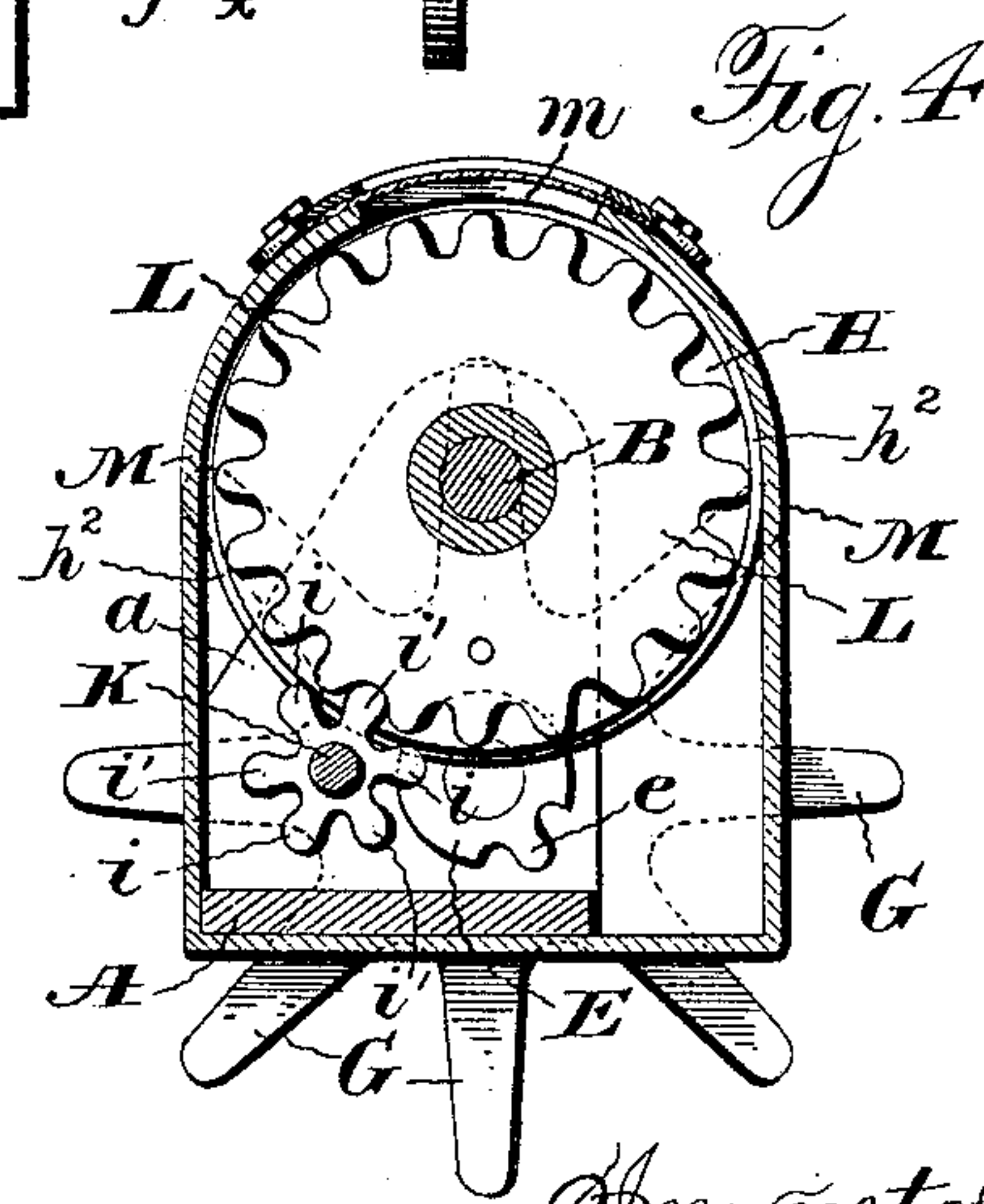
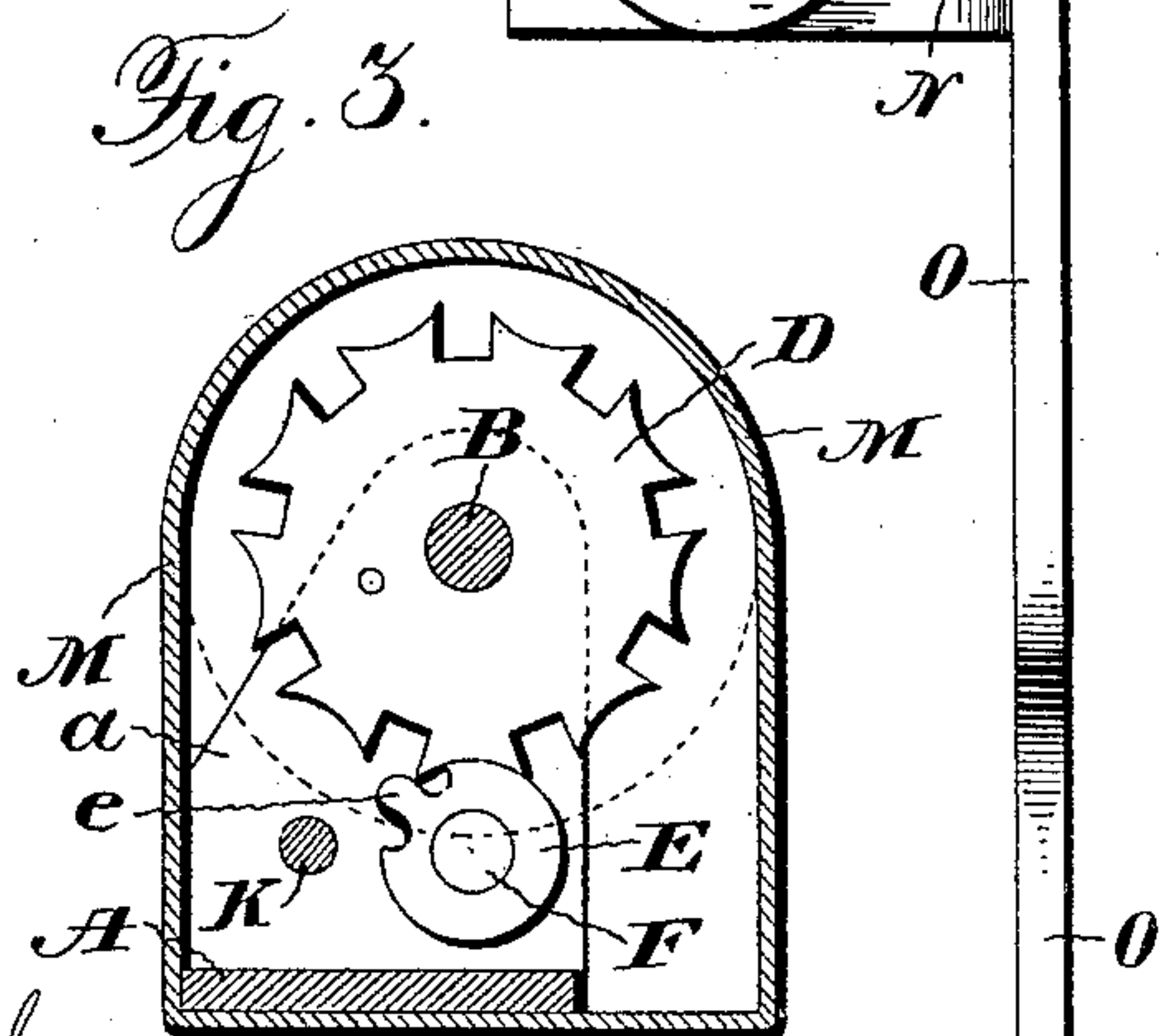
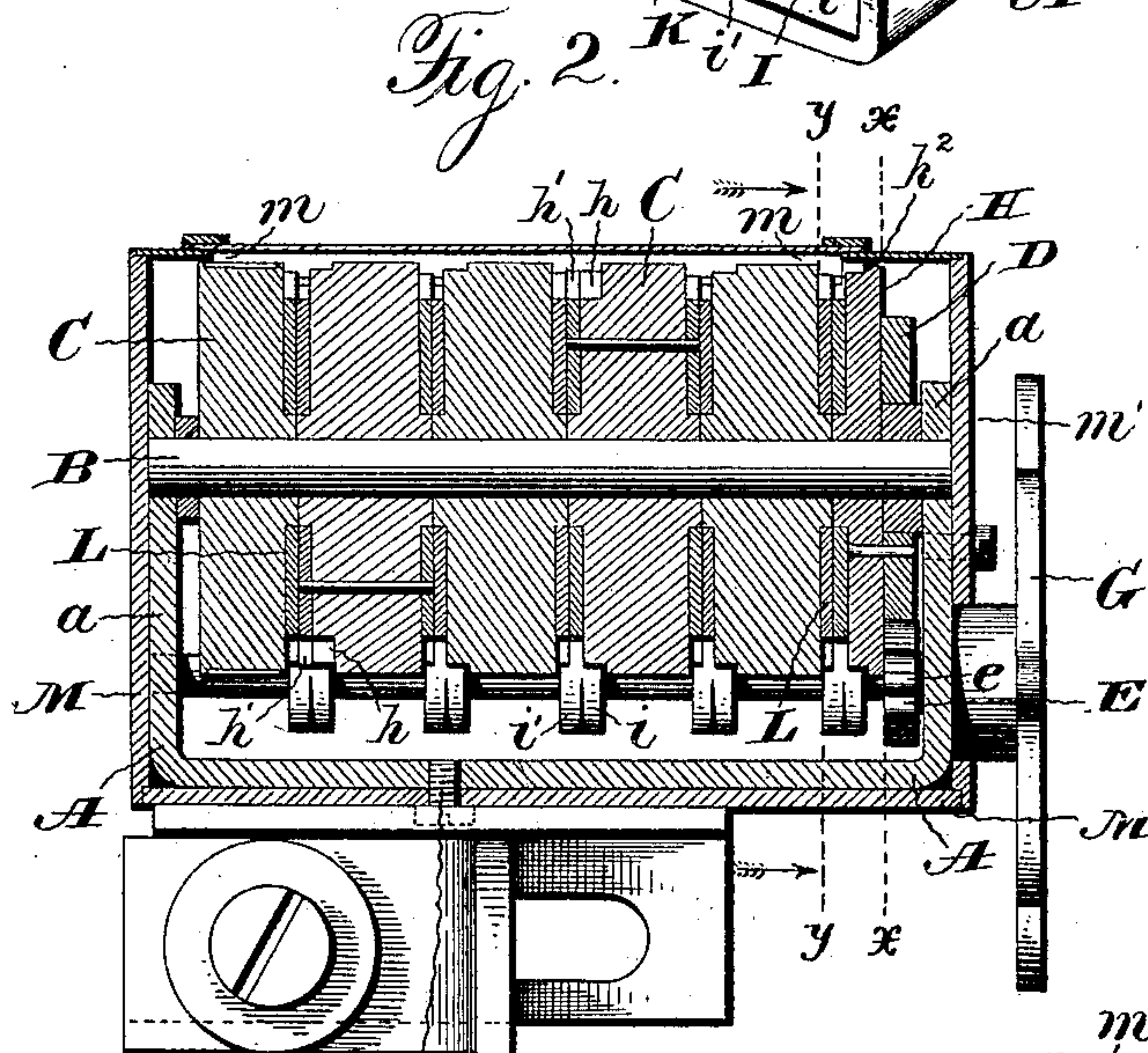
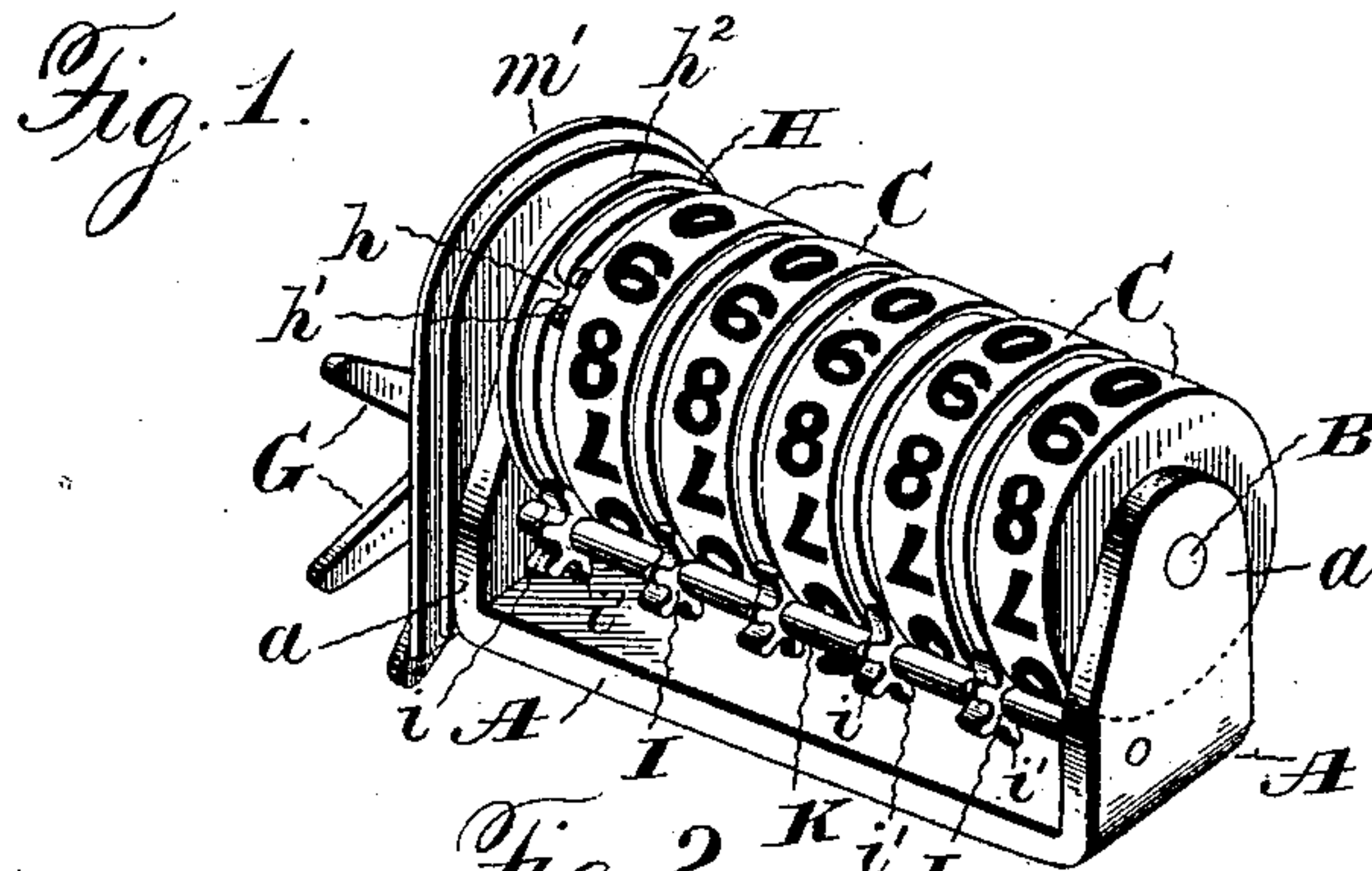


(No Model.)

E. HART.  
CYCLOMETER.

No. 591,762.

Patented Oct. 12, 1897.



Witnesses:  
Jas. E. Hutchinson.  
Henry C. Hazard.

Inventor:  
Edwin Hart  
by Pringle and Russell  
his attorneys



# UNITED STATES PATENT OFFICE.

EDWIN HART, OF WATERBURY, CONNECTICUT, ASSIGNOR TO THE WATERBURY WATCH COMPANY, OF SAME PLACE.

## CYCLOMETER.

SPECIFICATION forming part of Letters Patent No. 591,762, dated October 12, 1897.

Application filed October 30, 1896. Serial No. 610,616. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN HART, of Waterbury, in the county of New Haven, and in the State of Connecticut, have invented certain new and useful Improvements in Cyclometers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my cyclometer with the casing removed; Fig. 2, a view in longitudinal section thereof, and Figs. 3 and 4 are respectively transverse sections on the lines  $xx$  and  $yy$  of Fig. 2.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is to provide an accurate cyclometer of simple construction for use more particularly with bicycles; and to this end said invention consists in the cyclometer having the construction and combination of parts substantially as hereinafter specified.

In the carrying of my invention into practice I employ a frame or support for the operative parts of my cyclometer that consists of a horizontal base-plate A and two vertical arms  $a$  and  $a$  at the ends thereof. Supported by said arms is a shaft or rod B, upon which side by side are placed a series of index or registering wheels C and C, the periphery of each of which bears numerals from "0" to "9," the first wheel of the series indicating tenths, the second units, the third tens, &c.

Mounted loosely upon the rod B, between the first or tenths index and the adjacent arm  $a$ , is a notched wheel D, the notches of which are adapted to be successively engaged by a single tooth  $e$  of a disk E, carried upon the inner end of a shaft F, directly below the rod B, and carrying upon its outer end a star-wheel G, adapted to be actuated, as usual, by a tappet attached to one of the spokes of the wheel. The periphery of the wheel D, between the notches therein, is curved concavely on an arc of the same radius as the arc of the disk E, so that the periphery of the latter will engage the concavities of the wheel and thus hold the latter from revolving except when the disk-tooth engages a notch.

Attached to the side of the wheel D next to the units-index and rotating with said wheel is a disk H, having in its periphery a notch  $h$ , that is adapted by the revolution of the disk to successively engage three teeth  $i$  and  $i$  of a pinion I, loosely mounted on a rod K, supported by the arms  $a$  and  $a$ , parallel with the shaft B. Said teeth  $i$  and  $i$  also engage the teeth of a gear L, attached to the side of the first or tenths index, and thereby impart movement to the latter. When a tooth  $i$  is not in engagement with the notch  $h$ , two of said teeth engage the periphery of the disk H, and the pinion is thereby securely held from turning. In addition to the teeth  $i$  the pinion has three other teeth  $i'$  and  $i'$ , that alternate with the former, but being narrower than the said teeth  $i$  are not engaged by the notch  $h$ . Said teeth  $i'$  are adapted to be engaged by either of two teeth  $h'$  and  $h'$  on the side of the disk H adjacent to and on opposite sides of the notch  $h$ , according to the direction of rotation of said disk, and thus the pinion turned sufficiently to place a tooth  $i$  in engagement with said notch. The pinion, though loose on the rod, is held against side-wise movement in one direction by means of a small circumferential flange  $h^2$  on the disk, and in the opposite direction by the tenths-index, whose side it engages. It will be seen that each revolution of the star-wheel will impart a partial or fraction of a revolution to the disk H and that at each full revolution of the latter the first or tenths index will be moved through one-tenth of a revolution by the pinion I.

Precisely similar mechanism to that employed for actuating the first index from the disk H is used to actuate the index of the next higher denomination from the preceding index, and hence it is unnecessary to further describe such mechanism.

As all of the index-wheels are alike in size and are marked with numerals of like design and size, I preferably distinguish the tenths or fraction index from the others by marking the numerals in a different color, using red for the fraction index-numerals and black for the others. It will be observed that every wheel of the registering mechanism is positively locked or held from accidental turn-



ing, and no springs or pawls are employed, the mechanism being thus rendered reliable and simple.

The registering mechanism is inclosed in a casing M, having a suitable sight-opening *m*, one end *m'* of which is removable to permit the ready separation and assemblage of casing and mechanism. When together, the casing and mechanism are connected by means of a screw N, that passes through the bottom of the casing into the base-plate A. The removable end *m'* is preferably attached to an arm *a* of the base-plate. A suitable adjustable bracket O is provided on the under side of the casing, by which the instrument may be attached to the front wheel-axle, as usual.

Having thus described my invention, what I claim is—

In a cyclometer, the combination of a frame comprising a base-plate and end pieces, a rod or shaft mounted in the latter, a series of index-wheels journaled side by side on the shaft, between said end pieces, a toothed wheel attached to the side of each index-wheel, a disk adjacent to the toothed wheel, having a notch and teeth on opposite sides of the notch, a series of pinions having each alternating wide and narrow teeth to coöperate

with said toothed wheels and disks, a rod or shaft on which the pinions are placed, mounted in the end pieces of the base-plate, a notched wheel attached to an end of one of the index-wheels, having its periphery between the notches concave, a disk with a single tooth, adapted to coöperate with the notched and concave portions of said wheel, said disk being adjacent to the inner side of one of the end pieces of the base-plate, a shaft passing through said end piece, on which disk is mounted, a star-wheel, on the outer end of said shaft, and a casing fitting over the base-plate and its end pieces, and all of the mechanism between said end pieces, having one end that is separably connected to the remainder of the casing, and attached to the end piece through which the disk and star-wheel shaft passes, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 27th day of October, 1896.

EDWIN HART.

Witnesses:

CHARLES S. CHAPMAN,  
S. L. ARTHUR.