

(No Model.)

2 Sheets—Sheet 1.

F. H. PECK.
BICYCLE.

No. 523,943.

Patented July 31, 1894.

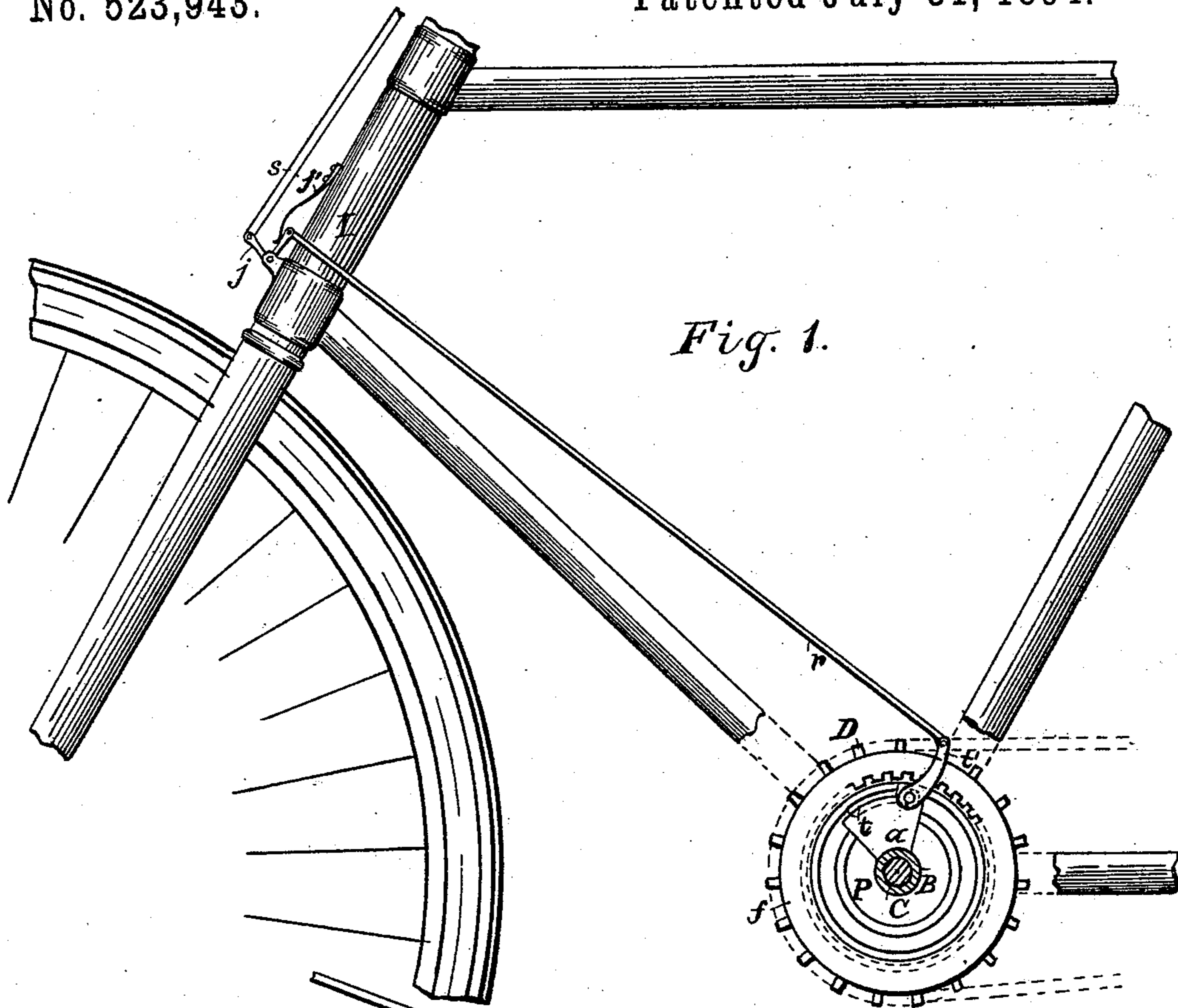


Fig. 1.

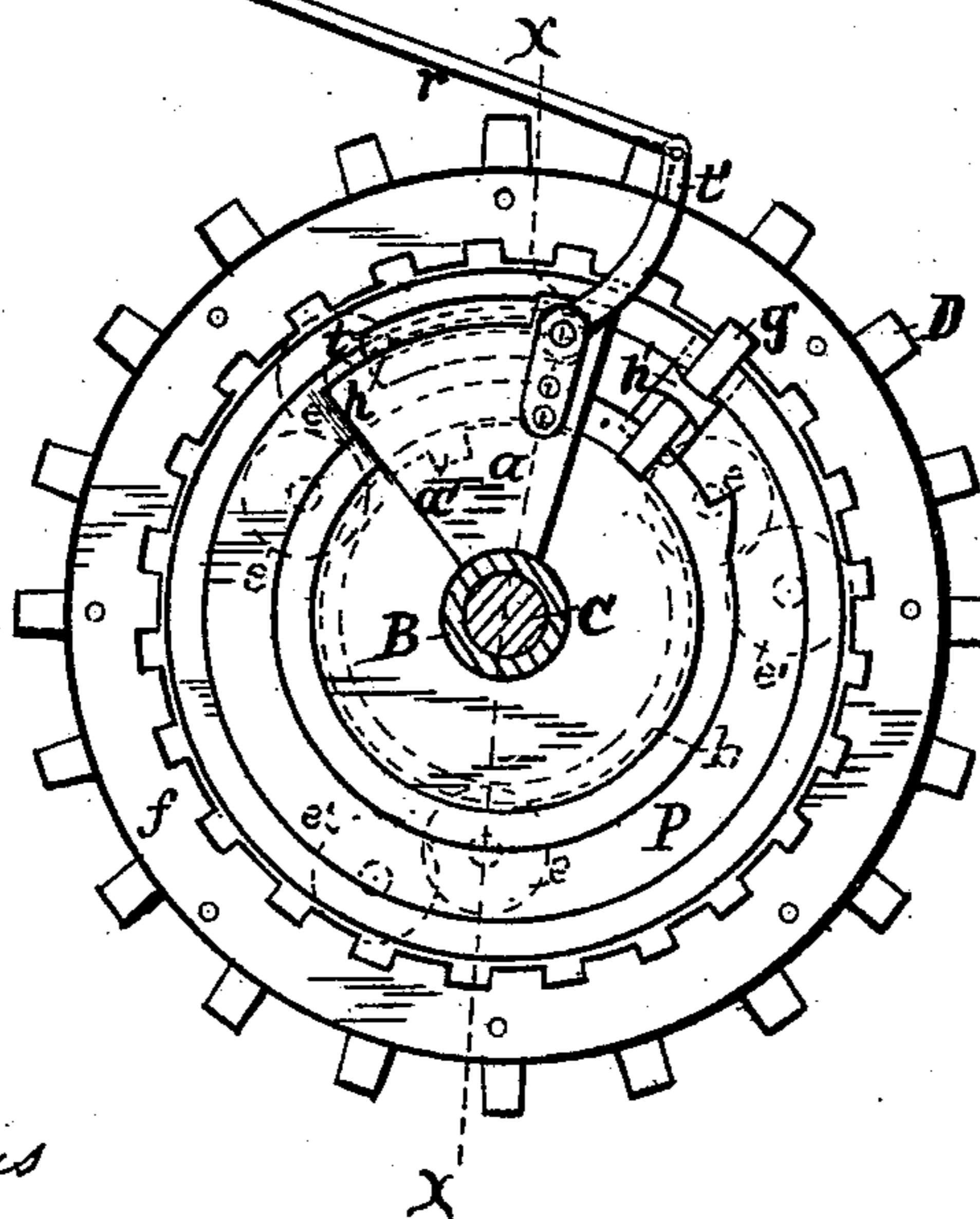


Fig. 2.

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INVENTOR,

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By C. H. Duell,

his ATTORNEY.

(No Model.)

2 Sheets—Sheet 2.

F. H. PECK.
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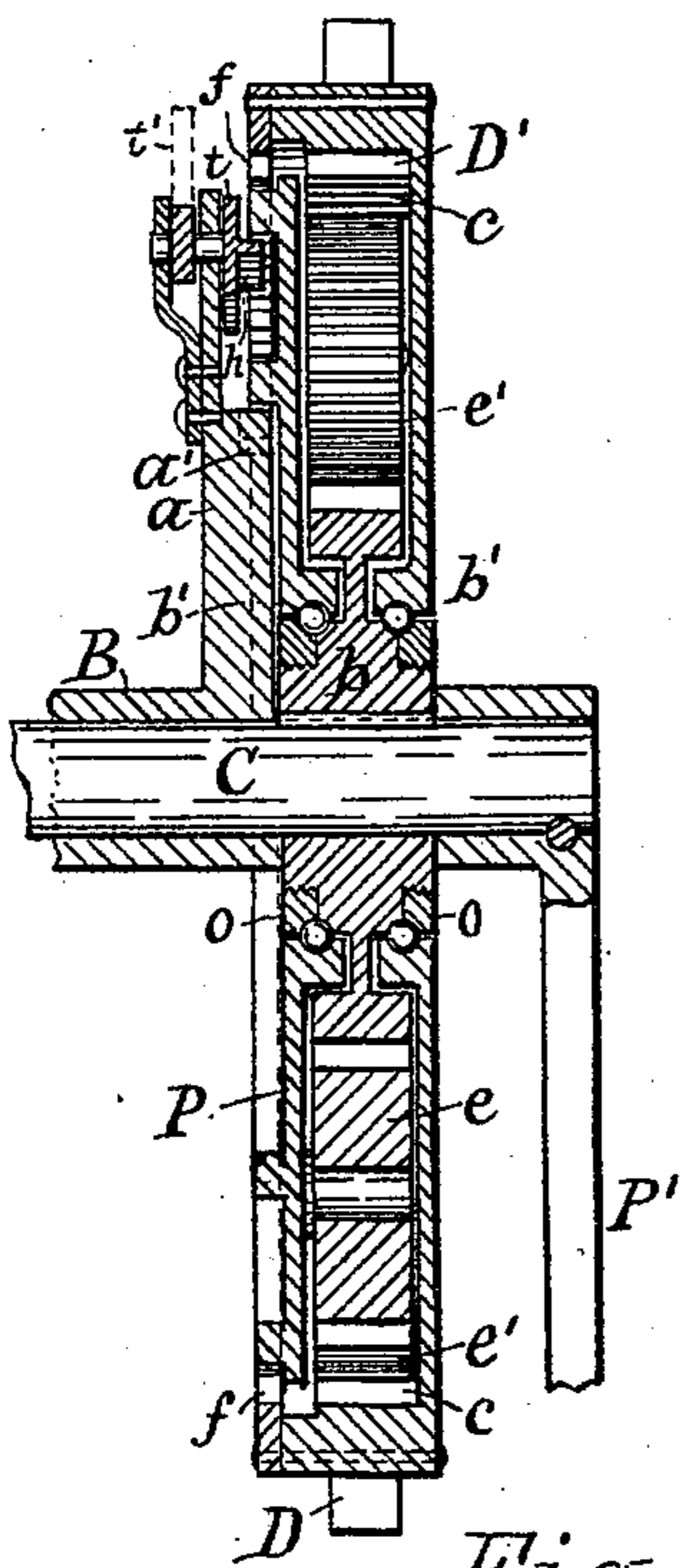


Fig. 3.

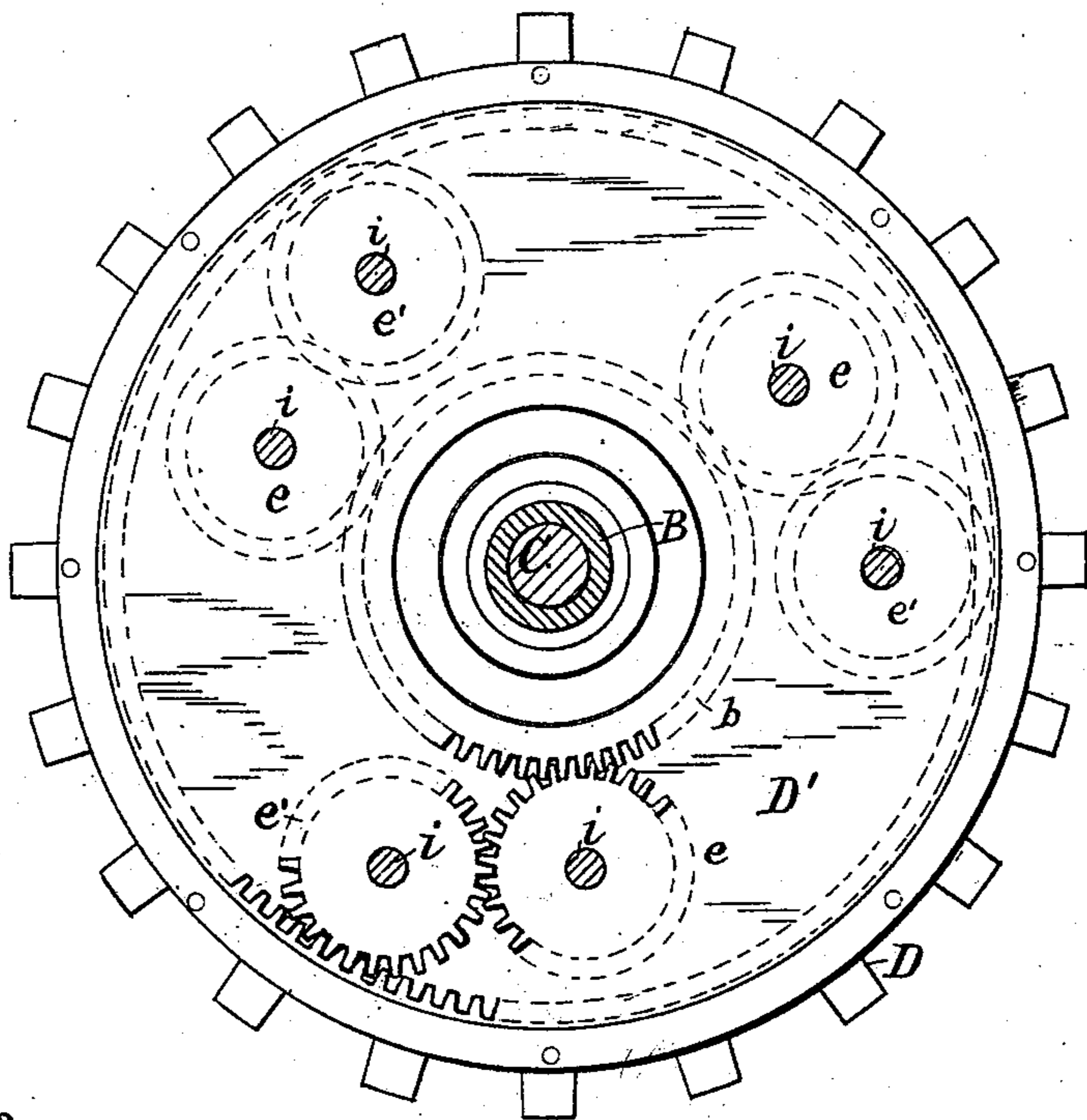


Fig. 4.

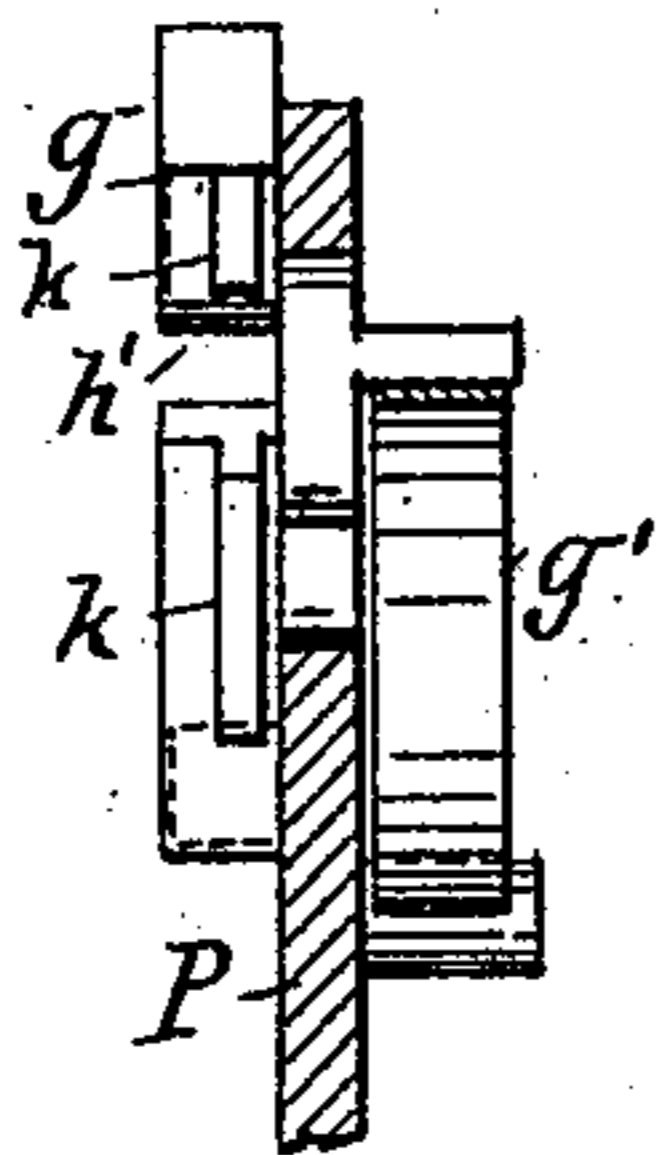


Fig. 5.

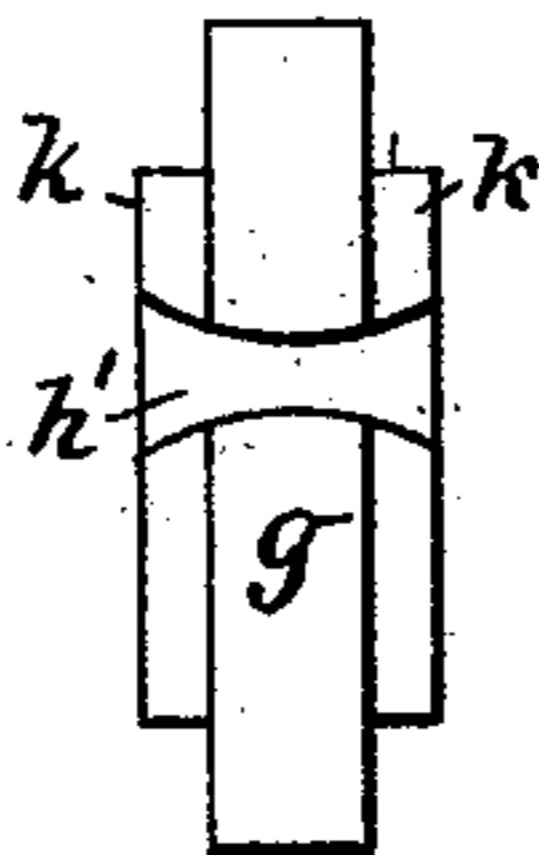


Fig. 6.

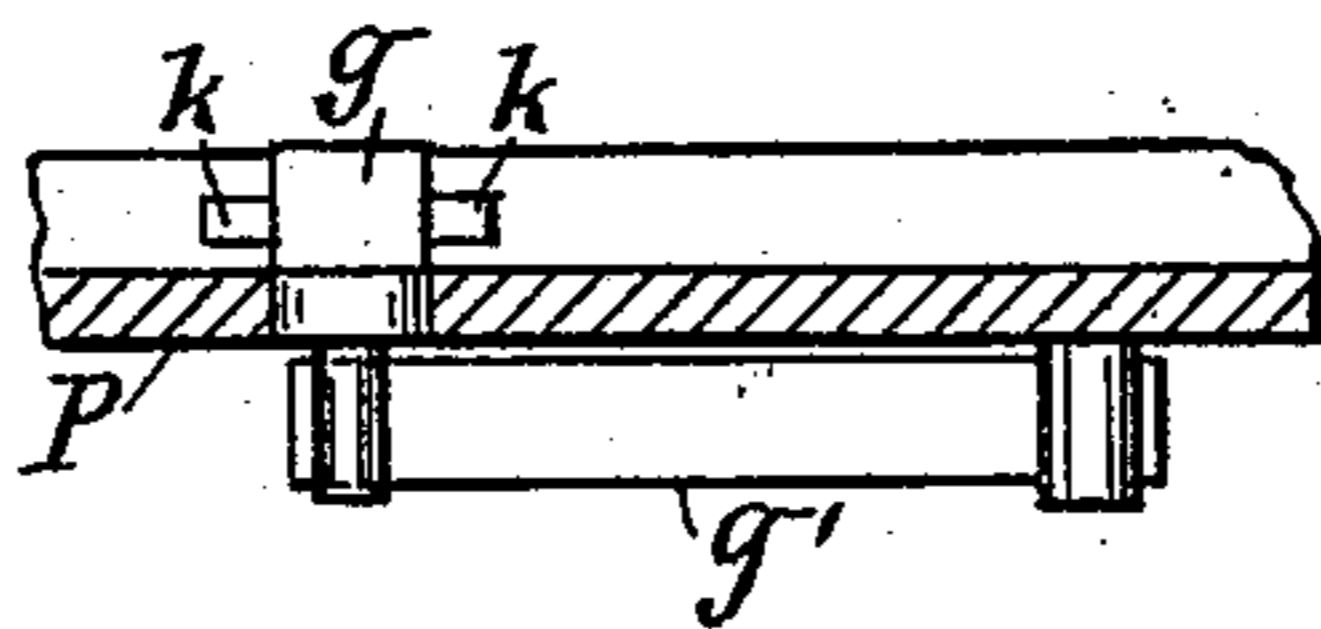


Fig. 7.

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UNITED STATES PATENT OFFICE.

FAYETTE H. PECK, OF CLINTON, NEW YORK.

BICYCLE.

SPECIFICATION forming part of Letters Patent No. 523,943, dated July 31, 1894.

Application filed August 12, 1893. Serial No. 483,028. (No model.)

To all whom it may concern:

Be it known that I, FAYETTE H. PECK, of Clinton, in the county of Oneida, in the State of New York, have invented new and useful
5 Improvements in Bicycles, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to devices for varying
10 the transmission of power from the driving shaft to the propelling wheel so that either rapid motion may be imparted to the wheel with moderate power applied to the shaft while traveling over a smooth level road, or
15 slow motion of the wheel with increased power to the shaft may be obtained when traveling over an ascending grade.

The object of my present invention is to accomplish the aforesaid results by more simple, stronger and positive acting means than
20 heretofore employed.

To this end my invention consists in the combination with the driving-axle and hanger, of a pinion keyed to the axle, a loosely mounted
25 sprocket-wheel provided with a rack, a plate movable independently of the aforesaid pinion and sprocket-wheel, two pinions pivoted to said plate, in mesh with each other and engaging the keyed pinion and rack on the
30 sprocket-wheel, an annular internally notched ring or ratchet rigid on the sprocket-wheel, a catch-plate fixed to the said hanger, a notch in the catch plate, a bolt secured to the movable plate, and adapted to move longitudi-
35 nally and radially on said plate to lock the same either to the ratchet on the sprocket-wheel or to the catch-plate, a spring to hold said bolt normally engaged with the ratchet, a lever pivoted to the catch-plate and pro-
40 vided with a rib to engage a groove in the side of the bolt to move the bolt out of engagement with the ratchet and into engagement with the catch-plate, and suitable means to operate the lever.

45 In the drawings accompanying and forming a part of this specification, Figure 1 is an inner side view of my improved devices in connection with the rod known as the brake-rod of the bicycle. Fig. 2 is an enlarged view of the same. Fig. 3 is an enlarged transverse
50 section on line x, x , in Fig. 2. Fig. 4 is a view of the interior of the sprocket-wheel, and Figs.

5, 6 and 7 are detail views of the sliding bolt on the movable plate or disk.

Referring specifically to the drawings, B is
55 the hanger, in which is journaled the driving-axle C, which latter has affixed to its ends the usual pedals P'. To one end of said hanger is rigidly attached the catch-plate, a , which is provided with the notch a' in its periphery.
60 Adjacent to said catch-plate is the driving pinion, b , fastened or keyed to the axle. The hub of this pinion is sufficiently elongated to be provided with the ball bearings, b' , b'' , at
65 opposite sides of the web of the pinion as shown in Fig. 3 of the drawings. Upon the outer of said ball bearings is mounted the sprocket-wheel, D, which is formed with an annular cavity, D', on its inner side and
70 formed with the rack c on the interior of the rim of said wheel. Upon the other of the aforesaid ball-bearings is mounted the annular plate, P.

To the plate P are fastened three sets of
75 gudgeons i, i , equal distances apart on which are mounted the intermediate pinions e, e' , which mesh with each other and with the pinion b , and rack c as shown in Fig. 4 of the drawings. The said intermediate pinions
80 may be provided with ball-bearings on the gudgeons to obviate friction, if desired.

To the inner edge of the rim of the sprocket-wheel is fastened an inwardly toothed annular ratchet plate, f , and on the plate P is
85 mounted to move longitudinally and radially a bolt g , one end of which is adapted to engage and release the notch a' , of the catch-plate a , and the opposite end is adapted to engage and release the ratchet-plate f . A
90 spring g' on the opposite side of the plate and bearing upon a pin fixed to the bolt and extending through a slot in the plate holds said bolt normally in engagement with said
95 ratchet-plate, and when thus engaged it is released from the notch a' .

To the catch-plate is pivoted at one end, a
100 lever, t , having a curved rib, h , which, when in its normal position lies concentric with and between annular ribs on the plate or disk P, and in the path of a groove h' in the adjacent
side of and extending across the bolt, g , which is mounted to slide radially in the said plate. An arm t' extends upward from the pivoted
end of the lever, t , and is connected by a rod,

7, to one of the arms of a bell-crank lever, *j*,
 pivoted to the head *I*, of the frame. The
 other arm of the lever, *j*, is connected to a rod,
s, which may be the brake-rod with the brake-
 5 shoe removed, moved longitudinally by a
 suitable lever connected to the upper end of
 the head, *I*, not necessary to be shown. A
 spring, *j'*, secured to the head, *I*, and bearing
 against the bell crank lever holds the ribbed
 10 lever in its normal position so that the rib will
 pass freely through the groove in the bolt
 when the plate *P* is rotated at each revolution
 without friction. Ribs, *k*, *k*, on each side of
 the bolt, *g*, slide in grooves in the ends of the
 15 annular ribs between which the bolt slides.

All of the ball-bearings of the sprocket-
 wheel *D* and plate *P* are protected from dust
 by disks, *o*, *o*, of felt or other suitable mate-
 20 rial secured to the outer sides of the said
 wheel and plate.

The operation of the described differen-
 tiating power-transmitter is as follows: The
 bolt, *g*, being held normally engaged with the
 ratchet-plate, *f*, locks the plate, *P*, on the
 25 ratchet-wheel, hence the power is transmit-
 ted from the driving pinion, *b*, directly to the
 sprocket-wheel and compels the same to re-
 volve in unison with the said pinion. The
 sprocket-wheel is thus geared for high speed
 30 and in this condition the power-transmitter
 is maintained while the bicycle is propelled
 over a smooth level road. When ascending
 a grade, the rider of the bicycle applies press-
 ure on the rod, *s*, and this turns by means of
 35 the lever, *j*, and rod, *r*, the ribbed lever, *t*, so
 as to throw the rib, *h*, in the path of the in-
 ner side of the groove in the bolt, *g*, which is
 thereby drawn out of engagement with the
 ratchet-plate, *f*, and made to engage the
 40 notch, *a'*, of the catch-plate *a*. This locks
 the plate, *P*, to the plate, *a*, and therefore
 holds said plate stationary. As soon as this
 is effected the intermediate pinions, *e*, *e'*, are
 caused to transmit the power from the driv-
 45 ing pinion, *b*, to the rack, *c*, which is integral
 with the sprocket-wheel. The speed of the
 latter is thus reduced and the power is greatly
 increased in its transmission.

When it is desired to change the gears for
 50 high-speed the rider reverses his operation on
 the rod, *s*, and thereby turns the ribbed le-

ver, *t*, back so as to release the bolt and al-
 low the spring, *g'*, to throw the bolt out of
 the notch, *a'*, and allow said bolt to spring
 into engagement with the ratchet-plate *f*. 55

Having described my invention, what I
 claim as new, and desire to secure by Letters
 Patent, is—

1. The combination with the driving axle,
 hanger and catch-plate, of a pinion keyed to 60
 the driving axle, a loosely mounted sprocket
 wheel provided with a rack, a plate movable
 independently of the aforesaid pinion and
 sprocket-wheel, two pinions pivoted to said
 plate and engaging the keyed pinion and rack 65
 on the sprocket-wheel, a bolt secured to the
 movable plate, and movable longitudinally
 and radially on said plate to lock the same
 either to the sprocket-wheel or to the catch-
 plate, a groove in the side of the bolt, and a 70
 lever pivoted to the catch plate and adapted
 to engage the bolt in said groove to move the
 same, substantially as described and shown.

2. The combination with the driving-axle
 and hanger, of a pinion keyed to the axle, a 75
 loosely mounted sprocket-wheel provided
 with a rack, a plate movable independently
 of the aforesaid pinion and sprocket-wheel,
 two pinions pivoted to said plate, in mesh
 with each other and engaging the keyed pin- 80
 ion and rack on the sprocket-wheel, an an-
 nular internally notched ring or ratchet rigid
 on the sprocket-wheel, a catch-plate fixed to
 the said hanger, a notch in the catchplate, a
 bolt secured to the movable plate, and adapted 85
 to move longitudinally and radially on said
 plate to lock the same either to the ratchet on
 the sprocket-wheel or to the catch-plate, a
 spring to hold said bolt normally engaged
 with the ratchet, a lever pivoted to the catch- 90
 plate and provided with a rib to engage a
 groove in the side of the bolt to move the bolt
 out of engagement with the ratchet and into
 engagement with the catch-plate, and suit-
 able means to operate the lever, substantially 95
 as described.

In testimony whereof I have hereunto
 signed my name.

FAYETTE H. PECK. [L. S.]

Witnesses:

NATHAN L. HAYES,
 DELOS DE WOLF SMYTH.