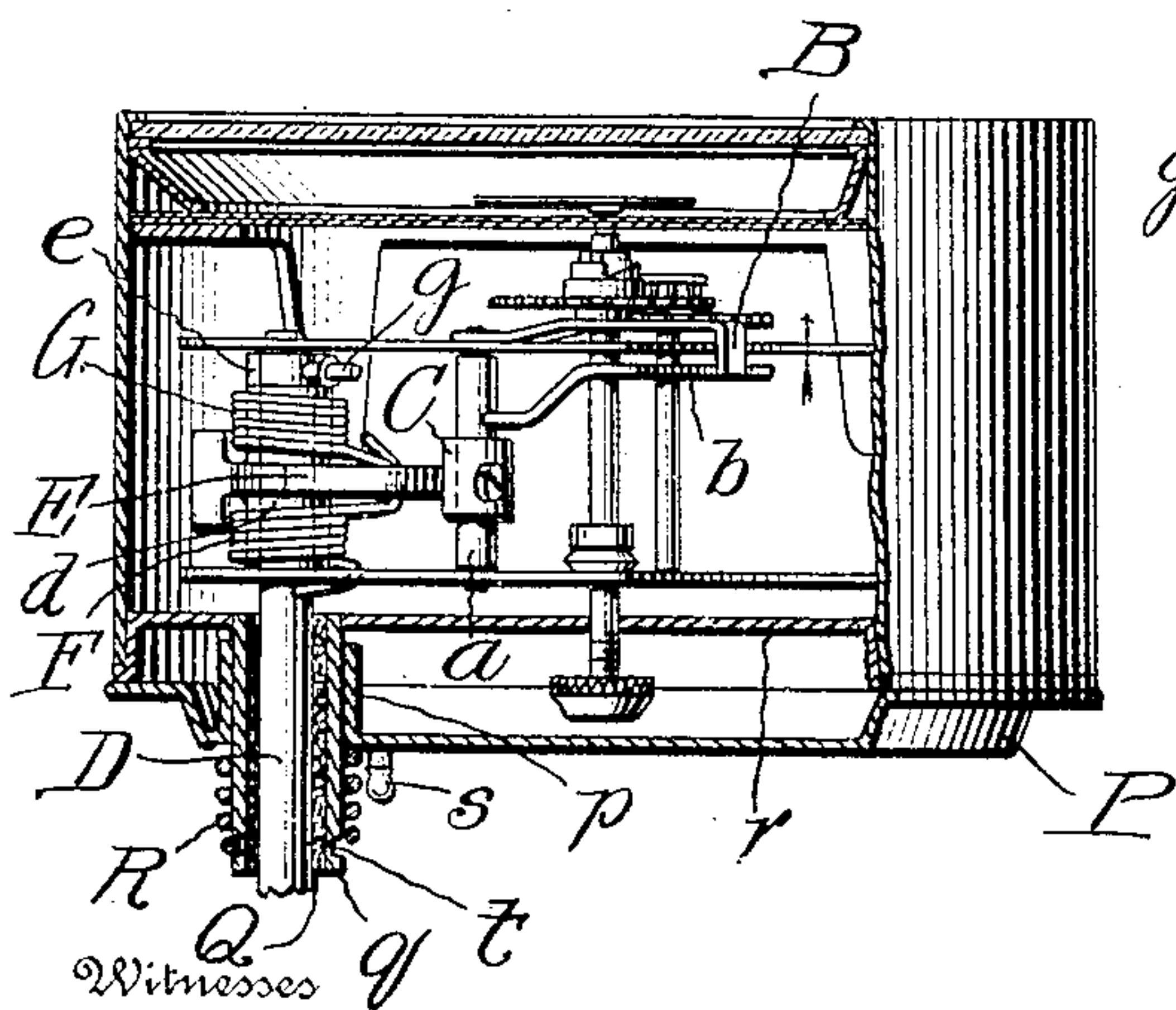


Fig. 5.

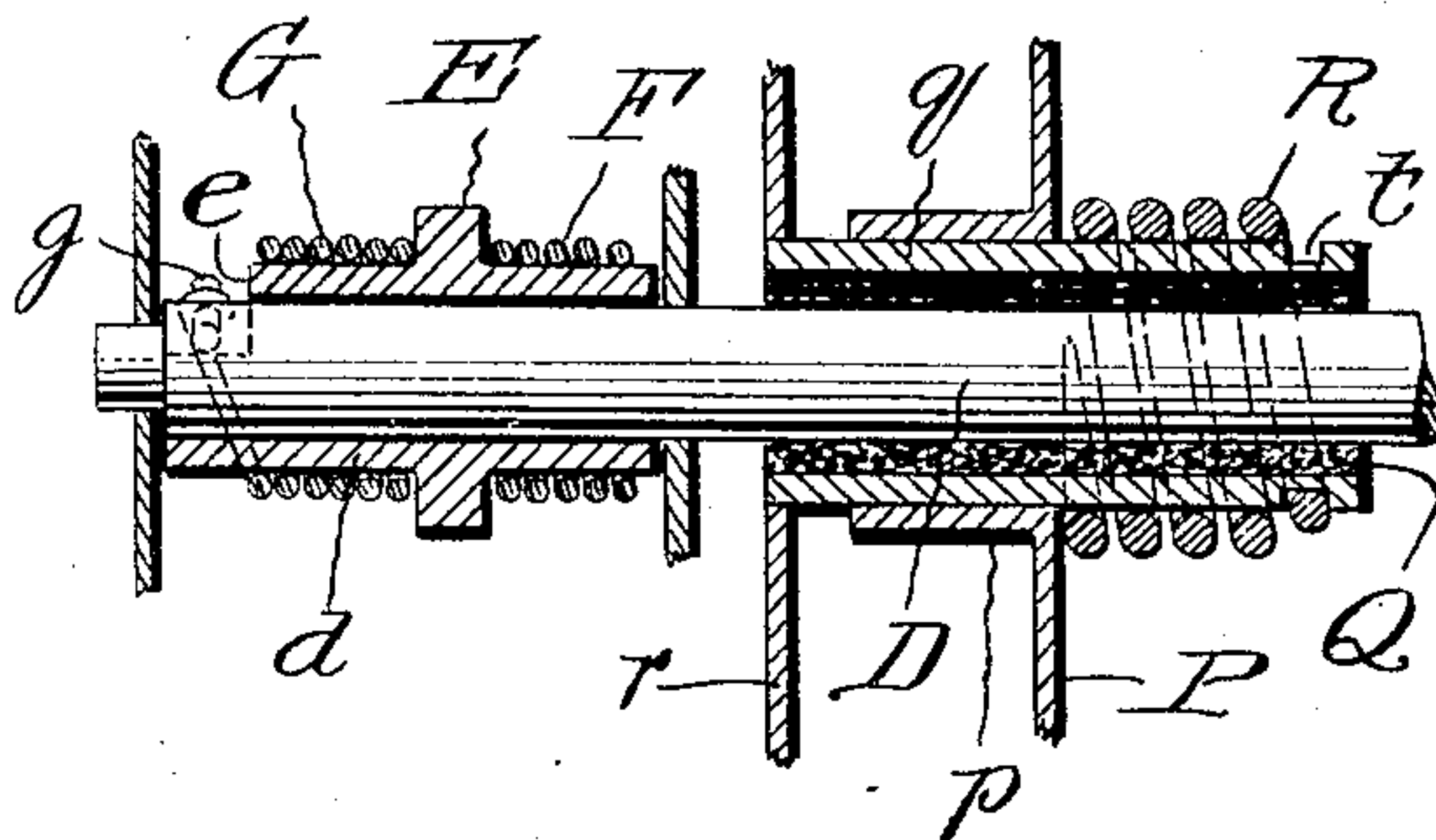
Fig. 4.



Witnesses

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Fig. 6.



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3 SHEETS—SHEET 3.

Fig. 7.

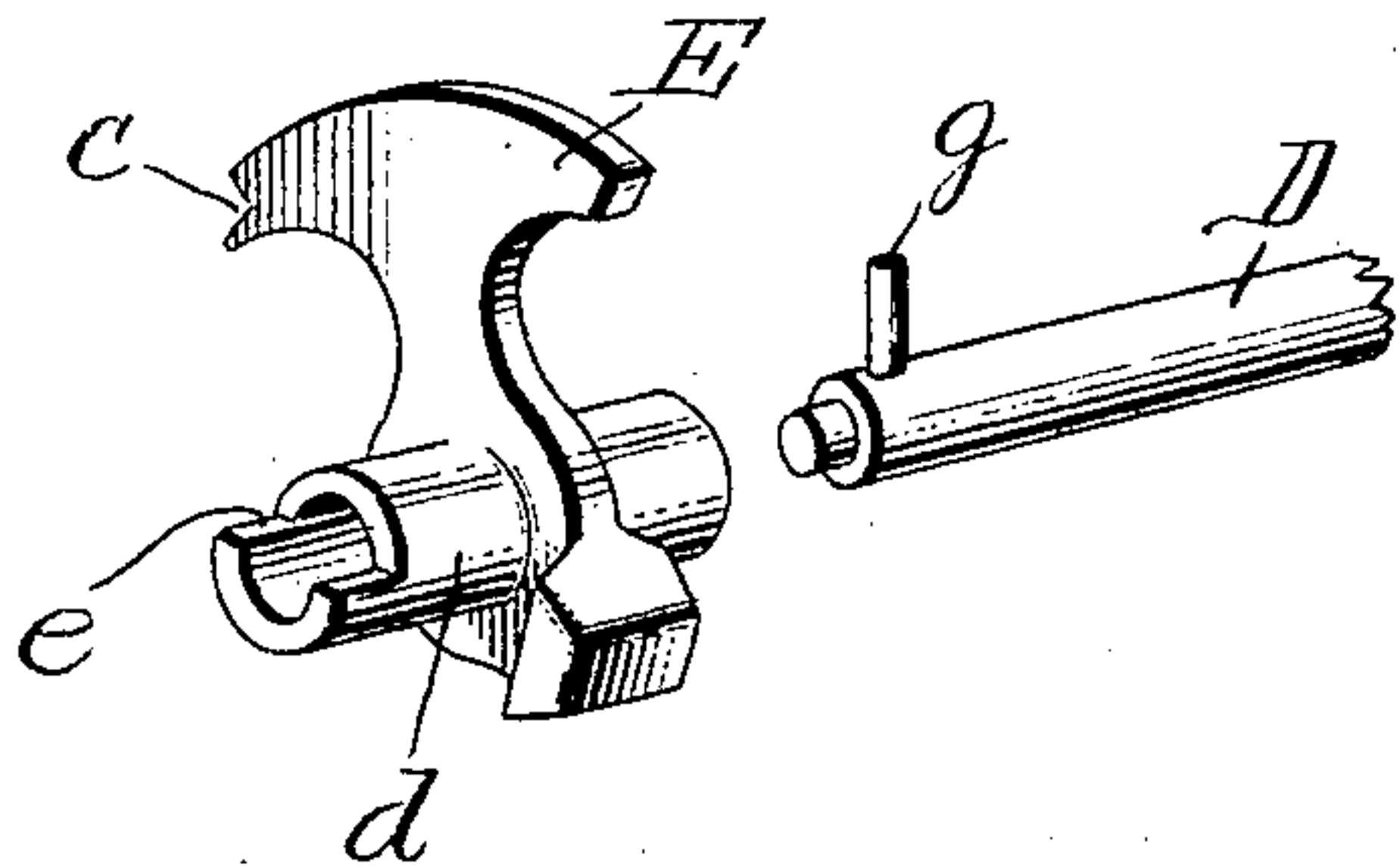


Fig. 8.

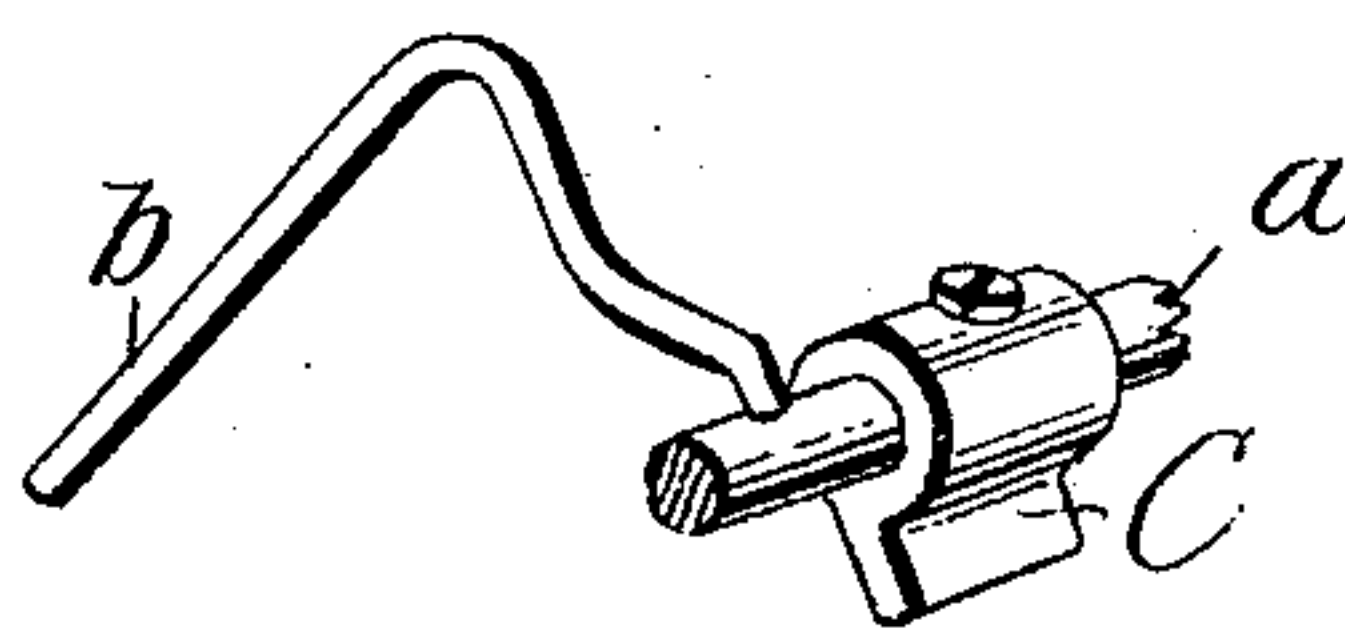


Fig. 9.

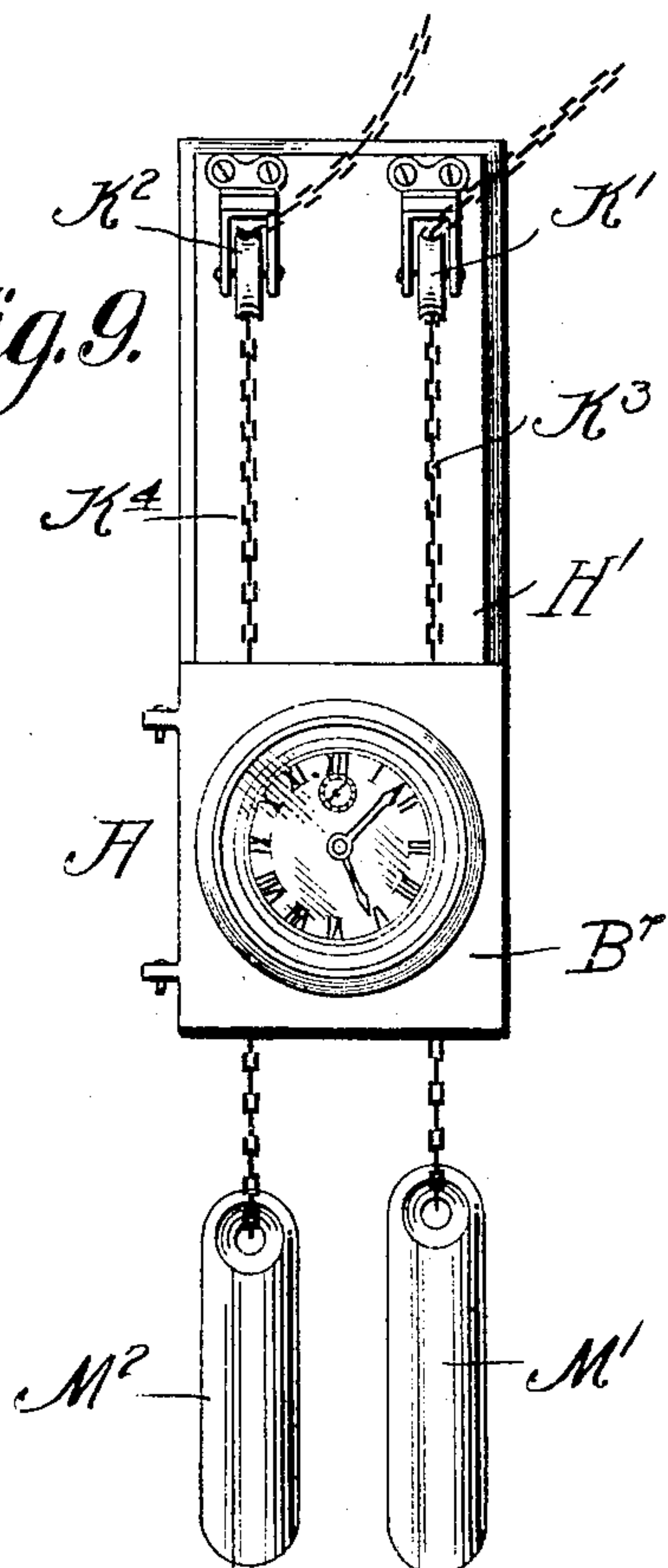
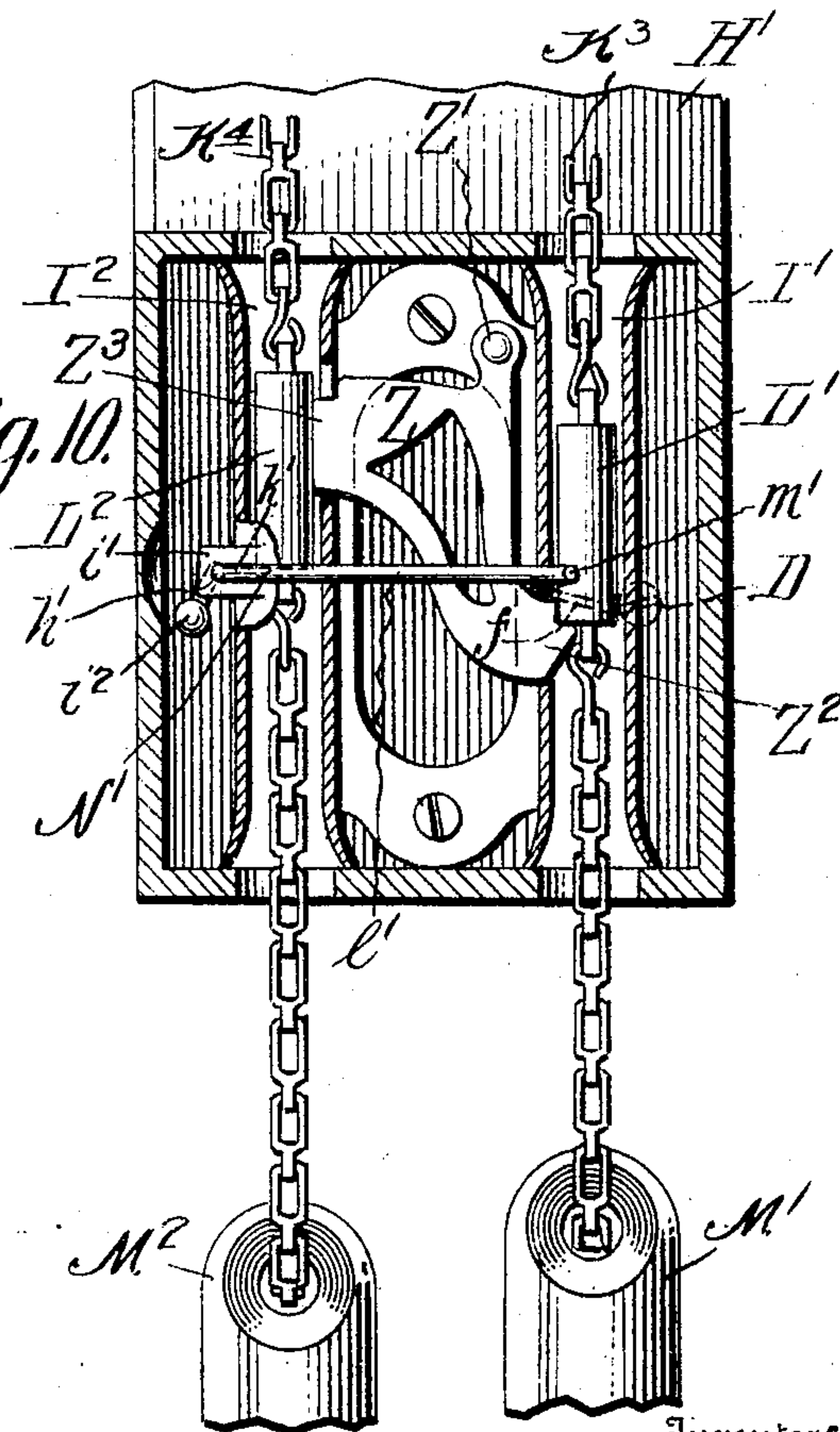


Fig. 10.



Witnesses

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UNITED STATES PATENT OFFICE.

ALTON B. CARTY AND ROY F. CARTY, OF WASHINGTON, DISTRICT OF COLUMBIA.

TIME-CONTROLLING MECHANISM.

No. 865,629.

Specification of Letters Patent.

Patented Sept. 10, 1907.

Application filed February 6, 1907. Serial No. 356,041.

To all whom it may concern:

Be it known that we, ALTON B. CARTY and ROY F. CARTY, citizens of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Time-Controlling Mechanism, of which the following is a specification.

Our invention pertains to time-controlling mechanism, and seeks to provide an advantageous time-controlling mechanism for performing any function for which it is adapted; the said mechanism comprising a clock, a weight, and means for supporting the weight and for releasing and permitting gravitation of the weight at predetermined times, and being so constructed that the weight is supported and is automatically released with the imposition of but a minimum amount of strain on the clock, and when the weight is raised to set the mechanism, the weight-support is enabled to automatically assume its proper working position relative to the trip for holding it against movement until the proper time.

Another object of our invention is the provision of an advantageous hanger for carrying the clock and the means for supporting and for releasing the weight.

Another object of the invention is the provision on the clock of means for effectually preventing dust and dirt from gaining access to the interior of the clock, and this without interfering with the free operation of the trip for controlling movement of the weight support.

Other objects and advantages of the invention will be fully understood from the following description and claims when the same are read in connection with the accompanying drawings, forming part of this specification, in which:

Figure 1 is a side elevation of a mechanism constituting one embodiment of our invention. Fig. 2 is a rear elevation of the same. Fig. 3 is an enlarged, detail section illustrating the parts in the positions they occupy when the mechanism is set and the weight is supported or held against downward movement. Fig. 4 is a section taken on the line 4-4 of Fig. 3, looking downward. Fig. 5 is a view similar to Fig. 3 but showing the parts in the positions they assume when the trip is permitted to move and release the weight-support. Fig. 6 is an enlarged detail section illustrating the spindle of the trip and the parts adjacent thereto. Fig. 7 comprises enlarged, disconnected perspective views of the lever arm and the spindle of the trip. Fig. 8 is an enlarged perspective view of the swinging platform for holding said lever arm against downward movement when the mechanism is set. Fig. 9 is a front elevation of a modification of our invention hereinafter referred to in detail, and showing the mechanism as set. Fig. 10 is an enlarged, detail, vertical section of said modification illustrating the mechanism as set.

Referring by letter to the said drawings, and more particularly to Figs. 1 to 8 thereof: A is the clock of

our improved mechanism. The said clock is provided with a keeper B designed to assume and rest in the position shown in Figs. 3 and 4 during the running of the clock; and it is also provided with mechanism, whereby it may be set to assure movement of the keeper B in the direction indicated by arrow in Fig. 4 at a predetermined time to release the weight of our novel mechanism. The said mechanism, whereby the clock may be set to assure movement of the keeper B in the direction indicated at any predetermined time may be and preferably is of a type well known in the art of horology, and we therefore deem it unnecessary to describe said mechanism except to say that its construction is such that after the keeper B moves in the direction indicated by arrow in Fig. 4 it is automatically returned to the position shown in said figure, for a purpose which will presently appear.

In accordance with our invention, the clock A is equipped with a vertically-swinging platform C, pivotally supported at *a*, a spindle D extending at a right angle to the plane in which the platform C is movable, a lever arm E loosely mounted on the spindle D, and coiled springs F and G. The platform C is provided with an arm *b* for the engagement of the keeper B, and is so arranged as to return of itself to the position shown in Fig. 3 on the completion of the upward movement of the lever arm E. Thus it will be apparent that when movement of the keeper B in the direction indicated by arrow in Fig. 4 is effected, the platform C is enabled to assume the position shown in Fig. 5 and permit downward movement of the lever arm E, and then when the lever arm E is returned upward by the spring F as presently described, the platform C will return of itself to the position shown in Fig. 3 so that the arm *b* will be in readiness to be engaged by the keeper B on the subsequent movement of said keeper B in the direction opposite to that indicated by arrow in Fig. 4. The lever arm E is provided with a rabbet *c* to engage the edge of the platform C; and it is also provided with a tubular body portion or sleeve *d* which loosely receives the spindle D and is received at its inner end, as indicated by *e* in Figs. 4, 6 and 7, for an important purpose presently set forth. The spindle D is journaled in the clock frame and is loose in the sleeve *d* of lever arm E; and it is provided at its outer end with an arm *f*, Figs. 1, 2, 3 and 5, and at its inner arm with a radial pin *g* which is located in the recess *e* in the sleeve *d* of the lever arm E so that the movement of the spindle D independent of said lever arm E is a limited movement. The spring F is coiled about the sleeve *d*, at the outer side of the lever arm E and is connected at one end to the clock frame and at its other end to the lever arm. Consequently it will be apparent that when the lever arm E is moved in the direction of arrow in Fig. 3 from the position shown in said Fig. 3 to that shown in Fig. 5, by means

presently described and is then released, the spring F will operate to return said lever arm E to the position shown in Fig. 3. The spring G is coiled about the sleeve *d*, at the inner side of the lever arm E, and is connected at one end to said lever arm E and at its other end to the pin *g* on spindle D. From this it follows that the said spring G will serve to normally hold the pin *g* on spindle D against the right hand wall of the recess *e* so that when the spindle is turned in the direction indicated by arrow in Figs. 1, 2, 3 and 5, by means presently described, the pin *g* will operate to move the lever arm E in the same direction; also, that the spindle D is free to move in the direction opposite to that indicated by arrow in Figs. 1, 2, 3 and 5, a limited distance corresponding in length to the recess *e*, independent of the lever arm E for an important purpose which will presently be described.

H is the support which we prefer to employ for the clock A.

I is a vertically-disposed conduit connected to the rear side of the support and open at its ends.

J is a sheave carried by the support.

K is a cable extending through the conduit I and over the sheave J and having a cylindrical body or bullet L at an intermediate point of its length.

M is a weight connected to the cable K and arranged below the conduit I, and N is a swinging weight-support. The said swinging weight-support is preferably made up of a rock-shaft *h* journaled in a lug *i* on conduit I, a platform *j* fixed to said rock-shaft and movable in an opening *k* in the side of conduit I and adapted in one position to rest below the cylindrical body or bullet L, Figs. 1, 2 and 3, and an arm *l* fixed to and depending from the rock-shaft *h* and having an angularly disposed toe *m* at its lower end arranged to engage the arm *f* on the spindle D after the manner shown in Fig. 3.

The end of the cable K opposite to that bearing the weight M is designed to be connected with a furnace damper (not shown) or any other device that it may be desired to actuate, and when the parts are arranged as shown in Figs. 1—4 and the clock is set for the movement of the keeper B in the direction indicated by arrow in Fig. 4 at a predetermined time, it will be apparent that at the hour selected, the keeper B will be disengaged from the arm *b* of the platform C. It will also be apparent that when the keeper B is disengaged as stated, the platform C and lever arm E will be moved downward by the pressure which the toe *m* of the weight-support N exerts against the arm *f* on spindle D, and said toe *m* of the weight-support N after moving the arm *f* toward the left passes out of engagement with the same when the arm *l* of the weight-support flies upward toward the left. Because of this, the cylindrical body or bullet L is released from the platform *j* of the weight-support N, and the weight M is then free to gravitate so as to pull the bullet L and the cable K down through the conduit I and thereby actuate a damper or any other device that may be connected with the cable K. As soon as the toe *m* on arm *l* of the weight-support N passes the arm *f* on spindle D in the manner stated, the spring F operates to return the lever arm E, the platform C, the spindle D and the arm *f* to the positions shown in Fig. 3. With this done it will be perceived that the toe *m* of the weight-support N is on

the wrong side of the arm *f* for operation, but then when the cylindrical body or bullet L is drawn upward through the conduit I in setting the mechanism, said cylindrical body or bullet by acting in an upward direction against the platform *j* of the weight-support N will swing the arm *l* of said support toward the right so as to carry the toe *m* past the arm *f* into the relative position shown in Figs. 2 and 3. The specific connection between the spindle D and the sleeve *d* of the lever arm E will permit the arm *f* to swing toward the right in order to enable the toe *m* on arm *l* to pass the arm *f* in the manner stated, and then, as will be readily apparent, the cylindrical body or bullet L will rest on the platform *j* and the mechanism will be ready for another operation.

With a view of excluding dust from the interior of the clock A we provide the dust shield P illustrated in Figs. 2, 4 and 6. The said dust shield P is pivotally mounted at *p* on a sleeve *q* which extends rearward from the back wall *r* of the clock casing, and at *s* the shield is provided with a finger-piece, whereby it will be seen that when it is desired to gain access to the winding key and the other appurtenances usually located at the back of a clock, the shield may be swung to one side so as to expose the said appurtenances. The sleeve *q* contains the spindle D and raw cotton or other suitable packing Q, and hence it will be apparent that while the spindle D is free to rock on its axis incident to the operations before described there is no liability of dust or dirt finding its way through the sleeve *q* into the interior of the clock casing.

Surrounding the sleeve *q* and bearing at its inner end against the dust shield P is a coiled spring R which after being compressed has its outer coil seated in a circumferential groove *t* in the sleeve *q*. This coiled spring has for its office to crowd the shield P, which is preferably of sheet-metal, against the rear edge of the clock casing and in that way effectually prevent any dust from passing between the said edge and the shield when the latter is in the closed position shown in Fig. 4.

The support H for the clock A and conduit I and sheave J is preferably in the form of a hanger, as illustrated in Figs. 1 and 2, and the clock A is attached in a detachable manner through the medium of a screw R' to an arched metallic plate S which is fixed to the lower end of the hanger and is slotted at *u* to receive the shank of the said screw R'. Thus it will be apparent that when it is desired to remove the clock for use as a mere time piece, the same may be accomplished by simply loosening the screw R' and then drawing the shank of the same out of the slot *u* in the plate S. The sheave J is not mounted directly in the hanger, but on the other hand is carried in a block T which, in turn, is pivoted at *v* in a bifurcation *w* in the upper end of the hanger H. To the upper end of the block T is fixed a screw U, and by virtue of this it will be seen that the user of the mechanism is enabled to readily turn the hanger H into engagement with a beam or other overhead support indicated by V.

In order that the hanger H after being connected with an overhead support in the manner stated, may be made to hang perfectly perpendicular, we provide the hanger adjacent to its upper end with a yoke W, and in a threaded aperture in the said yoke we arrange a screw X which bears at its inner end against the upper portion

of the block T. By adjusting this screw X in one direction or the other as occasion demands, the user of the mechanism is obviously enabled to place and adjustably fix the hanger H in a perfectly perpendicular or upright position.

The modification of our invention shown in Figs. 9 and 10 comprises a support H', weights M' and M², sheaves K' and K² connected, preferably in a swiveled manner, to the upper portion of the support, cables K³ and K⁴ connected to the weights and passed over the sheaves and having bullets or cylindrical bodies L' and L² at intermediate points of their length, a clock A similar to the clock shown in Figs. 1 to 4 with the exception that it lacks the dust-shield P and the appurtenances thereof, vertically disposed conduits I' and I² arranged back of the clock and in position to receive the cables and the cylindrical bodies or bullets, a gravitating latch Z pivoted at Z' and having a toe Z² arranged to assume and normally rest in the position shown in the conduit I' and also having a protuberance Z³ arranged to assume and normally rest in the conduit I², and a weight-support N'. The said weight-support N' comprises a rock-shaft h' journaled in a lug i' on the conduit I² and having a weighted arm i², a platform k¹ carried by the rock-shaft h¹ and arranged to rest under and support the bullet L², and an arm l¹ extending at a right angle from the shaft h¹ and having a toe m¹ arranged to be engaged by the arm f on the spindle D of the clock, after the manner shown in Fig. 10.

The cables K⁴ and K³ are designed to be connected together at a point more or less remote from the support H', and by virtue of the construction shown in Fig. 10, it will be seen that when the arm f on the spindle D is rendered free to turn in the manner before described with reference to Figs. 1 to 8, the bullet or cylindrical body L² bearing on the platform k¹ of the weight-support N', will force the arm N' of said support downward. This will permit the weight M² and the cylindrical body or bullet L² to fall so as to take up slack in the cable K⁴, and then when the bullet L² has passed out of engagement with the protuberance Z³ of the gravitating latch Z, the said gravitating latch will swing toward the left under the pull of the weight M' and thereby release the bullet L'. The weights M' and M² will then gravitate together and operate any device that may be connected with the cables K³ and K⁴.

In setting the modified mechanism, the bullet L' is drawn up to a position above the toe Z² of the latch Z, and then the bullet L² is drawn upward past the platform k' into the position shown opposite the protuberance Z³ of the latch Z. Incident to the said upward movement of the bullet L², the same serves by acting against the platform k' to raise the arm l' of the weight-support N' so as to carry the toe m' on said arm upward past the arm f on the clock spindle D. Then when the bullet L² is permitted to move down and rest upon the platform k' and the toe m' is moved down against the said arm f, the mechanism is ready for another operation. The weighted arm i² is designed to serve as a counterbalance, and has for its office to return the weight-support N' to approximately the position illustrated in Fig. 10 so as to assure the platform k' being engaged by the bullet L² on the before described upward movement of the bullet. The arrangement of the protuberance Z³ of the latch Z opposite to the bullet L²

obviously prevents release of the bullet L' from the toe Z² until after the bullet L² passes down and out of engagement with the said protuberance Z³. From this it follows that in setting the apparatus it is essential to draw the bullet L' upward past the toe Z² before the bullet L² is raised to a position opposite the protuberance Z³. This arrangement is materially advantageous when the mechanism is designed to do heavy work, inasmuch as it lessens the amount of weight to be sustained by the clock.

In the practical operation of the modified mechanism, when the hour selected arrives and the arm f on the clock spindle D is permitted to swing downward, the arm l' of the weight-support N' is permitted to swing downward, and the bullet L² under the pull of the weight M² is drawn downward past the platform k'. This takes up slack of the cable K⁴, and as soon as the bullet L² is below the protuberance Z³ on the latch Z, the weight M' operates by pulling on the bullet L' to move the toe Z² of the latch Z out of the path of the bullet L' when the two weights fall together and actuate the damper or dampers or any other device or devices connected with the cables that it may be desired to actuate. The mode of setting the modified mechanism has been explained in the foregoing and need not therefore be repeated.

When desirable the clock A of the modified mechanism may be carried by a swinging support B' connected to the casing shown in Fig. 10 and arranged in front of the mechanism of said figure, and any suitable measure may be resorted to for making the clock dust proof, such for instance as inclosing the clock in a metallic box, wax sealed.

The constructions herein shown and described in detail constitute the preferred embodiments of our invention, but we desire it distinctly understood that in practice various changes in the form, construction and relative arrangement of parts may be made without involving departure from the scope of our invention as defined in the claims appended.

Having described our invention, what we claim and desire to secure by Letters-Patent, is:

1. In a mechanism for the purpose described, the combination of a vertically-disposed conduit open at its upper and lower ends, a cable movable through the conduit, a bullet connected to the cable at an intermediate point in the length thereof and movable into and out of and through the conduit, a weight carried by the cable, and arranged below the bullet and separated by a portion of cable therefrom, a support for coöperating with the conduit to hold the bullet against downward movement; said support being movable to release the bullet by the gravitation of the weight exerted on the cable and bullet, and means for permitting the said movement of the support at predetermined times.

2. In a mechanism for the purpose described, the combination of a vertically-disposed conduit open at its upper and lower ends, a cable movable through the conduit, a bullet connected to the cable at an intermediate point in the length thereof and movable into and out of and through the conduit, a weight carried by the cable, and arranged below the bullet and separated by a portion of cable therefrom, a vertically-swinging support having a platform arranged to coöperate with the conduit in supporting the bullet; said platform being movable downward to release the bullet by the gravitation of the weight exerted on the cable and bullet and being arranged to be engaged by the bullet on upward movement thereof to position the support properly, relative to the bullet, and means for per-

mitting the support to swing downward at predetermined times.

3. In a mechanism for the purpose described, the combination with a conduit having lower and upper flared ends and also having an opening in its side and an apertured lug, a cable movable through the conduit and carrying a bullet adapted to be positioned in the conduit, and a weight on the cable; of a vertically swinging support comprising a rock-shaft journaled in the apertured lug of the conduit, a platform fixed to said rock-shaft and movable into and out of the path of the bullet and also movable in the opening in the side of the conduit, and an arm on the rock-shaft, and means cooperating with the said arm of the support for permitting movement of the support at predetermined times to release the bullet.

4. In a mechanism for the purpose described, the combination with a conduit, a cable movable through the conduit and carrying a bullet adapted to be positioned in the conduit, and a weight on the cable; of a vertically movable weight-support having an arm, a lever arm, means for releasing the lever arm at predetermined times, a spindle movable with the lever arm when the same is released and having an arm arranged to be engaged by the arm of the support and moved thereby in one direction, and a connection between the lever arm and the spindle whereby the spindle and its arm are enabled to move in the opposite direction independent of the lever arm.

5. In a mechanism for the purpose described, the combination of a swinging support, a lever arm, means for releasing the lever arm at predetermined times, a spindle engaged by the support and movable by the same in one direction and with the lever arm when the same is released, and a connection between the lever arm and the spindle whereby the spindle is enabled to move in the opposite direction independent of the lever arm.

6. In a mechanism for the purpose described, the combination of a movable support, means for moving the same, a lever arm, means for releasing the lever arm at predetermined times, a spindle engaged by the support and movable by the same in one direction; said spindle being loosely mounted in the lever arm and provided with means for moving the lever arm in said direction, and means intermediate the lever arm and the spindle, whereby the spindle is enabled to move in the opposite direction independent of the lever arm.

7. In a mechanism for the purpose described, the combination of a movable support, means for moving the same, a lever arm having a sleeve in one end of which is a recess, means for releasing the lever arm at predetermined times, a spindle having an arm engaged by the support and movable by the same in one direction; said spindle being loosely mounted in the sleeve of the lever arm and having a pin disposed in the recess of said sleeve, a coiled spring surrounding the sleeve of the lever arm and connected to said arm and the pin on the spindle, and a spring for moving the lever arm in the direction opposite to that in which said lever arm is moved by the spindle.

8. In a mechanism for the purpose described, the combination of a conduit, a cable movable through the conduit and carrying a bullet adapted to be positioned in the conduit, a weight on the cable, a vertically swinging weight-support, a lever arm having a sleeve in one end of which is a recess, a swinging platform for holding the lever arm against movement in one direction, means for releasing said platform and consequently the lever arm at predetermined times, a spindle having an arm engaged by the weight-support and movable by the same in one direction; said spindle being loosely mounted in the sleeve of the lever arm and having a pin disposed in the recess of said sleeve, a coiled spring surrounding the sleeve of the lever arm and connected to said arm and the pin on the spindle, and a spring for moving the lever arm in the direction opposite to that in which said lever arm is moved by the spindle.

9. In a mechanism for the purpose described, the combination of a conduit, a cable movable through the conduit and carrying a bullet adapted to be positioned in the conduit, a weight on the cable, a vertically swinging weight support having a platform movable in opposite directions

by the bullet and also having an arm, a lever arm having a sleeve in one end of which is a recess, means for releasing said lever arm at predetermined times, a spindle having an arm movable in opposite directions by the arm of the weight-support; said spindle being loosely mounted in the sleeve of the lever arm and having a pin disposed in the recess of said sleeve, a coiled spring surrounding the sleeve of the lever arm and connected to said arm and the pin on the spindle, and a spring for moving the lever arm in the direction opposite to that in which said lever arm is moved by the spindle, whereby the lever arm and a platform cooperating therewith are returned to the proper working positions relative to means for engaging the platform and for releasing the same at predetermined times to permit of movement of the lever arm by the spindle.

10. In a mechanism for the purpose described, the combination of a conduit, a cable movable through the conduit and carrying a bullet adapted to be positioned in the conduit, a weight on the cable, a vertically swinging weight-support having a platform movable in opposite directions by the bullet and also having an arm, a spindle having an arm arranged to be moved in one direction by the arm of the weight-support, means for permitting movement of the spindle in said direction at predetermined times, and a spring connection intermediate the spindle and said means, whereby the spindle is adapted to be moved in the opposite direction by the arm of the weight-support independent of said means.

11. A mechanism for the purpose described comprising a hanger, a block mounted in the upper portion of the hanger and provided with a sheave and also with a screw whereby the hanger may be turned into engagement with a support, a conduit on the hanger, a cable passed over the sheave and movable through the conduit and having a bullet adapted to be positioned in the conduit, a weight on the cable, a vertically swinging weight-support arranged to cooperate with the conduit in holding the bullet, and a clock carried by the hanger and provided with means for permitting movement of the weight-support at predetermined times.

12. A mechanism for the purpose described, comprising a hanger having a bifurcation in its upper end, a block pivotally mounted in said bifurcation and provided with a sheave and also with a screw whereby the hanger may be turned into engagement with a support, a yoke connected to the hanger and having a threaded aperture, a screw bearing in said aperture and engaging the block, a vertically disposed conduit on the hanger, a cable passed over the sheave and movable through the conduit and having a bullet adapted to be positioned in the conduit, a weight on the cable, a vertically swinging weight-support arranged to cooperate with the conduit in holding the bullet against downward movement, and a clock carried by the hanger and provided with means for holding the weight-support against movement and for permitting said weight-support to move at predetermined times.

13. In a mechanism for the purpose described, the combination of vertically disposed conduits, cables movable through the conduits and carrying bullets adapted to be positioned in the conduits, weights on the cables, a vertically swinging weight-support having a platform movable in opposite directions by one bullet and also having an arm, means for holding said arm against movement and for permitting movement thereof at predetermined times, and a vertically-swinging latch having a protuberance arranged to engage the last mentioned bullet, and also having a toe arranged to rest under the other bullets when the bullets are in their raised positions.

14. In a mechanism for the purpose described, the combination of a clock having a sleeve communicating with its interior and extending rearward from the back wall of its casing, a spindle extending through said sleeve and having an arm on its outer portion, means in the clock casing for permitting movement of said spindle at predetermined times, packing arranged in the sleeve around the spindle, a dust shield pivoted on the sleeve and arranged to bear against the back of the casing, a coiled spring surrounding the sleeve and interposed between the shield and an outer abutment on the sleeve, a gravitating

weight, and a weight-support arranged to be held against movement by the arm on the spindle and to be released from said arm when the spindle is permitted to move.

5 15. The combination of a clock having a sleeve communicating with its interior and extending rearward from the back wall of its casing, a spindle extending through said sleeve, means in the clock casing for holding the spindle against movement and for permitting movement of said
10 spindles at predetermined times, packing arranged in the sleeve around the spindle, a swinging dust shield pivoted

on the sleeve and arranged to bear against the back of the casing, and a spring arranged to crowd the shield against the casing.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

ALTON B. CARTY.

ROY F. CARTY.

Witnesses:

HENRY D. HUBBARD,

OSCAR G. LANGE.