

No. 815,895.

PATENTED MAR. 20, 1906.

E. H. AHLANDER.  
INTERMITTENT GRIP DEVICE.

APPLICATION FILED OCT. 4, 1902.

2 SHEETS—SHEET 1.

Fig. 7

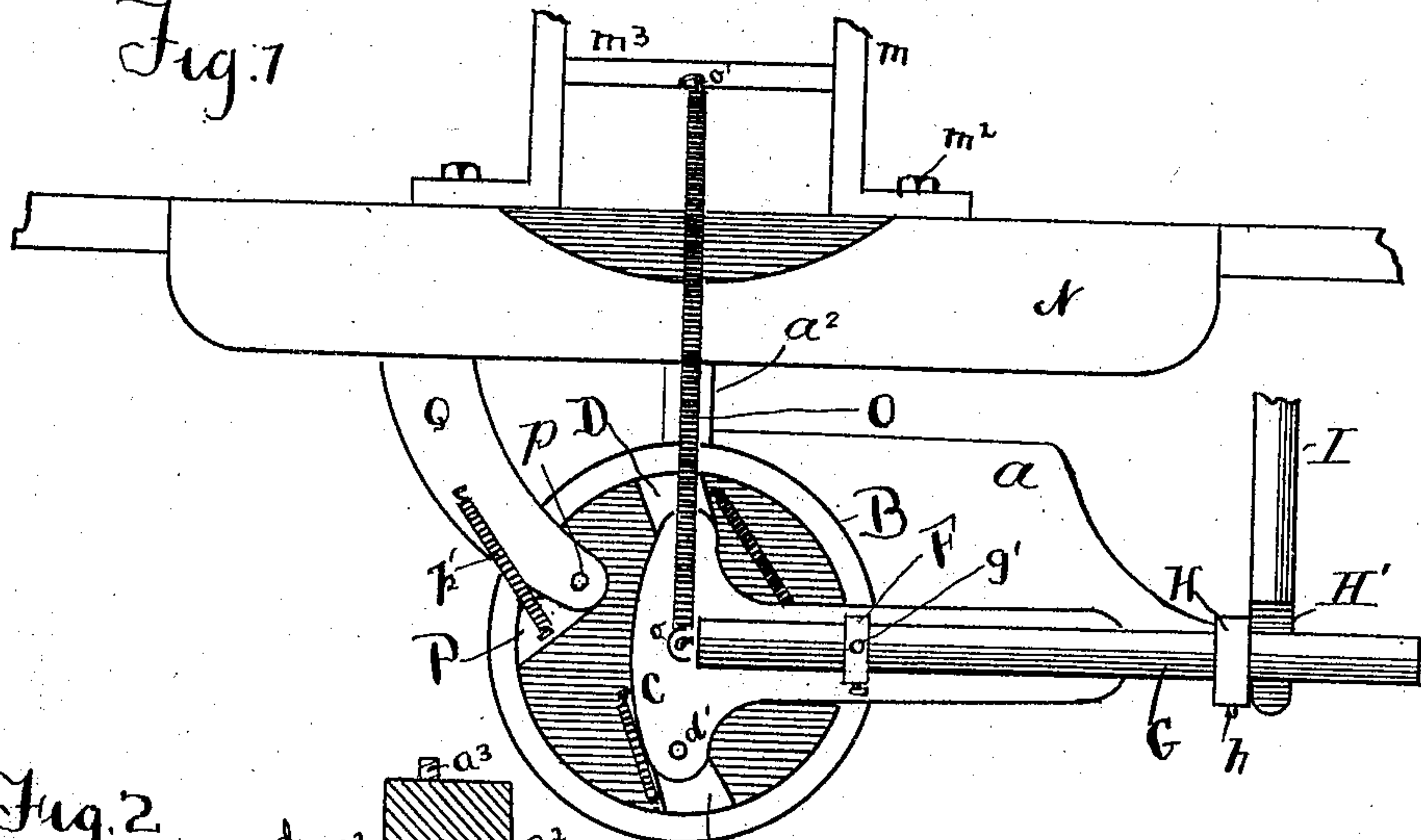


Fig. 2

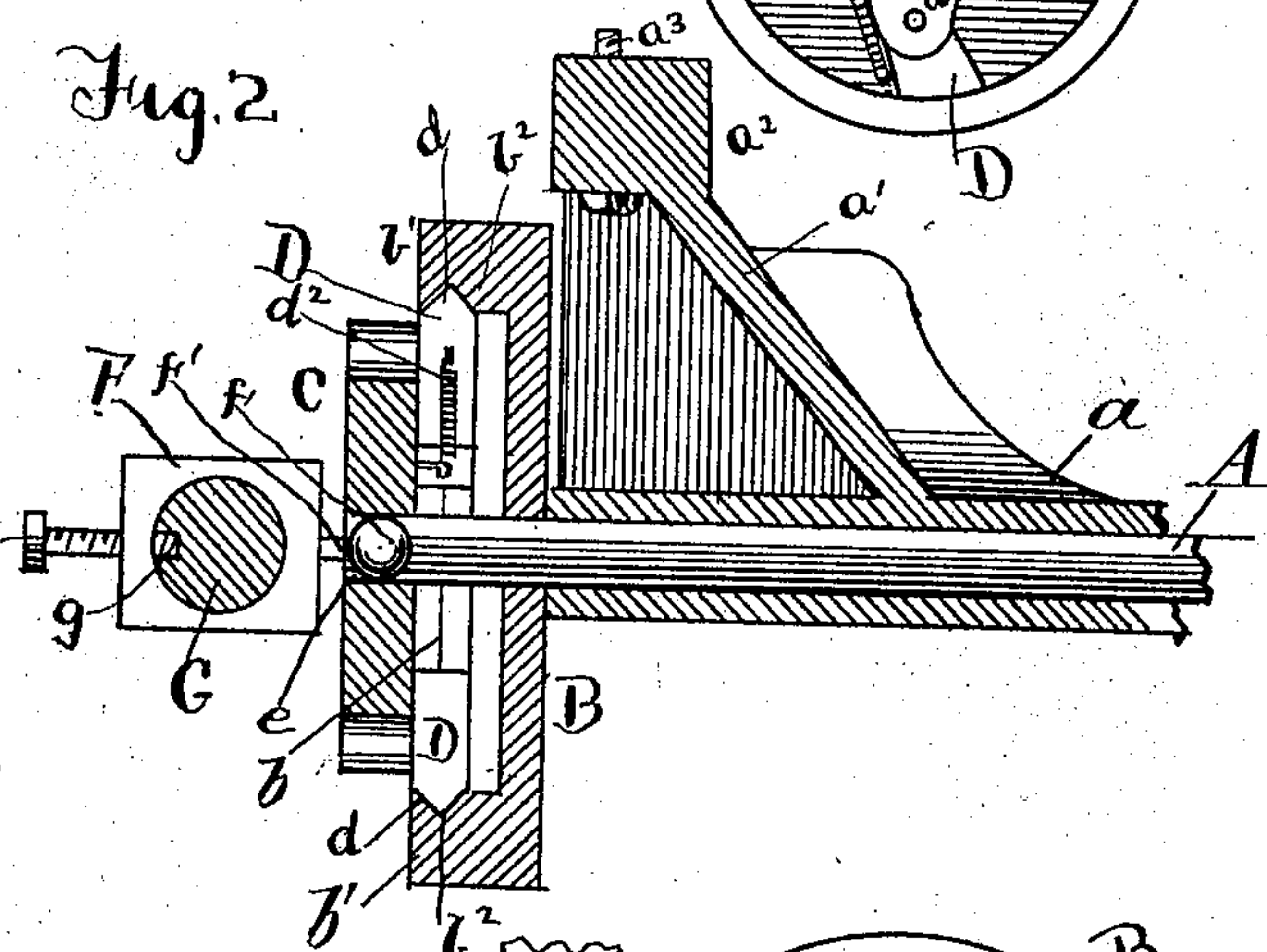
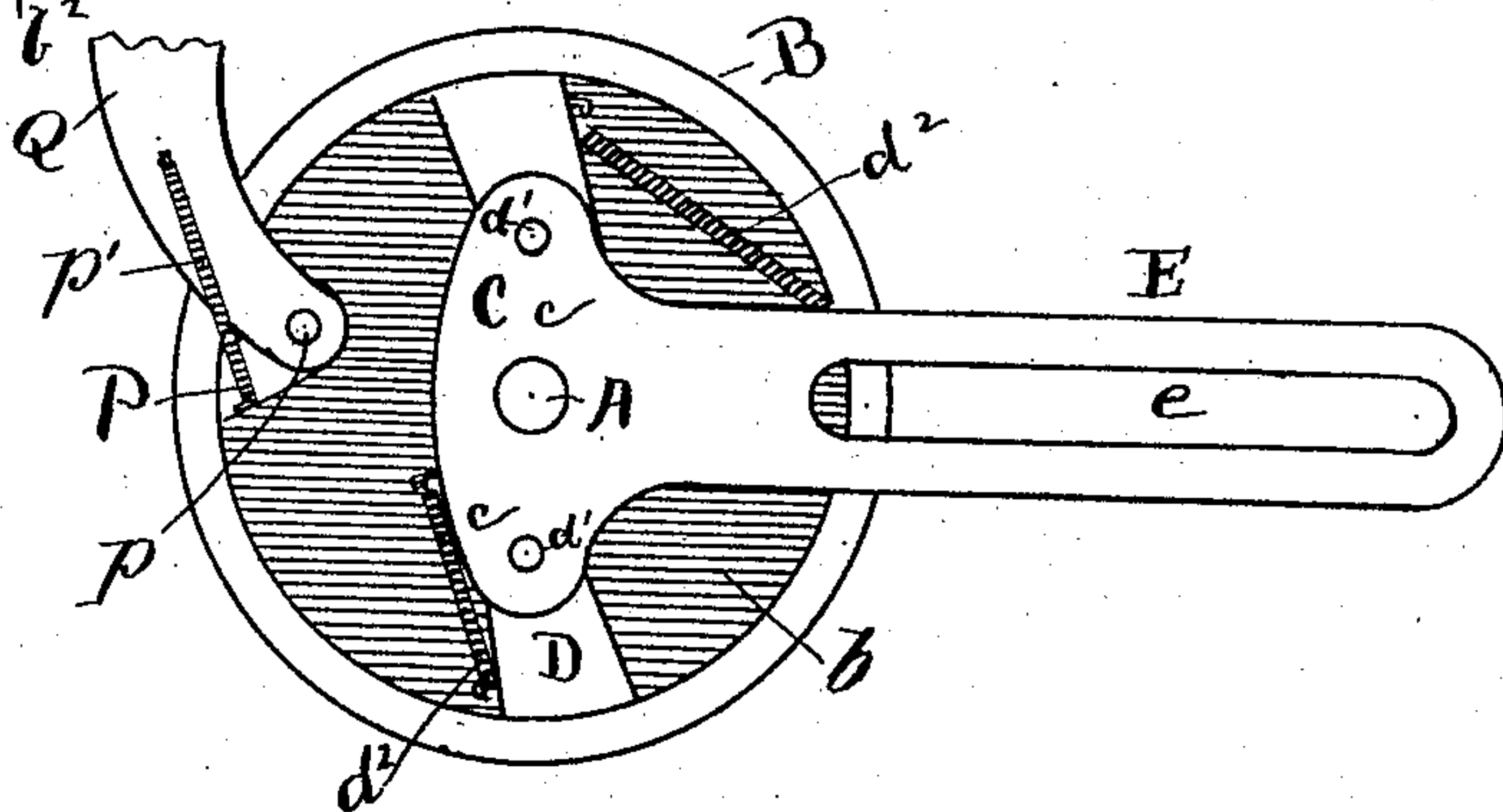


Fig. 3



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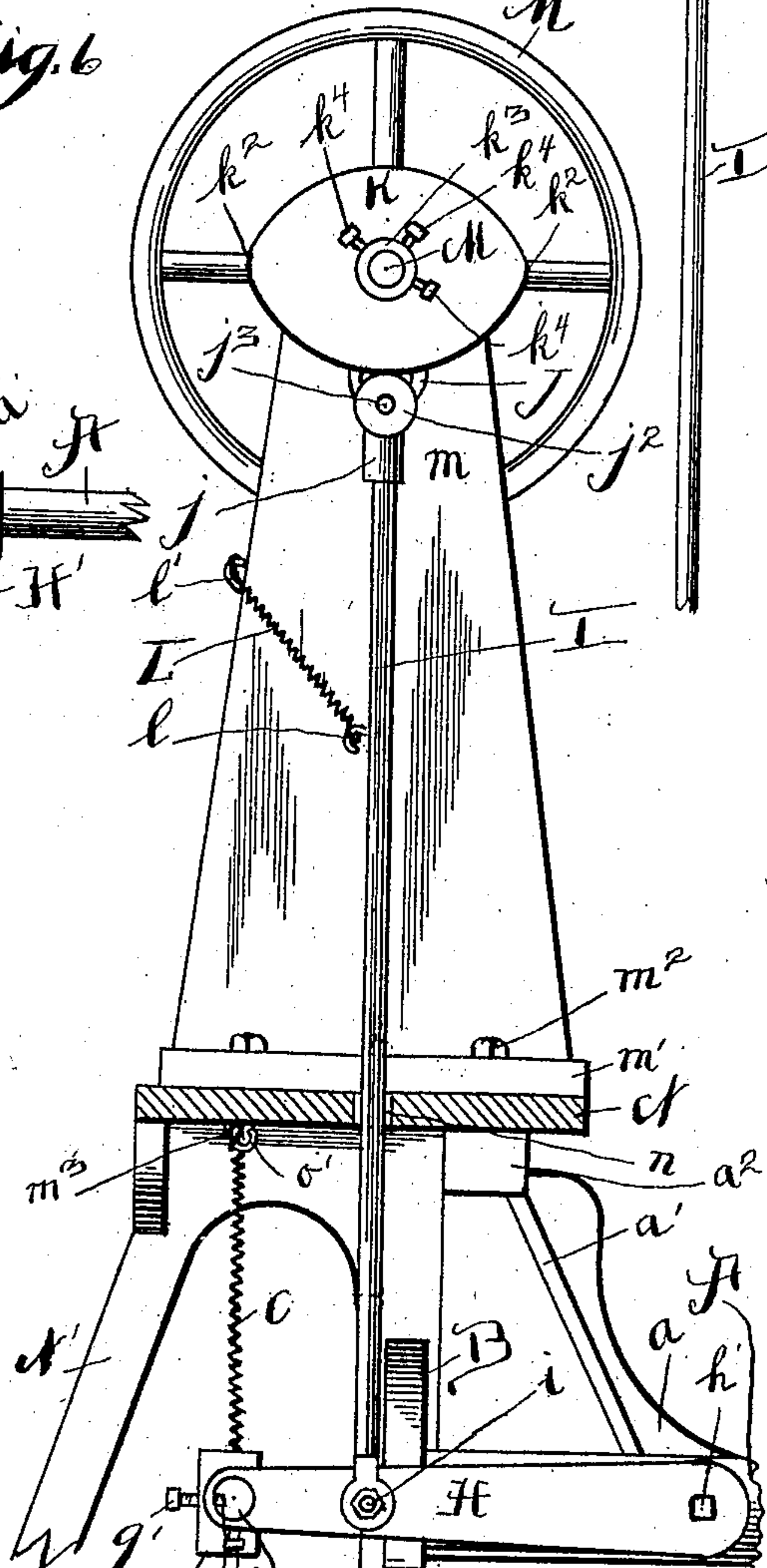
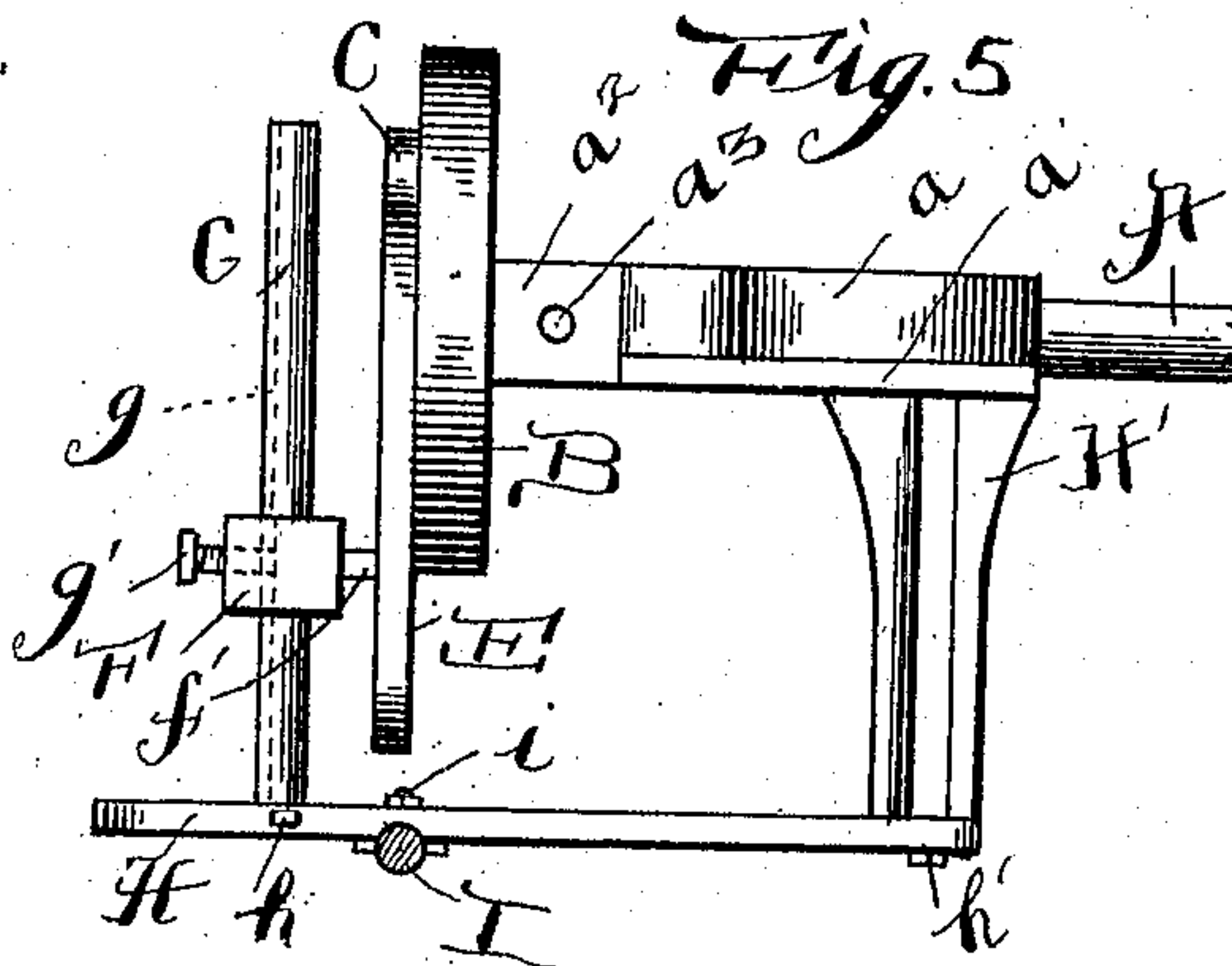
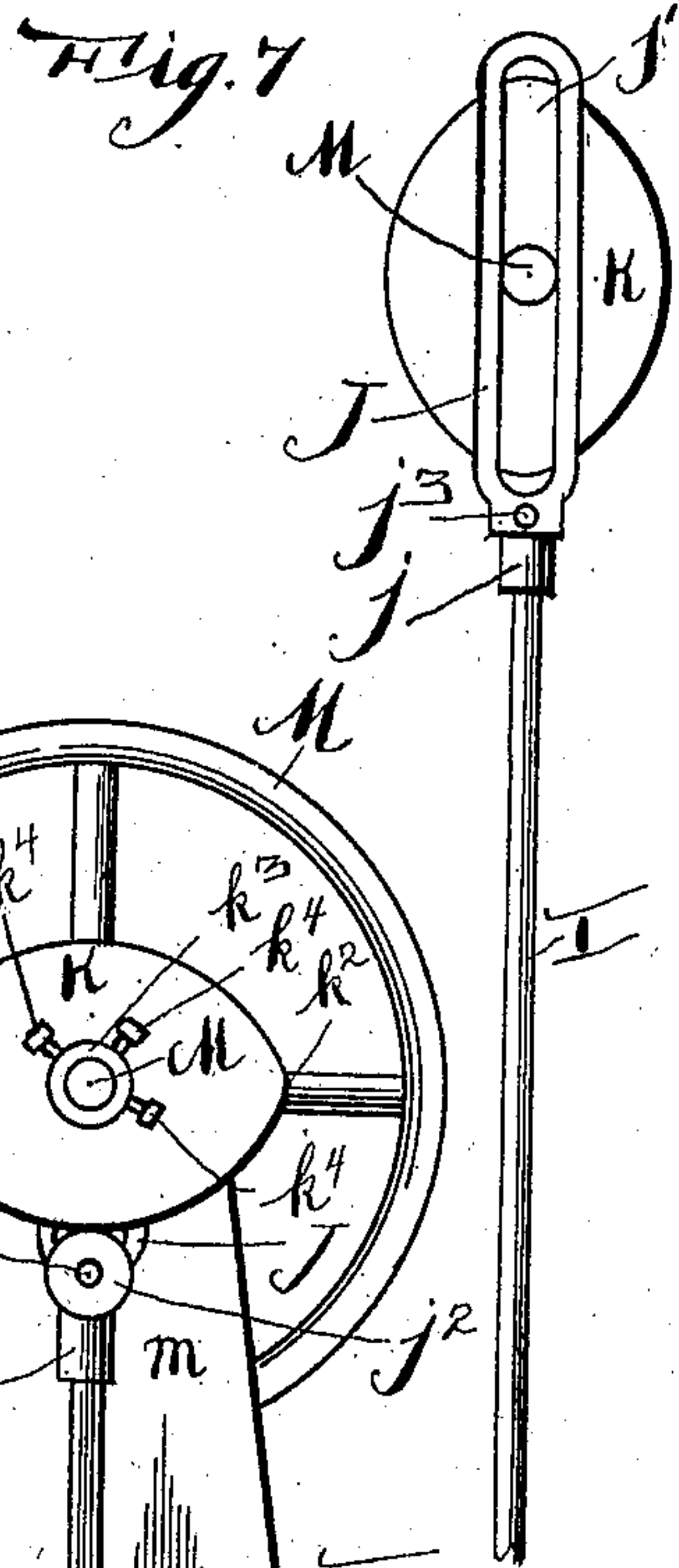
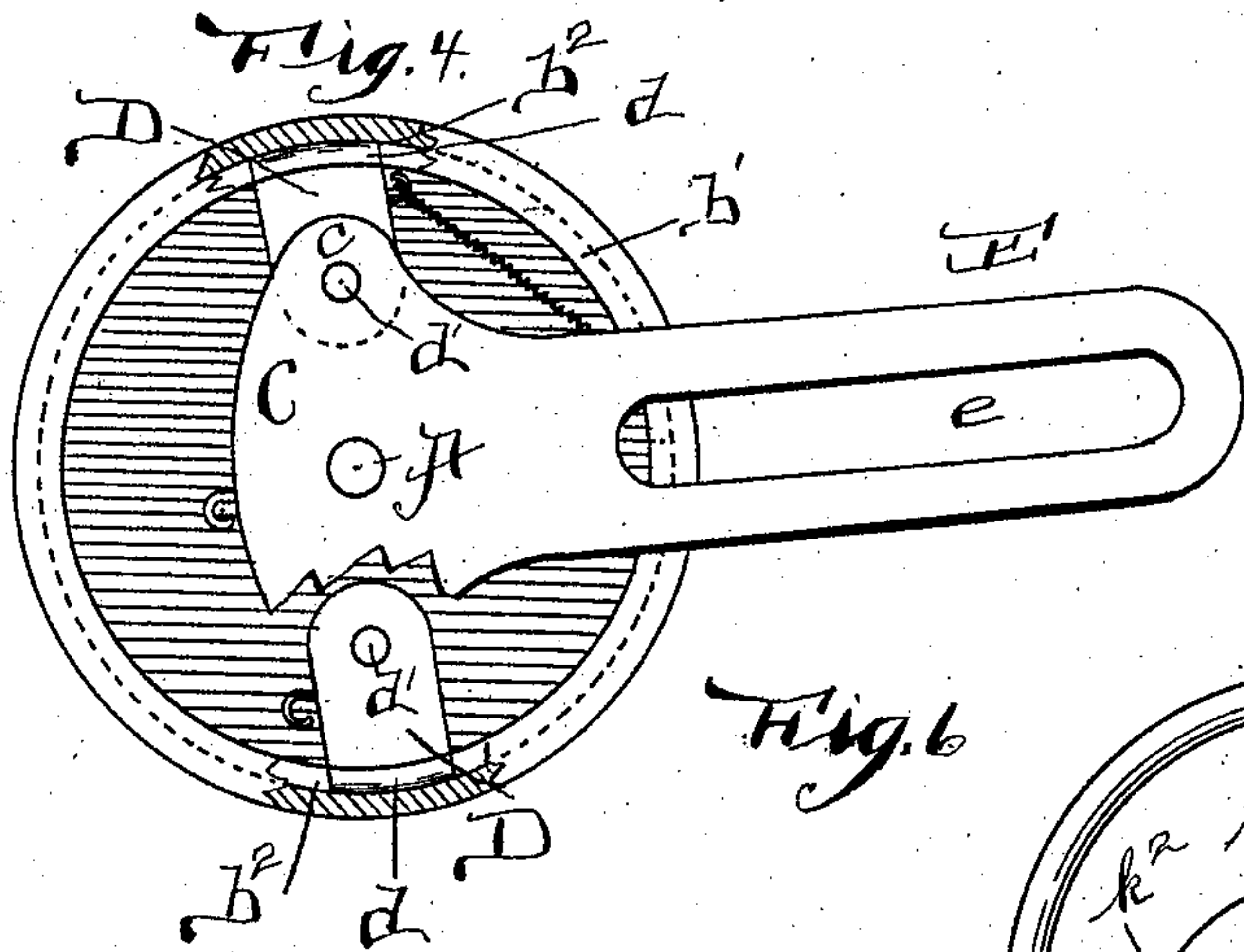
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INTERMITTENT GRIP DEVICE.

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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

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## INTERMITTENT GRIP DEVICE.

No. 815,895.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed October 4, 1902. Serial No. 125,894.

*To all whom it may concern:*

Be it known that I, ERNST H. AHLANDER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Intermittent Grip Devices, of which the following is a specification.

The objects of this invention are to improve the construction and operation of intermittent grip devices as regards attaining a release and clutch of the devices at regular intervals; to simplify and improve the elements entering into the construction of the grip device; to furnish a disk having an open front face with an engaging groove in the wall of the recess of the open front face and arranged to coact therewith oppositely-disposed pawls or dogs, each having an acting end to engage with the groove of the open face of the disk; to arrange in juxtaposition to the open face of the disk a head carried by a slotted arm and having the actuating pawls or dogs oppositely pivoted thereto; to give the arm of the head carrying the pawls or dogs a vibrating movement by which the pawls or dogs will be caused to alternately engage with and be released from engagement with the disk; to furnish a stop pawl or dog by means of which the disk is held against a return movement during the movement of the actuating pawls or dogs into position for an advance of the disk, and to improve generally the construction, arrangement, and operation of the several elements which enter into the intermittent grip mechanism as a whole.

The invention consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is an elevation with some of the parts broken off and showing an arrangement of support for the intermittent grip device or mechanism; Fig. 2, a sectional elevation of the intermittent grip device or mechanism, showing it in connection with a shaft and a bearing for the shaft; Fig. 3, a front face elevation of the intermittent grip device or mechanism with the arm carrying the stop pawl or dog broken off and showing the parts in their normal or released position for the actuating pawls or dogs;

Fig. 4, a front face elevation with the flange or rim of the disk partly in section and with the head carrying the actuating pawls or dogs broken off on one side and showing the position of the actuating pawls or dogs in advancing the disk, the stop pawl or dog not being shown; Fig. 5, a top or plan view of the intermittent grip device or mechanism, showing also the shaft to be given a step-by-step advance and its bearing and the rocking arm by which the arm of the actuating pawls or dogs is oscillated; Fig. 6, a side elevation showing one arrangement of means for operating the rocking arm to oscillate the arm carrying the actuating pawls or dogs, and Fig. 7 a detail showing the rod and cam for operating the rocking arm.

The arrangement shown has the intermittent grip device or mechanism of the invention arranged for giving a step-by-step advance or rotation to a shaft. The shaft A is mounted in a bearing *a*, which is supported by a pendant *a'* from a head *a<sup>2</sup>*, which can be attached by a bolt *a<sup>3</sup>* or otherwise to a platform, bed, or other support. The disk B is attached to one end of the shaft A in any suitable manner, so that the advance or forward rotation of the disk will advance or rotate the shaft. The face of the disk B has a recess or chamber *b*, forming a rim or flange *b'*, in which is a V-shaped groove *b<sup>2</sup>*, extending circumferentially around the flange on its inner face. The end of the shaft A projects beyond the open front face of the disk B and has loosely mounted thereon a head C, having on opposite sides ears *c*, and each ear has pivoted thereto by a suitable pin or pivot *d'* a pawl or dog D, each pawl or dog having a V-shaped acting end *d* to enter the V-shaped groove *b<sup>2</sup>* in the wall of the rim or flange *b'* of the disk for each dog when thrown forward to have its acting end *d* engage the walls of the groove and move the disk forward intermittently.

The head C is a part of or fixedly attached to an arm E, having therein a longitudinal slot *e*, into which slot is entered a ball *f*, attached by a stem *f'* to a head F, which head can be adjusted fore and aft in its position relative to the arm E, and thereby adjust the throw of the arm E to a greater or less extent of



throw. The head F is slidable on a rod G, which rod has in one side thereof a longitudinal groove  $g$ , into which enters the end of a set-screw  $g'$ , the stem of which passes through the head, so that the head F is adjustable on the rod G and when adjusted is locked and fixedly held on the rod by the set-screw  $g'$ , so as to maintain its adjusted position. The rod G passes through the end of a rocking arm H and is held in the arm by a set-screw  $h$  or otherwise. The arm H at its rear end is pivotally mounted on a stud or journal-pin  $h'$  on the end of a rod or support  $H'$ , extending out from the journal box or support of the shaft A in the arrangement shown. The arm H adjacent to the end which carries the rod G has a stud or pivot  $i$  entered into the end of a rod or pitman I, which rod stands vertical and at its upper end is entered into a socket  $j$  of a stirrup J, the slot  $j'$  of which stirrup receives thereinto the end of a driving-shaft. The driving-shaft has fixed thereto adjacent to the stirrup J a cam K, having a projected curved face  $k$  and a depressed curved face  $k'$ , joined together by curved ends  $k^2$  and forming the acting face of the cam, and this acting face of the cam is in engagement with a roller  $j^2$ , mounted on a journal pin or pivot  $j^3$ , projecting out from the base or socket end of the stirrup, so that as the cam revolves the rod or pitman I will be depressed by the engagement with the roller of the projected curved face  $k$  of the cam and will be permitted to rise when the roller is engaged with the depressed face  $k'$  of the cam. The pitman or rod I in the arrangement shown is raised or lifted by a coiled spring L, one end of which is attached to a pin or eye  $l$  on the pitman or rod and the other end of which is attached to a pin or eye  $l'$  on one of the standards supporting the driving-shaft for the cam. The driving-shaft M for the cam has the hub of the cam fixedly secured thereto by set-screws  $k^4$ , which enables the cam to be properly adjusted to coact with the roller on the pitman or rod to properly force down the pitman or rod to move the rocking arm for actuating the intermittent grip device or mechanism to give an advance movement or rotation to the disk. The shaft M can be driven by a pulley or a driving-wheel  $M'$  from any suitable source of power, and, as shown, the shaft is mounted in suitable journal-boxes on the upper ends of standards  $m$ , each standard at the lower end having a flange  $m'$ , through which passes bolts  $m^2$ , attaching the standards to a table, bed, or support N, to which in the construction the bearing  $a$  for the shaft A is attached, and this table N in the arrangement shown has a slot  $n$  for the passage of the vertical rod or pitman I, so as to bring its upper end in proper relation to the cam K for the cam to perform its work. A spring O, attached at one end to a pin or stud  $o$  on the

end of the rod G and attached at its other end to a pin or stud  $o'$  on a cross-rod  $m^3$  between the standard M, assists the spring L in returning the pitman or rod I to its raised or elevated position and also serves to maintain the rod G against any twist from the action of the spring L, thus retaining the rod G in a level position practically, so that the ball  $f$  of the head F will act properly at all times.

A stop-pawl or dog P, similar in construction to the pawls or dogs D and having an acting end corresponding to the acting end  $d$  of the pawls or dogs D and like the acting ends  $d$  entering into and engaging with the walls of the V-shaped groove  $b^2$  of the disk, is pivotally attached to a bracket-arm Q by a suitable pin or pivot  $p$ , as shown in Figs. 1 and 3. The pawl or dog P operates to prevent any backward movement of the disk with the return of the actuating pawls or dogs D to their normal or starting position and so that during the return of the pawls or dogs D to normal position the disk will remain stationary. Each pawl or dog D has connected thereto one end of a spring  $d^2$ , the other end of which in the case of the upper dog is connected with the arm E and the other end of which in the case of the lower dog is connected to the edge of the head C, as shown in Figs. 1 and 3. These springs  $d^2$  are for the purpose of drawing each pawl or dog out of operative position with the downward movement of the vibratable arm E, so that the pawls or dogs will not operate and the advance of the disks will not take place; but with the upward movement of the vibratable arm E the springs allow each pawl or dog to be forced outward into engagement with the disk to advance the disk. The pawl or dog P has connected therewith one end of a spring  $p'$ , the other end of which spring is connected to the bracket-arm Q, and this spring operates to draw the pawl or dog P into position to engage with the disk B and prevent backward rotation thereof with the return movement of the pawls or dogs D and at the same time does not interfere with the advance of the disk B in the forward throw of the actuating pawls or dogs.

The operation is as follows: The upward movement of the pitman or rod I raises the forward end of the rocking-arm H and with it the rod G and the head F, carried thereby, and with the raising of the head F the vibratable arm E is raised through the engagement of the ball  $f$  with the slot  $e$  of the arm. This upward throw of the vibratable arm E forces the actuating pawls or dogs D each into engagement with the wall of the V-shaped groove in the disk and forces the disk forward to the limit of the upward throw of the vibratable arm, and with the return or downward throw of the vibratable arm the springs act and hold the dogs out of engagement



with the wall of the groove in the disk B for the disk to remain stationary, giving the disk an intermittent rotation. This intermittent rotation of the disk is attained by reason of the vibratable arm as it is raised at its outer end moving the head or pivoted end C of the arm or lever E for the pawls or dogs D to be forced outward and wedge themselves in the groove of the circumferential rim or flange of the disk D and between such rim or flange and the pivot *d'* for each pawl or dog to the ears of the head, and inasmuch as the pawl or dog cannot pass the center of its pivot it must become locked, and with the vibration of the arm E such locking turns the disk B in a forward direction, giving a corresponding intermittent rotation to the shaft A or other part connected with the intermittent grip device or mechanism. The down throw of the vibratable arm or lever at its free end rocks the head C in the opposite direction, allowing the pawls or dogs D to fall clear of engagement with the rim of the disk and permitting the vibratable arm or lever to descend without imparting rotation to the disk.

What I regard as new, and desire to secure by Letters Patent, is—

1. In an intermittent grip device, the combination of a disk having a peripheral rim on one side face, a vibratable arm loosely mounted adjacent to the rim-face of the disk, a pair of dogs carried by the vibratable arm and entered into the recess of and engaging with the interior face of the peripheral rim of the disk in one direction of movement of the vibratable arm and disengaged from the interior face of the rim of the disk in the opposite direction of movement of the vibratable arm, a head in adjustable engagement with the vibratable arm, and a rising and falling rod carrying the head and oscillating the vibratable arm for engaging and disengaging the pawls and intermittently revolving the disk, substantially as described.

2. In an intermittent grip device, the combination of a disk having on one side face a peripheral rim, a vibratable arm loosely mounted on the shaft adjacent to the rim-face of the disk, a pair of dogs carried by the vibratable arm and entered into the recess of and engaging with the peripheral rim of the disk in one direction of movement and disengaged from the rim of the disk in the opposite direction of movement, a stop-dog engaging and holding the disk against a return movement, a head engaging the vibratable arm, and a rising and falling rod carrying the head and oscillating the vibratable arm for intermittently revolving the disk, substantially as described.

3. In an intermittent grip device, the combination of a shaft, a disk fixed on the shaft and having a peripheral rim on one side face, a vibratable arm loosely mounted on the

shaft, a pair of dogs carried by the vibratable arm and engaging with the interior face of the peripheral rim of the disk in one direction of movement and disengaged from the interior face of the peripheral rim of the disk in the opposite direction of movement, a head engaging the vibratable arm, a rising and falling rod carrying the head, a rocking arm in which the rising and falling rod is mounted, and means for rocking the arm, substantially as described.

4. In an intermittent grip device, the combination of a shaft, a disk fixed on the shaft, a vibratable arm loosely mounted on the shaft, a pair of dogs carried by the vibratable arm and engaging the disk in one direction of movement and disengaged from the disk in the opposite direction of movement, a head engaging the vibratable arm, a rising and falling rod carrying the head, a rocking arm in which the rising and falling rod is mounted, a pitman or rod, a cam engaged with the pitman or rod, and a revoluble shaft carrying the cam, substantially as described.

5. In an intermittent grip device, the combination of a shaft, a disk fixed on the shaft, a vibratable arm loosely mounted on the shaft, a pair of dogs carried by the vibratable arm and engaging the disk in one direction of movement and disengaged from the disk in the opposite direction of movement, a head engaging the vibratable arm, a rising and falling rod carrying the head, a rocking arm in which the rising and falling rod is mounted, a pitman or rod connected with the rocking arm, a roller on the pitman or rod, a cam engaging with the roller, and a revoluble shaft carrying the cam, and means for returning the pitman or rod, substantially as described.

6. In an intermittent grip device, the combination of a shaft, a disk fixed on the shaft, a vibratable arm loosely mounted on the shaft, a pair of dogs carried by the vibratable arm and engaging the disk in one direction of movement and disengaged from the disk in the opposite direction of movement, a head engaging the vibratable arm, a rising and falling rod carrying the head, a rocking arm in which the rising and falling rod is mounted, a pitman or rod connected with the rocking arm, a roller on the pitman or rod, a cam engaging with the roller, a revoluble shaft carrying the cam, and a spring for returning the pitman or rod, substantially as described.

7. In an intermittent grip device, the combination of a shaft, a disk fixed on the shaft, a vibratable arm loosely mounted on the shaft, a pair of dogs carried by the vibratable arm and engaging the disk in one direction of movement and disengaged from the disk in the opposite direction of movement, a head engaging the vibratable arm, a rising and falling rod carrying the head, a rocking arm



in which the rising and falling rod is mounted, a pitman or rod connected with the rocking arm, a roller on the pitman or rod, a cam engaging with the roller, a revoluble shaft carrying the cam, a spring connected at one end with the pitman or rod and having a fixed connection at its other end, and a spring connect-

ed at one end with the rising and falling rod and having a fixed connection at its other end, substantially as described.

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