

C. HAMMELMANN.
Mechanical Movement.

No. 225,702.

Patented Mar. 23, 1880.

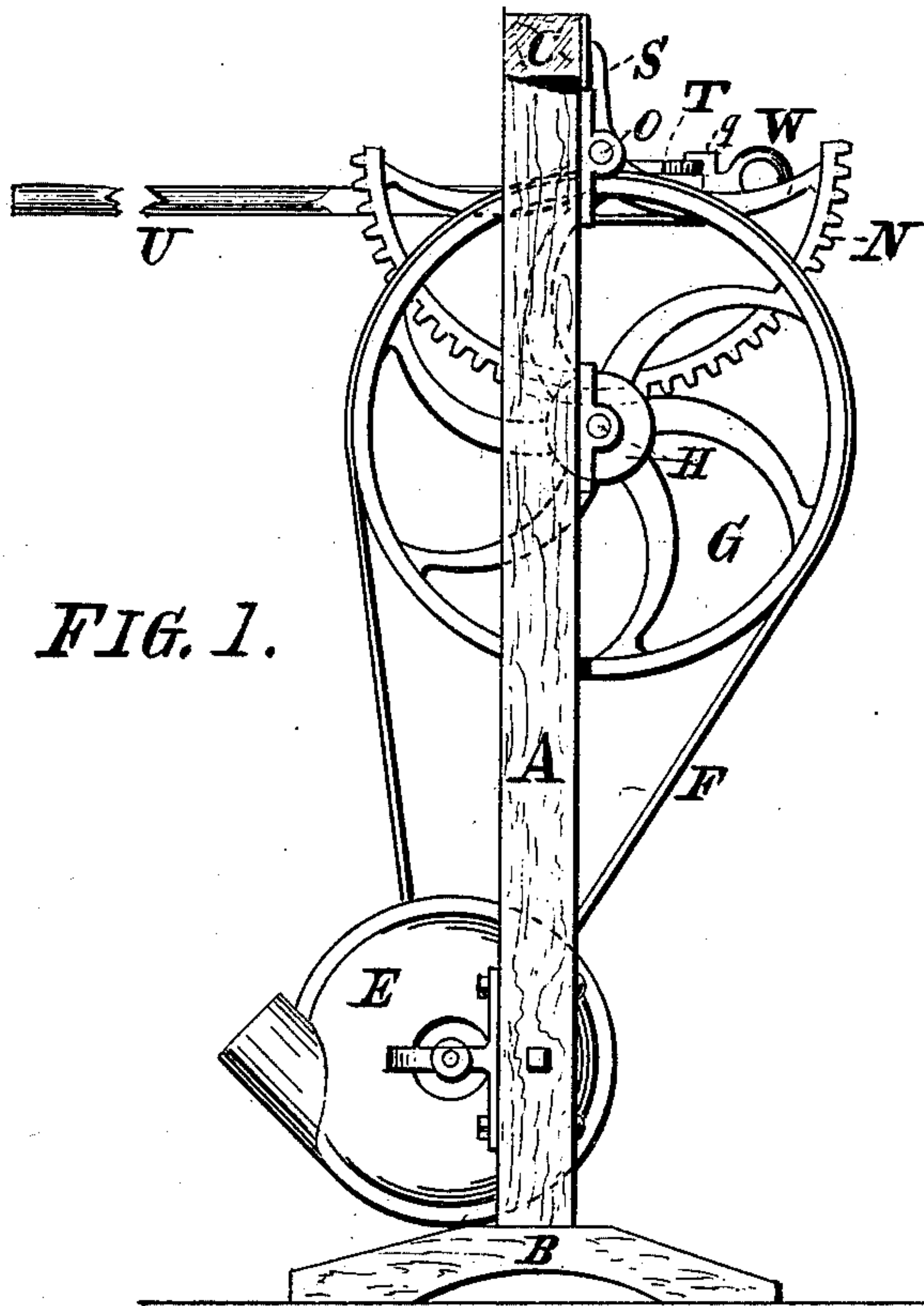


FIG. 1.

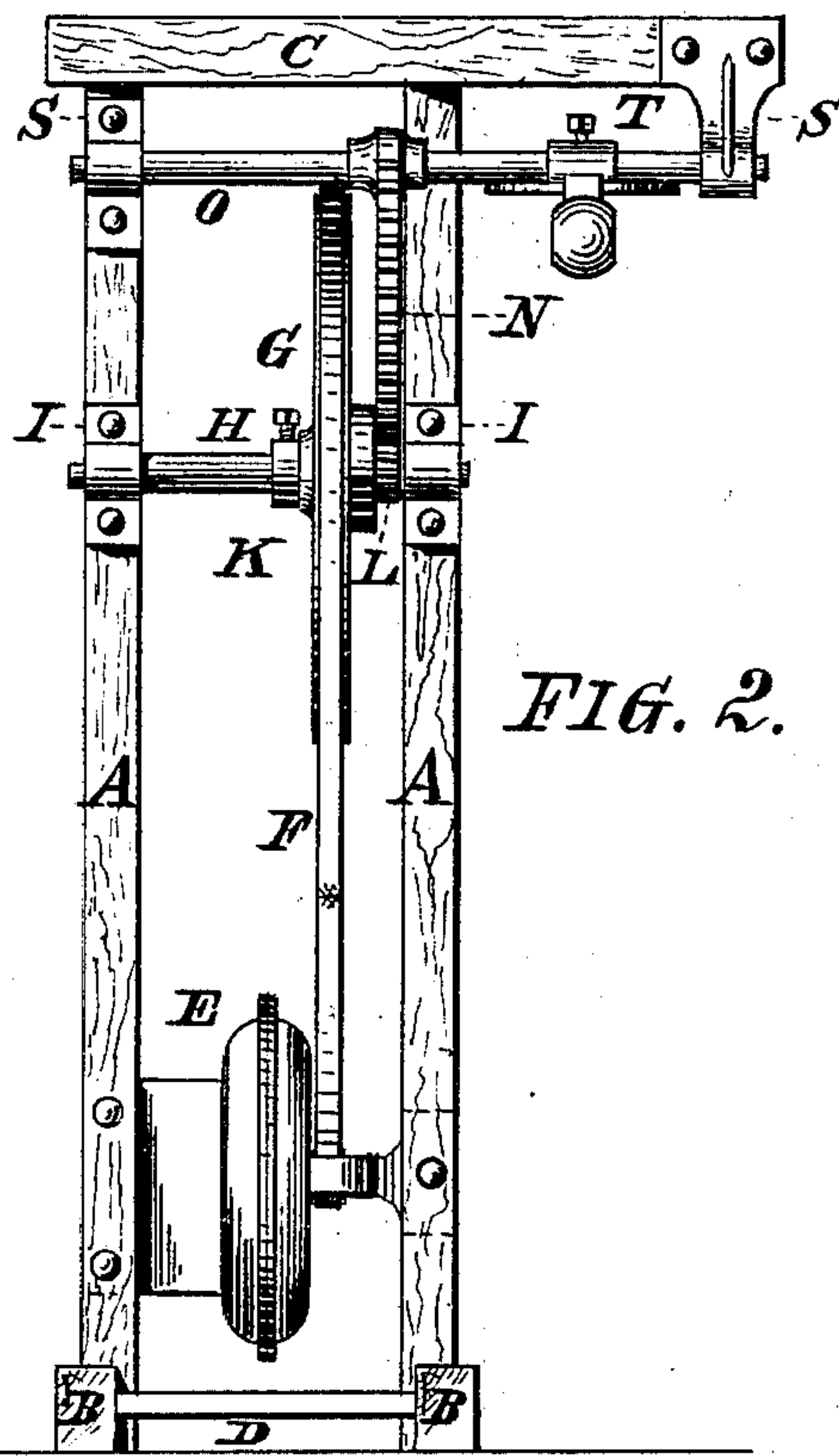


FIG. 2.

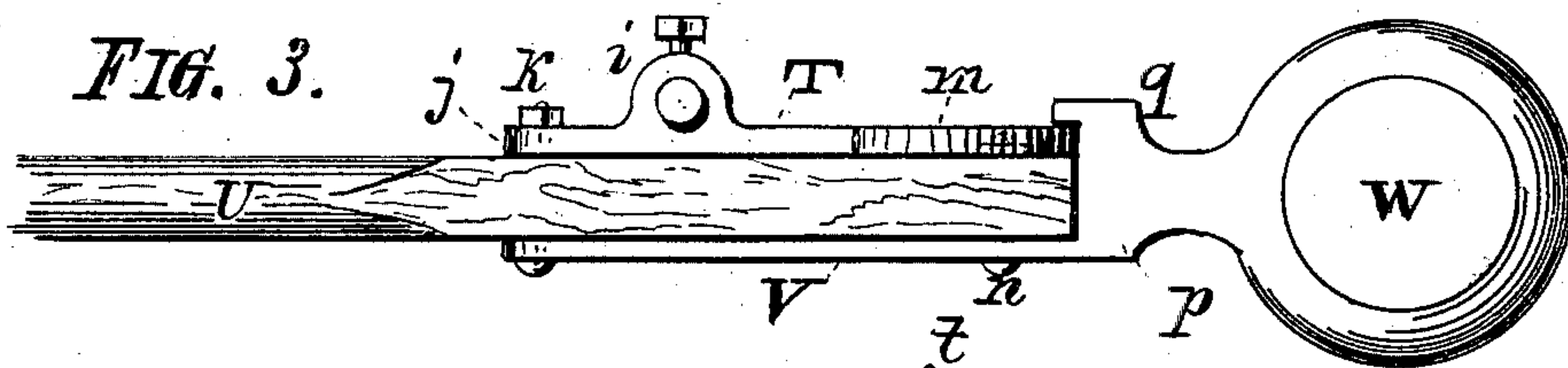


FIG. 3.

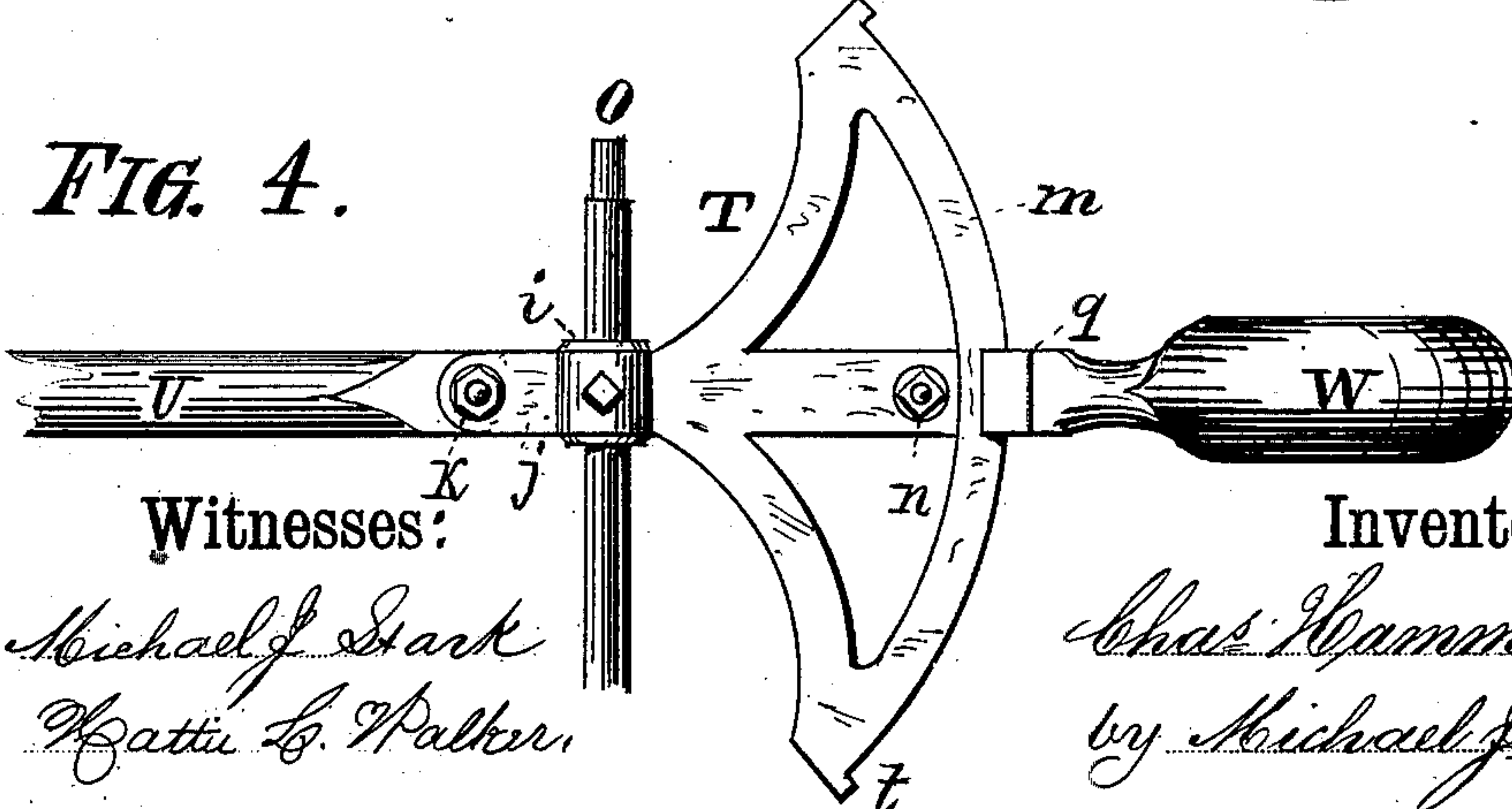


FIG. 4.

Witnesses:

Michael J. Stark
Hattie L. Walker.

Inventor:

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by Michael J. Stark,
Attorney.

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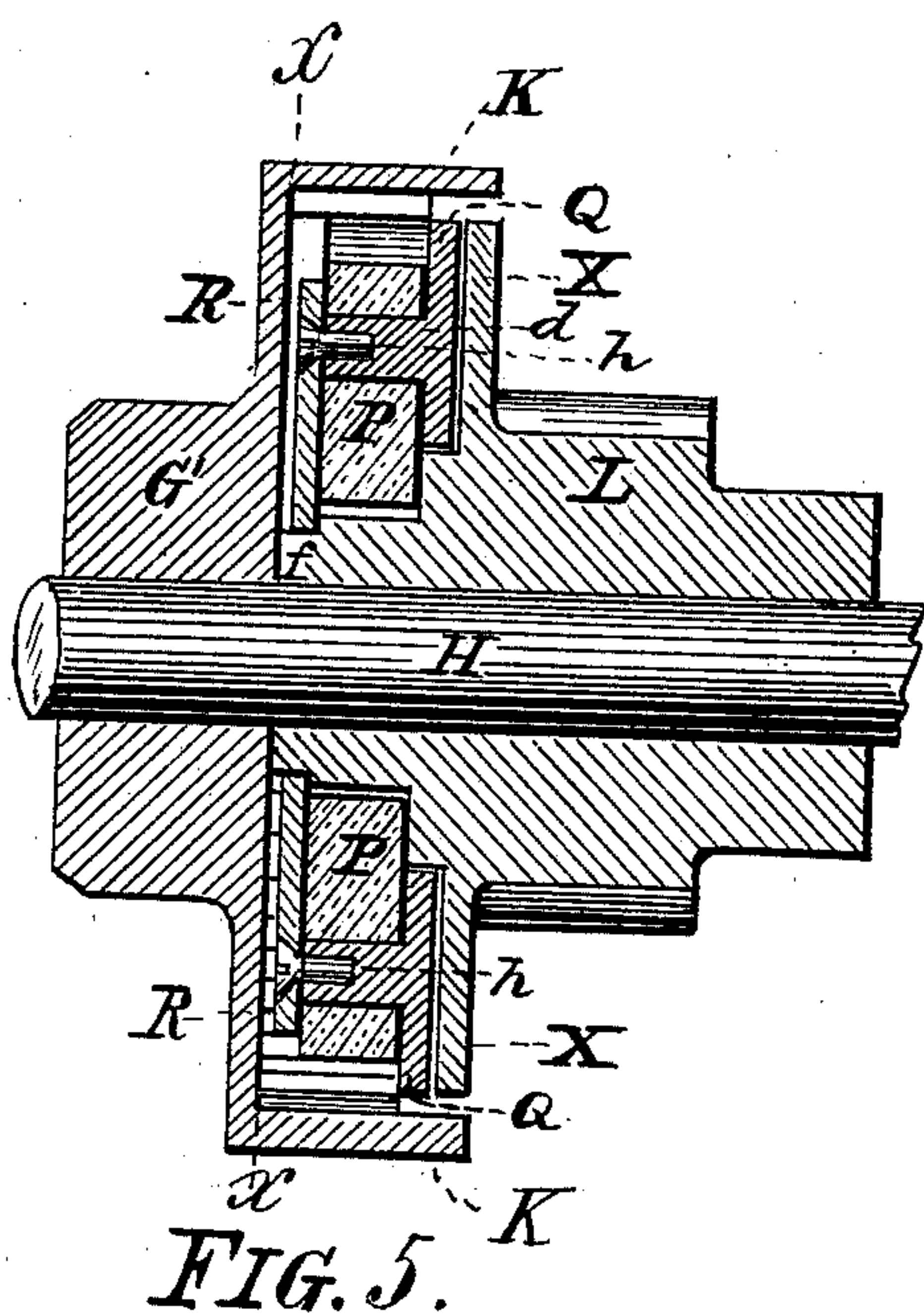
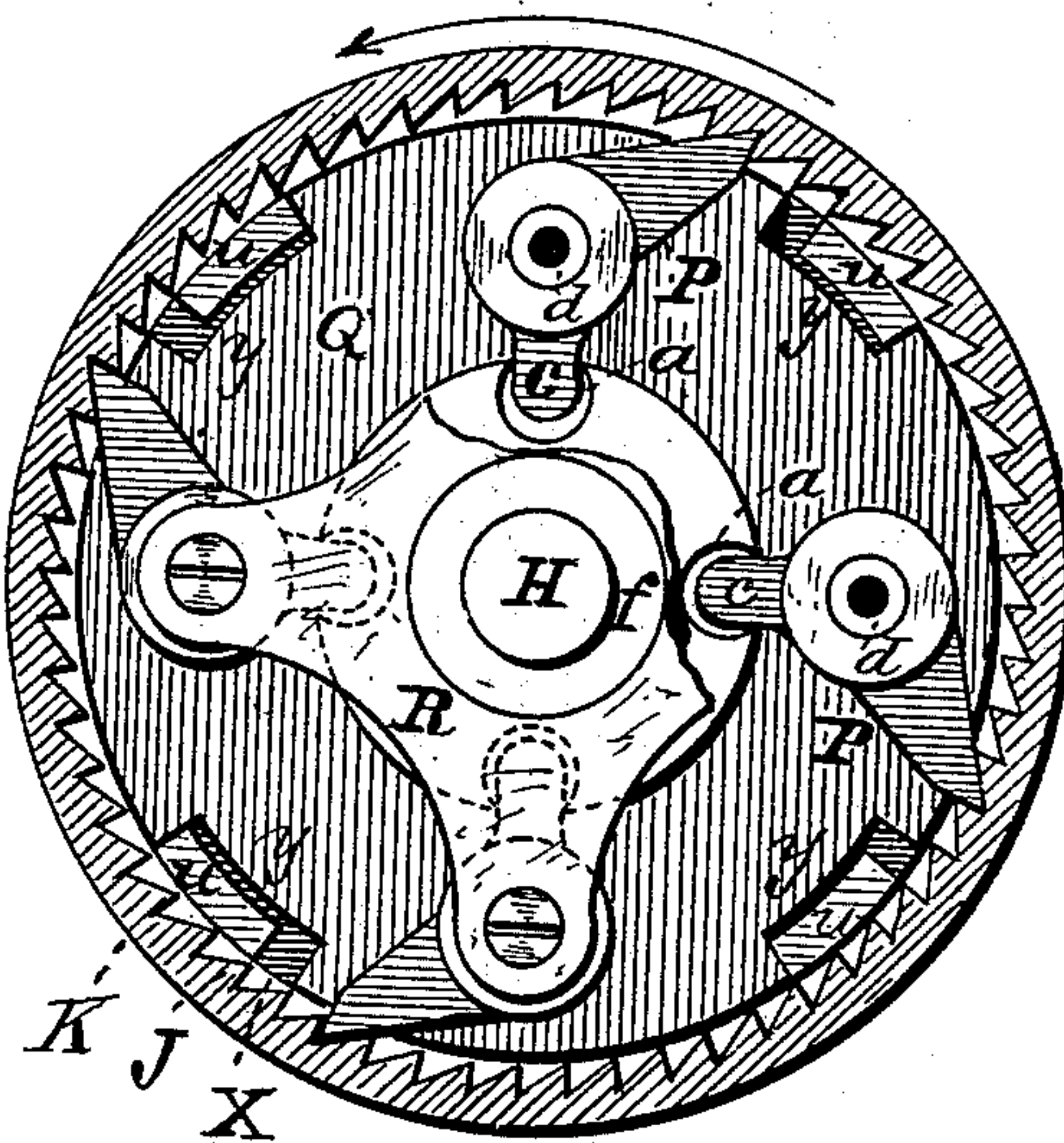


FIG. 6.



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FIG. 8.

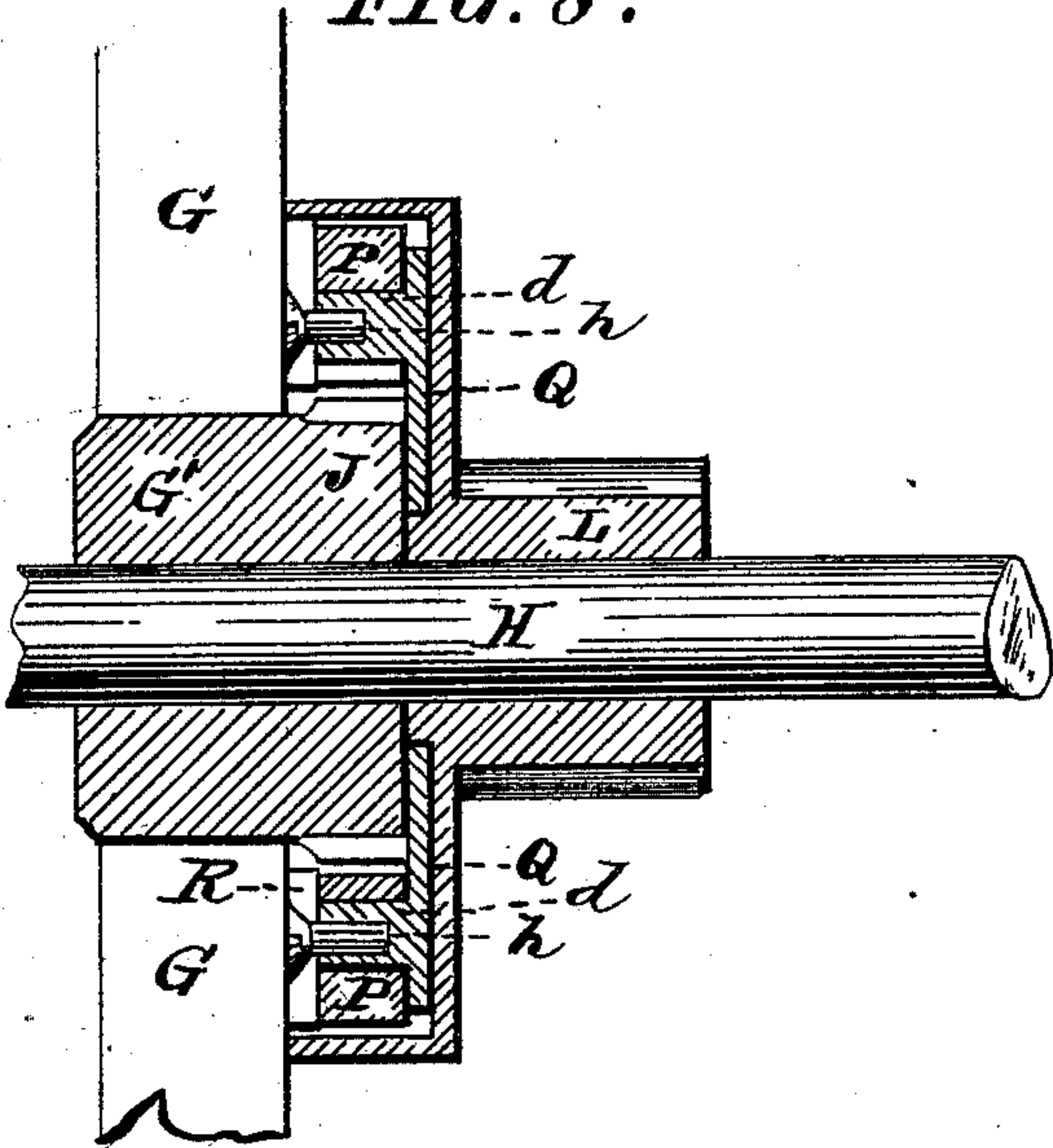


FIG. 7.

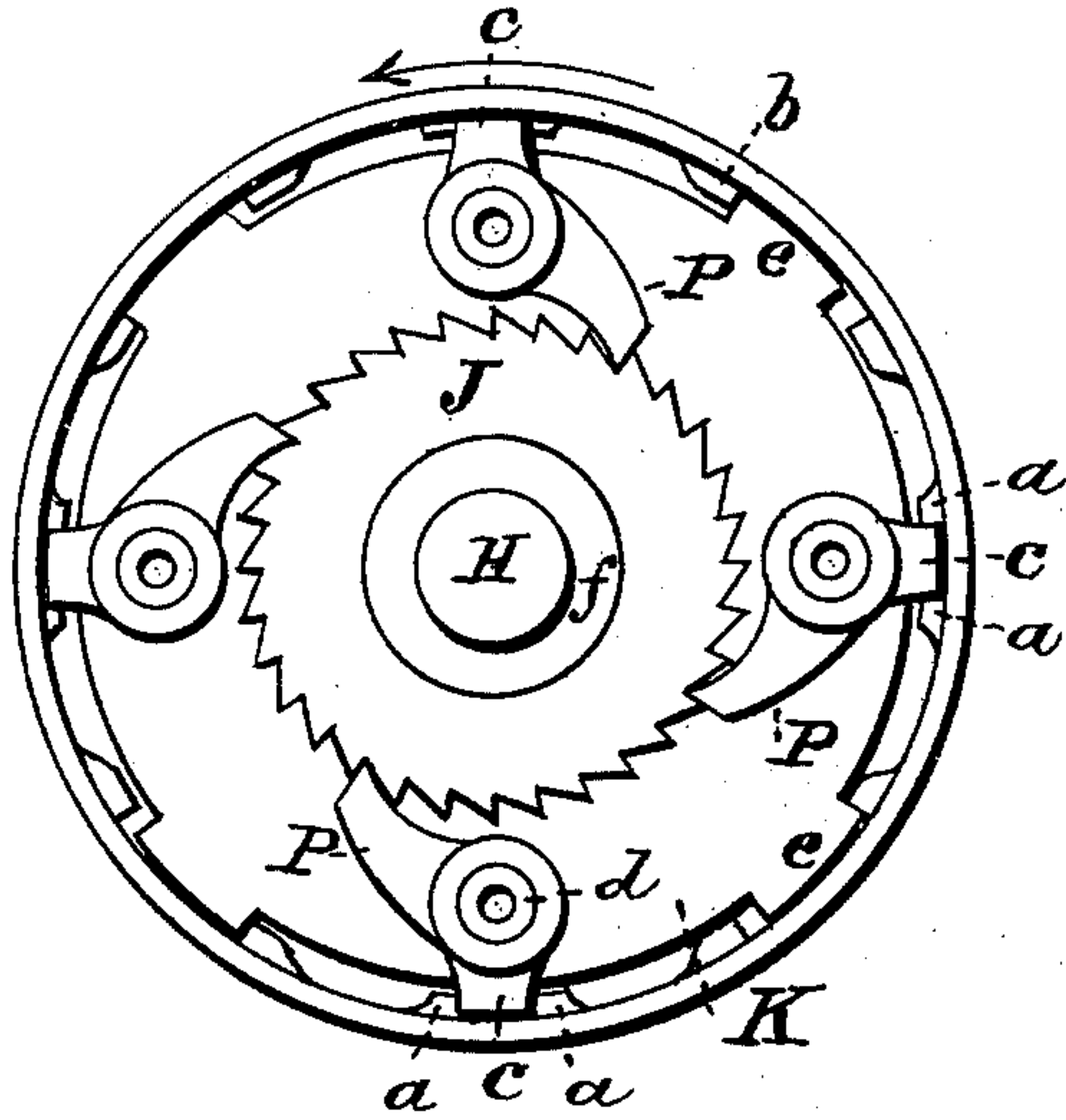


FIG. 9.

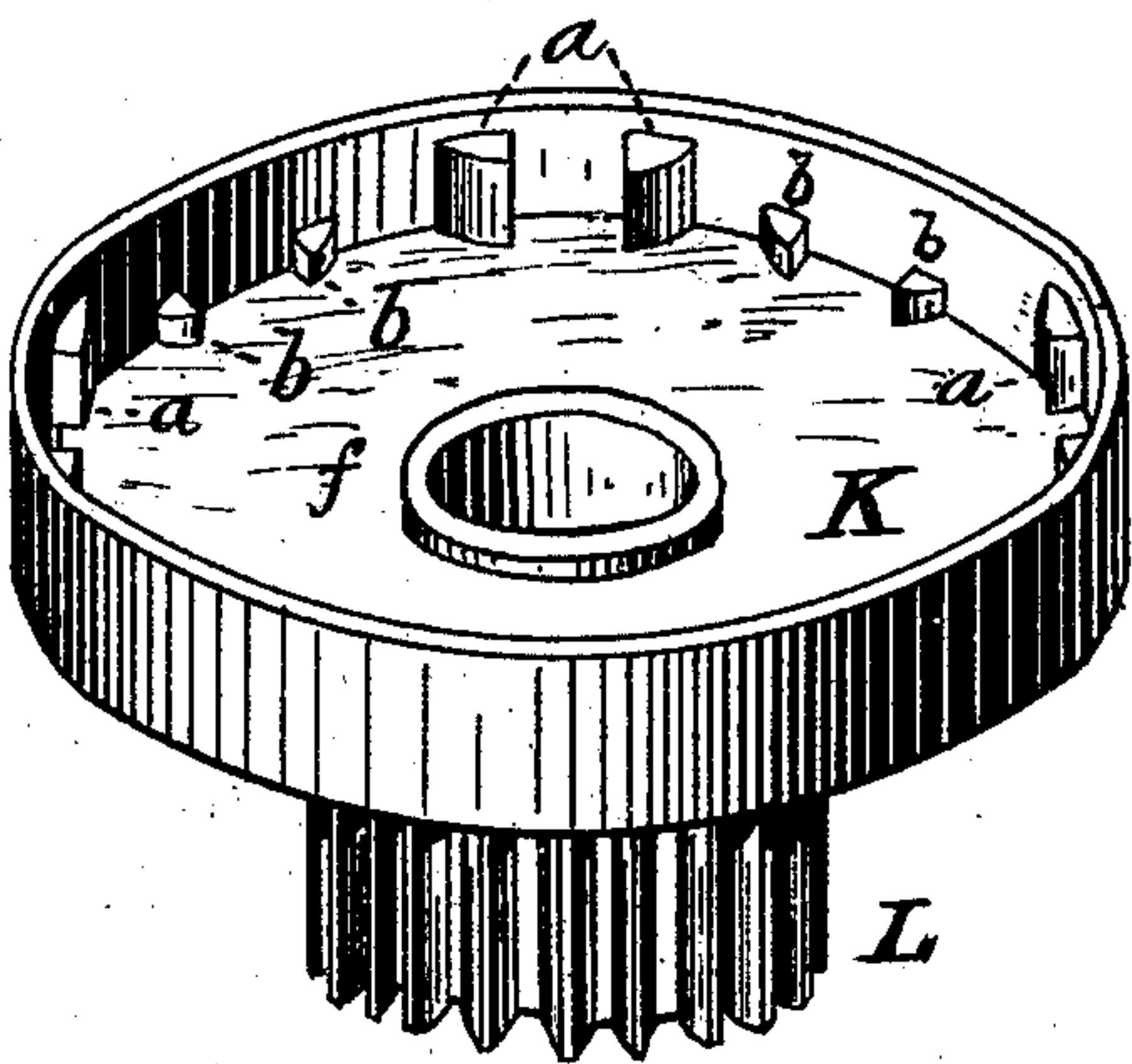
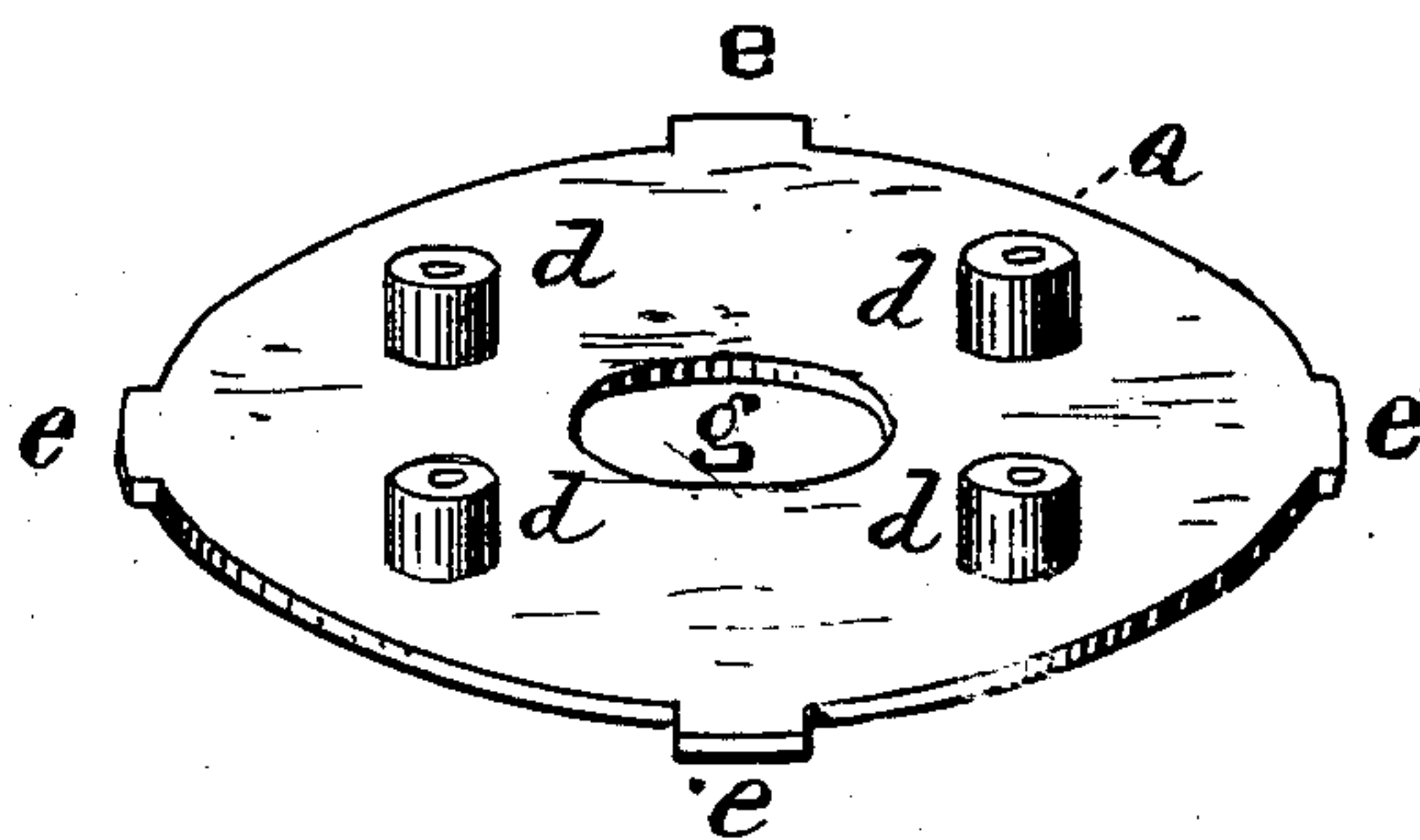


FIG. 10.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES HAMMELMANN, OF BUFFALO, NEW YORK.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 225,702, dated March 23, 1880.

Application filed February 11, 1880.

To all whom it may concern:

Be it known that I, CHARLES HAMMELMANN, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements on a Mechanical Movement for Operating Blowers, &c.; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheets of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has general reference to improvements in mechanical movements for operating blowers, forges, and similar machines requiring the conversion of a reciprocating into a rotary motion; and it consists in the peculiar construction of parts and combination of elements, as hereinafter first fully set forth and described, and then pointed out in the claims.

In the drawings, Figure 1 is a side, and Fig. 2 a rear, elevation of my improved mechanical movement as applied to a blacksmith's blower. Fig. 3 is a side elevation of the operating-handle, and Fig. 4 a plan of the same. Fig. 5 is a sectional view of the clutch mechanism, and Fig. 6 a plan of the same in line *xx* of Fig. 5. Fig. 7 is a plan of a modified form of my clutch. Fig. 8 is a sectional elevation of the same. Fig. 9 is a perspective view of the clutch-casing, and Fig. 10 a similar view of the pawl-plate.

Like or similar parts are designated by corresponding letters of reference in all the figures.

The object of my present invention is the production of a device for operating blowers, forges, and similar machines capable of being operated by a handle, &c., having an up-and-down or reciprocating motion, and to convert the same into a rotary one by means of simple, durable, and inexpensive mechanism.

To attain this end I construct a machine consisting, essentially, of a frame composed of two uprights or standards, A, Figs. 1 and 2, fixed to suitable bases or legs B, and united at top and bottom by cross-pieces C D, respectively. Between these uprights I place a fan-blower, E, and operate its fan-wings by means of a belt, F, passing from a pulley, G, down to the usual fan-pulley.

The pulley G revolves loosely upon a fixed axle, H, fastened to the uprights A by clamping-boxes or other similar contrivance, I. Said pulley is provided with a ratchet-wheel, K, cast directly onto the hub G', or otherwise affixed thereto in any suitable manner. Upon the shaft H is furthermore loosely fitted a plate, X, having a pinion, L, the latter being arranged to engage a segment-wheel, N, fixed to a shaft, O, which shaft oscillates in bearings S, placed on the sides of the standards A.

The plate X, Figs. 5 and 6, has lugs *u*, engaging notches *y* on a plate, Q, placed upon a rise or boss, *f*, on said plate X. This boss *f* has four (more or less) notches, *a*, wherewith engage the tails *c* of pawls P, which pawls in turn engage the ratchet-teeth J on the circular casing K. These pawls are pivoted to the plate Q by means of the studs *d*, and they are retained in position upon said studs by means of a plate, R, and screws *h*. The plates Q and X, with their pawls and retaining-plate R, are placed into the interior of the casing K upon the fixed shaft H, upon which latter they loosely revolve.

Upon the shaft O, carrying the segment-wheel N, is placed, in addition to the segment-wheel, a retainer, T, for the operating-handle U. This retainer consists of a plate having an eye or boss, *i*, by means of which it is secured to said shaft O, and in front of said boss a lug, *j*, to which the handle U is pivoted by a bolt, K. The rear end of the retainer is formed into a segment of a circle, *m*, having its center in said bolt K.

To the lower side of the handle U is secured, by the bolt K and a bolt, *n*, a plate, V, Fig. 3, which plate is bent upward at *p* and lapped over the circular part *m* at *q*. The rear end of the plate is formed into a counter-weight, W, to keep the handle U in an elevated position.

In blacksmiths' blowers, &c., it is desirable to construct the operating-handle with capability of a horizontal or lateral movement in addition to its vertical motion, so that the operator may leave his usual place in front of the fire and reach tools near him without stopping the blast.

One such device I have shown and claimed in my Letters Patent of July 3, 1877, and another in an application now pending. Both these devices are especially designed for port-

able forges, while my present device is more particularly adapted for operating blowers detached from the hearth or fire-place. It may, however, be also used for many other purposes aside from that heretofore mentioned.

It will be observed that the handle U is pivoted to the retainer T, whereby it can be moved horizontally around the pivoting-bolt K for a distance limited by the stop-lugs *t* on the segment *m*, and that the retainer is capable of a vertical movement.

By this compound movement of the handle I attain the desired result in an inexpensive manner.

The movement of the handle U is imparted to the segment-wheel L, and that in turn communicates motion to the pinion L. The motion of said segment-wheel being alternately in opposite directions, it follows that the pinion L, and with it the plates X and Q, operate in a similar manner upon the shaft H.

Now, assuming the casing K or plate X traveling in the direction of the arrow placed on Figs. 6 and 7, it is evident that the plate Q remains immovable or stationary for the time being. This movement of said casing or plate will cause the pawls P to perform a partial revolution around their pivots *d*, and thereby to withdraw the points of said pawls from the teeth of the ratchet J, thus allowing the casing K and plates Q and X to revolve freely upon the axis H without imparting any or interfering with any movement of the wheel G, to which the ratchet-wheel J is attached. This part of the operation is performed during the time the handle U is lifted; but as soon as the handle is depressed a reverse motion of the casing K or the plate X takes place, which again causes the pawls to partly revolve, and this time to engage the ratchet-wheel J and pulley G, and, as a matter of sequence, the fan-wings of the blower E.

It will now be readily observed that, although the casing K or plates X and Q revolve alternately in opposite directions, the movement of the wheel G, driven by the mechanism described, is in one direction only; hence it follows that the blower can never be revolved in the wrong direction, nor that there is in this mechanism any inoperative or dead centers upon which it may stop, and then require starting by means extraneous to the operating mechanism. The principle upon which this clutch mechanism operates is, that the plate Q, which is, so to speak, negatively fixed to the casing and plate X, remains intact during the moments when the casing K or plate X reverses its motion, and that thereby it allows the pawls to be acted upon by said plate X or the casing K to engage or disengage the ratchet J. This principle may be employed in various manners, and I have shown two such devices which produce the desired result in the most satisfactory manner.

As a modification, I would suggest to connect the segment or similar wheel N with the pinion or analogous wheel L by a band, chain,

rope, or other devices which would answer the purpose more or less satisfactorily. However, belts, cords, &c., are objectionable in a device of the kind described, and their employment should be avoided wherever possible.

Among the advantages derived from the construction of the clutch mechanism are, that the device described is, notwithstanding its cheapness, as durable as any, and absolutely positive and perfectly noiseless in its action, because the pawls are positively lifted from the ratchet-wheel and again thrown into gear, and can therefore not drag over the teeth, and thereby cause the rattling noise produced by pawl-clutches having gravitating-pawls, or pawls kept in contact with the ratchet-wheel by means of springs and other analogous means.

Having thus fully described my invention, I claim as new and desire to secure to me by Letters Patent of the United States—

1. The combination, with the standards A, of the shaft H, carrying the band-wheel G, having the ratchet-wheel J, plate X, with the pinion L, and the plate Q, having the pawls P, engaging said ratchet-wheel, substantially as described, and the shaft O, provided with the segment-wheel N, and operating-lever U, substantially as and for the object stated.

2. The clutch mechanism for converting the alternately-changing motion of the segment-wheel into an intermittently-operating motion in one direction only, consisting, in combination with the shaft H, of the ratchet-wheel J, fixed to the driving-pulley G, the plate with its attached pinion L, and the plate Q, with its pawls, said plate Q being operated by the pinion and its retainer, substantially as and for the object specified.

3. The combination, with the shaft H, of the ratchet-wheel and casing J, fixed to the driving-pulley G, the plate X, with its attached pinion L, and rise *f*, with the notches *a*, and the plate Q, with the pivoted pawls P, said plate Q having notches *y*, engaging lugs *u* on the plate X, and the pawls P having tails *c*, engaging the notches *a*, the whole being constructed to operate substantially in the manner as and for the use and purpose specified.

4. In blowers, &c., the mechanism for converting the reciprocating motion of the handle into a rotary one, consisting, essentially, of the driving-pulley G, having a ratchet fixed to it, of a plate having pivoted pawls, and of a further plate movably connected with the pawl-plate and with the pawls, whereby said pawls are actuated substantially in the manner as and for the purpose specified.

5. In ratchet-and-pawl clutches, the device for actuating the pawls, consisting of a plate carrying said pawls, and of a further plate engaging the pawl-plate and said pawls, whereby the pawls are operated substantially as and for the purpose described.

6. The handle U, pivoted to the retainer T by the bolt K, said retainer having the eye *i*, for attachment of the shaft O, and the seg-

ment *m*, engaged by the overlapping catch *q*, substantially as and for the object stated.

7. The combination, with the handle *U*, of the retainer *T*, consisting of a plate having an eye, *i*, a lug, *j*, and a segment, *m*, with stops *t*, and the plate *V*, having the overlapping catch *q*, said handle being pivoted to the retainer by the bolt *K*, as described, for the object specified.

In testimony that I claim the foregoing as my invention I have hereto set my hand in the presence of two subscribing witnesses.

CHARLES HAMMELMANN.

Attest:

MICHAEL J. STARK,
HATTIE L. WALKER.