

No. 692,783.

Patented Feb. 4, 1902.

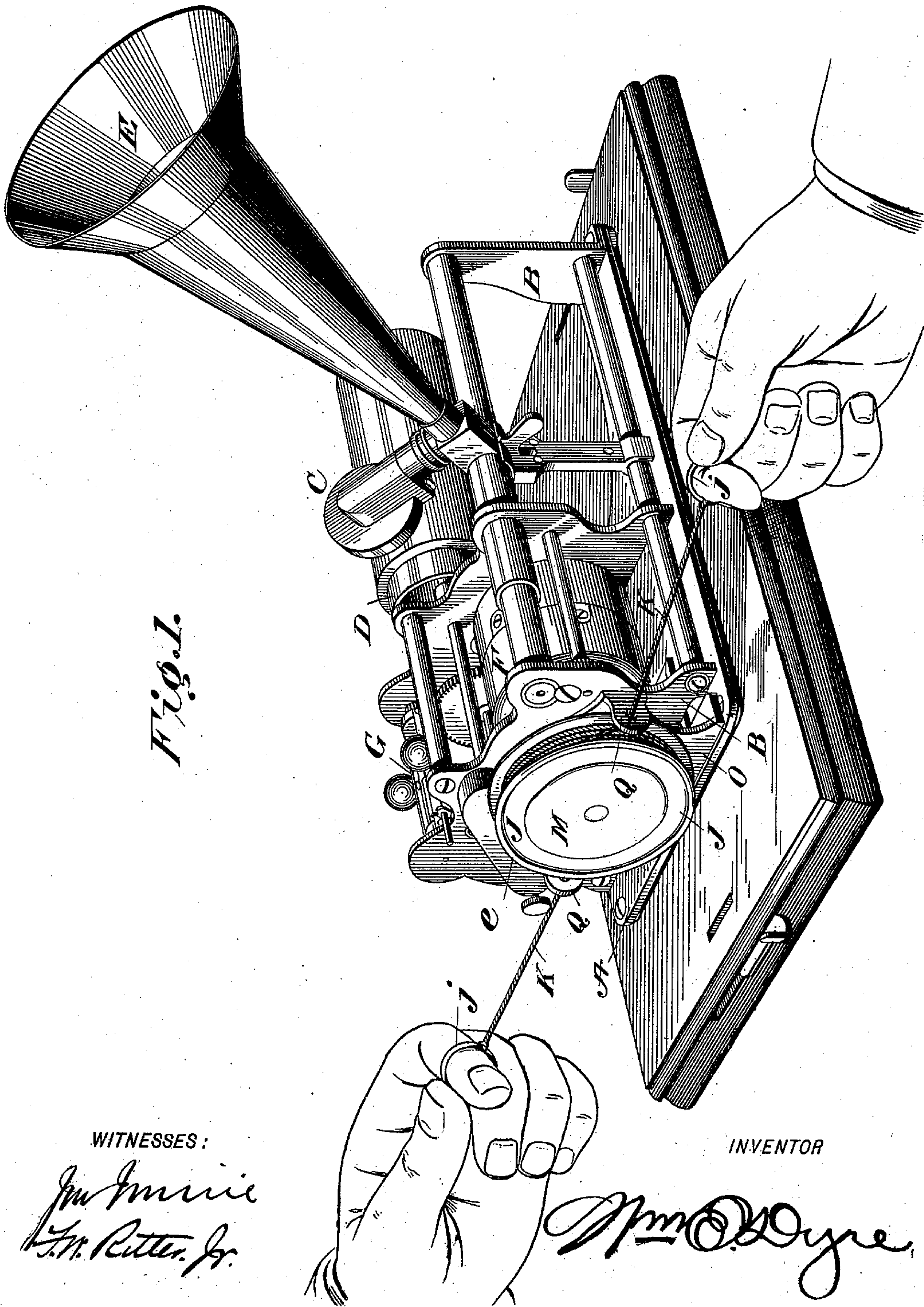
W. E. DYRE.

WINDING ATTACHMENT FOR GRAPHOPHONES.

(Application filed Mar. 23, 1901.)

(No Model.)

3 Sheets—Sheet 1.



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Fig. 2.

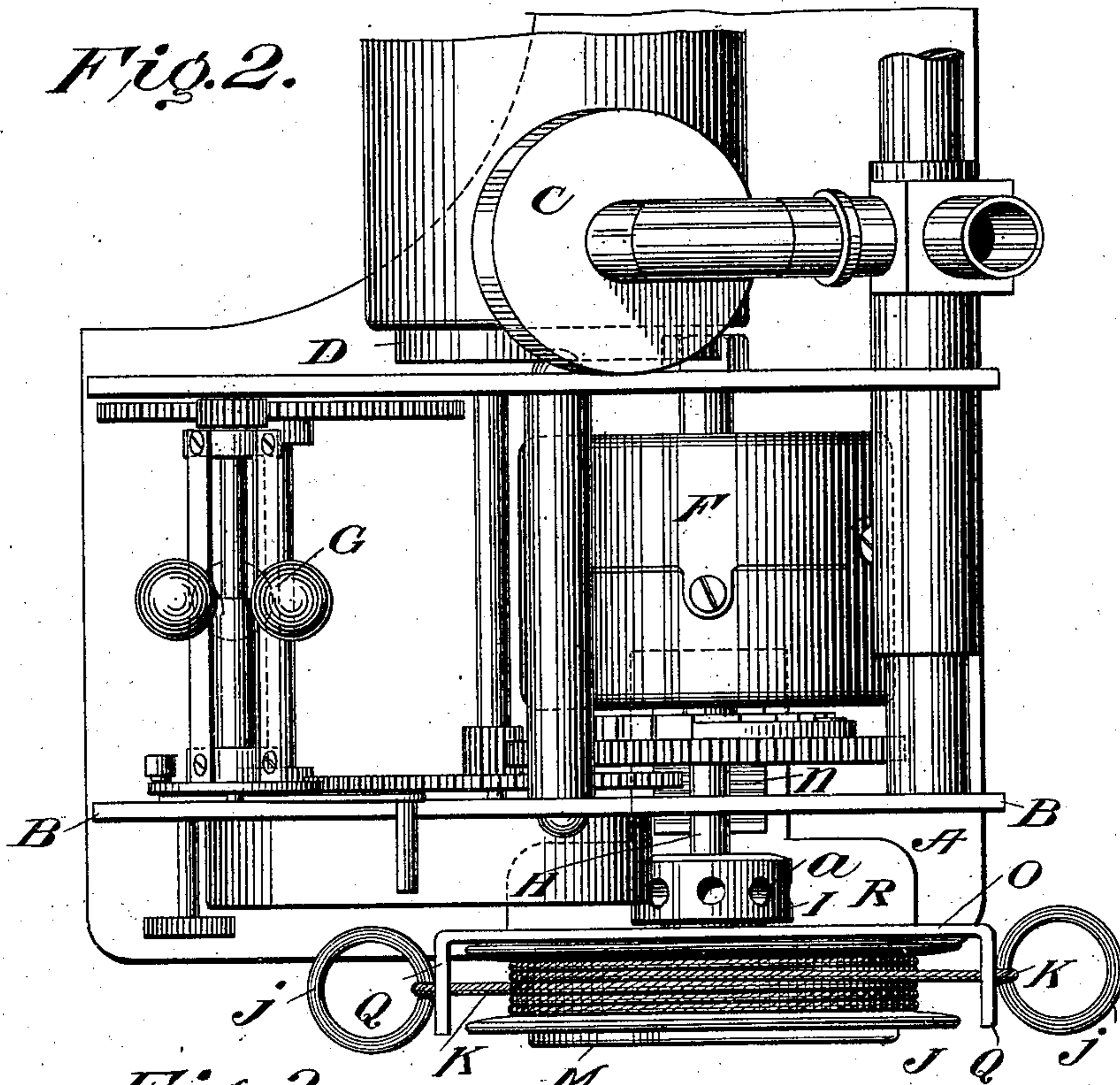
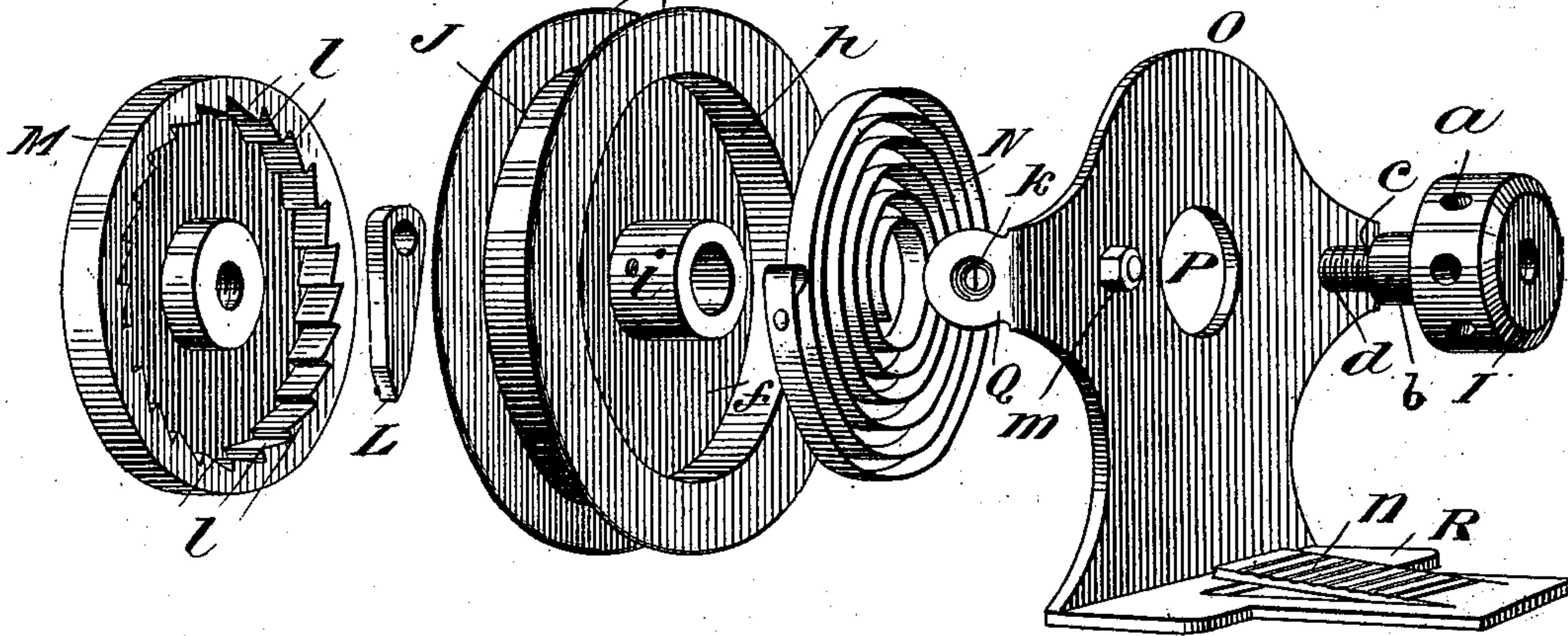


Fig. 3.



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Fig. 4.

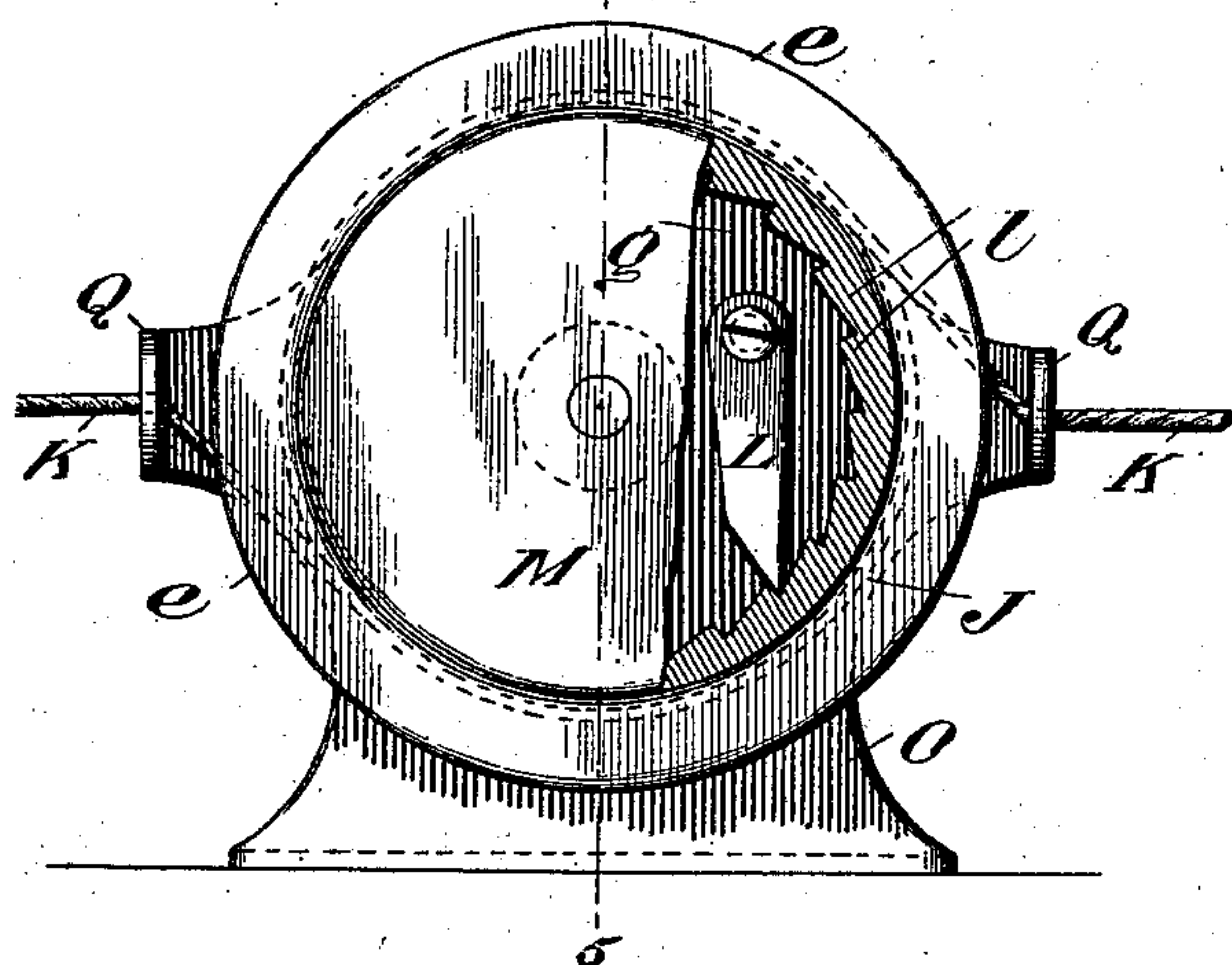


Fig. 5.

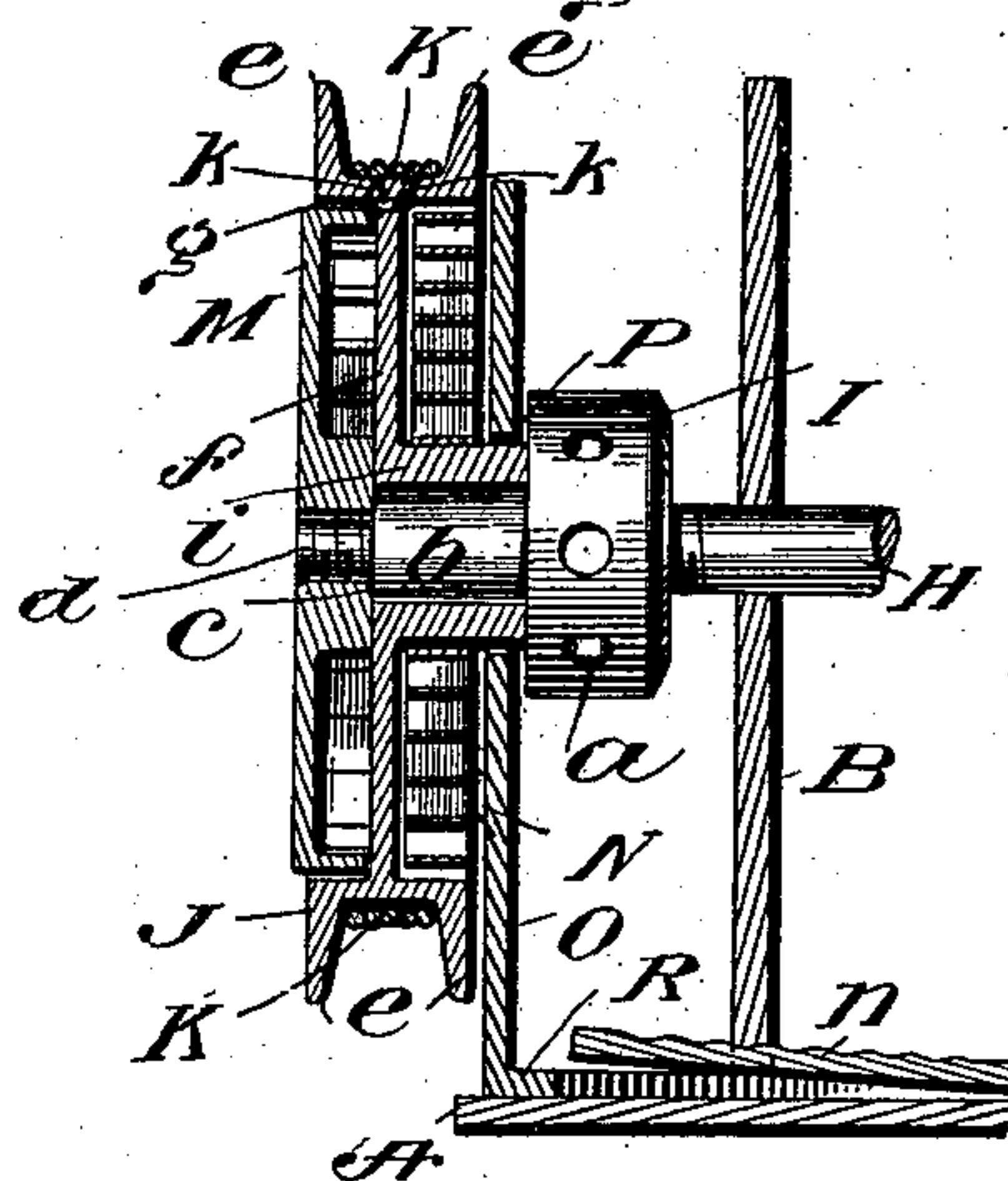


Fig. 6.

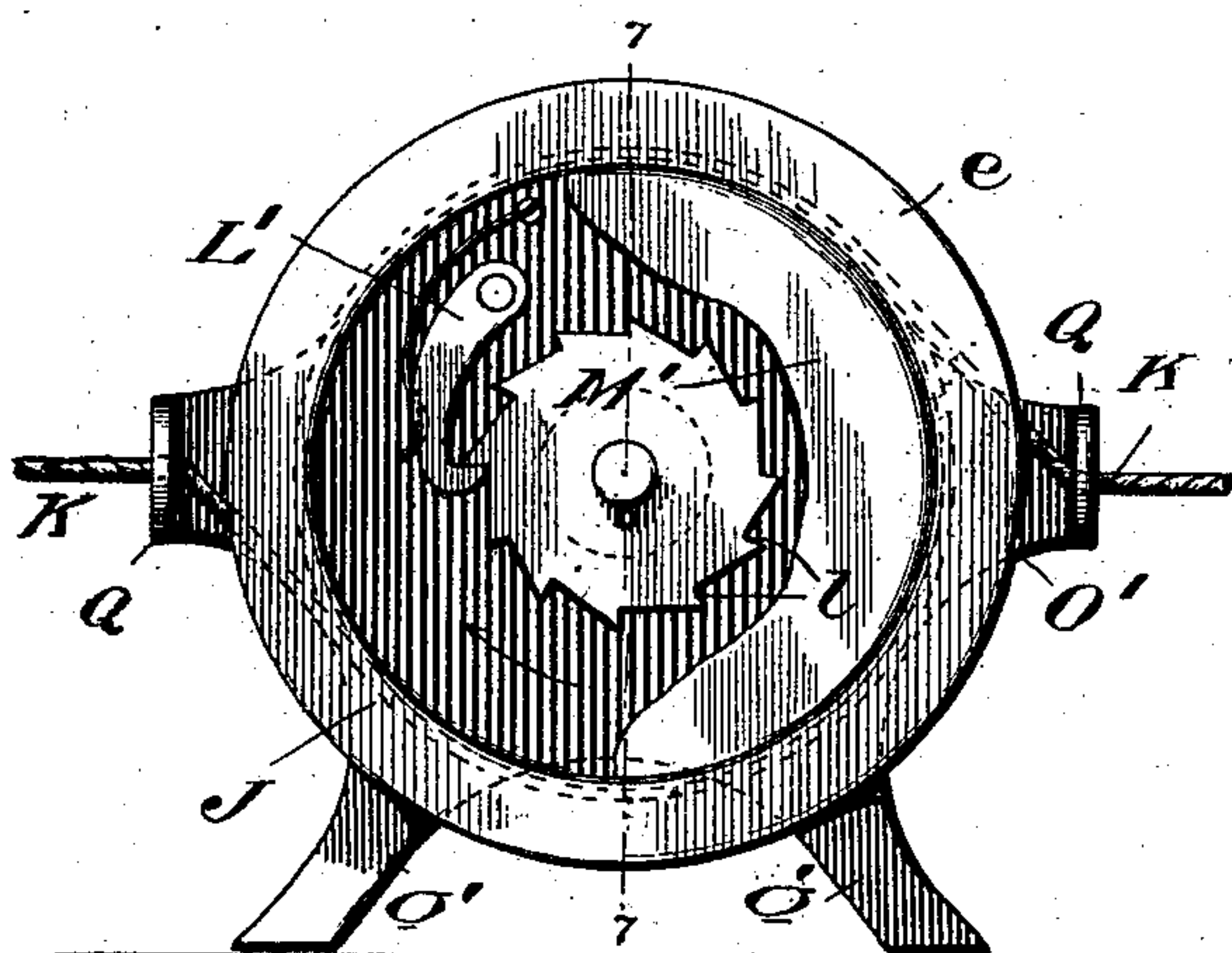


Fig. 7.

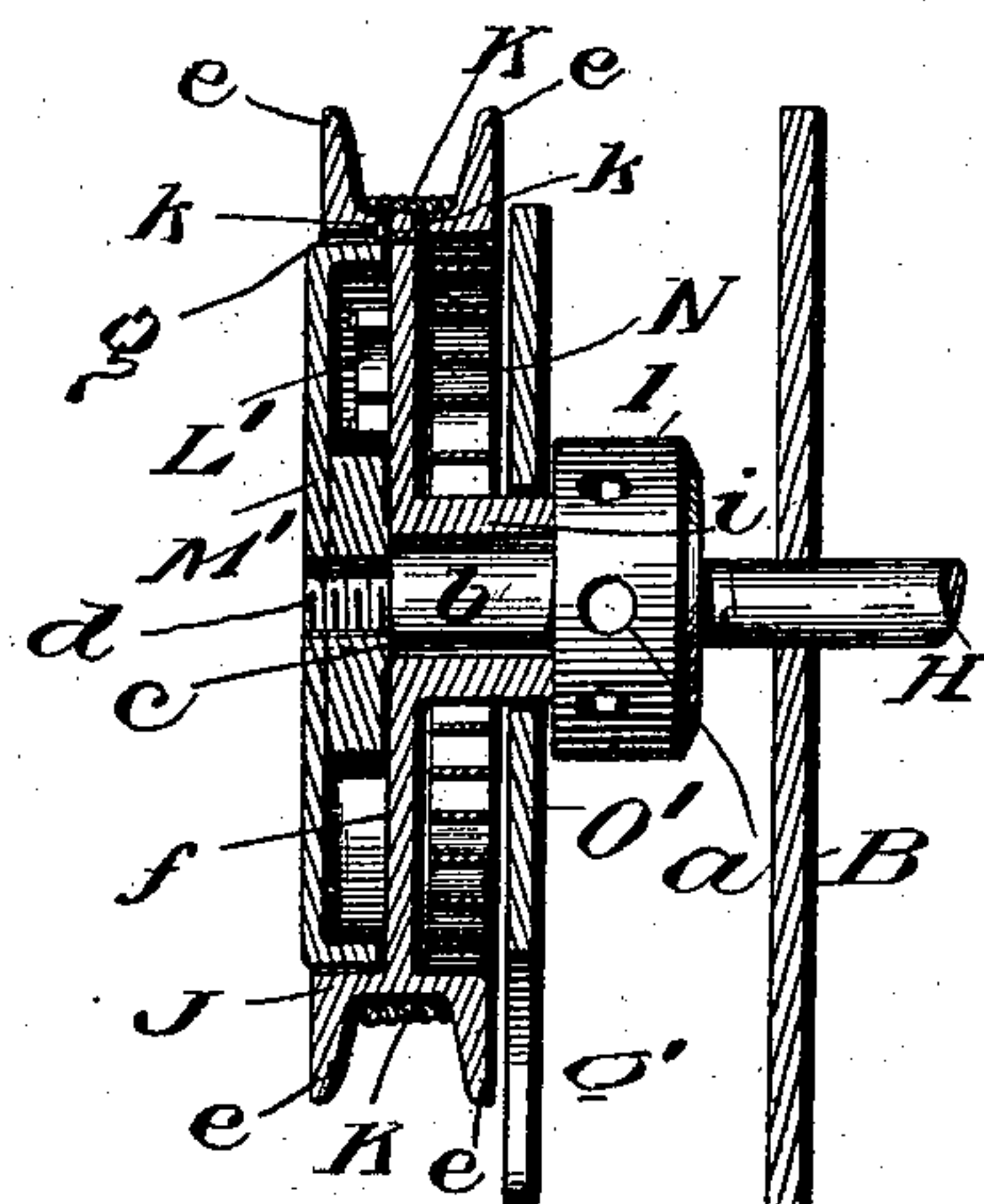
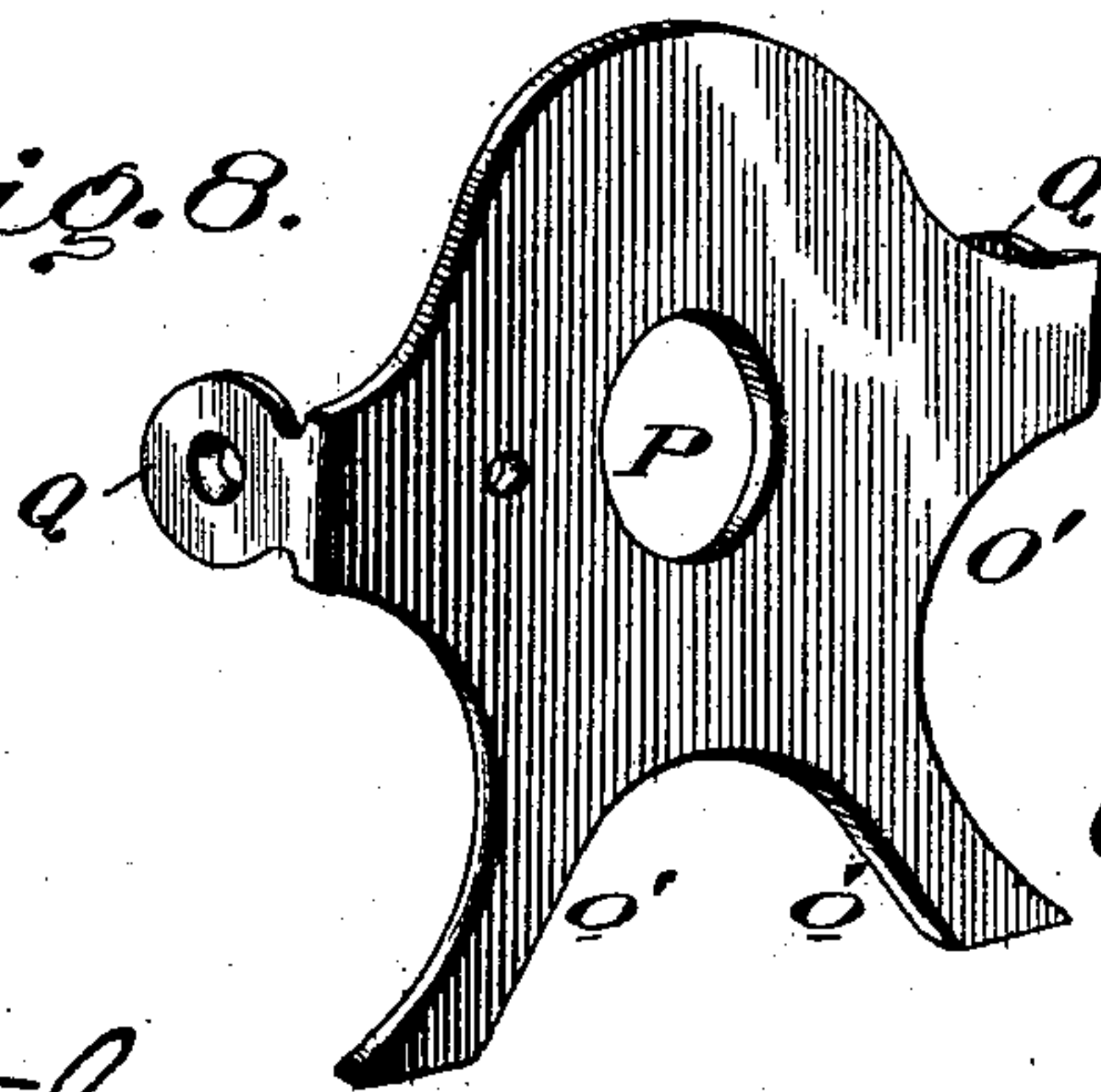


Fig. 8.



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UNITED STATES PATENT OFFICE.

WILLIAM E. DYRE, OF TAKOMA PARK, DISTRICT OF COLUMBIA, ASSIGNOR
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WINDING ATTACHMENT FOR GRAPHOPHONES.

SPECIFICATION forming part of Letters Patent No. 692,783, dated February 4, 1902.

Application filed March 23, 1901. Serial No. 52,613. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. DYRE, a citizen of the United States, residing at Takoma Park, in the District of Columbia, have invented certain new and useful Improvements in Winding Attachments for Graphophones; and I do hereby 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.

My invention relates, primarily, to sound recording and reproducing machines, in which class are included phonographs, graphophones, gramophones, and a variety of music-boxes actuated by spring-motors.

More particularly stated, the invention relates to means for energizing or winding the motors of such instruments, its object being to effect this winding with the least possible expenditure of time and physical exertion by the substitution of my winding attachment for the keys and cranks heretofore employed. Both keys and cranks have always been regarded as unsatisfactory expedients, not only because of their tedious and laborious operation, but also because of their comparatively uncertain action. The former frequently slip from the fingers during the winding process, the latter as often become accidentally detached from the winding-shaft, while both are exceedingly slow in the performance of their respective functions. To overcome these difficulties, I have invented and produced an attachment for graphophones and similar instruments, whereby their actuating-motors may be speedily and conveniently wound or energized by the rapid rotation of a drum applied to the winding-shaft of the motor.

Further characteristic features of the invention comprise a cord or other flexible band secured to and coiled upon said drum as a means of rotating same in one direction, a pawl and ratchet interposed between said drum and shaft for transmitting power from the former to the latter, a recoil-spring for rotating the drum reversely and rewinding the cord aforesaid, and a back plate of novel construction designed and adapted to engage the motor-frame and steady the attachment in operative relation, all as will hereinafter more fully ap-

pear, and be particularly pointed out in the claims following.

In the accompanying drawings, which form part of this specification, and whereon corresponding letters of reference indicate like parts in the several views, Figure 1 illustrates in perspective a graphophone with my invention attached thereto in operative relation. Fig. 2 is a plan view showing graphophone reproducing mechanism, the motor for driving same, its governor, and finally my winding attachment applied to the motor-shaft. Fig. 3 is a segregated view in perspective illustrating in relative arrangement the following elements or parts of the invention—to wit, an attaching hub, a back plate, a recoil-spring, the main drum, a gravity-pawl, and a ratchet-wheel. Fig. 4 is an end elevation wherein the ratchet-wheel is partly broken away, disclosing a pawl for engaging and driving said wheel during each forward rotation of the drum. Fig. 5 is a vertical central section of my invention, taken on the line 5 5, Fig. 4. Fig. 6 illustrates in end elevation a modification of the invention partly broken away to disclose an external ratchet-wheel and spring-pressed pawl. Fig. 7 is a vertical central section taken on the line 7 7, Fig. 6. Fig. 8 is a perspective view of modified back plate appearing in Figs. 6 and 7.

Reference being had to the drawings and letters thereon, A represents a graphophone-base or bed-plate surmounted by a suitable frame B and by sound-reproducing mechanism comprising a reproducer C, record-mandrel D, and horn E of usual construction. The reproducing mechanism is driven by a spring-motor F, speed of the latter being controlled by a governor G, all of usual construction, and mounted in frame B, through which projects the winding-shaft H of the motor, as clearly illustrated by Fig. 2.

Detachably secured to the winding-shaft H is a hub or nut I, having one or more radial pockets *a* in its periphery to facilitate adjustment and removal thereof by agency of a wrench pin or nail. (Not shown.) The outer portion of hub I is reduced, as at *b*, and upon this as a journal-bearing is loosely mounted the moving parts of the invention. By preference journal *b* is shouldered at *c* and ter-

minates in an outer external screw-thread d for purposes that will later appear.

Rotatably mounted upon journal b is the main drum J of the attachment, comprising peripheral flanges $e e$, a central web or partition f , dividing the drum into front and back pockets or compartments $g h$, respectively, and a drum-seat i , projecting from the center of web f through the pocket h , as shown by Figs. 3, 5, and 7. Secured to the periphery of drum J is the operating or winding cord K , same being attached at a point in its length intermediate of its ends, normally coiled upon the drum, projected therefrom in opposite parallel lines, and finally fitted with finger-rings $j j$, as indicated by Figs. 1 and 2. Obviously this element of the invention, herein designated as "cord" or "cords" K , may be of any flexible material or configuration adapted to perform the functions of that shown and may be secured in any approved manner—as, for example, by lacing same through radial openings $k k$ —provided only that said cords K constitute a "couple" as defined by the *Standard Dictionary*, Ganot's *Physics*, Deschanel's *Natural Philosophy*, and all similar publications.

Within the outer compartment g of drum J is located a pawl-and-ratchet mechanism, which may be varied somewhat in construction, provided only that it is interposed between the drum and the winding-shaft of the motor in a manner to transmit power from one to the other upon each rotation of the drum in one direction. In its preferred form of construction this mechanism comprises a gravity-pawl L , pivotally supported upon the web f of drum J , and an internal ratchet-wheel M , having teeth l affixed to the threaded extremity d of hub I , as will be seen by reference to Figs. 3, 4, and 5. Within the opposite or rear compartment h is located a recoil-spring N , its innermost end being secured to the drum-seat i and its outer end fastened to a fixed support, such as pin m , projecting from a back plate now to be described. O represents said back plate, constituting at once an auxiliary support for the structure, a guide for its cord or cords K , and a closure for the back or spring-containing compartment h . This plate O is perforated centrally at P to loosely receive the tubular drum-seat i . It is also provided with forwardly-projecting perforated guide-lugs $Q Q$, through which pass the oppositely-arranged ends of winding-cord K , and at its base is provided a rearwardly-projecting angular foot R , bearing a yielding spring-tang n for insertion beneath the end of frame B to steady the attachment.

It should be noted that the contents of compartments $g h$ may be reversed, or both the recoil and ratchet mechanisms may be located in a single compartment, if desired, without materially altering their individual or correlative action. The back plate O may also be varied in construction without in the least detracting from its general efficiency, and

likewise various changes in the construction and arrangement of parts may be made and substituted for those herein shown and described without in the least departing from the spirit of my invention as set forth in the claims following.

Figs. 6, 7, and 8 illustrate modified forms of the invention, wherein an external ratchet-wheel M' is substituted for the internal ratchet-wheel, heretofore described, its cooperating pawl L' being spring-pressed, as shown, and the back plate O' being altered by the omission of foot R . This arrangement of ratchet and pawl is well suited to that class of motors wherein the winding-shaft does not rotate reversely as the motor runs down. The back plate O' , however, is applicable to all types of motors and is so arranged that its depending feet $o' o'$ terminate in close proximity to the surface of base or bed plate A' , where without actually binding they serve to steady the attachment, which, however, is in all events dependent mainly upon the winding-shaft of the motor for its support and means of attachment.

In actual construction the leading elements of my invention are preferably stamped from sheet-steel by suitable dies; but obviously this constitutes no part of the present invention, since they may also be cast in aluminium or other suitable material or made in any manner whatsoever, due consideration being given to lightness, compactness, and economy of manufacture.

It will be observed that the ratchet-wheel M and pawl L constitute a clutch mechanism which may be varied in construction, provided only that a clutch is furnished which is capable of imparting to shaft H a rotary motion with each initial movement of drum J and of automatically going out of action with each reverse movement of the drum.

The foregoing being a description of my invention in its preferred embodiment, its use and operation may be stated as follows: Applied to a spring-motor by means of the hub I , in screw-threaded connection with winding-shaft H , as shown by Figs. 1 and 2, the invention is ready for use. Force now applied to the cord or cords K in opposite parallel directions, as indicated by Fig. 1, serves to rapidly rotate drum J in one direction, pawl L promptly engaging one tooth l of ratchet-wheel M . The latter being thus positively driven imparts the same rotary motion to hub I and shaft H in a forward or winding direction, said hub and shaft being to all intents and purposes one and the same part. Tension on opposite ends of the cord or cords K now being relieved, recoil-spring N , energized by the aforesaid initial rotation of drum J , goes into action to rotate said drum reversely, re-winding the cords. In so doing pawl L is automatically withdrawn from ratchet M and comes to rest in a neutral or disengaged position at the instant rings $j j$ at the ends of cords K are stopped by their respective guides

Q Q. Obviously then in that class of motors employing a winding-shaft that rotates reversely as the motor force is expended the shaft H, hub I, and ratchet-wheel M may continue to rotate freely, while in that class of motors employing a winding-shaft that does not so rotate reversely the same parts will simply remain idle when drum J has come to rest. This operation of winding and recoiling may be rapidly repeated as frequently as desired, and it will be particularly noted that the force thus applied to the motor-shaft as also all moving parts of the invention is so completely counterbalanced and distributed that strains are reduced to a minimum and in so far as the motor-shaft is concerned are practically eliminated. This application of a pair of equal forces acting in opposite and parallel lines upon the periphery of drum J at points diametrically opposite is especially efficacious and is such that motors of the lightest type need not be secured in any manner to their supporting stands or tables during the winding operation.

Such being a description of my invention and of the preferred manner of applying same to practical use, what I claim, and desire to secure by Letters Patent, is—

1. An attachment for the winding-shaft of spring-motors, comprising a drum mounted upon said shaft, and cords secured to the drum adapted to rotate it by agency of a pair of forces acting simultaneously in opposite directions, substantially as and for the purposes specified.

2. An attachment for the winding-shaft of spring-motors, comprising a drum mounted upon said shaft, cords secured to the drum and adapted to rotate it by agency of a pair of equal forces acting in opposite directions, and oppositely-disposed guides for conducting said cords to the drum, substantially as and for the purposes specified.

3. An attachment for the winding-shaft of spring-motors, comprising a drum mounted upon said shaft, cords secured to the drum and adapted to rotate it by agency of a pair of equal forces acting in opposite parallel lines, and means for automatically returning the drum to its normal position, substantially as and for the purposes specified.

4. An attachment for the winding-shaft of spring-motors, comprising a drum mounted upon said shaft, cords secured to the drum and adapted to rotate it by agency of a pair of equal forces acting in opposite parallel lines, a clutch mechanism interposed between said drum and shaft, and means for automatically returning the drum to its normal position, substantially as and for the purposes specified.

5. An attachment for the winding-shaft of spring-motors, comprising a drum rotatably mounted with relation to said shaft, cords secured to the drum and adapted to rotate it by agency of a pair of equal forces acting in opposite parallel lines, a pawl and ratchet inter-

posed between said drum and shaft, and a recoil-spring for returning the drum to its normal position, substantially as and for the purposes specified.

6. An attachment for the winding-shaft of spring-motors, comprising a drum rotatably mounted with relation to said shaft, cords secured to the drum and adapted to rotate it by agency of a pair of equal forces acting in opposite parallel lines, a ratchet-wheel secured to the shaft, a coacting pawl carried by the drum, and a recoil-spring for returning the drum to its normal position, substantially as and for the purposes specified.

7. An attachment for the winding-shaft of spring-motors, comprising a drum rotatably mounted with relation to said shaft, cords secured to the drum and adapted to rotate it by agency of a pair of equal forces acting in opposite parallel lines, ratchet and recoil mechanisms carried by the drum, and suitable case-plates for inclosing said mechanisms, substantially as and for the purposes specified.

8. An attachment for the winding-shaft of spring-motors, comprising a drum rotatably mounted with relation to said shaft, cords secured to the drum and adapted to rotate it by agency of a pair of equal forces acting in opposite parallel lines, a ratchet mechanism interposed between said drum and shaft, and a recoil-spring secured at its opposite ends to said drum and to a fixed point of support, substantially as and for the purposes specified.

9. An attachment for the winding-shaft of spring-motors, comprising a drum rotatably mounted with relation to said shaft, cords secured to the drum and adapted to rotate it by agency of a pair of equal forces acting in opposite parallel lines, a ratchet mechanism interposed between said drum and shaft, a recoil-spring secured at its opposite ends to said drum and to a fixed point of support, and a non-rotatable back plate serving to steady the attachment in operative position, substantially as and for the purposes specified.

10. An attachment for the winding-shaft of spring-motors, comprising a rotatable drum, oppositely-extending cords secured to the drum for rotating it, a ratchet mechanism interposed between said drum and shaft, a recoil-spring secured at one end to the drum, and a non-rotatable back plate affording a fixed support for the opposite end of said recoil-spring and a closure for the spring-compartment, substantially as and for the purposes specified.

11. An attachment for the winding-shaft of spring-motors, comprising a rotatable drum, oppositely-extending cords secured to the drum for rotating it, a ratchet mechanism interposed between said drum and shaft, a recoil-spring secured at one end to the drum, and a back plate affording a fixed support for the opposite end of said recoil-spring having a foot for engaging the frame of the motor aforesaid, substantially as and for the purposes specified.

12. An attachment for the winding-shaft of spring-motors, comprising a rotatable drum, oppositely-extending cords secured to said drum for rotating it, and a supporting back plate having a foot for engaging the frame of the motor aforesaid, substantially as and for the purposes specified.

13. An attachment for the winding-shaft of spring-motors, comprising a rotatable drum, oppositely-extending cords secured to said drum for rotating it, and a supporting back plate having an angular foot for engaging the frame of the motor aforesaid, substantially as and for the purposes specified.

14. An attachment for the winding-shaft of spring-motors, comprising a rotatable drum, oppositely-extending cords secured to said drum for rotating it, a supporting back plate having an angular foot, and a tang upon said

foot for engaging the frame of the motor aforesaid, substantially as and for the purposes specified.

15. An attachment for the winding-shaft of spring-motors, comprising a rotatable drum, oppositely-extending cords secured to said drum for rotating it, a supporting back plate having oppositely-arranged cord-guides, and an angular foot projecting from said plate bearing a yielding tang for engaging the frame of the motor, substantially as and for the purposes specified.

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

WM. E. DYRE.

Witnesses:

F. W. RITTER, Jr.,
HUGH M. STERLING.