Oct. 14, 1924. 1,511,234

J. K. OLSEN

ODOMETER DRIVE

Filed Aug. 14, 1922

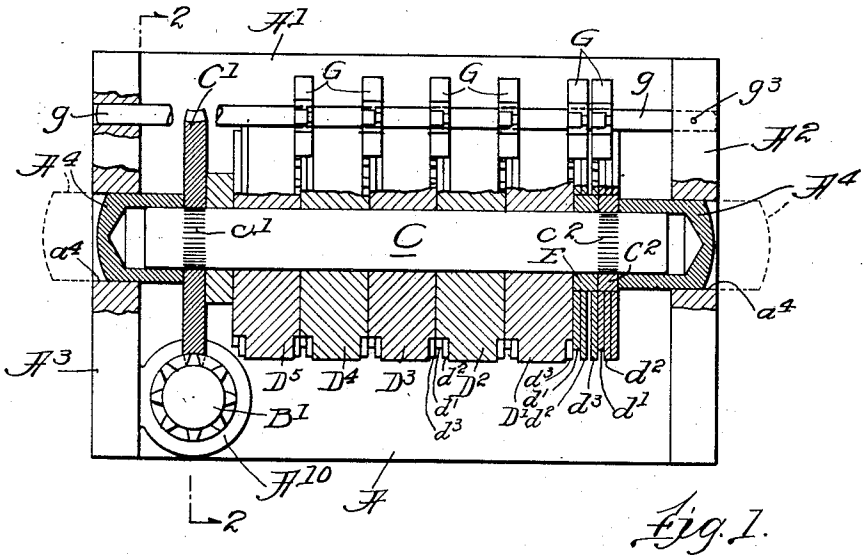


Fig. 1.

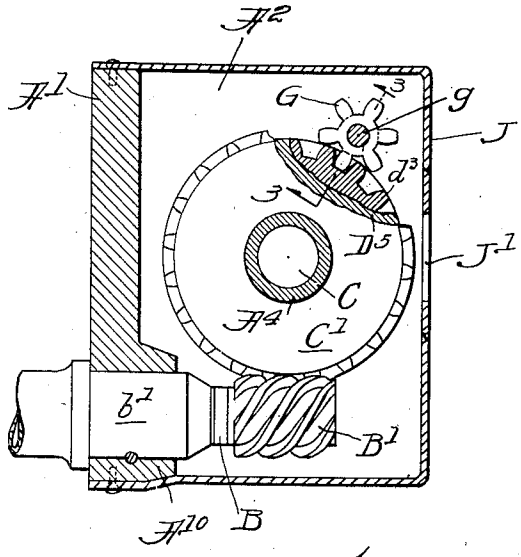


Fig. 2.

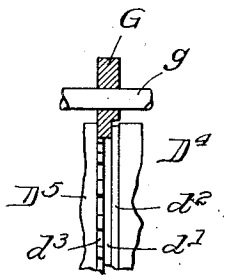


Fig. 3.

Witness:

Inventor;
John K. Olsen,
by Burton & Burton
his Attys.

Patented Oct. 14, 1924. 1,511,234

UNITED STATES PATENT OFFICE.

JOHN K. OLSEN, OF CHICAGO, ILLINOIS, ASSIGNOR TO STEWART-WARNER SPEEDOMETER CORPORATION, OF CHICAGO, ILLINOIS, A CORPORATION OF VIRGINIA.

ODOMETER DRIVE.

Application filed August 14, 1922. Serial No. 581,563.

To all whom it may concern:

Be it known that I, JOHN K. OLSEN, a citizen of the United States, residing in the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Odometer Drives, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The purpose of this invention is to provide an improved and simplified construction of odometer having a single set of successive dial wheels, the whole consisting of a small number of parts and adapted to be assembled with a small number of handlings or movements and in compact form for enclosure in the small size of casing. It consists in the elements and features of construction shown and described, as indicated in the claims.

In the drawings:—

Figure 1 is a partly sectional front elevation of an odometer embodying this invention, having the outer casing removed, showing the frame structure and mechanism, section being made radially through the odometer dial wheels and shaft.

Figure 2 is a section at the line, 2—2, on Figure 1.

Figure 3 is a section at the line, 3—3, on Figure 2.

The structure shown in the drawings comprises a rigid unitary frame, A, consisting of a back web, A^1, end standards, A^2 and A^3. The web, A^1, has a protruding boss, A^{10}, which receives a journal bearing bushing, b^1, for an inleading power shaft, B. In the end standards, A^2 and A^3, there are formed apertures, a^4, a^4, for journal bearing bushings, A^4, A^4, which are dimensioned for drive fit in said aperture, said bushings being in cup form, that is, having closed ends so that they may constitute grease pockets as well as bearings, and being longer than the thickness of the end standards so that they may protrude inward therefrom to afford bearings for the ends of the speedometer train shaft without making said shaft any longer than the distance between the standards so as to be introduced laterally between them, as hereinafter described. On the odometer train shaft, B, there is mounted at the left hand end beyond the highest denomination dial wheel thereon, a spiral gear pinion, B^1, which meshes with the spiral driving gear, C^1, on the shaft, C. At the opposite end of the shaft, B, there is made fast thereon for rotation therewith, a mutilated gear element, C^2, of familiar form for communicating decimally-reduced speed to the next wheel of the train by means of the carrying pinion, G, of familiar form, mounted on the carrying pinion shaft, g, which is journaled at its opposite ends in the standards, A^2 and A^3. On the shaft, C, between the gears, C^1 and C^2, which are rigid therewith there are mounted loose as seen in Fig. 1, any desired number of mileage indicating dial wheels,—five being shown,—indicated, D^1, D^2, D^3, D^4 and D^5,—and carrying pinions, G, on the shaft, g, communicate decimally reduced rotation successively from the gear, C^2, which is without dial markings to the wheel, E, also without marking, and thence to the dial wheels, D^1, D^2, D^3, D^4 and D^5. The construction of the carrying pinions with their mutilated and delay zones, and the co-operating gear elements of the wheels,—D^1, D^2, D^3, D^4 and D^5, comprising mutilated gear and delay zones, d^1 and d^2, and unmutilated gear zones, d^3, for co-operating with the corresponding zones of the carrying pinions is familiar and requires no further description here. Both the gears, C^1 and C^2, are made fast upon the shaft, C, by being constructed for drive fit thereon, and, preferably, for the most perfect securement, by knurling the shaft as seen at c^1 and c^2, at the zones at which said gears, C^1 and C^2, are to be made fast. By this means it will be seen that all the dial wheels and the wheel, E, assembled on the shaft, loose thereon for rotation, may be correctly positioned, without undue slack longitudinally but sufficiently free for rotation, in the process of driving on the gears, C^1 and C^2, which may be last applied, and that no other securing means or spacing means is required. The shaft, C, being as described of such length that it may be entered laterally between the two standards, A^2 and A^3, may therefore, be thus entered with the entire assemblage of wheels thereon, before the carrying pinon shaft, g, is inserted, the gear, C^1, being adapted to mesh with the spiral gear pinion in the movement for bringing the shaft, C, into alignment with the apertures in the standards, A^2 and A^3, through which the bushing bearings, A^4 and A^4, may

be afterward driven and entered upon the journaled ends of the shaft; these journal bushings being dimensioned for drive fit into the apertures, a^4, a^4, may be driven so that their inner ends abut the exposed outer surfaces of the gears, C^1, and C^2, and being in touch therewith, the driving of said bushings into the standards drives the gears, C^1 and C^2, on to the shaft the proper distance for positioning the parts assembled on the shaft between said gears without undue endwise play, but free for rotation. It will be seen, therefore, that the process of assembling is rendered exceedingly simple, requiring neither set screws nor any adjustment, the construction or adjustment of the appliance used for forcing in the bushings, determining to any desired degree of exactness the spacing apart of the two bushings upon assemblage of the dial wheels on the shaft, C, and the positioning of the shaft, as stated, and the forcing in of the bushings, the pinion counter shaft, B, will be inserted, the pinions being entered on the shaft respectively, in the process, and thereupon a pin, g^3, securing the pinion shaft at one end to one of the standards, completes the assembly of the parts in place, and the casing, J, having the reading opening, J^1, is applied over the end standard secured by a screw taking into the web, A^1.

From the foregoing description, it will be understood that the instrument described comprises a minimum number of parts, both in respect to frame structure and mechanism, and that the parts are secured together by a minimum number of securing devices, so as to make a very economically constructed, as well as accurately operating instrument for the purpose.

Also it will be seen that the dial wheels being all loose on the shaft, C, through which they derive rotation are subjected to frictional driving by said shaft in the same direction in which they are driven positively by the decimally reducing train, and thereby all slack in the train is constantly taken up and the dial markings are kept in alignment notwithstanding the slack.

I claim:—

1. An odometer comprising in combination with a rigid unitary frame consisting of a base bar and parallel standards projecting therefrom; a shaft and a system of mileage number wheels mounted side by side on said shaft for rotation thereabout; a driven gear fast on the shaft at one end of the system of number wheels, constituting a stop for the same at that end, and speed-reducing gears on the shaft at the opposite end of said system, comprising a stop member adapted to be made fast on the shaft outside the remainder of said speed-reducing wheels for definitely positioning the entire system of wheels longitudinally on the shaft, the distance between the standards being not less than the length of the shaft, whereby the shaft with the number wheels thereon may be entered between the standards, said standards having aligned apertures and journal bearing bushings fitting said apertures for insertion therethrough, said bushings being adapted for journaling the ends of the shaft, and dimensioned longitudinally for stopping against the means on said shaft by which the number wheels are stopped thereon while said bushings are seated in said aligned apertures.

2. A revolution counter having its entire system of number wheels mounted side by side on a shaft-in common; a unitary frame comprising a longitudinal bar and parallel end standard projecting therefrom, the length of a shaft being not greater than the distance apart of said end standards, the latter having aligned apertures; and journal bearing sleeves fitted for thrust through said apertures and for journaling the ends of the shaft, and longitudinally dimensioned for encountering at their proximate ends the extreme stop members on the shaft while engaged at their remote ends in said apertures of the standards respectively.

3. In the construction defined in claim 1, foregoing, the stop members at the end of the number wheel system opposite the driven gear, comprising speed-reducing gears, whereby the number of speed reductions may be varied by varying the number of said speed-reducing gear elements mounted on the shaft, and accommodated by correspondingly varying the in-thrust through the standard of the journal bearing bushing at that end.

In testimony whereof, I have hereunto set my hand at Chicago, Illinois, this 8th day of August, 1922.

JOHN K. OLSEN.