

J. A. ROBINSON.

Way-Meters for Wheel-Vehicles.

No. 145,527.

Patented Dec. 16, 1873.

Fig. 1.

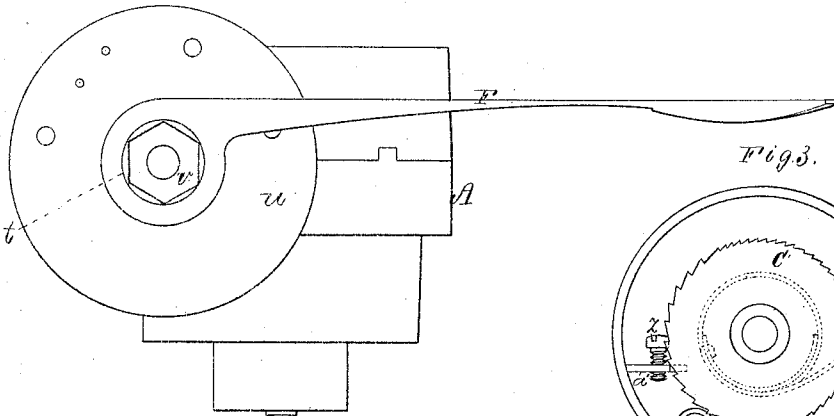


Fig. 3.

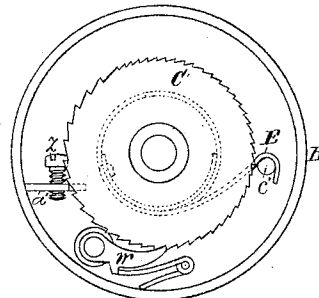


Fig. 4.

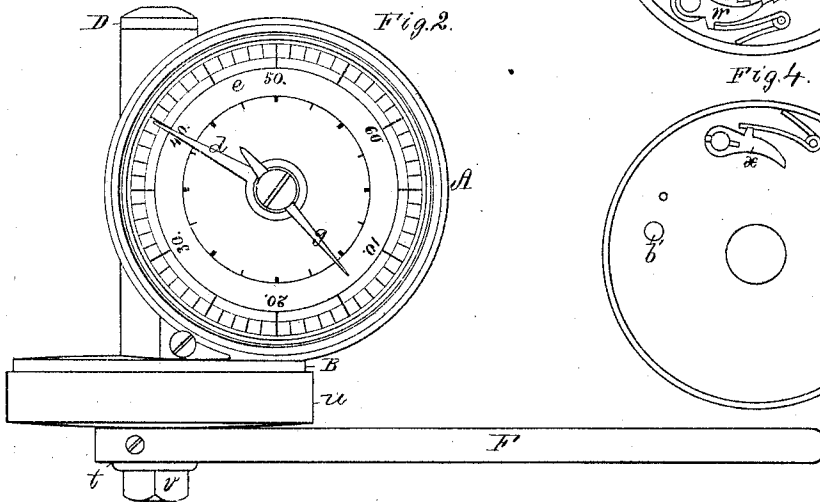
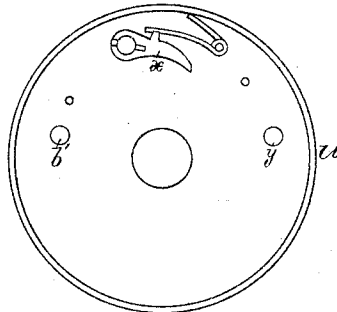
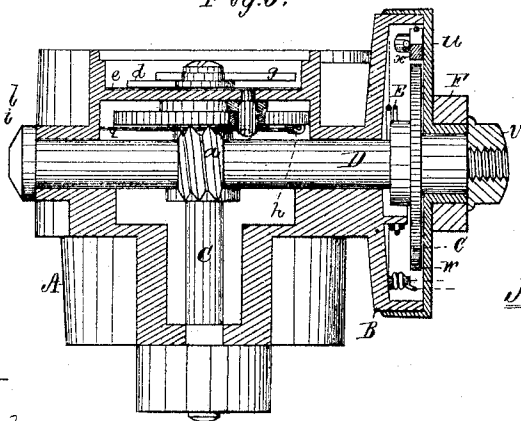


Fig. 5.



Witnesses.

S. W. Piper

L. N. Höller.

Jonathan A. Robinson

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Fig. 6.

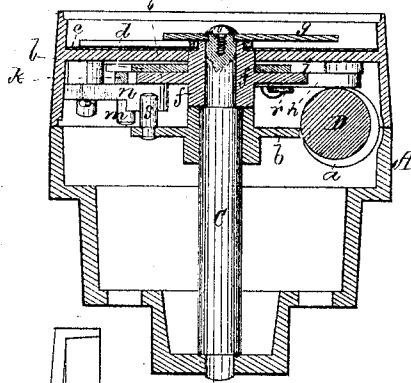


Fig. 8.

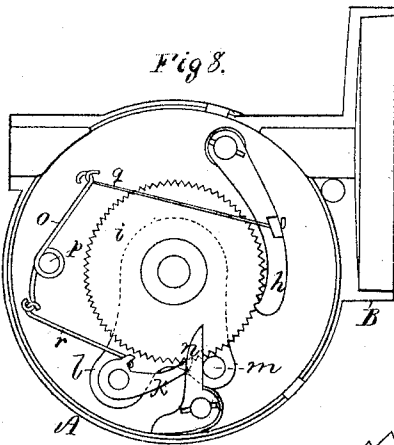


Fig. 7.

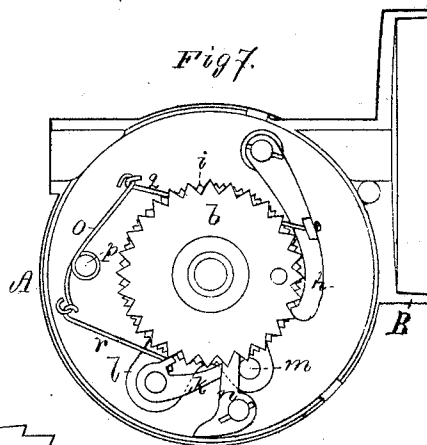
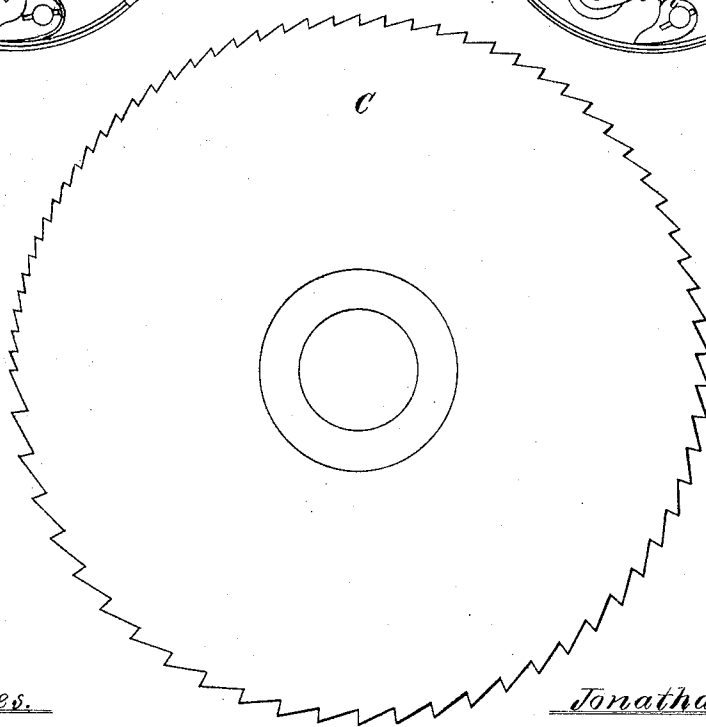


Fig. 9.



Witnesses.

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UNITED STATES PATENT OFFICE.

JONATHAN A. ROBINSON, OF FREMONT, NEW HAMPSHIRE.

IMPROVEMENT IN WAY-METERS FOR WHEEL-VEHICLES.

Specification forming part of Letters Patent No. **145,527**, dated December 16, 1873; application filed October 31, 1873.

To all whom it may concern:

Be it known that I, JONATHAN A. ROBINSON, of Fremont, of the county of Rockingham and State of New Hampshire, have invented a new and useful Improvement in Way-Meters for Wheel-Vehicles; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 denotes a side elevation, and Fig. 2 a top view, of one of my improved meters. Fig. 3 is an inner-side view of the operative ratchet-wheel and its case. Fig. 4 is an inner-side view of the rotary cap of such case with the parts applied to the interior thereof. Fig. 5 is a longitudinal section taken through and in line with the axis of the arbor of the ratchet-wheel. Fig. 6 is a vertical section of the main case and the mechanism contained therein.

In such drawings, A denotes the said main case of the meter, such having applied to one side of it, in manner as shown, another or auxiliary circular case, B, in which there is arranged concentrically a ratchet-wheel, C. This wheel C is fixed upon a driving-arbor, D, which extends into and through the main case A, is supported in suitable bearings and has at its middle a screw or worm, *a*. This worm *a* engages with a worm-gear, *b*, fixed upon a shaft, *c*, which is arranged in the axis of the case A. Such shaft *c* carries a hand or index-pointer, *d*, to operate with a dial, *e*, disposed as shown. A short tubular shaft, *f*, arranged to turn upon the shaft *c*, carries another hand or index-pointer, *g*, to operate with the dial. One pointer serves to indicate with the dial the number of miles, and the other parts of a mile.

Fig. 7 is a view of the train or mechanism within the main case. A retaining-pawl, *h*, is arranged within such case and applied to the second toothed wheel *i*, which is fixed upon the tubular shaft *f*. With this wheel *i* an impelling-pawl, *k*, operates, the two pawls being arranged in manner as shown.

Fig. 8 is a view of the wheel *i* and its operative mechanism. The pawl *k*, shaped as shown in such Fig. 8, is pivoted to an arm, *l*, that turns upon the tubular shaft, and is provided with a stud, *m*, projecting downward from it, as shown. A lever, *n*, pivoted to the case, and formed as represented, has one arm resting against the stud *m* and the other against the inner periph-

ery of the case. A lever-spring, *o*, arranged upon a fixed pivot, *p*, and in other respects as shown, has its arms connected with the two pawls by rods *q r*, whereby the spring serves to operate both pawls or to draw them up to the ratchet-gear *i*. From the gear *b* a stud, *s*, extends upward, and, during such revolution of the gear *b*, such stud will be carried against the lever *n* and will move it so as to cause it to move the arm *l* in a manner to force the impelling-pawl against the wheel *i*, so as to turn the said wheel the distance required. The lever *n*, besides serving to actuate the arm carrying the impelling-pawl, operates as a back-stop for the arm. The lever-spring not only performs the function of drawing the two pawls up to their ratchet-wheel, but also that of retracting the arm after each advance of it. There is applied to the auxiliary case B, and the rotary cap or cover *u* thereof, a spring, *E*, for turning such cover, so as to keep its working lever in close contact with the hub and cam thereof of a carriage-wheel. This lever is shown at F, as applied to the hub *t* of the rotary cap *u* of the case B, and held thereto by a set-screw, *v*, the same being so as to admit of the lever being turned around upon and fixed in place on the hub, as circumstances may require. A retaining-pawl, *w*, pivoted to the case B is applied to the ratchet-wheel C, and, furthermore, there is pivoted to the rotary cap *u* an impelling-pawl, *x*, to act with the ratchet-wheel. There also projects from the rotary cap a stud, *y*, which, by abutting against the head of a screw, *Z*, (arranged in the case and screwed through a stationary flange, *a'*, as shown,) serves to limit the advance movement of the rotary cap and, of course, that of the ratchet-wheel. The backward movement of the rotary cap is estopped by a stud, *b'*, of the cap bringing up against another stud, *c'*, projecting from the case B.

The lever F should be formed as represented, in order that it may be elastic, or act as a spring, but still have sufficient rigidity to turn the rotary cap as may be required.

The object in having the lever elastic is that it may not be broken by the wheel-hub or the cam thereof, to work against such lever or be caused by the wheel or cam to overstrain the mechanism operated by such lever.

It is intended for the main case A to be fast-

ened or clamped to the carriage-axle, and to have projecting from the hub of one of the wheels of such axle a cam or wiper to actuate or move the lever F upward during each entire revolution of the wheel. Provided the dial be properly made, it will register with the index-pointers the distance the carriage may run.

Fig. 9 represents, on an enlarged scale, a side view of the ratchet-wheel C, whose teeth differ in their lengths, each, as shown, being a little longer than the one directly in rear of it. The purpose of so making the teeth is to enable the way-meter to be adapted for use with carriage-wheels of different diameters. Were the teeth of even length throughout, it has been found impracticable to make the impelling-pawl operate the ratchet correctly, as the areal movement of the pawl must vary, as the carriage-wheel is larger or smaller, for, unless this is the case, the dial and pointers will not indicate the distance traveled.

To adjust the meter to any wheel is the purpose of the screw Z, which, by being raised or lowered, determines the extent of forward movement of the ratchet-wheel, and thus regulates the train, so that the bands or pointers may indicate on the dial the true distance traveled by the wheel.

As the wheels may vary in diameter, so must the areal movement of the ratchet be varied to adjust the train to indicate the proper distance.

In view of this variation, it will be seen that, as each movement of the impelling-pawl is alike or the same distance, whatever may be the diameter of the carriage-wheel, such pawl will not

always take a tooth of the ratchet at the proper time, but will ride upon it.

One object of making the lever elastic, as set forth, is to enable it to spring up under the strain of the cam after the ratchet-wheel may have been estopped in its advance.

It has been found that by making the butt of the ratchet movable in size the slip of the pawl is so compensated or varied that the ratchet-wheel will work to better advantage than were its teeth of equal length.

I am aware that a way-meter for a carriage, and to be operated by a cam on a wheel-hub thereof, is not new; and therefore I make no claim to such in the abstract.

I claim as my invention in the said way-meter as follows:

1. The arm *l*, the lever *n*, the impelling-pawl *k*, the spring *o*, the studs *m s*, and the two gears *b i*, all constructed, combined, and arranged within their case A, substantially as described.

2. The lever-spring *o*, the retaining-pawl *h*, the impelling-pawl *k*, the arm *l*, the lever *n*, the studs *m s*, and the two gears *b i*, all combined and arranged together and in and with their case A, as explained.

3. The adjustable stop-screw *z*, the stud *y*, and the elastic lever F, in combination and arranged as described with the rest of the mechanism, (viz., the rotary cap *u*, the impelling-pawl *x*, and ratchet-wheel C,) for revolving the main arbor D of the train.

JONATHAN A. ROBINSON.

Witnesses:

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J. R. SNOW.