

(No Model.)

4 Sheets—Sheet 1.

E. G. DORCHESTER.
TIMING INSTRUMENT FOR VEHICLES.

No. 561,702.

Patented June 9, 1896.

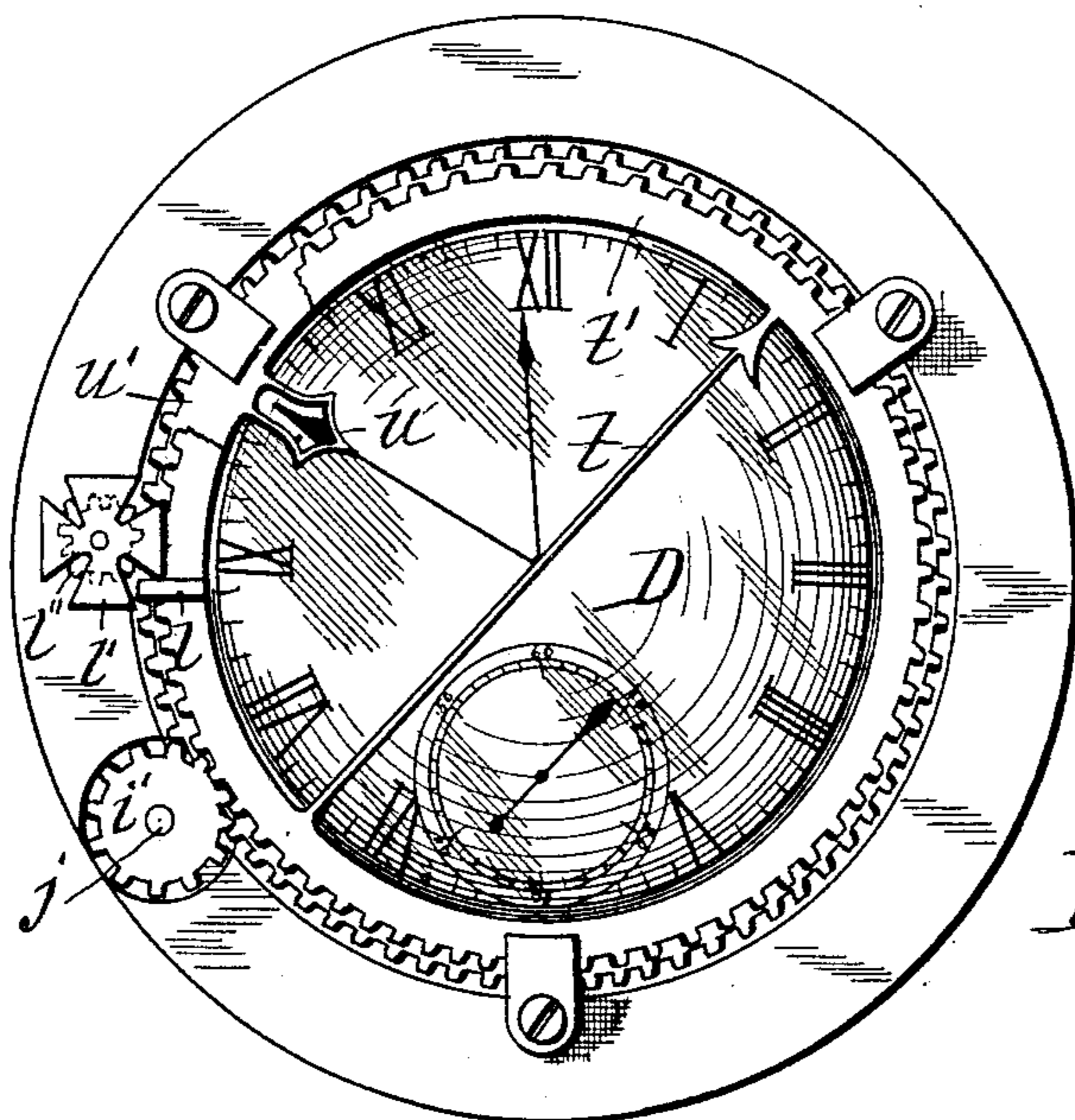


Fig. 1

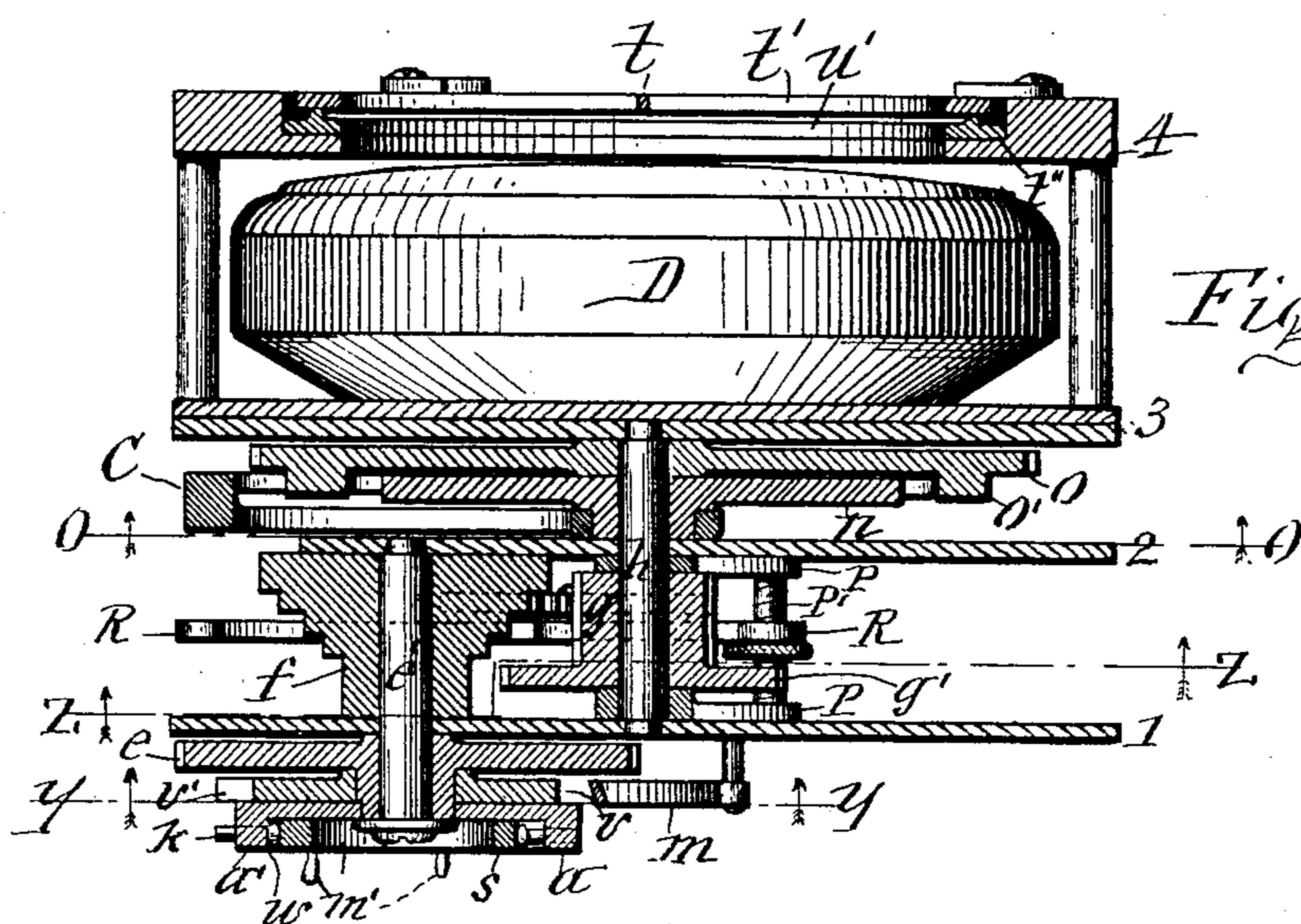


Fig. 2

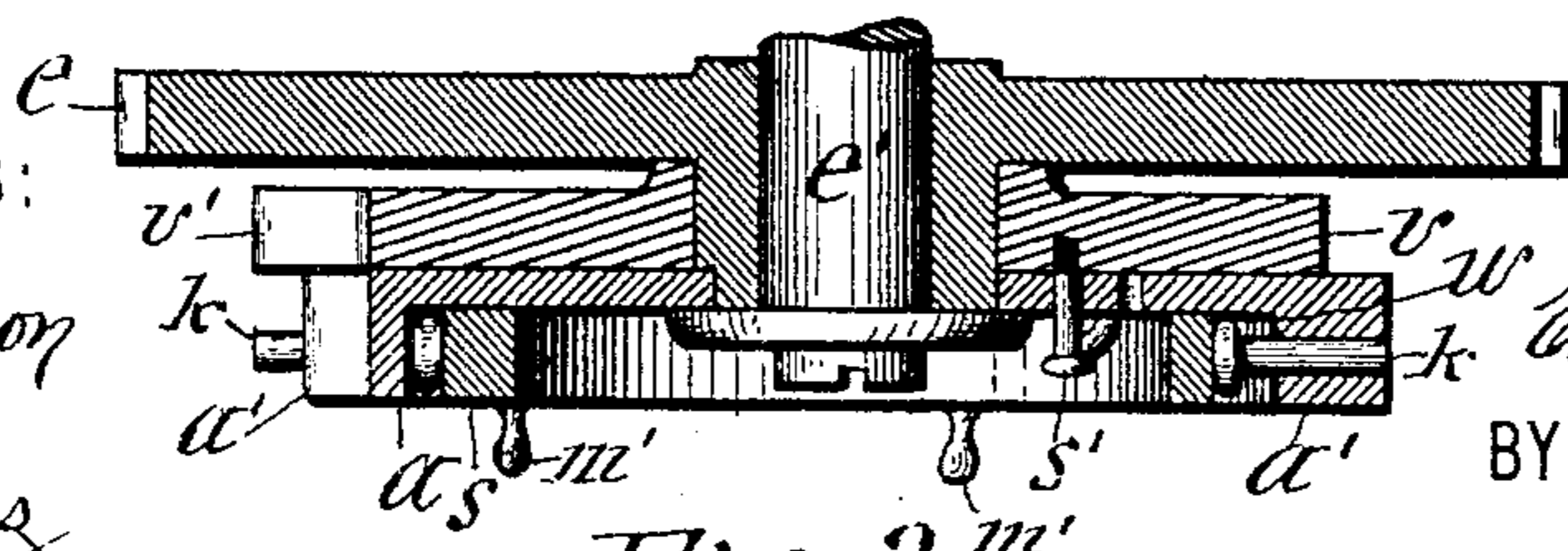


Fig. 3

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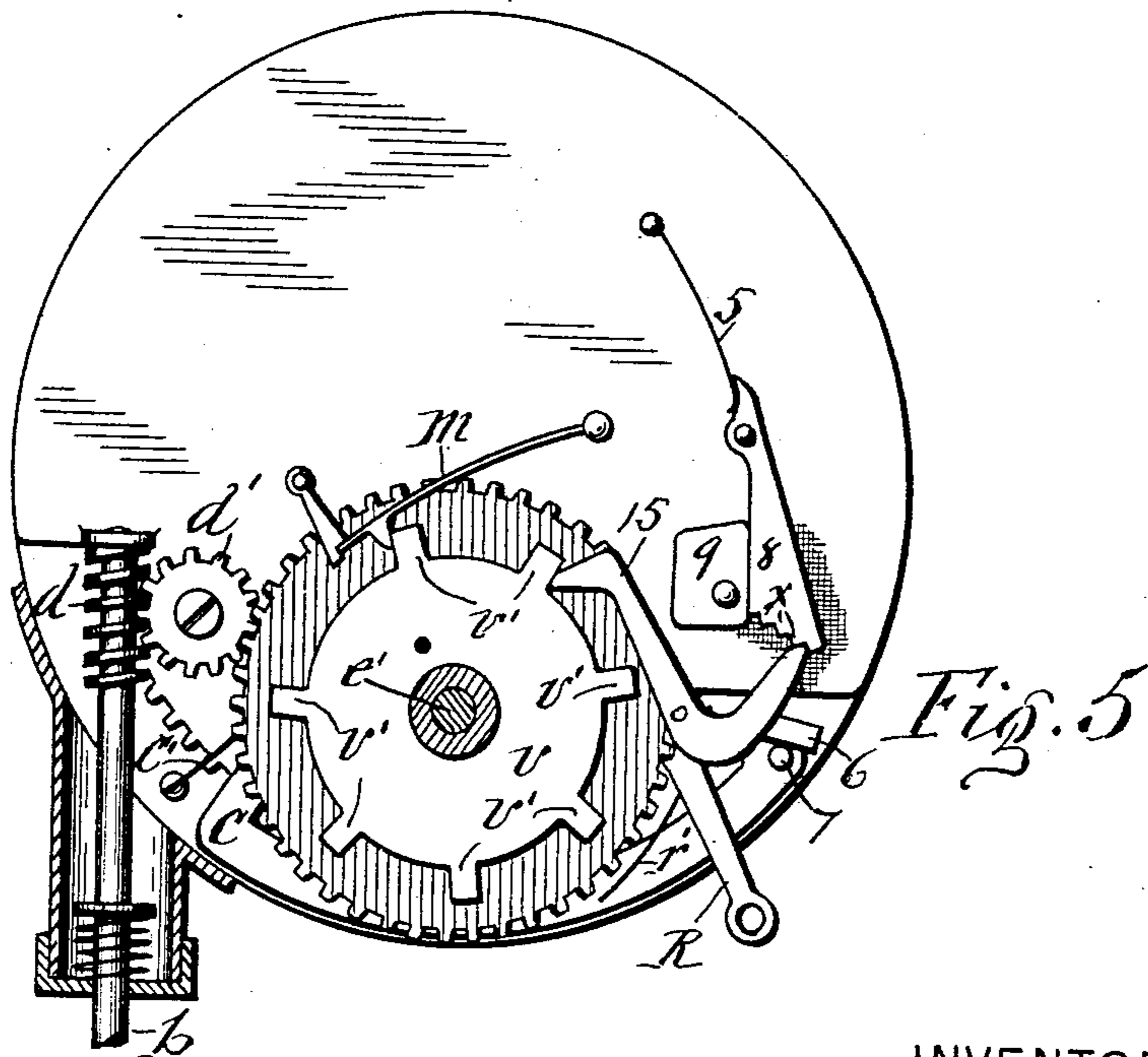
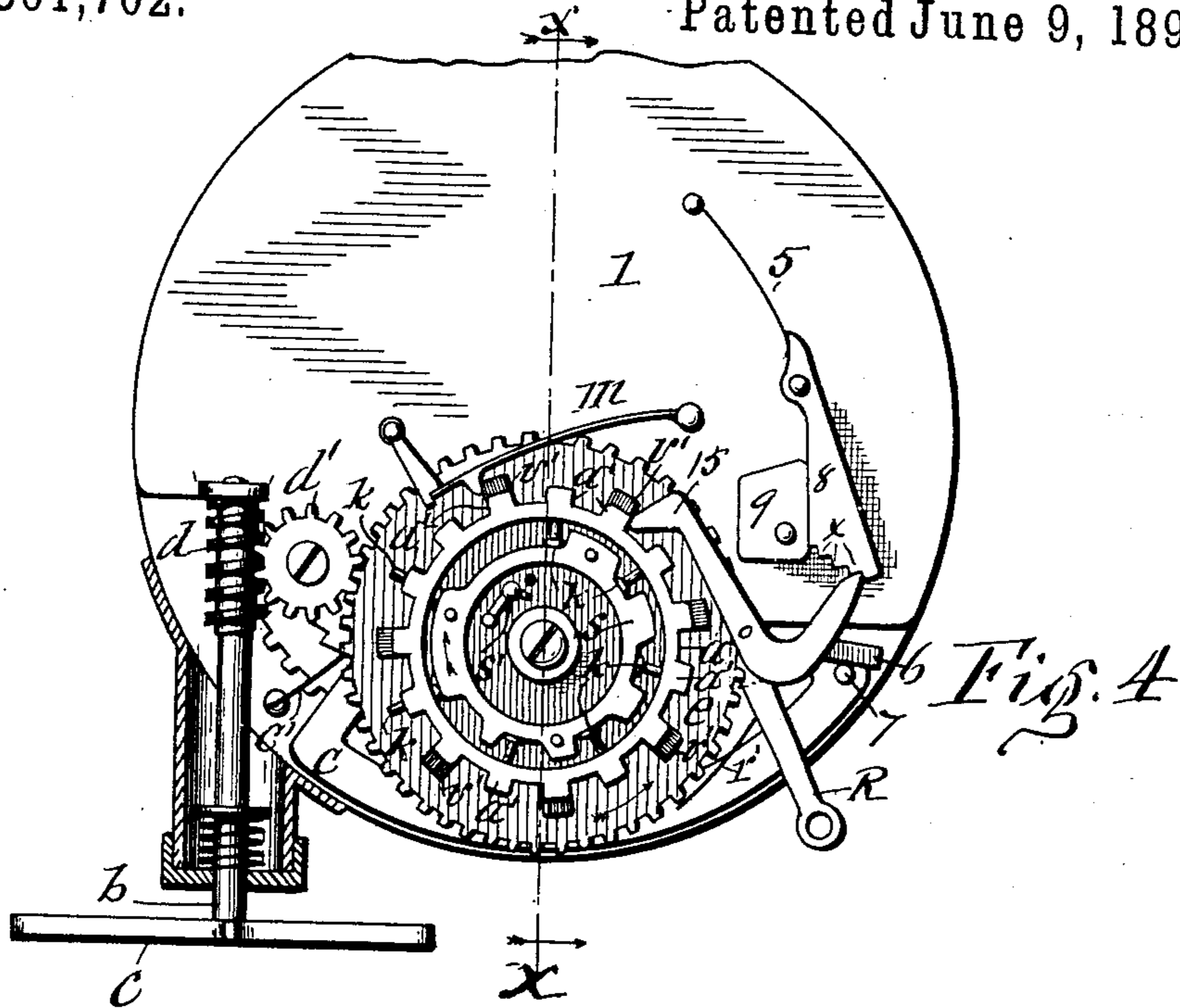
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Patented June 9, 1896.



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(No Model.)

4 Sheets—Sheet 3.

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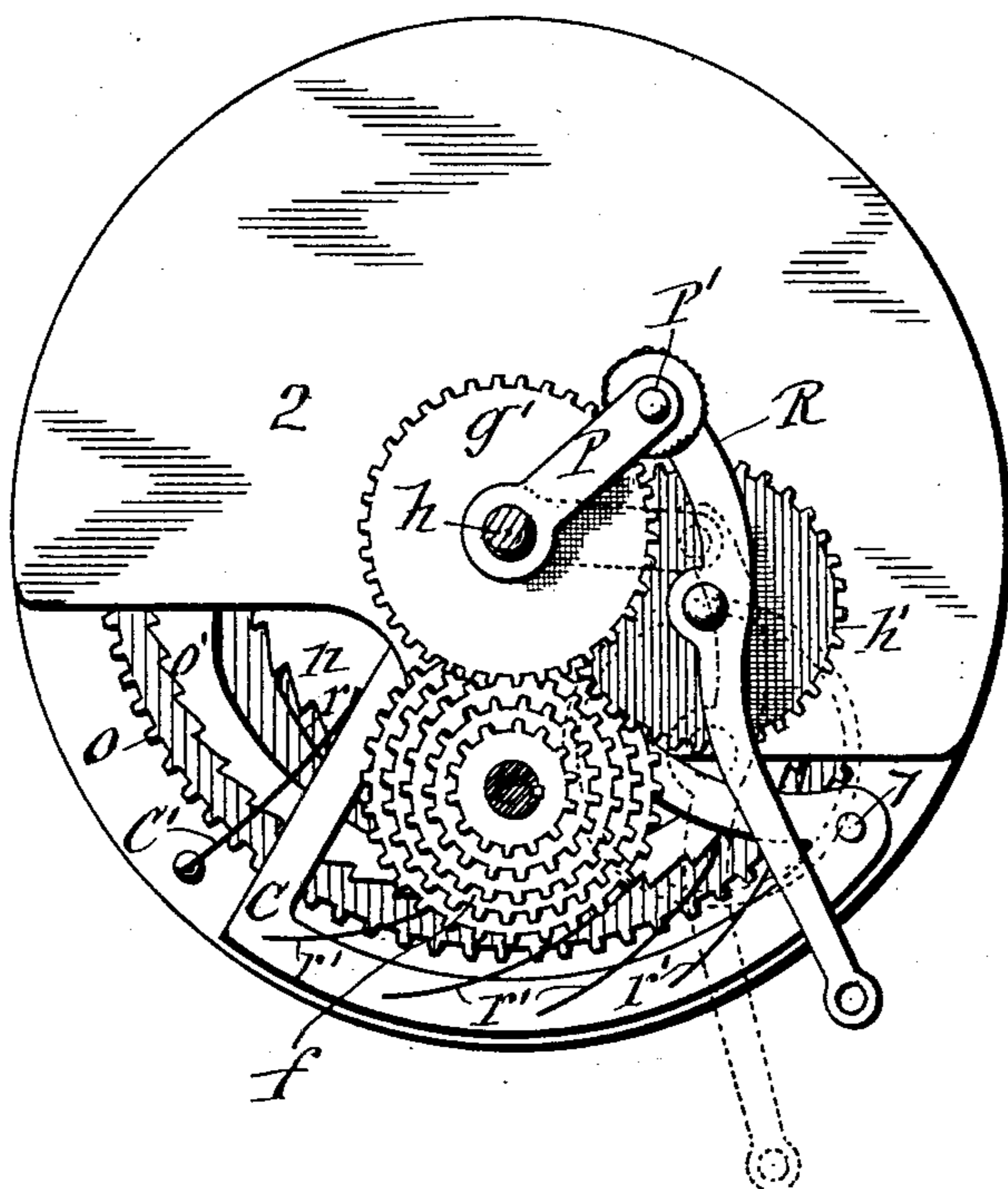


Fig. 6

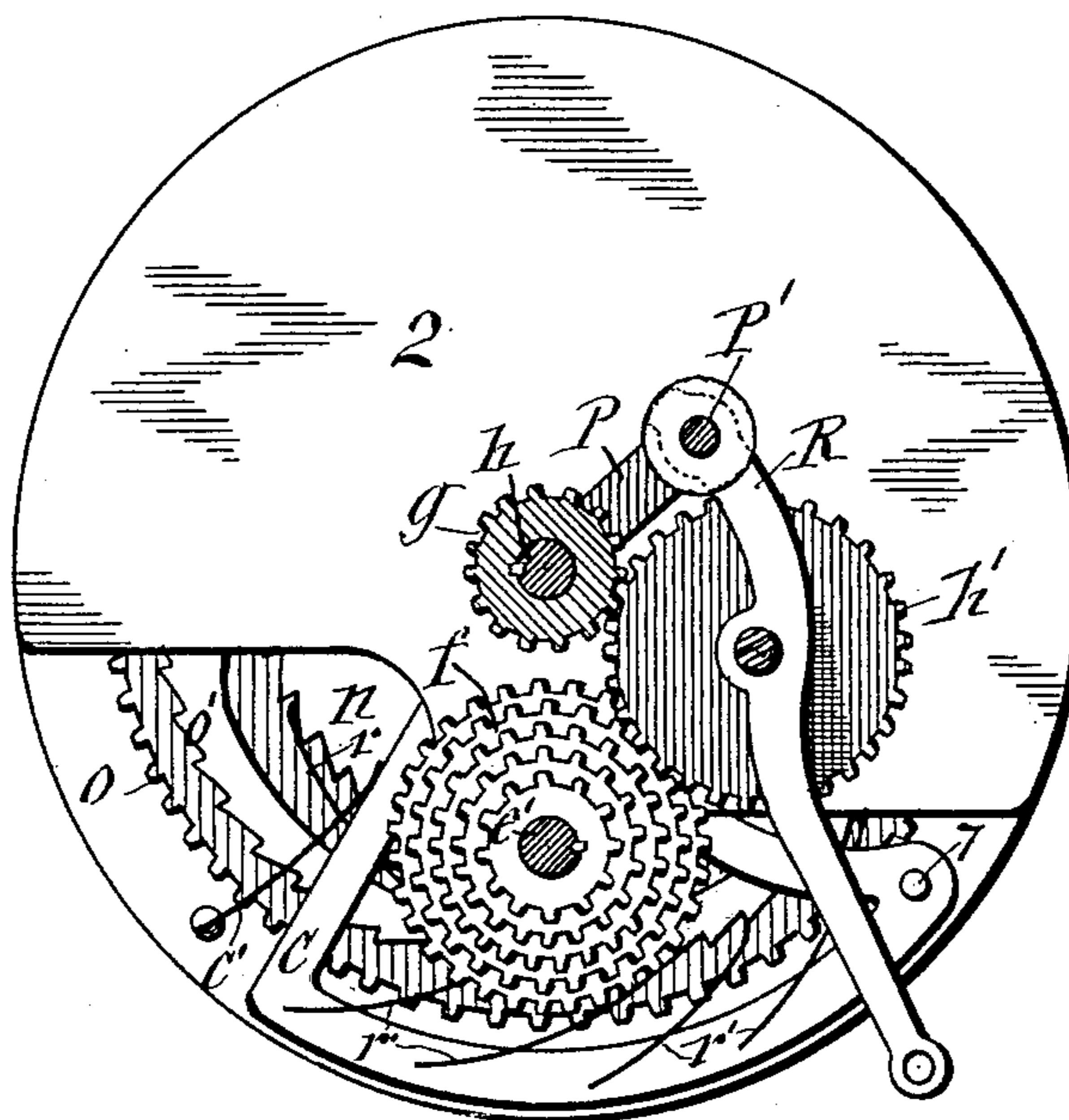


Fig. 8

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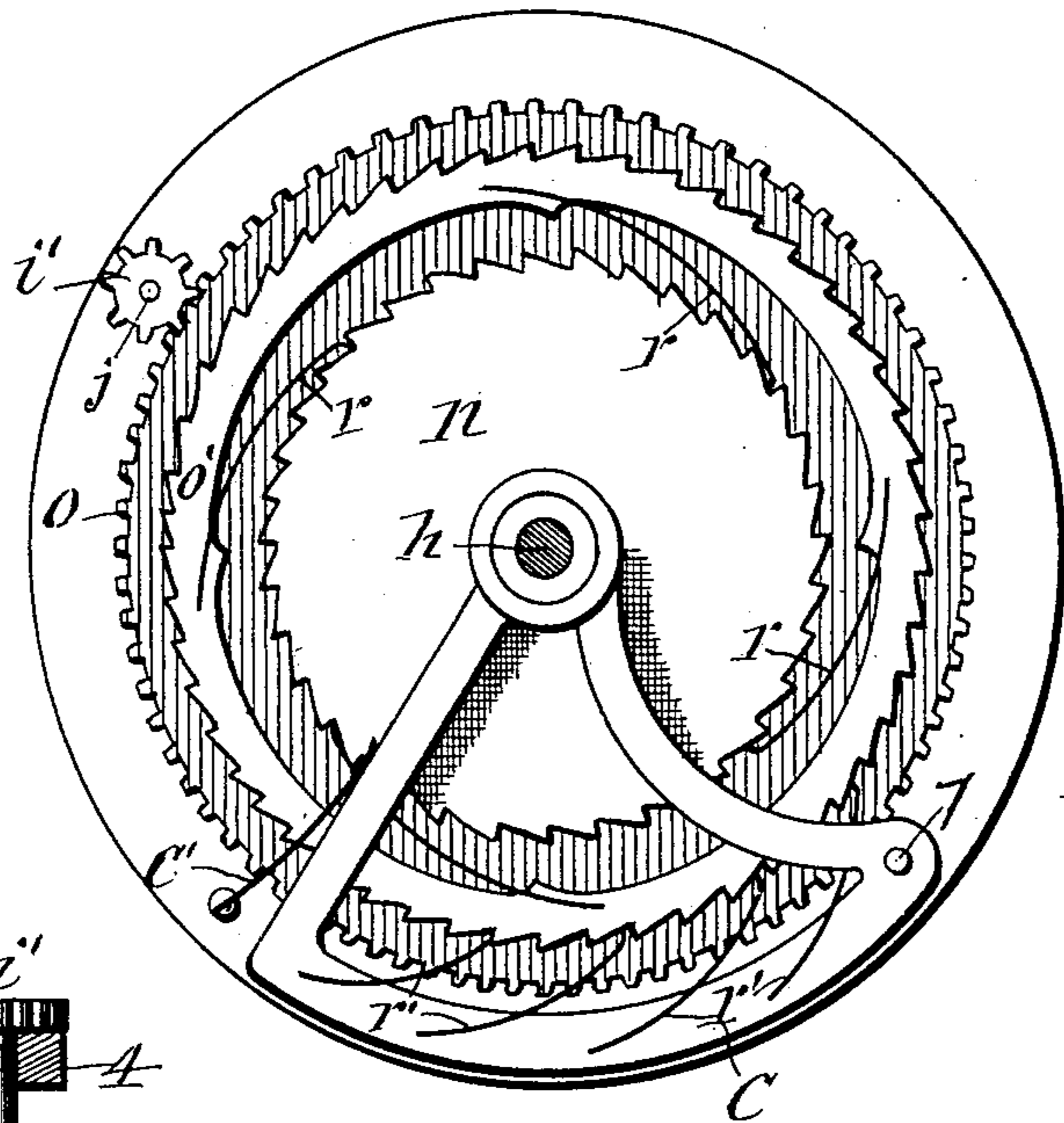


Fig. 7

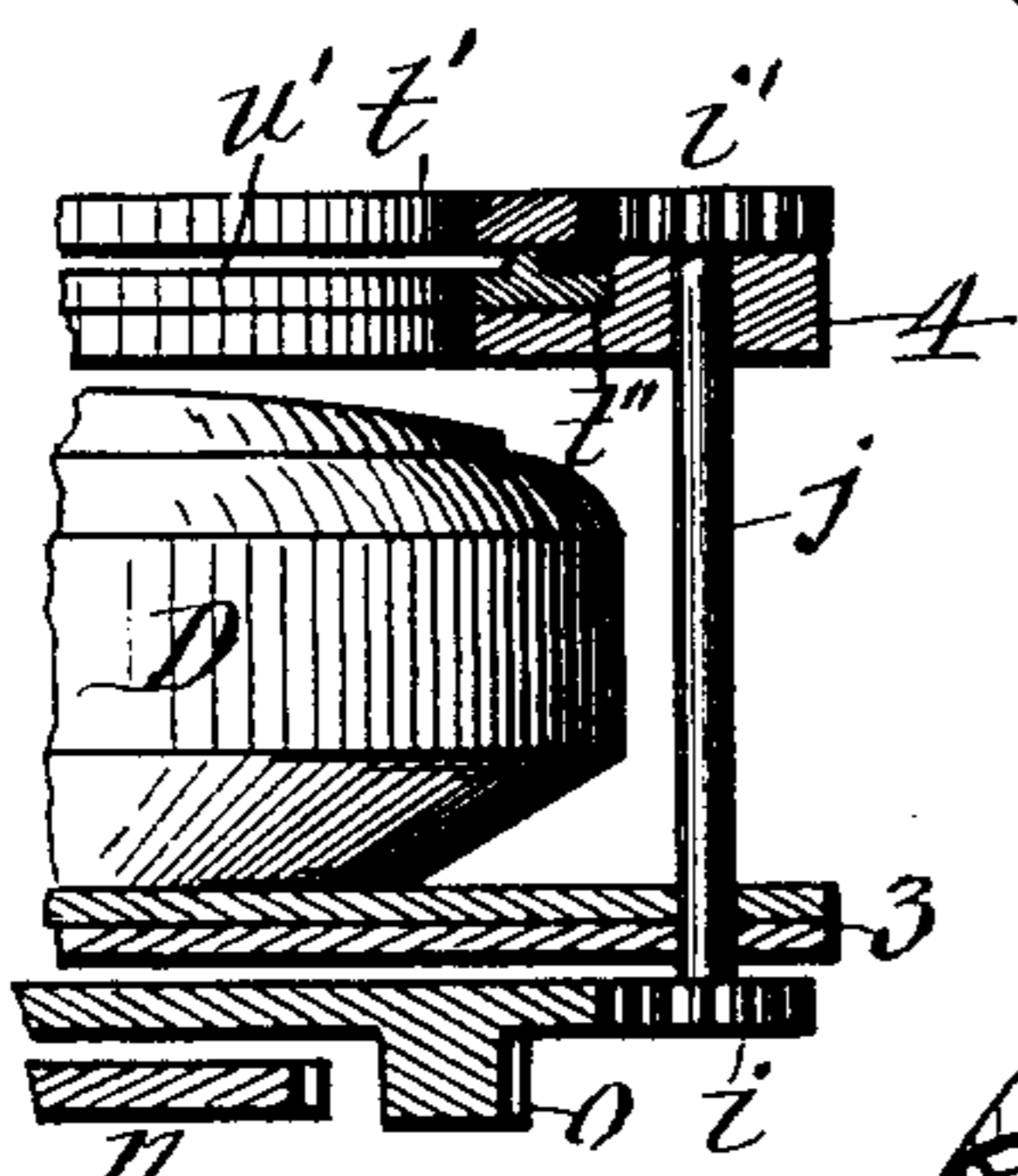


Fig. 10

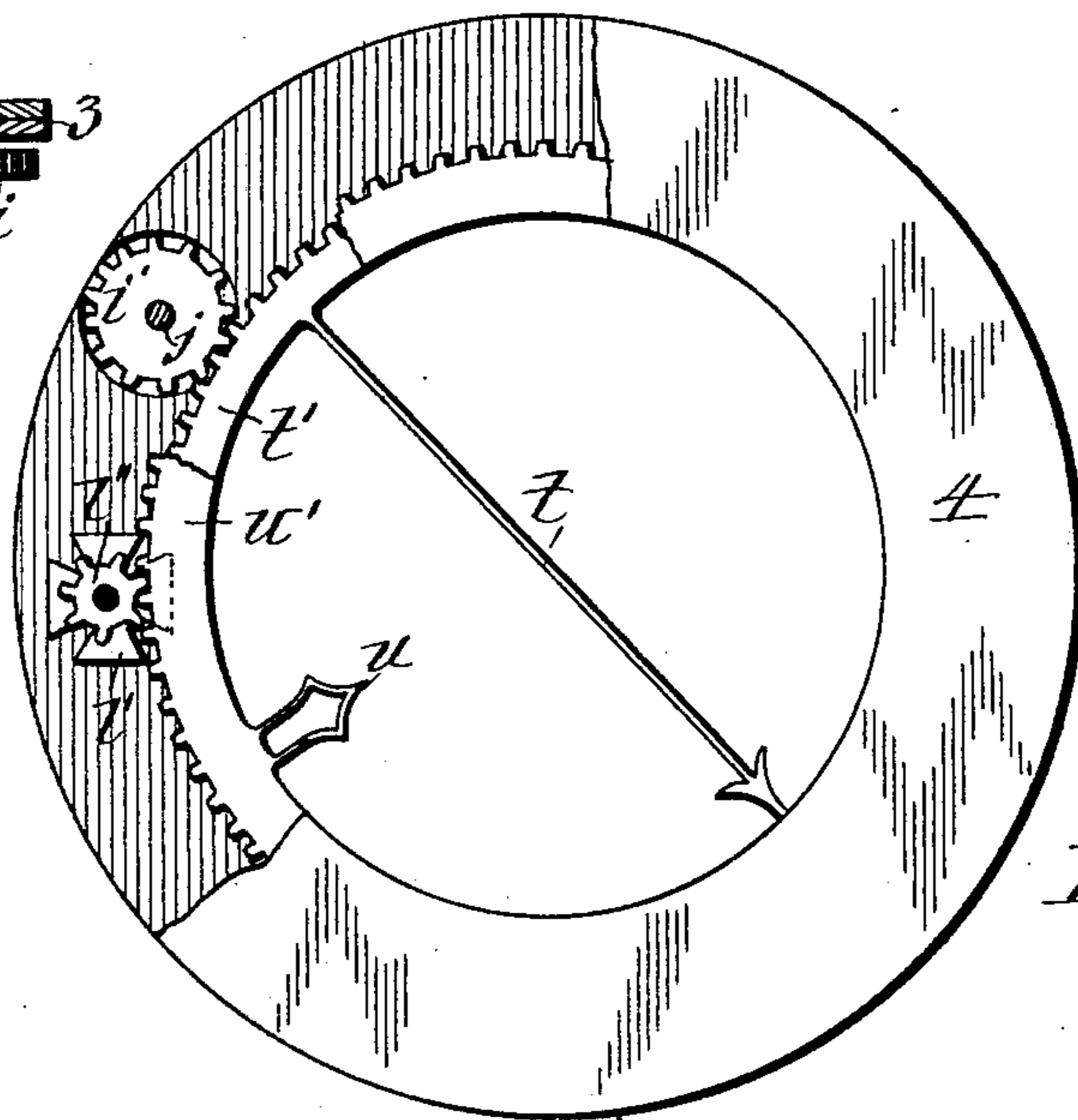


Fig. 9

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UNITED STATES PATENT OFFICE.

EDWARD G. DORCHESTER, OF GENEVA, NEW YORK.

TIMING INSTRUMENT FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 561,702, dated June 9, 1896.

Application filed April 20, 1895. Serial No. 546,513. (No model.)

To all whom it may concern:

Be it known that I, EDWARD G. DORCHESTER, of Geneva, in the county of Ontario, in the State of New York, have invented new and useful Improvements in Timing Instruments, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention is a further improvement of the timing instrument for which I filed an application for United States Patent on the 23d day of February, 1895, Serial No. 539,368.

My present invention relates specifically to the mechanism employed for imparting additional impulses to and thus accelerating the movements of the time-indicators of the instrument when desired; and the invention consists in the novel construction and combination of parts hereinafter described, and specifically pointed out in the claims.

In the annexed drawings, Figure 1 is a plan view of the timing instrument. Fig. 2 is a transverse section on line X X in Fig. 4. Fig. 3 is an enlarged transverse section of that part of the instrument which contains my present improvements. Fig. 4 is a plan view of the under side of the mechanism of the instrument. Figs. 5 and 7 are horizontal transverse sections, respectively, on lines Y Y and O O in Fig. 2. Fig. 6 is a section in line z z of Fig. 8. Fig. 8 shows the shifting gears in different position from that shown in Fig. 6. Fig. 9 is a detail view of the pointers, and Fig. 10 is a detail view of the means for transmitting motion to said pointers.

Similar letters and figures of reference indicate corresponding parts.

The mechanism is mounted on horizontal plates or diaphragms 1 2 3 4, secured in a suitable case, preferably of annular shape. (Not shown.)

b denotes the shaft, which extends from the interior of the case and is journaled in suitable bearings on the case and on the diaphragm 1. The outer end of said shaft has attached to it the star-wheel *c*, which by contact with the revolving vehicle-wheel transmits intermittent rotary motion to the shaft *b*. The inner end of said shaft is provided with a worm-gear *d*, which engages a pinion *d'*, pivoted to the diaphragm 1. This pinion meshes

with the gear-wheel *e*, secured to the shaft *e'*, which is journaled in the diaphragms 1 and 2. Between these diaphragms is a cone of gears *f*, fastened to the shaft *e'*. Parallel with this shaft is the shaft *h*, which passes through the diaphragm 2 and is journaled in the diaphragms 1 and 3. To the shaft *h* are fastened the gears *g* and *g'* of different diameters and permanently united. On the same shaft is pivoted the yoke *P*, which is formed with the screw-threaded rod *P'*, disposed parallel with the shaft *h*. On the rod *P'* is pivoted the arm *R*, to one end of which is pivoted a gear-wheel *h'*, which can be adjusted to engage any desired sized gear of the cone *f* and simultaneously with one of the gears *g g'*. Said adjustment is effected by turning the yoke on the shaft *h* and swinging the arm *R* on the yoke and sliding said arm vertically on the rod *P'* of the yoke until the wheel *h'* is opposite the desired gears *f* and *g* or *g'* and then swinging the arm so as to cause the wheel *h'* to engage said gears. By said shifting of the wheel *h'* the speed of the transmission of motion can be varied as may be desired.

Between the diaphragms 2 and 3 is the ratchet-wheel *n*, fixed to the shaft *h*, and over this wheel is the spur-wheel *o*, mounted loosely on the said shaft and receiving motion from the ratchet-wheel *n* by means of the pawls *r*, attached to the wheel *o*, engaging the teeth of the ratchet-wheel.

t and *u* represent the two pointers which are over the face of the chronometer *D* to enable the rider of the vehicle to compare the movements of said pointers with the movements of the seconds and minute hands of said chronometer, and thus ascertain if he is traveling at the desired speed. Said pointers are attached, respectively, to the annular gears *t'* and *u'*, mounted revolubly in the rabbet *t''* in the diaphragm 4, which is provided with an opening concentric to the dial of the chronometer *D*, seated between the diaphragms 3 and 4. The gear *t'*, which carries the pointer *t*, receives motion by means of pinions *i* and *i'*, attached to a vertical shaft *j*, and meshing, respectively, with the gears *o* and *t'*, as shown in Fig. 10 of the drawings. The other annular gear *u'*, which carries the pointer *u*, is caused to make one revolution during sixty revolutions of the gear *t'*. This reduced mo-

tion is obtained by a lug l on the gear t' engaging a star-wheel l' , attached to a shaft, which has also secured to it a pinion l'' , meshing with the annular gear u' , as shown in Figs. 1 and 2 of the drawings.

The mechanisms thus far described are adjusted by the shifting of the gear-wheel h' in the manner hereinbefore described to move the pointers t and u in unison with the seconds and minute hands of the chronometer D at a predetermined speed of the motion of the vehicle, and any deviations between said pointers and hands apprises the rider of the vehicle if he is traveling at the desired speed.

In order to further graduate the transmission of motion to the indicators t and u , I employ mechanism which is to a great extent similar to that described in my prior application for Letters Patent hereinbefore mentioned—*i.e.*, to the hub of the ratchet-wheel n is pivoted the segment C , which is concentric to the shaft h , and has connected to it spring-pawls $r' r'$, engaging the teeth of the ratchet-rim o' , which is attached to or integral with the wheel o , as shown in Figs. 5 and 8 of the drawings. The teeth of said rim are pitched in opposite direction of the teeth of the ratchet-wheel n , and allows the wheel o to be turned independently of the wheel n by the pawls r' of the segment C when the latter is swung to its position of rest by force of the spring C' .

I will now describe that part of the instrument to which my present invention specially pertains. On the hub of the wheel e is loosely mounted a wheel v and under this is another wheel a , fastened to the aforesaid hub. The wheel v is provided with seven teeth v' on its periphery while the lower wheel a has fourteen teeth a' , which are shorter than the teeth v' . The alternate teeth a' are provided with radial channels, in which are seated radially-movable pins k , as clearly shown in Fig. 3 of the drawings. The under side of the wheel a is formed with a circular recess w , in which is seated a revoluble cam-ring s , having cam-shaped projections on its periphery, as shown in Fig. 4 of the drawings. Said ring is provided with suitable knobs m' , by which to turn it so as to cause one or more of the cam projections to push out a corresponding number of pins k , so as to cause them to project from the outer end of the teeth a' . By means of a suitable latch m , connected to the diaphragm 1 and adapted to engage one of the teeth of the wheel v , the latter can be locked in its position, so as to prevent its rotation. To the wheel a is connected a pin s' , which is adapted to be inserted through a hole in said wheel and enter a socket in the wheel v , and thereby compel the latter to turn with the wheel a , when desired. In this case the latch m must be adjusted to release the wheel v . In connection with the said wheels I employ the tumbler 15, (shown in my prior application for patent before mentioned,) which tumbler is pivoted to the diaphragm 1 and has on

its heel the spur 6, against which bears a pin 7, attached to the segment C , forced in said direction by a spring C' . The tumbler is thereby forced toward the wheels v and a , so as to cause the teeth of said wheels to strike the tumbler and oscillate the same during the revolution of said wheels. The segment C is thus oscillated correspondingly and by means of the pawls r , attached to the segment and engaging the ratchet-rim o' on the wheel o , the latter receives intermittent rotary motion.

To allow the tumbler to be adjusted to come in contact with the teeth v' and a' of different lengths, I employ the latch 8, which is pivoted to the diaphragm 1 and is provided with steps X by which to engage the heel of the tumbler. The tumbler is sustained in its position by the eccentric 9, pivoted to the aforesaid diaphragm and having the latch held upon it by the spring 5.

The operation of the described mechanism is as follows: Assuming it is desired to accelerate the movement of the time-indicators one second of time during the revolution of the wheel e , the wheel v is to be fastened by the latch m , and the locking-pin s' is to be withdrawn to disconnect the wheel v from the wheel a . Then the cam-ring s is to be turned so as to cause it to push out one of the pins k , the projection of the outer end of which increases the thrust of the tumbler 15 and segment C sufficient to cause the wheel o to move the indicator-gear u' to advance the indicator u one second of time. This motion can be further accelerated by turning the cam-ring s to push out additional pins k . There being seven pins in the wheel a , the speed of the indicator can be accelerated seven seconds. If seven more impulses are to be imparted to the tumbler 15, the wheel v is to be released from the latch m , and the locking-pin s' is to be inserted to lock the wheel v to the wheel a , and thus compel said wheel to turn in unison. When the wheel is thus fastened to the wheel a , the teeth of the former lie under those teeth of the wheel a which are without pins k , and thus the long teeth of the wheel v are intermediate the pins k , which latter project to the same degree as said long teeth.

Having described my invention, what I claim is—

1. In combination with the wheel o , segment C pawl and ratchet transmitting motion from said segment to the wheel, the tumbler 15 actuating said segment, and the wheel e actuated by the wheel of the vehicle, the wheel a fixed to wheel e and provided with the teeth a' and the radially-movable pins k and the cam-ring s mounted revolubly on the wheel a and pushing by its cams the aforesaid pins outward to project from the teeth as set forth.
2. In combination with the wheel o , segment C , pawl and ratchet transmitting motion from said segment to the wheel, the tumbler 15 actuating the segment, and the wheel e ac-

tuated by the wheel of the vehicle, the wheel
v pivoted to the hub of the wheel e and pro-
vided with the teeth v', an adjustable catch
for detaining and releasing the wheel v, the
5 wheel a fixed to the aforesaid hub and pro-
vided with teeth a' double the number of, but
shorter than the teeth v' radially-movable
pins k in the teeth a' which are intermedi-
ate the teeth v' the cam-ring s mounted rev-
10 olubly on the wheel a, and the adjustable

pin s' locking and unlocking the wheel v to
and from the wheel a as set forth and shown.

In testimony whereof I have hereunto
signed my name this 28th day of February,
1895.

EDWARD G. DORCHESTER. [L. S.]

Witnesses:

J. J. LAASS,

C. L. BENDIXON.