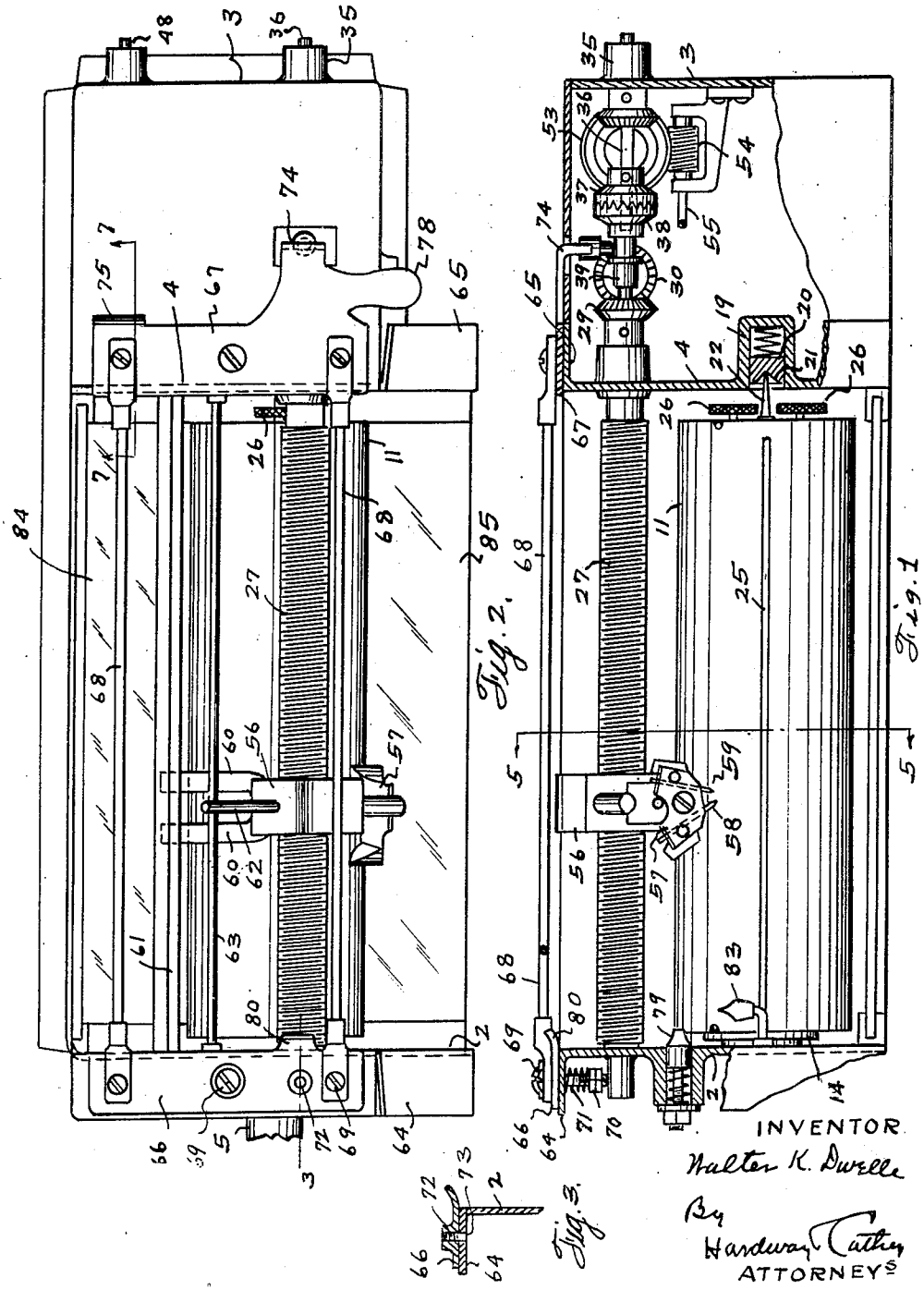
April 15, 1930. W. K. DWELLE 1,754,503

INDICATOR AND RECORDER

Filed Oct. 17, 1927 3 Sheets-Sheet 1



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INDICATOR AND RECORDER

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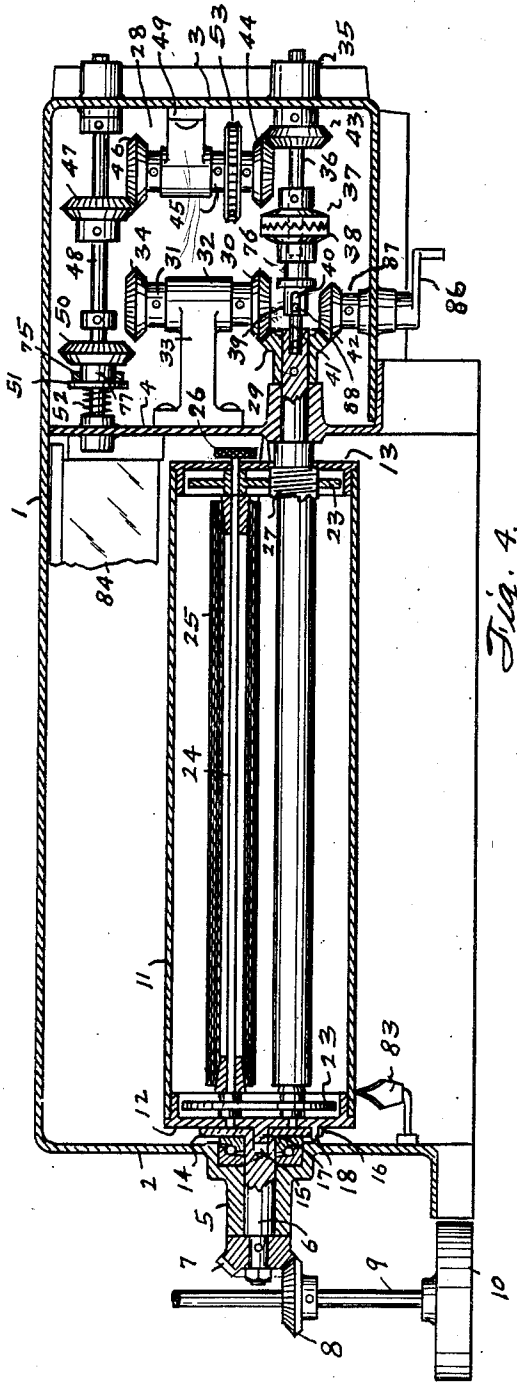


Fig. 4.

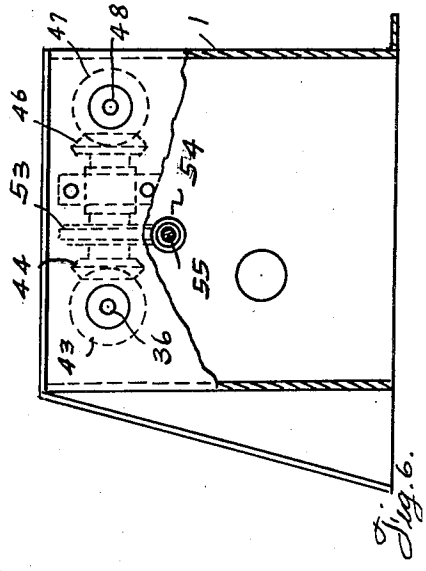


Fig. 6.

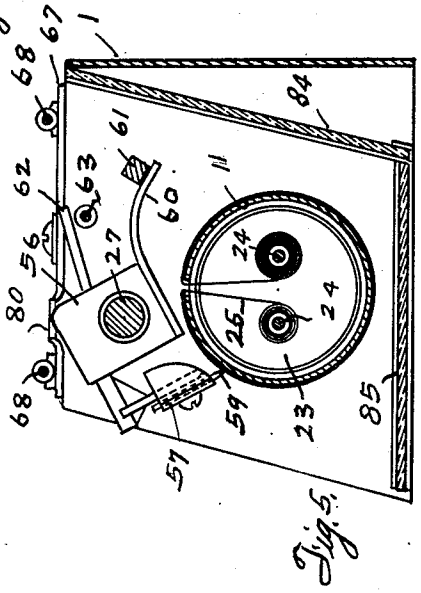


Fig. 5.

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INDICATOR AND RECORDER

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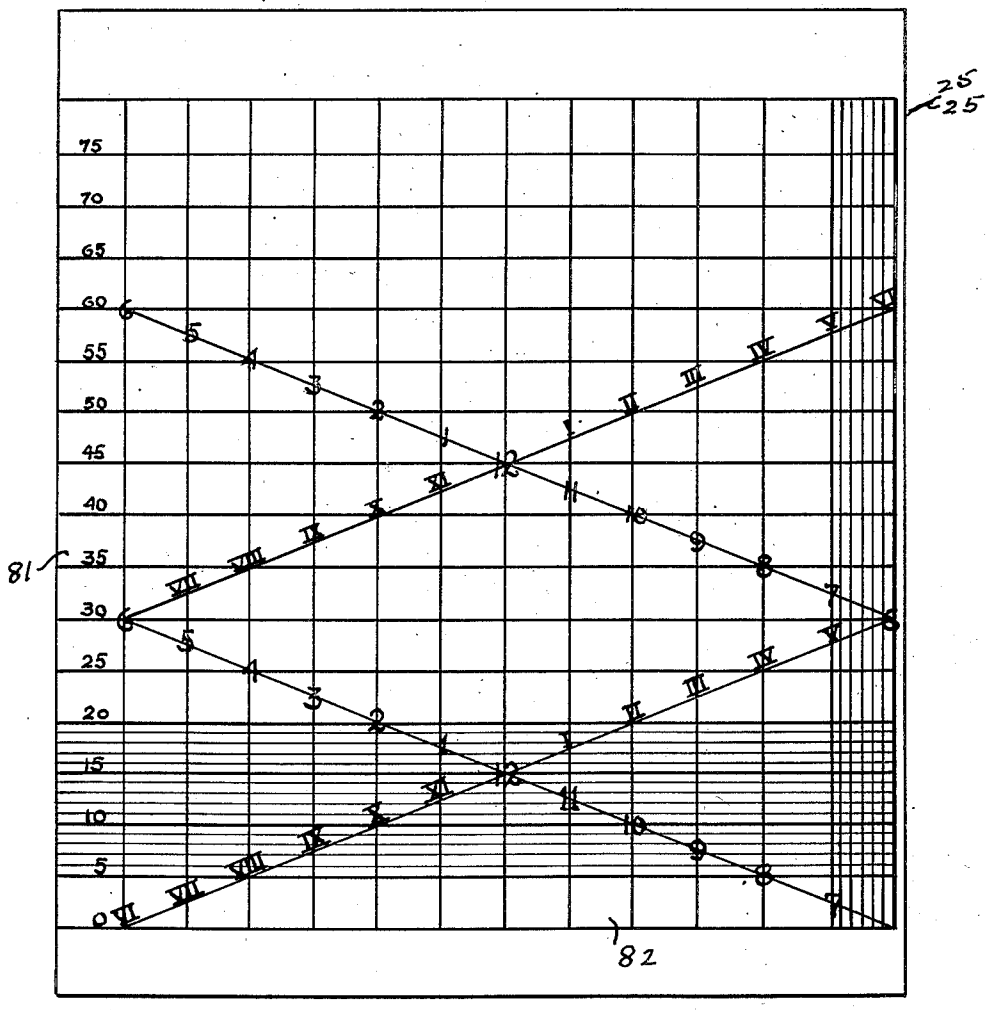


Fig. 8.

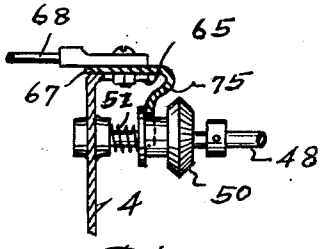


Fig. 7.

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Patented Apr. 15, 1930 1,754,503

UNITED STATES PATENT OFFICE

WALTER K. DWELLE, OF HOUSTON, TEXAS, ASSIGNOR OF FORTY PER CENT TO JOHN T. DEAVER, TWELVE AND ONE-HALF PER CENT TO JAMES LAWLOR, AND SEVEN AND ONE-HALF PER CENT TO C. C. CUNNINGHAM, ALL OF HOUSTON, TEXAS

INDICATOR AND RECORDER

Application filed October 17, 1927. Serial No. 226,715.

This invention relates to new and useful improvements in an indicator and recorder.

One object of the invention is to provide an apparatus of the character described specially adapted for use on a motor vehicle and provided for the purpose of indicating the speed at which the vehicle is traveling, as well as for making a record of such speed.

Another object of the invention is to provide an indicating and recording apparatus by means of which a record may be made and kept indicating whether the vehicle has been used during the daytime, or night time, and the character of such use as to the time, when used, and the speed of the vehicle, when in use.

A further feature of the invention is to provide a record making apparatus of the character described whereby a record may be made of the time during which the vehicle is standing idle.

A still further feature of the invention is to provide an apparatus of the character described which may also be used as a time indicator, or chronometer.

With the above and other objects in view this invention has particular relation to certain novel features of construction, operation and arrangement of parts an example of which is given in this specification and illustrated in the accompanying drawings, wherein:—

Figure 1 shows a front elevation of the apparatus, partly in section.

Figure 2 shows a plan view thereof.

Figure 3 shows a fragmentary sectional view taken on the line 3—3 of Figure 2.

Figure 4 shows a horizontal sectional view of the apparatus.

Figure 5 shows a vertical cross sectional view taken on the line 5—5 of Figure 1.

Figure 6 shows an end view partly in section.

Figure 7 shows a fragmentary cross sectional view taken on the line 7—7 of Figure 2, and

Figure 8 shows an elevation of a record sheet employed.

Referring now more particularly to the drawings, wherein like numerals of reference designate similar parts in each of the figures the numeral 1 designates the framework, or casing, as a whole, which may, if desired, be formed of sheet metal, and which has the end plates 2, 3 and a middle partition 4. The end plate 2 is formed with an extended bearing 5 in which the shaft 6 rotates. Fixed to the outer end of this shaft there is a pinion 7 in mesh with a similar pinion 8 which is fixed on the shaft 9 which is operatively connected with the conventional speedometer mechanism designated generally by the numeral 10. The construction and mode of operation of the speedometer mechanism is well known and need not here be described. It is of such construction that the shaft 9, as well as the shaft 6, geared to said shaft 9, will be rotated back and forth, or rocked, in harmony with the speed of the vehicle.

There is a drum 11 having the removable ends 12, 13 fitted therein. The inner end of the shaft 6 is formed with a disc 14, having a central socket 15 and a marginal notch 16 and the adjacent end 12, of the drum has a central boss 17, which fits into the socket 15, and a projecting stud 18 adapted to engage in the notch 16 to clutch the drum 11 with the shaft 6.

The partition 4 is formed with a socket bearing 19 in which is located a spring seated bearing block 20 whose outer face has a conical shaped bearing 21 in which the pointed pintle 22, carried by the drum end 13, works.

Within the drum 11, at each end, are the discs 23, 23 and there are the parallel rods 24, 24 which have the end bearings in the respective drum ends 12, 13 and which also are rotatable in suitably aligned bearings in the end discs 23, 23.

There is a record receiving sheet 25 spooled onto one of the rods 24 and it passes through slit 25′ of the drum 1 and around the drum, and its other end is spooled onto the other rod 24. One end of each of the rods 24, is extended and have knurled heads 26, 26 fixed thereon, by means of which the rods 24 may be turned and the sheet 25 wound onto either rod from the other, as the necessities of the case may require.

Above and in front of the drum 11 there is an exteriorly threaded shaft 27, which has

end bearings in the end plate 2 and the partition 4 respectively. One end of the shaft 27 extends into the gear box 28 between the end plate 3 and the partition 4. This extended end has a bevel pinion 29, fixed thereon which is in mesh with a similar pinion 30 fixed on the adjacent end of the transverse shaft 31, which in turn rotates in a bearing 32, carried by the bracket 33, which is fixed to the partition 4. The other end of the shaft 31 also has a bevel pinion 34, fixed thereon. Rotatably mounted in the bearing 35, carried by the end plate 3, there is a drive shaft 36, which is co-axial with the shaft 27 and whose inner end has a jaw clutch member 37 fixed thereon and opposing which is a similar jaw clutch member 38 which is fixed on an intermediate longitudinally movable shaft 39. The adjacent end of the shaft 36 is journaled in the opposing end of the shaft 39 and the other end of this last mentioned shaft has a transverse keyway 40 therethrough. There is a short connecting shaft 41 one end of which has a transverse key 42, which works in the keyway 40, and the other end of which telescopes into the adjacent end of the shaft 27 and is pinned therein.

The shaft 36 has a bevel pinion 43 fixed thereon which is in mesh with a similar pinion 44 fixed on one end of the transverse shaft 45 and fixed on the other end of this shaft there is a bevel pinion 46 in mesh with a similar pinion 47 fixed on the longitudinal shaft 48. The shaft 45 is mounted to rotate in a suitable bearing in the bracket 49, which is fixed to the end plate 3 and the shaft 48 has the end bearings in the partition 4 and the end plate 3, respectively. There is a bevel pinion 50 splined on the shaft 48 and shiftable into and out of mesh with the pinion 34. Surrounding the shaft 48 and interposed between the end plate 4 and the hub 51 of the pinion 50 there is a coil spring 52 which normally tends to hold the pinion 50 in mesh with the pinion 34.

Fixed on the shaft 45 there is a worm gear 53 which is in mesh with, and adapted to be driven by, the screw gear 54, which is fixed on the shaft 55. The shaft 55 is driven by a suitable clock works, (not shown) but intended to be enclosed within the gear box 28.

The shaft 27 is threaded throughout its length between the end plate 2 and the partition 4 and a stylus carrier 56 is threaded thereon and is adapted to be actuated back and forth by the rotation of said shaft. The stylus carrier has a stylus holder 57 pivotally mounted thereon which carries the pencils 58 and 59. The sylus holder is shiftable into either of two positions so as to bring either of the pencils into contact with the record sheet 25. The pencils are preferably, though not necessarily, of different colors, one to indicate day time use of the vehicle and the other to indicate its use at night.

The carrier 56 carries the inwardly extending magnetic arms 60 which extend underneath the lengthwise armature 61, located in the magnetic field, and whose ends are anchored to the end plate 2 and the partition 4, respectively. The magnetic arms operate to hold the active pencil firmly against the record sheet. The pencils 58, 59 are so located that should one become worn down or broken the other will come into contact with the record sheet 25. There is a stop arm 62 carried by the stylus carrier and extending inwardly therefrom which extends over the lengthwise rod 63, whose ends are anchored to the end plate 2 and the partition 4, respectively. The range of rotative movement of the carrier 56 on its shaft is thus limited.

The upper edges of the end plate 2 and partition 4, respectively, are overturned, forming the bearing plates 64, 65 and mounted on these respective plates are the shaft yokes 66, 67 which are pivoted on said plates at intermediate points, and the corresponding ends of these yokes are connected by the links 68, 68 whose ends are pivoted to said respective yokes. The bolt 69, connecting the yoke 66 to the bearing plate 64 is extended downwardly through a bearing in the plate 64, and has a nut 70 on its lower end and surrounding said bolt and interposed between the nut 70 and the bearing plate 64 there is a coil spring 71.

The yoke 66 has a depending detent 72 which is normally held seated in the aligned hole 73 in the plate 64, by the pressure of the spring 71.

The yoke 67 has the downwardly turned fingers 74, 75 which project into the annular grooves 76, 77 respectively, of the shaft 39 and the hub 51 of the pinion 50 respectively. The forward end of the yoke 67 carries a handle, or grip 78, provided for a purpose to be hereinafter explained.

When the clutch jaws 37, 38 are engaged the pinions 34, and 50 will be disengaged, and a direct drive will be transmitted from the clock works through the shafts 36, 39 and 41 to the shaft 27 and the stylus carrier will move from right to left with the pencil 59 in contact with the record sheet 25. When the stylus carrier reaches the limit of its movement in said direction the stylus will contact against the yieldable stop 79, mounted in the end plate 2, and will be thereby swung, on its pivot, into its other position with the pencil 58 in contact with the record sheet. At the same time the carrier 56 will engage underneath the upwardly curved, inwardly extending lip 80, carried by the yoke 66, and will lift the corresponding end of said yoke and disengage the detent 72 from the hole 73, thus releasing said yoke and thereupon the spring 52 will operate to carry the pinion 50 into mesh with the pinion 34 and at the same time, acting through the finger 75, to reverse

the position of both yokes 66, 67 and the finger 74 will operate to disengage the clutch jaws 37, 38.

The rotation of the shaft 27 will be thereby reversed and said shaft will be driven, from the clock works, through the train of gearing described, and the stylus carrier will be moved, from left to right, with the record making pencil 58 in contact with the record sheet 25. The carrier 56 continues to move until it contacts with, and is stopped by the partition 4 and the stylus will be thereby reversed and the clock stopped. The cycle of movement of the stylus carrier consumes a period of twenty-four hours.

When it is again desired to start the apparatus the grip 78 should be moved to the right to actuate the yokes 66, 67 to engage the jaws 37 and 38 and to carry the pinion 50 out of mesh with the pinion 34, and when in this position the detent 72 will again engage in the hole 73 and secure the yokes in this position. When the clock is started the cycle of movement of the stylus carrier will be repeated.

The record sheet may be separated into different sections, preferably thirty-one, one for each day of a month. One of such sections is shown in Figure 8. Each section is ruled in thirteen columns, which will extend circumferentially around the drum 11. The first column 81, on the left, is suitably numbered to indicate the speed, per hour, at which the vehicle moves, in the usual way.

The other twelve columns, as 82, are the time columns. The columns 81 and 82 may be subdivided, if desired. The stylus will traverse one of the time columns, transversely, each hour, during operation, irrespective of the speed of the vehicle. The columns 82 are numbered in Arabic, from right to left to designate the hours from 6 a. m. to 6 p. m. and, in Roman, from left to right to designate the hours from 6 p. m. to 6 a. m. for convenience in reading the record. The record sheet thus serves as a clock dial and the pencil in use serves, as a pointer or hand, to indicate the time of day. The record sheet may also be transversely ruled, if desired, for convenience in ascertaining speed.

There is a fixed pointer 83 associated with the speed column 81 to indicate the speed of the vehicle at any particular time.

The pencils in use will make an irregular line across the record sheet which varies as the speed of the vehicle varies but which will show the particular time when the vehicle was in use, and the various speeds of the vehicle, while in use.

When the vehicle i stopped the drum 11 will at once move to neutral position and there remain, with the record making pencil at, or near, the bottom of the section, of the record sheet, in use, but the carrier 56 will continue to move transversely of said section, thus making a straight transverse line, while the vehicle is idle, thus indicating the time when the vehicle was not in use. The time of parking the vehicle, particularly on streets may thus be readily ascertained.

Rear and bottom mirrors 84 and 85 are provided for convenience in reading that portion of the record on the drum 11, not easily visible from the front.

The apparatus may be operated manually for the purpose of adjusting the stylus carrier, through the crank 86 which is detachably secured to the outer end of the shaft 87, whose inner end carries the pinion 88 in mesh with the pinion 29.

While I have shown what I now consider the preferred form of the invention it is obvious that mechanical changes may be made therein and equivalents substituted for the parts shown and I reserve the right to make such changes and adaptions as may be found desirable, and which may be comprehended within the scope of the appended claim.

What I claim is:—

A recorder adapted for use on motor vehicles and including a rotatably mounted record receiving element, means for imparting a rocking movement to said element which varies as the speed of the vehicle varies, a record making means co-operating with said element, means for moving said record making means, relative to said element, and at a constant rate of speed and means for automatically reversing the direction of movement of said record making means and means for automatically stopping the movement of said record making means at the end of a cycle of its movement.

In testimony whereof I have signed my name to this specification.

WALTER K. DWELLE.