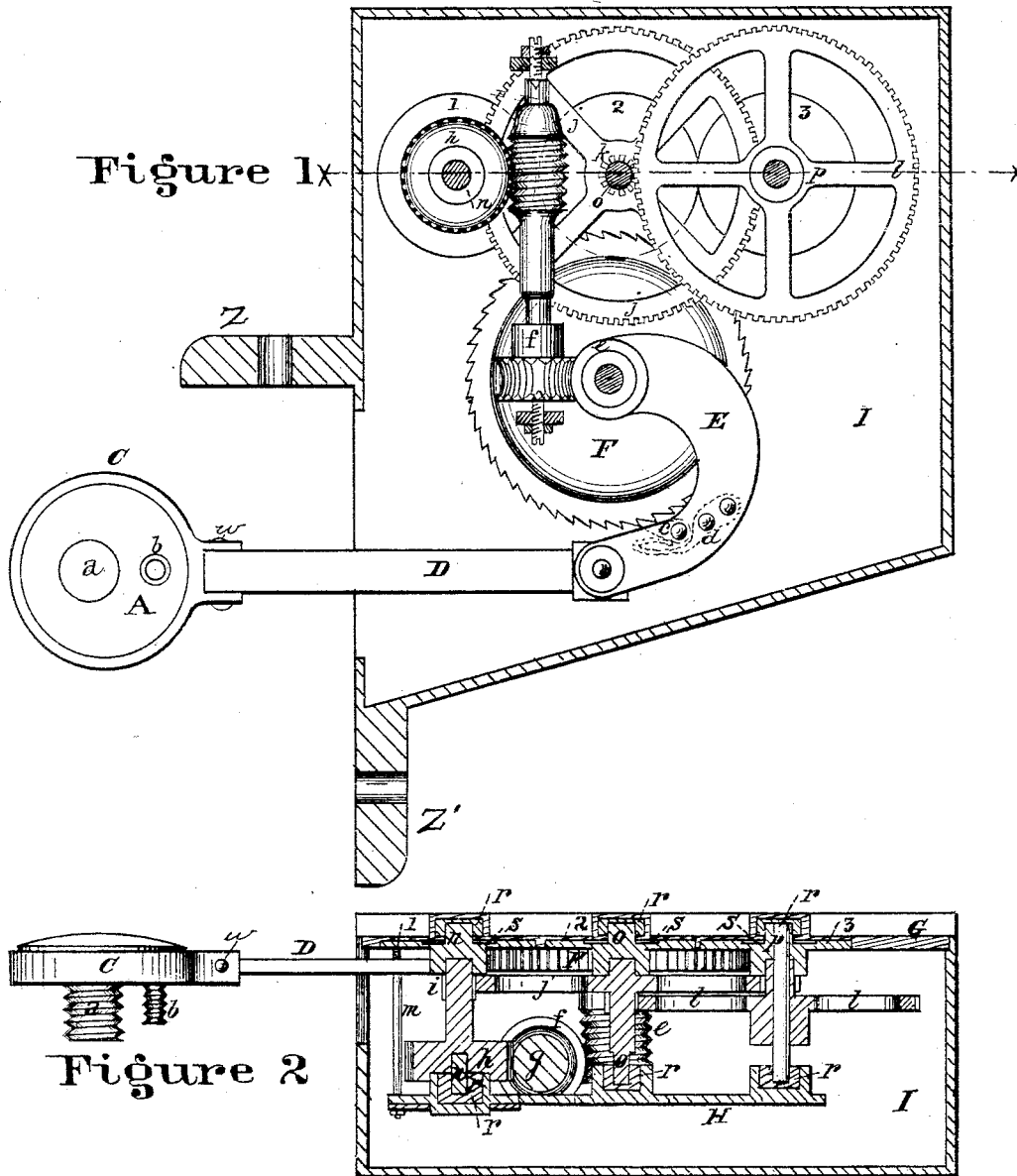


J. D. RICHARDSON.
Odometer.

No. 217,550.

Patented July 15, 1879.



Attest
Ed. Dewald.
John H. McCarren

Inventor
John D. Richardson
By Henry Millward
att'y.

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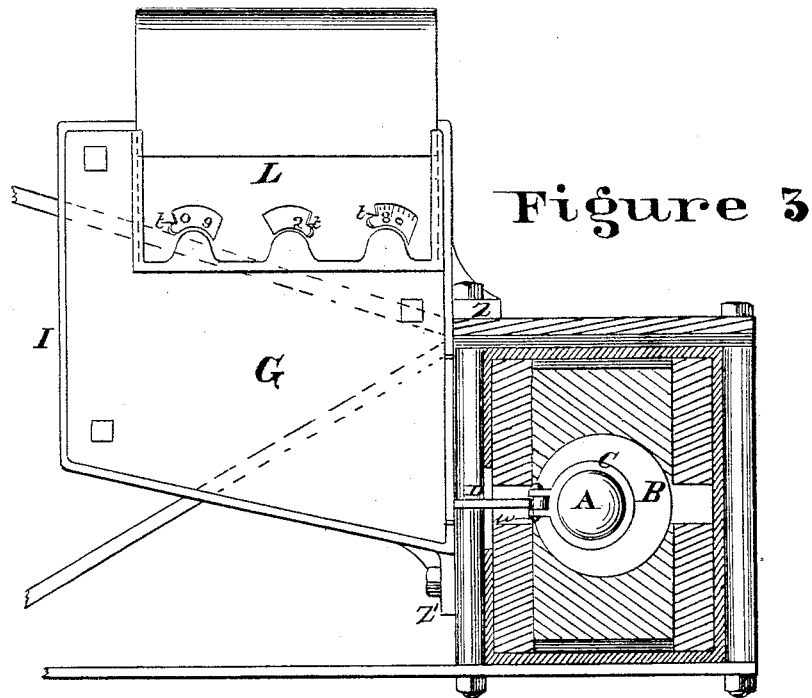


Figure 3

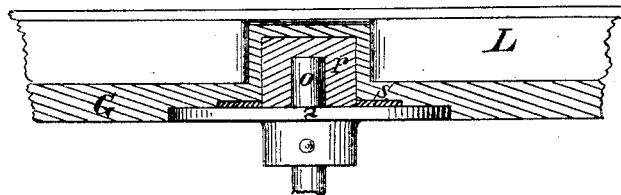


Figure 4

Attest
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UNITED STATES PATENT OFFICE.

JOHN D. RICHARDSON, OF HOUSTON, TEXAS.

IMPROVEMENT IN ODOMETERS.

Specification forming part of Letters Patent No. **217,550**, dated July 15, 1879; application filed May 21, 1878.

To all whom it may concern:

Be it known that I, JOHN D. RICHARDSON, of Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Odometers, of which the following is a specification.

My invention relates to odometers for registering the distance traveled by freight and other cars; and its object is to secure accuracy in the operation of this class of apparatus, to dispense with special and separate lubrication of the same, and to provide for the attachment of the register to the axle-box in position to be readily observed, and in order to reduce the mechanism intermediate of the same and the axle; and, further, to permit of the ready removal and replacement of the box and register without disturbing the working parts of the latter; and, further, to adapt an odometer for application to a car already in use without any special construction of axle.

It consists, first, in the combination of an odometer secured upon an oil or axle box, an axle having on its end, and within the oil or axle box, an eccentric and strap, and devices connecting said strap with the registering devices, as hereinafter more particularly described; second, in a mile-meter connected with a rotating car-axle, to which the vehicle-wheels are rigidly attached, exterior to them, and adapted to be operated by the axle through suitable intermediate mechanism connected with said axle inside the oil or axle box.

In the accompanying drawings, Figure 1 is a vertical section of a meter, showing in full lines devices for attaching the same to the axle-box and connecting the registering devices with the axle. Fig. 2 is a section on line *x x*, Fig. 1. Fig. 3 is a view of the odometer secured to the axle-box, and having its registering devices connected with the axle. Fig. 4 is a sectional view of a dial.

The letter I indicates the case of the odometer, which contains the registering mechanism. The eccentric A is secured to the end of the axle by means of the screw *a*, and is prevented from rotating by the screw *b*, which may be countersunk in the eccentric for seal-

ing. Surrounding the aforesaid eccentric is a ring or strap, C, connected to a link or pitman, D, by a pivot-pin, *u*, the opposite end of this link or pitman being pivoted to the lever E, to which is pivoted the pawl *e*, which is held in place by the spring *d*. This pawl engages with the teeth of a ratchet-wheel, F, the teeth of which have a pitch corresponding to the throw of the eccentric A. From the shaft of ratchet-wheel F motion is transmitted to the dial 1 by means of a double system of worm-gearing, *e f* and *g h*, and by means of pinion *i* on the shaft of the dial and the gear-wheel *j* motion is transmitted to dial 2 in a decreasing ratio of 10 to 1, and by means of pinion *k* and gear-wheel *l* motion is transmitted to dial 3 in the same decreasing ratio, so that while the dial 1 makes ten revolutions the dial 2 makes 1, and that while the dial 2 makes ten revolutions the dial 3 makes one. The circumference of the car-wheels being uniform, and the throw of the eccentric A being equal to the movement of one tooth of ratchet-wheel F, the manner of graduating the dials will be obvious without further explanation.

The registering mechanism may be of any desired construction, however, and forms no part of my present invention, which relates particularly to the accurate operation of any kind of registering mechanism used in odometers.

The lever E is loosely secured to the shaft of the wheel F, which is the prime operating-shaft of the odometer, and as the meter-case I is secured directly to the axle-box, and this box directly to the axle, it is obvious that whenever the axle moves or vibrates laterally, the case I and registering mechanism will move exactly the same distance and in the same direction, so that there can be no separation or increase of distance between the axle and registering mechanism, which would be liable to cause the link or pitman D to operate lever E, and through it the register. Only the revolutions of the axle, therefore, will be registered.

When the odometer is arranged according to old modes, upon the car truck or body, and operated by intermediate connection with the

axle, it will be readily understood that a difference of vibrations of the axle and truck would be liable to cause operation of the register independent of the rotation of said axle, and consequently the distance traveled would not be accurately registered.

The lid G has openings corresponding to the positions of dials 1 2 3, and at the edge of each of these openings I prefer to arrange a spur or point reaching across the edge of the dial, and serving as an index of the dial's movement. The lid G is also provided with a sliding cover, L, as shown in Fig. 3, protecting the dials from dust, and allowing ready access thereto for observation.

By means of the lugs Z Z' the meter-case may be bolted securely to the axle-box, and by simply removing the screws *a* and *b* the eccentric A may be removed from the end of the axle, and the oil-box and meter may then be removed together, when desired.

As the eccentric A is within the oil box, and directly adjacent to the journal of the axle, it will be seen that the oil which reaches said journal will also reach the eccentric and lubricate its bearing in its strap, so that no special separate lubrication thereof is necessary, and much time is thus saved, and a proper lubrication guaranteed.

The ends of the axles in all ordinary cars being faced off square and centered, in applying my invention to a car already in use, it is only necessary to tap the two screw-holes in the end of the axle, and cut suitable openings in the oil-box, which may all be done as the car stands upon the track.

Having now described my invention, I claim—

1. The combination of the odometer secured upon the oil or axle box, the axle having on its end, and within the oil or axle box, the eccentric and strap, and the devices connecting said strap with the registering devices, substantially as described.

2. A mile-meter connected with a rotating car-axle, to which the vehicle-wheels are rigidly attached, exterior to them, and adapted to be operated by the axle through suitable intermediate mechanism connected with the axle inside the axle or oil box, substantially as described.

In testimony whereof I have hereunto set my hand this 4th day of May, 1878.

J. D. RICHARDSON.

Witnesses:

W. P. SHEPHERD,
W. C. OLIVER.