

[No Model.]

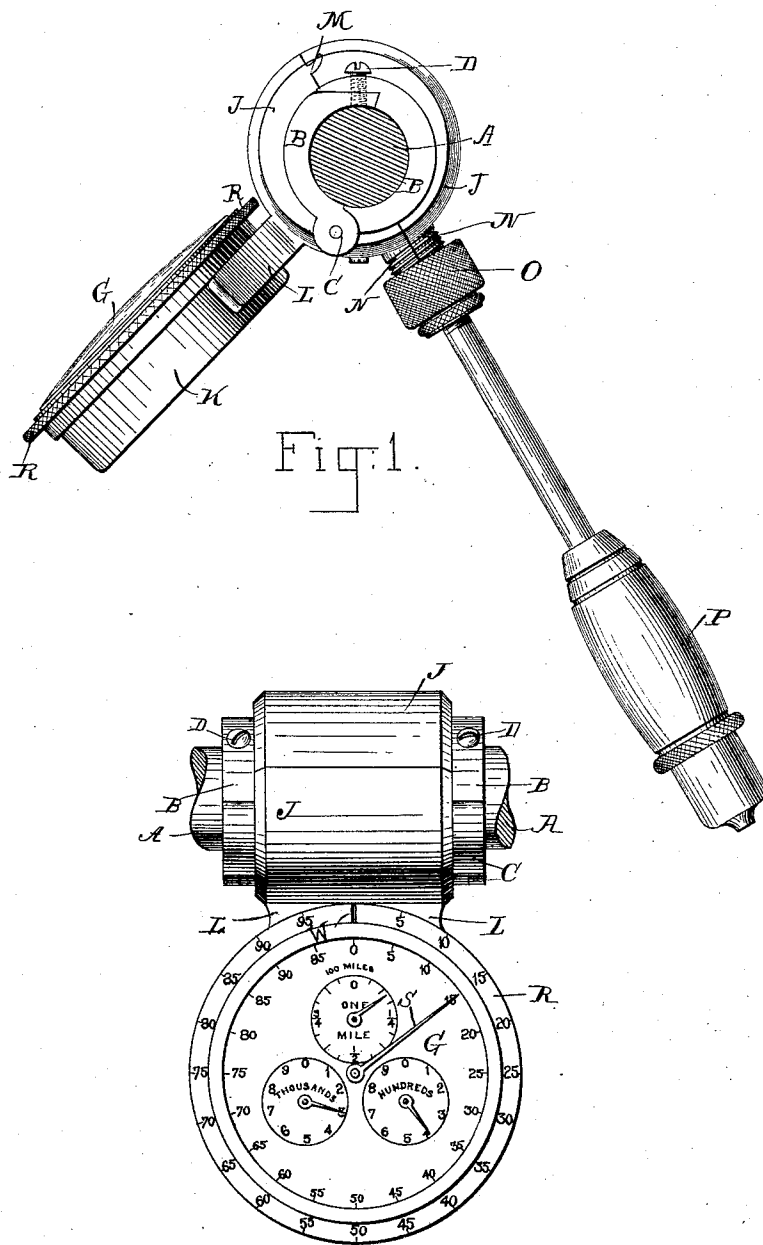
2 Sheets—Sheet 1.

M. H. DOWNES.

CYCLOMETER.

No. 363,218.

Patented May 17, 1887.



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William H. Thomas

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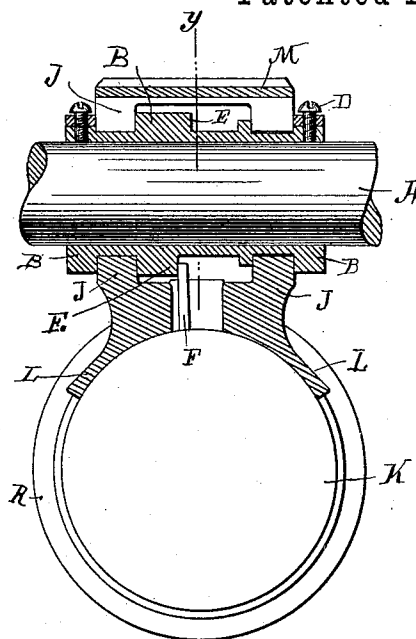


Fig. 3.

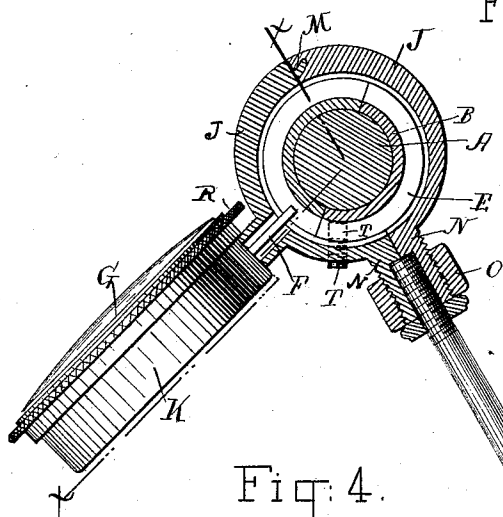


Fig. 4.

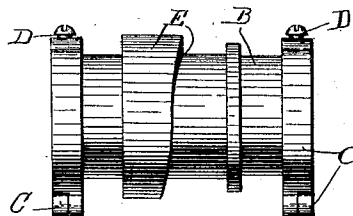


Fig. 5.

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UNITED STATES PATENT OFFICE.

MOSES H. DOWNES, OF MALDEN, ASSIGNOR TO THE OVERMAN WHEEL COMPANY, OF CHICOPEE, AND CHARLES E. W. WOODWARD, OF CAMBRIDGE, MASSACHUSETTS.

CYCLOMETER.

SPECIFICATION forming part of Letters Patent No. 363,218, dated May 17, 1887.

Application filed November 19, 1886. Serial No. 2:9,386. (No model.)

To all whom it may concern:

Be it known that I, MOSES H. DOWNES, of Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Cyclometers, of which the following, taken in connection with the accompanying drawings, is a specification.

The first peculiarity of this invention is the combination, with a suspended or gravity cyclometer, of a cam fixed upon or formed in one with the rotating axle of the wheel, and constituting a collar, rib, or groove surrounding and turning with the axle, and acting laterally upon an arm which projects from within the cyclometer and bears against the side wall of said cam, so as to be moved thereby in a direction parallel with the axle to positively actuate the cyclometer. Outside of and embracing this cam is a non-rotary sleeve made in two parts, from which depends the cyclometer-case, with its inclosed works, and the counter-balance which holds the dial up to view. The parts of this sleeve are hinged or otherwise jointed to each other at one side and fastened on the other side by a peculiar split stud and screw, so as to be readily put together and to come just right. The stem of the counter-balance screws axially into the split stud, which is also threaded externally, and an annular nut binds the halves of the stud and the sleeve together.

Another feature of my invention is a severed indicator-ring, which surrounds the dial or face of the instrument, and is adjustable by rotation thereon, and when adjusted is held by friction in its position, while the hands, moving over the dial, show on the graduated ring the number of miles traveled on any given day or trip since the indicator was set without in any way disturbing the season's record made by the dial and hands.

My invention consists in the devices and combinations of devices set forth in the appended claims.

In the drawings, Figure 1 represents the cyclometer in side elevation, the axle in section. Fig. 2 is a front view of the dial, indicator, &c., the axle being broken away. Fig. 3 is a section of the suspending-sleeve, taken

on the line *xx* of Fig. 4. Fig. 4 is a transverse section of the sleeve on line *yy*, Fig. 3. Fig. 5 is a detail elevation of the sleeve.

A is the axle of the main wheel of a bicycle, and B an enlargement integral therewith or fixed thereon, preferably made in two parts, joined longitudinally by hinges C at one side and screws at the other side of the axle, said screws also securing it firmly on the axle, as in Fig. 3. A laterally-acting cam, E, is an essential part of this enlargement, the object being to vibrate on its pivot the arm F, which projects from within the cyclometer and bears against the side of this cam. The cam may be a groove giving a positive movement to the arm in both directions; but I prefer that a spring within the instrument shall move the arm in one direction and keep it pressed up against the side of the cam. By the vibration of this arm the cyclometer suspended from the axle is actuated positively, its ratchet-wheel, train of gearing, and traversing hands being caused to move at their proper relative speed, according to the diameter of the bicycle-wheel, and to measure or indicate on the dial G the distance traveled.

The arrangement described, whereby the cam acts upon the side of the vibrating arm F to move it in the direction of the length of the axle, with or without the coaction of the spring, is advantageous, because it does not require that nicety of adjustment as to location of pivot or length of lever which has been necessary where the end of a sliding bar bears against the edge of an eccentric on the axle to actuate the mechanism, in which case a slight amount of wear so changes the relation of the parts that the action becomes uncertain and the instrument fails to register correctly.

J represents a non-rotary sleeve which surrounds the rotating cam E. It is made in two parts, one of which, as shown in Fig. 4, has the cyclometer-case K rigidly affixed to it within the embrace of curved arms L. The two halves of this sleeve are joined at one side by a hinge, M, or other detachable joint, the interlocking rib and groove shown being so made as to exclude water, and on the opposite side each has a semi-cylindrical projection, N,

forming one-half of a split stud threaded externally to receive an annular nut, O. The flat sides of these half-cylinders come in close contact when the halves of the sleeve are brought together, and on screwing the nut O upon the stud so formed the parts are held in close contact. This means of fastening together the parts of the sleeve may be employed on both sides of it. The ends of the sleeve fit snugly to the axle or into grooves formed in the enlargement B to exclude moisture from within the instrument.

T is a lubricating-plug, and V a screw introduced through the sleeve at each end to adjust such plug to compensate for wear and prevent rattling.

P is a counter-balance, the stem of which is represented as screwed into the end of the split stud N N, and provided with a collar which acts as a check-nut, bearing against the end of the annular nut O. The stem may, however, be formed in one with said nut O to screw upon the stud N. The object of the counter-balance is to hold the face of the cyclometer in such position that it can be easily seen by the rider while in the saddle, and also to add sufficient weight to insure that the instrument shall not be revolved with the axle from which it hangs.

The means provided for attaching the counter-balance are intended to be used in the same manner for attaching a lamp to the cyclometer-case, so that the weight of the lamp will act as a counter-balance.

The cyclometer has a suitable train of gearing and a graduated dial, G, with hands revolving in front thereof to denote fractions of or a complete mile, a hundred miles or less, one or more hundreds of miles, and one or more thousands of miles. The hundred-mile circle circumscribes the dial with its figures near the margin thereof. Outside of this is a similarly-graduated movable ring, R, adjustable with relation to the fixed dial and to the hundred-mile hand S, and held frictionally when adjusted to a desired position. This ring serves as an indicator of the distance traveled on any particular day or trip without computation from the dial; for by placing and leaving the indicator-ring with its zero-mark at the point of the long hand the advance of that hand around the dial denotes the number of miles traveled, the ring remaining stationary.

A peculiarity of my indicator is that the ring R is severed transversely, as at W, Fig. 2, so as to give it elasticity radially, that its diameter may be slightly changed by compression or expansion, so as to hold by its own elasticity, as its edge bears frictionally either on the exterior or interior wall of the case with

sufficient force to retain the desired position when adjusted.

The internal mechanism or train of gearing should be such as to give due rotation to the several hands on the dial; but I do not deem it necessary to explain its operation in detail, as such mechanism is not of my present invention.

In my application for patent on a "new mechanical movement," filed simultaneously herewith, I have set forth the means which I prefer to employ to convert the vibratory motion of the projecting arm F into the rotary movement required in the gear-wheels and hands. Such means are, in brief, two pivoted pawls connected to each other by a link or spring, and both actuating the ratchet-wheel on the axle of the primary pinion of the train of gearing.

I claim as my invention—

1. In a suspended cyclometer, the laterally-acting cam E, fixed upon and revolving with the axle, in combination with the pivoted arm F, projecting from within the cyclometer-case into contact with the side of said cam, and with a suitable suspending-sleeve, substantially as set forth.

2. In a suspended cyclometer, the suspending sleeve J, made in two connected parts, each part having the semi-cylindrical projection N, threaded externally, in combination with the annular nut O, screwing upon the split stud to join its parts and those of the sleeve, and with the case and counter-balance supported by said sleeve, substantially as set forth.

3. The circumferentially-graduated dial G, with indicating numbers, one or more traversing hands, and suitable actuating mechanism, in combination with the indicator-ring R, graduated to correspond with said dial, severed transversely, as at W, so as to be elastic radially, and adjustable frictionally at the periphery thereof, substantially as set forth.

4. The combination, with the rotary axle A, of the non-rotating suspending sleeve J, made in two parts, joined together above the axle in a detachable joint, M, formed with an interlocking rib and groove to exclude water, and suitably united below the axle, substantially as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 12th day of November, A. D. 1886.

MOSES H. DOWNES.

Witnesses:

A. H. SPENCER,
C. E. W. WOODWARD.