A. W. WESSOLECK.

ODOMETER.

APPLICATION FILED MAR. 16, 1914.

1,140,426.

Patented May 25, 1915.

2 SHEETS—SHEET 1.

Fig. 1

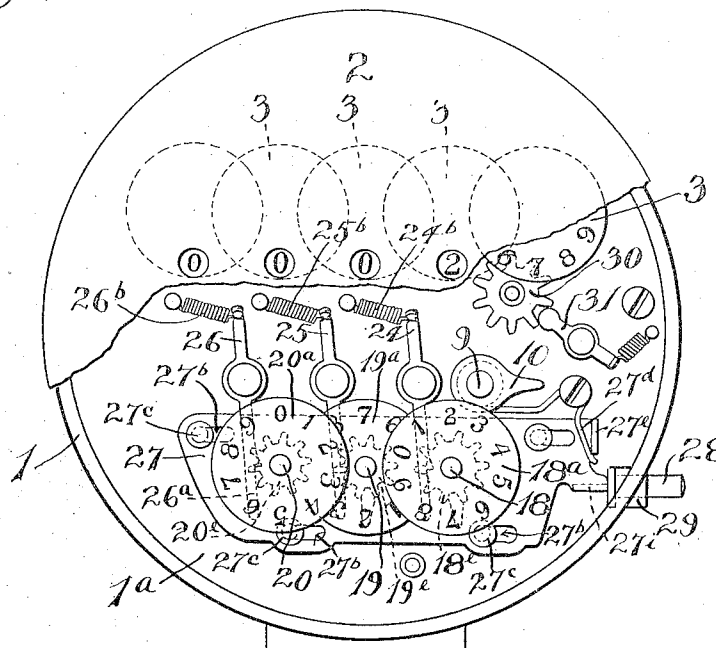
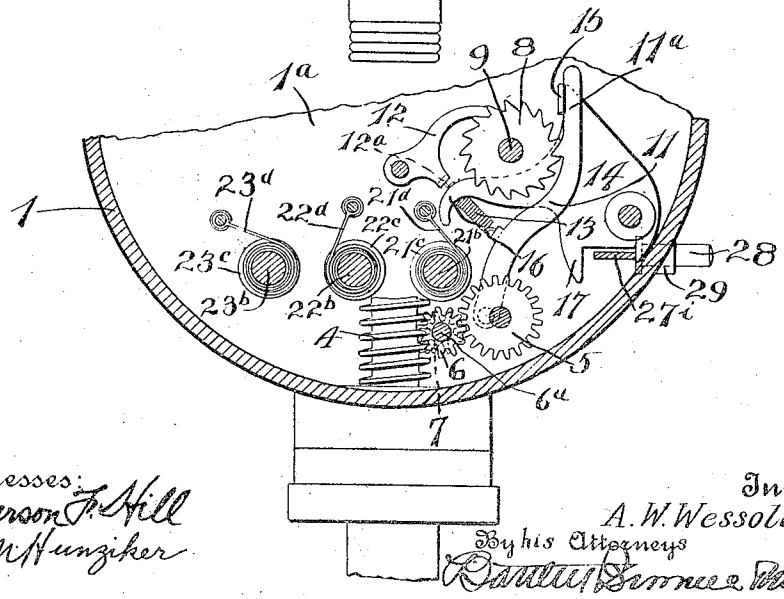


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

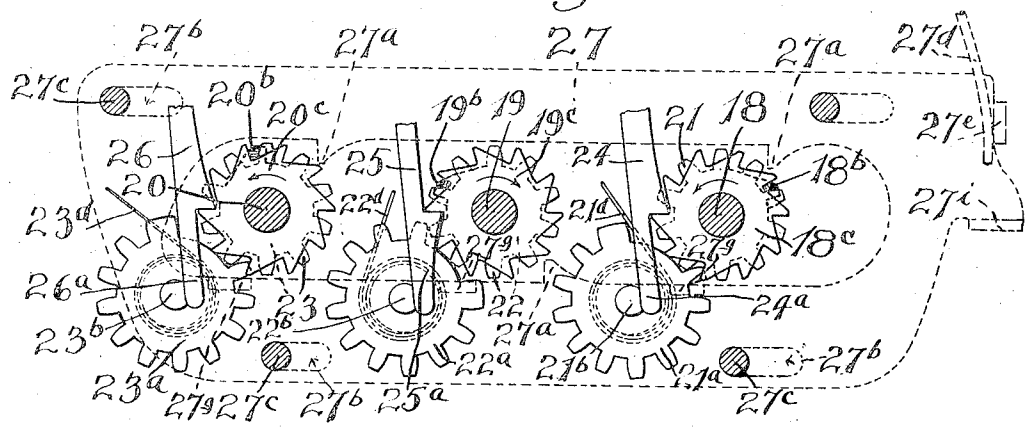


Fig. 4.

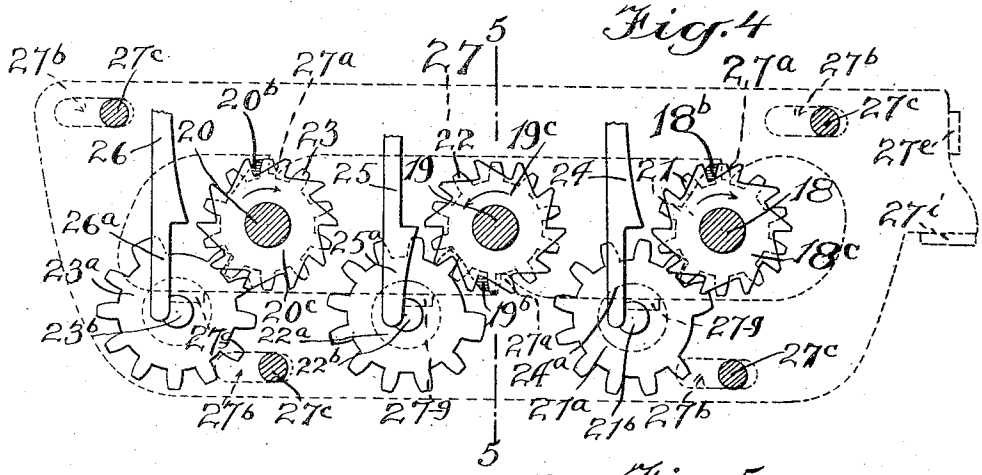
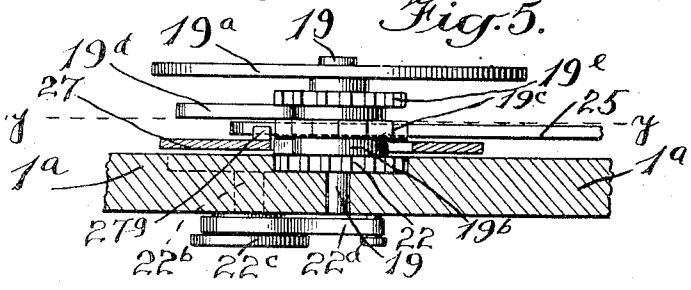


Fig. 5.



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ODOMETER.

1,140,426. Specification of Letters Patent. Patented May 25, 1915.

Application filed March 16, 1914. Serial No. 824,922.

To all whom it may concern:

Be it known that I, AUGUSTUS W. WESSOLECK, a citizen of the United States, residing at New Britain, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Odometers, of which the following is a full, clear, and exact description.

My invention relates to improvements in odometers of the type which includes numeral disks for registering trip mileage sometimes used in connection with other numeral disks which indicate total mileage.

The object of the present invention is to provide a simple, effective and durable means for resetting the trip recording means to zero.

In the accompanying drawings I have shown the invention as applied to an odometer of the type which includes registering means for showing total mileage as well as registering means for showing trip mileage.

In the drawings Figure 1 is a front elevation of such parts of an odometer as are essential to an understanding of my invention, part of the face plate being broken away. Fig. 2 is a sectional view of a portion of the mechanism viewed from the top with certain parts removed. Fig. 3 is a horizontal section on an enlarged scale and diagrammatically, this section being taken on the plane of the line *y—y*, Fig. 5 and the parts being shown in non reset position. Fig. 4 is a similar view, but with the parts in reset position. Fig. 5 is a section on the line 5—5, Fig. 4.

1 represents the case which may be of any suitable form and which constitutes a housing for the internal operating mechanism of the odometer.

2 is a face plate having therein suitable windows for exposing the numerals of the registering disks. In Fig. 1 only those windows appear which are associated with certain of the total mileage disks. The total mileage disks are indicated at 3—3—3 and are, of course, driven from the same source of power.

4 is a worm which is driven from one of the wheels of the vehicle with which the odometer is associated and by which the registering mechanism is actuated. On the under side of the plate 1^a, which may form the bed or frame for the odometer mechanism, is mounted the transmission gearing which receives the motion from the worm 4 and transmits this motion to the trip mileage and total mileage disks through suitable intermediate gearing. The portion of the transmission gearing mounted upon the under side of the bed 1^a comprises a gear wheel 5 meshing with a second gear wheel 6 whose spindle 6^a carries a worm gear 7 (shown in dotted lines in Fig. 2), which worm gear meshes with the worm 4 and transmits motion from said worm to the gear 5. Spaced from the gear 5 and on the under side of the frame 1^a is a ratchet wheel 8 whose spindle 9 extends through the frame 1^a to the upper face thereof where it carries rigidly a cam 10 for operating the gears of the trip and total mileage disks. A driving dog 11 has one end eccentrically journaled on the gear wheel 5 and its opposite end is provided with a tooth which coöperates with the ratchet wheel 8 to rotate said wheel as the driving dog is reciprocated through the rotation of the gear 5. At its opposite side the ratchet wheel 8 is provided with a pivoted pawl member 12. The dog 11 and pawl 12 normally have their operating teeth held in engagement with the ratchet wheel by means of the spring 13 interconnecting these two members. The pawl 12 is provided with a downwardly extending lug 12^a to which this spring may be secured, this lug also receiving the thrust of a pawl releasing device during the resetting operation, as will be hereinafter explained. The driving dog 11 has its end extended beyond its actuating tooth as at 11^a for a like purpose.

Pivotally mounted upon the under face of the frame 1^a adjacent the edge of the case 1 and adjacent the driving dog 11 is a controlling plate 14 having one end provided with a lug 15 positioned to engage the inner edge of the dog extension 11^a which is normally held thereagainst by the spring 13. This plate is also provided with a cam arm 16 positioned to lie adjacent the lug 12^a of the pawl 12 so that when this plate is swung in one direction, its said lug 15 and cam 16 will engage with the dog and pawl respectively to move these away from engagement with the ratchet wheel 8. The operation of the spring 13 acting through arm 11^a of the dog normally tends to hold these parts in a position shown in Fig. 2, wherein they are

inoperative to retract the pawl and dog. This plate 14 is further provided with an offset portion 17 designed to coöperate with a resetting slide mounted upon the upper face of the frame 1^a.

Journaled in the plate 1^a and extending upwardly from the upper face thereof is a series of numeral disk spindles numbered respectively 18—19—20. The numeral disks carried and rotated by these spindles are seen at 18^a—19^a—20^a, Fig. 1 of the drawings, and are secured to these spindles adjacent their upper ends. Adjacent the base of the spindles, the frame plate 1^a is recessed to form housings to receive tensioning gears 21—22—23. Above these gears and in alinement on each spindle is secured stop arms or lugs 18^b—19^b—20^b, the intermediate one of the stop arms being reversely arranged on its spindle because of the reverse direction of rotation of said spindle as indicated by the arrows, Figs. 3 and 4. The stop arms coöperate with certain portions of the resetting mechanism to position the numeral disks for trip reading at zero when the device is reset. On these spindles and directly above the stop arms are ratchet wheels 18^c—19^c—20^c, and directly above these ratchet wheels on spindles 18—19 are rigidly held cams 18^d—19^d (see Fig. 1), one of said cams being shown in solid lines, Fig. 5. On the spindle 18 is mounted a toothed wheel 18^e which is above the plane of the cam 18^d and in the plane of the cam 10 so that as the cam 10 is revolved by means of the driving dog 11 it will turn the spindle 18 and the parts associated therewith one step or fraction of a revolution for each complete revolution of the cam 10. On the spindle 19 and above the cam 19^d, but in the plane of the cam 18^d, is located another toothed wheel 19^e, corresponding in function to the toothed wheel 18^e, this latter wheel 19^e being driven by the cam 18^d. On the spindle 20 is a toothed wheel 20^e which is arranged in the plane of the cam 19^d so that said cam will rotate the spindle 20 one fraction of a revolution to every full revolution of the spindle 19.

The tensioning gears 21—22—23 coöperate respectively with spring winding gears 21^a—22^a—23^a, whose spindles 21^b—22^b—23^b extend through the frame plate 1^a and carry at the under face of said frame plate the spring hubs or barrels numbered respectively 21^c—22^c—23^c. Tension springs numbered respectively 21^d—22^d—23^d each have one of their ends fixedly secured to said barrels and their other end fixed to posts on the under face of the frame plate 1^a so that as these respective spindles 21^b—22^b—23^b are rotated through the gears 21—21^a, 22—22^a, and 23—23^a, their respective springs will be coiled above the spindles to tension the same and normally tend to rotate the spindles in the direction opposite to that in which they are being turned. The spindles 18—19—20 will, in practice, be rotated numberless times and means must be provided to prevent overwinding of the springs 21^d—22^d—23^d; otherwise unless some slippage is arranged for, these springs will be tensioned to their limit and either break or the registering operation be absolutely stopped. Therefore, each of the spring winding gears 21^a—22^a—23^a is formed as an interrupted gear presenting for a short space a smooth periphery over which the teeth of the gears 21—22 or 23 will slip when the spring winding gear spindle has been given substantially one revolution. The slippage will maintain the spring winding gears at their position of full spring tension, but will not permit them to be wound up any further and will at the same time permit the continued rotation of the spindles 18—19—20 and their respective tensioning gears 21—22—23.

In order to retain the numeral disk spindles 18—19—20 in the successive positions to which they are turned, pawl mechanism is provided coöperating with the respective ratchet wheels 18^c—19^c—20^c carried by the spindles. This pawl mechanism may take the form of the pivoted pawl members 24—25—26 mounted upon the upper face of the frame plate 1^a and in the plane of the ratchet wheels 18^c—19^c—20^c. These pawls are extended beyond their ratchet engaging teeth to provide end extensions 24^a—25^a—26^a for coöperation with the resetting mechanism. The intermediate pawl 25 is reversely arranged on account of the reverse direction of rotation of its ratchet as will be seen by the arrows in Figs. 3 and 4. These pawls have their teeth normally held in engagement with their respective ratchet wheels by coil springs 24^b—25^b—26^b appropriately secured to these pawls and to a fixed stud on the frame plate. It will be evident that as the spindles 18—19—20 are rotated through the rotation of the cam 10 and through the rotation of the cams 18^a and 19^a, the springs 21^d—22^d—23^d will be tensioned and held tensioned as long as the pawls 24—25—26 are in engagement with makes it a stationary abutment. In addi- therefore, to reset these trip mileage disks at zero, means must be provided for releasing the pawls, 24—25—26 and for stopping the reverse spring actuated rotation of these disks at the point where their numerals will appear at zero through the sighting windows in the case. It has also been found if the cam 10 has its actuating end positioned closely adjacent the gear 18^e of spindle 18 when the latter has been rotated say to the "9" position and the retaining pawl released, the resetting of its numeral disk 18^a is prevented because of the fact that the cam

10 forms a stationary abutment against which the reversely rotated teeth of the gear 18^e will strike, thereby preventing the complete resetting of the numeral dial 18^a. Consequently, it is necessary to release the mechanism which holds this cam 10 and which makes it a stationary abutment. In addition, therefore, to providing means for releasing the holding pawls and for stopping the numeral disks at zero position, my resetting mechanism embodies means for releasing the driving dog 11 and pawl 12, thereby releasing the means which holds the cam 10 rigid. The gear wheel 18^e of spindle 18 may, therefore, be reversely rotated under the impulse of the wound spring 21^d, and should the cam 10 be in the way, the rotation of the gear 18^e will merely swing the released cam out of the way, so that the numeral disk 18^a may return to zero position. There will be times also when, with the cam 10 in blocking position as aforesaid, the cams 18^d and 19^d will be so positioned relative to the toothed wheels 19^e and 20^e that none of the spindles 18—19—20 may be reversely rotated in resetting direction, and to fully reset position, until the cam 10 has been released and is swung out of the path of reverse rotation of the toothed gear 18^e. This blocking action of cam 10 will not occur every time, but only when the resetting operation is attempted with the cam end lying adjacent the toothed gear 18^e. The position of this cam is not ordinarily discernible to the person operating the resetting mechanism; consequently, the provision of means for releasing the cam holding means is a necessity, and this releasing means to be effective must coöperate with and be operated substantially coincidently with the operation of the resetting means.

Slidably mounted upon the upper face of the frame plate 1^a is a sliding plate 27 which forms a resetting plate and which is in the form of a longitudinal yoke, the central recess of which extends longitudinally thereof and embraces therewithin the spindles 18—19—20. This sliding plate is positioned in the plane of the stop lugs 18^b—19^b—20^b carried on the spindles 18—19—20, and at the opposite edges of the central recessed portion is provided with inset abutments 27^a (shown in dotted lines in Figs. 3 and 4) positioned to coöperate respectively with the stop lugs 18^b—19^b—20^b so that when the spindles 18—19—20 are reversely rotated in resetting direction, their stop lugs will engage with the respective stop abutments 27^a and position the "zero" numeral on the number dial in line with the sight opening in the casing. This sliding plate is guided for longitudinal movement by any suitable means, such as the elongated slots 27^b at opposite edges of the plate and stop pins 27^c extending through said slots into the frame plate 1^a. It is normally held in the position shown in dotted lines in Fig. 3 of the drawings by means of the spring 27^d coiled about a post secured to the frame 1^a, and having one end operating against a lug 27^c at one end of the plate. This plate is designed to be moved from the position shown in Fig. 3 to that shown in Fig. 4 and against the tension of the spring 27^d to move the pawls 24—25—26 from engagement with the ratchets 18^c—19^c—20^c, thereby releasing the restraint upon the tensioned springs 21^d—22^d—23^d so that these springs will rotate the spindles 18—19—20 in a reverse or unwinding direction to reset the same, spindles and numeral disks being stopped at zero position by engagement with the stop lugs 18^d—19^d—20^d with their respective abutments 27^a on the resetting plate. To this end the edge of the resetting plate 27 in line with the forward ends 24^a—25^a—26^a of the pawls, is provided with raised dogs 27^g which, when the plate is so moved, will engage with these ends of the pawls and move them from holding engagement with their respective ratchet wheels. At the same time, this movement of the plate is operative to effect the release of the ratchet wheel 8 holding the cam 10. The sliding plate is, therefore, provided with a downwardly extending finger 27^i which extends below the under surface of the frame plate 1^a to a position adjacent the offset portion 17 of the pivoted plate 14 which controls the driving dog and pawl of the ratchet wheel 8. When the sliding reset plate 27 is moved against the force of its spring to release the pawls, as aforesaid, the finger 27^i will engage offset 17 and will swing the controlling plate 14 in a direction to engage its pawls 15 and 16 with the driving dog and holding pawl respectively of the ratchet wheel 8, thereby freeing said ratchet wheel from any holding restraint, so that its spindle 9 and cam 10 may be freely turned by the gear wheel 18^e when the latter revolves in resetting direction. The resetting plate 27 may be moved to accomplish this resetting operation by any suitable means. In the drawings I have shown a plunger pin 28 guided in a bushing 29 in the side of the case 1, having its inner end abutting against the edge of the depending finger 27^i of the resetting plate. The outer end of this pin 28 projects out beyond the exterior face of the case 1 and is held in that position because of the pressure of spring 27^d against the plate and in turn against the pin. It, therefore, follows that when the pin 28 is pressed inwardly, the resetting plate 27 is moved in a direction to release the ratchet wheels of the spindles 18—19—20, and to release the holding means of the ratchet 8 and cam 10 so that the tensioned power springs 21^d—22^d—23^d may operate to rotate the

spindles in reverse direction to reset zero position, all as heretofore explained. When the pin 28 is released after having been moved to reset the numeral disks as explained, it will be returned to its normal projected position by the spring impelled movement of the resetting plate 27, the driving dog 14 and pawl 12 of the ratchet wheel 8 being themselves returned to holding position and in turn moving the controlling plate 14 to its original position through the coil spring 13.

In the drawings I have further shown a toothed gear 30 positioned on the upper face of the frame plate 1^a and provided with a suitable spring pressed pawl 31. This toothed gear, in the specific embodiment of odometer mechanism shown in the drawings, is operated through the cam 10 to in turn actuate the numeral disks of the total mileage mechanism through suitable intermediate gearing. The specific form and arrangement of this total mileage mechanism, however, is of no importance as far as the present invention is concerned, and is merely referred to and shown as representative of a standard construction of odometer mechanism in connection with which my invention in resetting mechanisms may be employed.

As to this invention, it will be understood that while I have herein described and shown a specific embodiment thereof, the same is susceptible of variation in structure and in relative arrangement of parts within the spirit of the invention and the scope of the appended claims.

What I claim, therefore, and desire to secure by Letters Patent is:

1. In combination, a spindle having a numeral disk thereon and arranged to be rotated in one direction to give an indication, means normally tending to reversely rotate said spindle, means coöperating with said spindle and normally tending to hold the same against reverse rotation while permitting rotation in the first direction to indicate, a rotatable actuator operatively connected with said spindle and arranged to rotate the same in said first or indicating direction, means arranged to hold said actuator against reverse rotation, and means operative to release the holding means of said spindle and of said actuator, whereby said spindle and disk may be reversely rotated.

2. In combination, a spindle having a numeral disk thereon and arranged to be rotated in one direction to give an indication, means normally tending to reversely rotate said spindle, means coöperating with said spindle and normally tending to hold the same against reverse rotation while permitting rotation in the first direction to indicate, a rotatable actuator eccentrically positioned relative to said spindle and connected thereto and arranged to rotate the same in said first or indicating direction, means arranged to hold said actuator against reverse rotation, and means manually operable to release the holding means of said spindle and of said actuator substantially simultaneously, whereby said spindle and disk may be reversely rotated.

3. In combination, a spindle having a numeral disk thereon and having a driving gear thereon, a driving shaft having an actuator thereon arranged to engage said spindle gear and rotate said spindle in a direction to indicate by said disk, means for rotating said shaft in such indicating direction, means normally tending to reversely rotate said spindle, means co-acting with said spindle and normally holding the same against reverse rotation while permitting rotation in the indicating direction, means arranged to hold said shaft against reverse rotation, and means manually operative to release said holding means for said spindle and operative to substantially simultaneously release the holding means of such shaft, whereby said spindle, disk and gear may be reversely rotated.

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Correction in Letters Patent No. 1,140,426.

It is hereby certified that in Letters Patent No. 1,140,426, granted May 25, 1915, upon the application of Augustus W. Wessoleck, of New Britain, Connecticut, for an improvement in "Odometers," an error appears in the printed specification requiring correction as follows: Page 2, strike out line 117, and insert the words *their respective ratchet wheels. In order;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 15th day of June, A. D., 1915.

[SEAL.]

J. T. NEWTON,

Acting Commissioner of Patents.