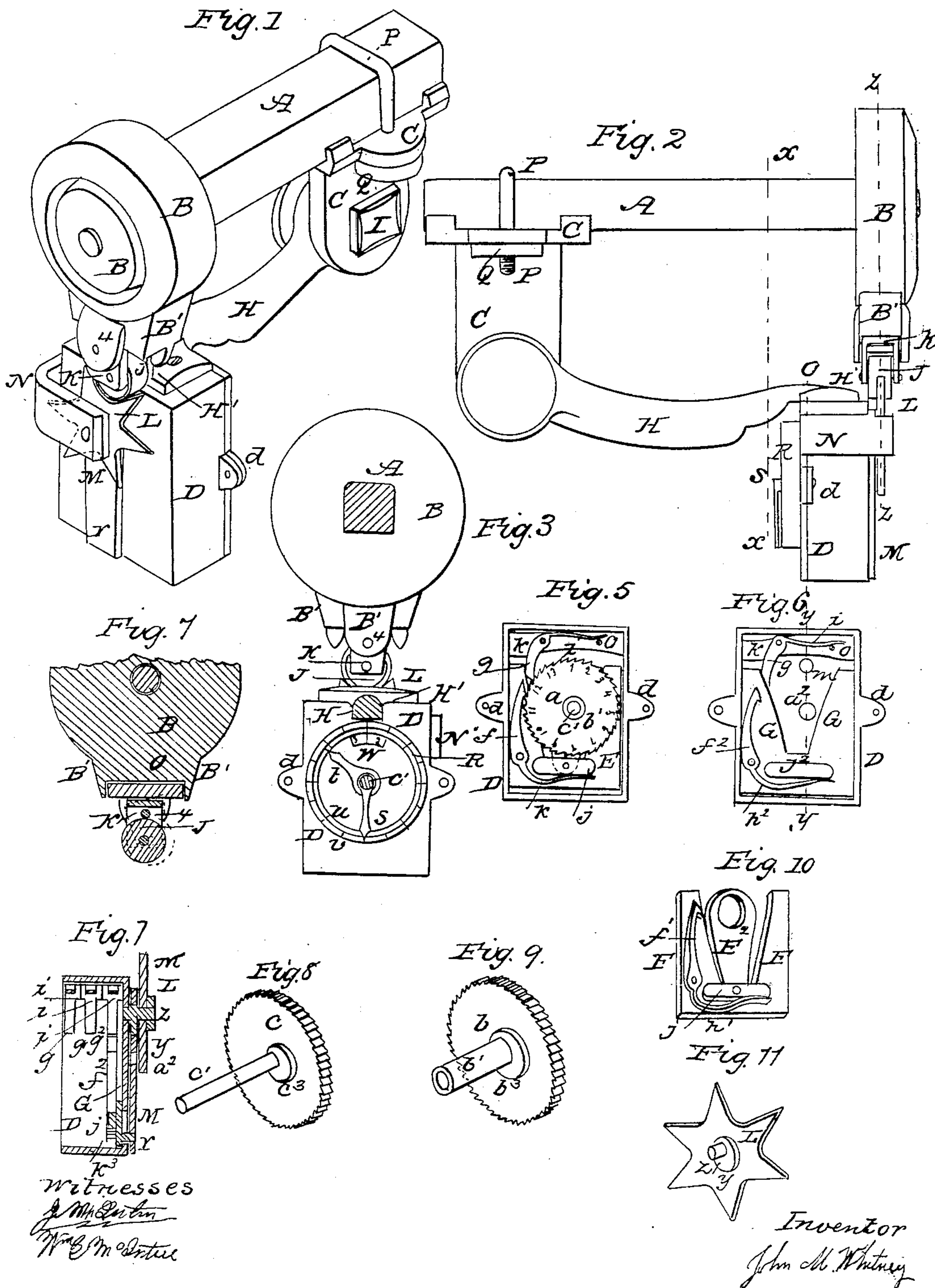


J. M. WHITNEY.

Odometer.

No. 27,589.

Patented March 20, 1860.



UNITED STATES PATENT OFFICE.

JOHN M. WHITNEY, OF BOLTON, MASSACHUSETTS.

ODOMETER.

Specification of Letters Patent No. 27,589, dated March 20, 1860.

To all whom it may concern:

Be it known that I, J. M. WHITNEY, of Bolton, county of Worcester, in the State of Massachusetts, have invented certain new and useful Improvements in Odometers; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

My invention has for its object an instrument, which shall perfectly indicate the distance a vehicle may travel (by the revolution of the wheels) and which is not susceptible of having fraud practiced upon it; and to this end my invention consists in the employment of a rotating sector or arm on the inner side of the hub (of the vehicle's wheel) which strikes against, and rotates a star wheel, imparting by its rotation in either direction, a rotary motion, in a given direction to a combination of registering wheels; as will be hereinafter fully explained.

To enable those skilled in the art, to make and use my improved apparatus I will proceed to describe its construction and operation referring by letters to the accompanying drawing forming part of this specification, and in which—

Figure 1, represents a perspective view of my improved "odometer" applied to the axle of a vehicle (the wheel being removed to prevent confusion in the drawing). Fig. 2, represents a side elevation of the same. Fig. 3, represents a vertical section on the line x, x of Fig. 2. Fig. 4, is a vertical section at the line z, z , of Fig. 2. Fig. 5, is a vertical section at the line o, o of Fig. 2, (looking into the register box). Fig. 6, is a similar view with all the removable parts extracted from the register box. Fig. 7, is a vertical cross section at y, y , of Fig. 6. Fig. 8, is a perspective view of the first register wheel. Fig. 9, is a similar view of the second wheel. Fig. 10, is an isometrical view of the middle slide, and Fig. 11, is a perspective view of star wheel with its driving cam.

Similar letters denote the same parts in the different views.

A, represents a portion of the axle of a vehicle. B the rotary, driving sector which is fastened to (or formed on) the inner side of the hub of the wheel.

C is a cast iron stand, which is bolted by a tie bolt, P, to the axletree, and to which is secured by bolt, I, an arm H to the foot-piece H' of which arm is firmly screwed or bolted, the registering box, D; said box is formed with only one side open, which is closed up by a removable cover or lid secured in place by screws or bolts, at the ears, d . On one side of the box, D, is fastened a bent strap piece, N, which extends around in front of said box, and has formed in it the bearing for the outer end of the stud or arbor, Z, of the star wheel, L, the inner end of said arbor, Z, having its bearing in the front side of the box, D, (see Fig. 7). Between the star wheel L and the front face of the box, D, is arranged a sliding bar, M, which is moved up and down by an eccentric, Y, on the arbor, Z, of the star wheel (see Fig. 7) and which is coupled by a pivot, r , to the lower end of the first slide, G, said slide, G, is caused by the bar, M, (connected to it as just mentioned) to move, up and down within the case, D, and carries with it the ratchet finger f^2 (see Fig. 6) which works in the ratchet wheel C. The finger f^2 is formed with a spring, h^2 , to allow it to return over the notches of the wheel, C.

g^2 is a pawl which drops into the notches of the wheel, C, and prevents its turning backward.

g^1 is a similar pawl which acts on the second ratchet wheel, b , and, g , is another pawl which acts on the last ratchet wheel, a .

G is the second slide which is moved up and down by an eccentric, or cam, c^3 , on the upper face of the first ratchet wheel, c , and which carries the finger f^2 that operates the second wheel, b .

On the second wheel, b , is a cam b^3 which moves the slide, E, which operates by its finger f the last wheel, a . On the outer surface of the cover or lid of the case, D, is formed an index plate, R, (see Figs. 2, 8, 3) on which are cut two dials, u , and, v , and in which is cut an opening, W, to allow the dial on the last wheel, E, to show through.

S, is a hand on the shaft, c' , of the first wheel which indicates on the dial, v , the revolutions of said wheel, and, t , is another hand on the shaft, b' , of the second wheel, which indicates the revolutions of said wheel on the dial, u .

J, is the caster or roll which meshes into and drives the star wheel L. This caster, J, is hung in a straddle box K, which is pivoted by a pivot 4, to the box, 5 B'. Said box B' is formed with a cavity in which is placed a block O, (see Fig. 4) of rubber (or other elastic material) in such manner as to fit up against the upper side of the box K, and the object of this 10 method of hanging the box K is to render the center of the caster to a slight degree a movable center; so that should the caster, J, and star wheel, L, come into contact on their dead centers, the caster's center will yield 15 and the caster and wheel, L, come into perfect gear, without any strain to the parts. The operation of the box K, is illustrated at Fig. 4, where it is shown in red lines as being pressed out of its normal position; the 20 top side of the box K pressing into the spring block, O, at one corner.

To render more comprehensible the operation of my improved apparatus I will *im-* 25 *primis*, explain the manner in which the several parts are all put together.

The star wheel, L, (with its cam, Y,) the slide bar, M, the first slide G (with its finger f^2) and the three retaining pawls g , g' , g^2 being all arranged with the case, D, as 30 illustrated at Figs. 6 and 7, the first ratchet wheel, c , is next put in the lower end (or short end) of its shaft S, being placed in the hole or bearing a^2 (in the case, D,) and the finger f^2 of slide G and the pawl g^2 being 35 sprung into the notches of said wheel (in a manner similar to that illustrated at Fig. 5 of the finger pawl and last wheel) the slide, F, is next placed in the case D, the vibrating arm F^2 (see Fig. 10) coming down on to the 40 face of the wheel, c , and the cam, c^3 , of said wheel projecting through the hole in the upper end of said arm F^2 , the wheel, b , is next put in, its hollow hub, b^1 , passing around the shaft S, and the finger f^1 and pawl g^1 are 45 sprung into its notches; the slide E is next put in; this slide is made similar to F^2 and its vibrating arm is placed around the cam b^3 on wheel, b , lastly the wheel, d , is put in fitting around the hub, b' , of wheel, 50 b , and the finger, f , of slide, E, and the pawl, g , are then sprung into the notches of said wheel, a . The lid or cover of the case, D, is then put on and secured by bolts at its ears, d , the shafts, S, and, b' , passing through 55 a hole, or bearing in said lid; which hole is at the center of the dials, R; the hands, s , and, t , are then put on and secured, and the apparatus is ready for use, and operates as follows viz:—As the wheel hub 60 (carrying the plate B) rotates, the caster, J, striking into the teeth of the star wheel, L, rotates said wheel and it by means of its cam, y , causes the slide bar, M, to move up and down which bar carries with it the 65 first slide, G; as the slide, G, is made to

move up and down or reciprocate vertically in the case, D, its finger f^2 causes the wheel, c , to rotate at each stroke, to the extent of the length of one of the teeth of said wheel; as the wheel, c , is thus rotated slowly on its 70 axis its cam, c^3 , operates the slide, F, (in a manner similar to that in which the bar M operates the slide G) and causes it, by its finger to operate the wheel, b ; which in turn 75 by its cam, b' , operates slide, E, which drives the last wheel, a , the pawls g , g' , g^2 retaining respectively each of the ratchet wheels to prevent back motion; as the ratchet 80 wheels rotate their revolutions are respectively indicated by the hand, s , (for first wheel) and by the index on wheel third, which shows through the slot or opening, W.

The size and proportion of parts shown in the drawings I have found to work well in practice; the number of teeth in the wheels 85 and proportions of speed are as follows viz:—The star wheel L, having six teeth it requires six revolutions of the wheel of the vehicle to cause said star wheel to rotate 90 once on its axis, and since one revolution of the star wheel causes the first ratchet wheel c , to move to the extent of one tooth and it has fifty teeth, it requires fifty revolutions of the star wheel or three hundred of the 95 vehicle's wheel to rotate the ratchet wheel c , once. And since one revolution of the wheel, c , only moves the wheel b , around one notch, and wheel, b , has fifty notches, it takes fifty revolutions of wheel c , or fifteen thousand 100 of wheel, L, or ninety thousand of the vehicle's wheel to rotate wheel, b , once on its axis, and since it requires a whole revolution of wheel, b , to move wheel, a , one notch, and wheel, a , has forty notches; it follows that 105 to rotate wheel, a , once around, requires forty revolutions of wheel, b , or two thousand revolutions of wheel, c , or six hundred thousand revolutions of the star wheel or 110 three million, six hundred thousand revolutions of the vehicle's wheels. It will then be understood that by this combination of the ratchet wheels with the operating slides and 115 cams arranged on a single shaft as described, a mechanism is produced which without any complication (comparatively) will register revolutions of the wheel of the vehicle, during exceedingly long travels; and it will be seen that the motion of the 120 wheel of the vehicle registers, no matter which way you turn it, so that there is no possibility of unregistering, while at the same time (since it requires six revolutions of the vehicle's wheels to register at all) the vehicle can always be backed at least three 125 revolutions of the wheel without registering. I propose to effectually prevent fraud in the use of my apparatus (which can only be practical by taking off the apparatus from the vehicle, or by taking it to pieces) 130 to seal with wax and a stamp all the nuts or

bolts; used in putting the apparatus together or in attaching it to the vehicle.

I do not wish to limit myself to three wheels more or less for registering; but

5 What I claim as my invention and desire to secure by Letters Patent is—

1. So constructing an odometer that the revolutions of the wheel of the vehicle are registered equally reliably in whichever

10 direction the said wheel may be rotated.

2. I also claim the combination of a series of ratchet wheels on one arbor with a series of operating slide bars driven by cams on

the ratchet wheels substantially as described for the purpose set forth.

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3. I also claim the employment of a rubber or other equivalent cushion in combination with the yielding caster holder K, as specified for the purpose set forth.

In testimony whereof I have hereunto set 20 my hand and affixed my seal this nineteenth day of December 1859.

JOHN M. WHITNEY. [L. S.]

Witnesses:

J. N. McINTIRE,

W. C. McINTIRE.