J. B. RHODES.

ODOMETER.

APPLICATION FILED NOV. 9, 1910.

1,047,566.

Patented Dec. 17, 1912.

2 SHEETS—SHEET 1.

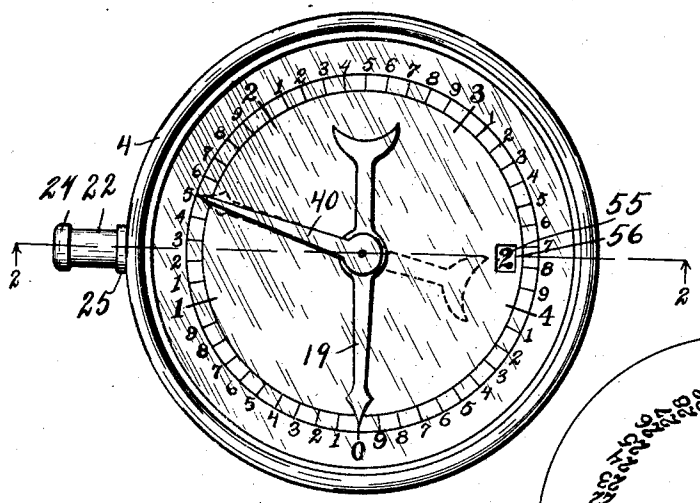

Fig. I.

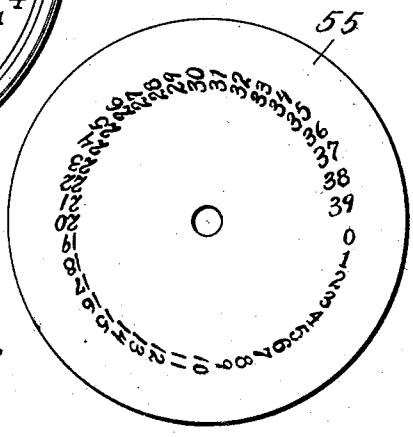

Fig. VI.

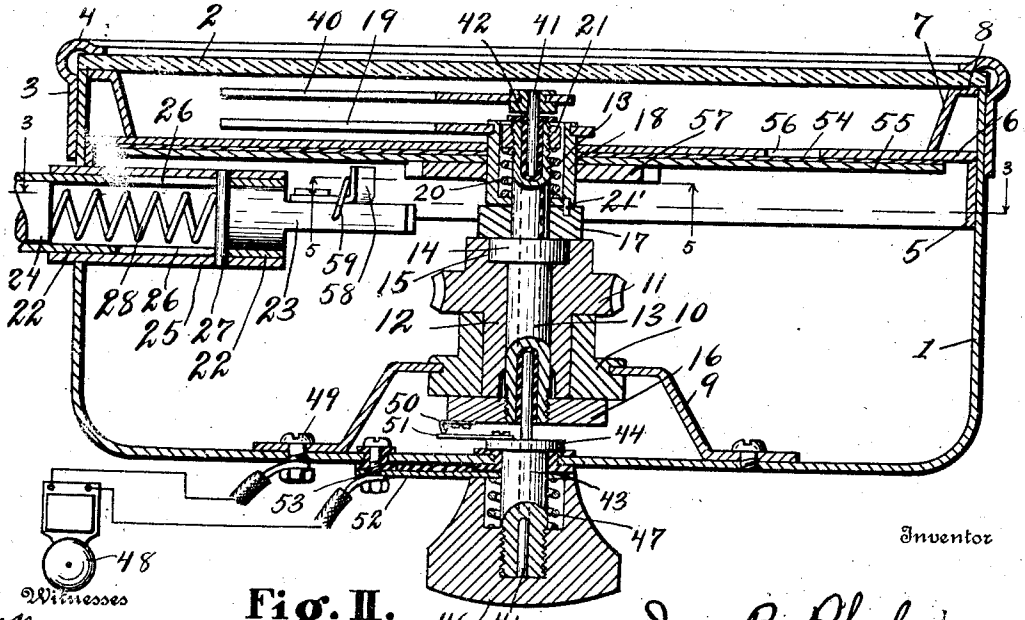

Fig. II.

Witnesses

Margaret Glasgow.

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2 SHEETS—SHEET 2.

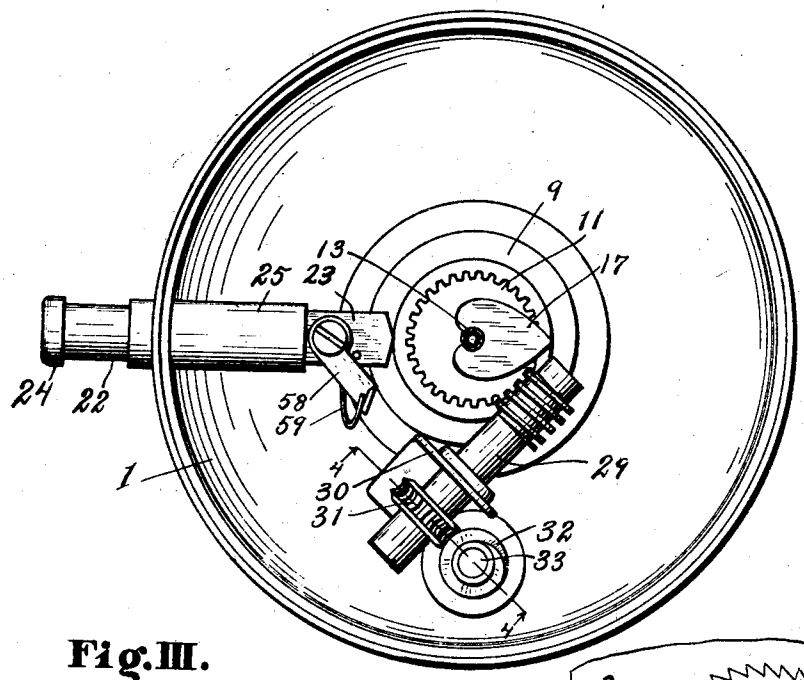

Fig. III.

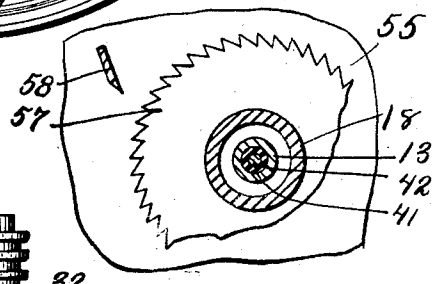

Fig. V.

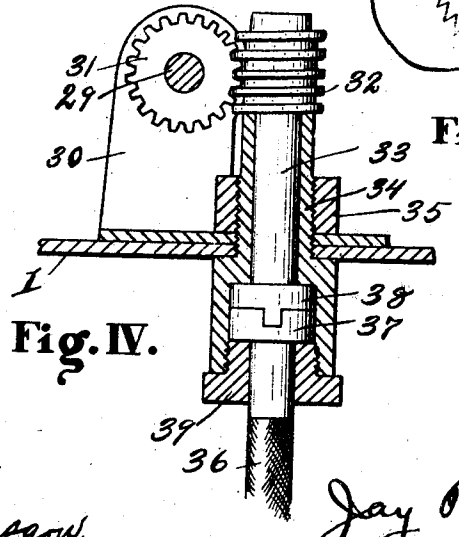

Fig. IV.

Witnesses

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UNITED STATES PATENT OFFICE.

JAY B. RHODES, OF KALAMAZOO, MICHIGAN.

ODOMETER.

1,047,566. Specification of Letters Patent. Patented Dec. 17, 1912.

Application filed November 9, 1910. Serial No. 591,485.

To all whom it may concern:

Be it known that I, JAY B. RHODES, a citizen of the United States, residing at Kalamazoo, Michigan, have invented certain new and useful Improvements in Odometers, of which the following is a specification.

This invention relates to improvements in odometers.

The main objects of this invention are: First, to provide an improved odometer having a station indicator and signal device. Second, to provide in an odometer an improved set back. Third, to provide in an odometer having a station indicia or dial, a set back mechanism which simultaneously actuates the station indicia member or dial. Fourth, to provide an improved odometer having a station indicator which is quickly adjusted or set as the route is traversed. Fifth, to provide an improved odometer which is simple and economical in structure and one which is not likely to get out of repair.

Further objects, and objects relating to structural details will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure, which is a preferred embodiment of my invention, is clearly illustrated in the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a plan of a structure embodying the features of my invention, the supporting or attaching bracket for the casing being omitted. Fig. 2 is a detail vertical section taken on a line corresponding to line 2—2 of Fig. 1. Fig. 3 is a horizontal section taken on a line corresponding to line 3—3 of Fig. 2. Fig. 4 is an enlarged detail section taken on a line corresponding to line 4—4 of Fig. 3, showing details of the driving gear. Fig. 5 is a detail section taken on a line corresponding to line 5—5 of Fig. 2. Fig. 6 is a plan view of the station indicia dial or member.

In the drawing, similar numerals of reference refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, the casing consists of the cup-like body portion 1, the open end of which is closed by the window 2. This window is arranged to rest on the end of the body portion 1 and is secured by means of the ring 3, which has an inwardly-projecting flange 4 at its upper end adapted to overlap the edge of the window. The ring 3 is sleeved upon the body of the casing 1, as clearly appears in Fig. 2. The flange 4 is preferably bead-like in form to provide an ornamental finish for the upper end of the casing, as well as securing the window.

Within the casing, toward its upper end, is a ring 5, forming a shoulder-like ledge for the plate-like mileage indicia member 6. This member 6 is formed of metal and arranged to form a partition across the casing. To assist in supporting the window 2, a ring 7 having an outturned flange 8 on its upper end is arranged on the indicia member 6, the upper face of the flange being flush with the edge of the body 1 of the casing, as illustrated. The casing thus formed is strong and simple and economical in structure, and, at the same time, serves its purpose very effectively.

Supported within the casing, preferably by means of a bracket 9 mounted on the bottom of the casing, (see Fig. 2), is a bearing 10. Arranged in this bearing is a driven worm gear 11 having a hub-like bearing member 12, the under side of the gear being provided with a bearing surface coacting with the upper end of the bearing. An index shaft 13 is arranged through this gear, the shaft being provided with a collar 14 and the gear with a seat 15 in its upper end adapted to receive the collar. On the lower end of the shaft is a nut 16 which clamps the gear and

the shaft together and retains them in position in the bearing, the nut being arranged to overlap the under side of the bearing, as shown.

Rotatably mounted upon the shaft above the gear is a heart-shaped arm or cam 17. (See Figs. 2 and 3). The hub of the mileage index 19 is mounted upon the shaft above this cam. This hub is chambered, as illustrated, its lower end resting upon the cam. Within the hub 18 is a coiled spring 20, its lower end engaging the hub, and its upper end engaging the nut 21 threaded upon the shaft. The hub and cam are connected to revolve together, as by the pin 21'. The spring 20 holds the cam in frictional driving engagement with the collar 14 on the shaft and the inner end of the gear 11. By the adjustment of the nut 21, the friction is regulated. The hub 18 is arranged through the indicia member or plate 6, the index member 19 being above the plate, which is provided with suitable indicia numerals, as is indicated in Fig. 1. In Fig. 1, the indicia member is graduated into tenths of miles, this being shown, for convenience of illustration, with indicia for only five miles thereon.

By connecting the index 19 to the shaft, as described, it is driven therewith, and, at the same time, may be readily turned back or set back to the zero point. To accomplish this, I provide a plunger to coact with the cam 17. This plunger consists of a tubular central portion 22, having a cam-engaging part 23 fixed to its inner end, and a finger piece 24 fixed to its outer end. The cam engaging part 23 is preferably A-shaped at its end. The plunger is supported so that it reciprocates radially to the shaft 13, owing to the shape of the cam on the reciprocation of the plunger it is engaged thereby and swung around to a zero point no matter what position it may be in when it is engaged by the plunger. The plunger is mounted in a tubular support 25 and is slotted at 26 to engage the pin 27, which serves as a stop for limiting the outward movement of the plunger. A spring 28, arranged within the tubular portion of the plunger, returns it to its initial position.

The driving connection for the index gear 11 consists of the worm 29 mounted in a suitable bearing bracket 30 in the casing. This worm has a gear 31 thereon arranged to mesh with the worm 32 on the driving shaft 33. This driving shaft 33 is arranged in a bearing 34, which is arranged through the bottom of the casing and is threaded to receive the clamping nut 35, the nut also serving to support the bearing bracket 30. (See Figs. 3 and 4).

The flexible shaft 36 is provided with a coupling member 37 coacting with the coupling member 38 on the driving shaft 33, a plug 39 being threaded into the outer end of the bearing 34 for securing the coupling members together. I thus secure a compact and simple driving connection.

To indicate stations, or direction points, or to give an alarm at any desired point, I provide an indicating mechanism and an alarm mechanism, preferably consisting of the pointer 40, which is provided with a spindle 41 arranged longitudinally through the shaft 13. The pointer 40 is mounted upon the upper end of this spindle above the index 19. This spindle is insulated from the shaft 13, by an insulating tube 42. On the lower end of this spindle is a friction member 43 having a flange 44 at its inner end adapted to coact with a suitable friction member on the casing. This friction member is arranged, in the structure illustrated, through the bottom of the casing and is of insulating material.

Threaded upon the lower end of the friction member is a finger piece 46. This finger piece is chambered to receive the spring 47, the upper end of which bears against a fixed member on the casing, and the lower end engages the finger piece. This spring applies suitable friction to the spindle, so that the station pointer 40 is retained in its adjusted position.

The signal preferably comprises a bell 48 electrically connected to the binding post 49, which, in the structure illustrated, is also a securing bolt for the bearing bracket 9. On the nut 16 is a switch or contact member 50. Mounted on the friction member to coact with this member 50 is a switch or contact member 51. This is connected through the friction member 43, and the plate 52 to the binding post 53, which is in electrical connection with the bell.

In use, the pointer 40 is adjusted to any desired position to indicate a station, or other point where it is desired that the signal be actuated, and as the shaft 13 is revolved, the contact member 50 is brought into engagement with the contact member 51, thus causing sounding of the alarm.

An indicia member 54 is provided, the same being mounted upon the disk 55 arranged below the distance indicia plate 6. This plate is provided with a window or opening 56, through which the station indicia may be read as it is successively brought into register therewith.

To actuate the indicia member 54, I provide the same with a ratchet member 57 and the plunger with a pawl 58, the pawl being held yieldingly in position by the spring 59. By this arrangement of parts, when the plunger is actuated to return the index 19 to its zero or initial position, the station indicia member is simultaneously ac-

tuated, it being advanced one step upon each actuation of the plunger.

My improved odometer is particularly designed by me to be used with a guide or route book having a series of directions designated by numerals, which I here designate as stations. As an illustration, the pointer 40 in Fig. 1 is shown set at 1.5 miles, and the station numeral 2 is exhibited the index 19 being at zero. The device is thus set to indicate that 1.5 miles is the distance to the next station or direction. When the index finger 19 indicates 1.5 miles, the alarm is given. The plunger is then actuated to return the index 19 to zero and advance the station indicia member one step. The pointer 40 is then adjusted according to the directions for station No. 3.

It is found, in practice, that the use of guide books with continuous mileage odometers are sometimes unsatisfactory, owing to inaccuracies in distance as given in the guide book, or inaccuracies resulting from variations in the diameters of the odometer driving wheels, such as is occasioned by variations in the size of tire, or the same becoming partially deflated. With my improved odometer, it is started at the zero point for direction, so that these inaccuracies are not multiplied, and are kept within such limits that they are substantially immaterial. By my improved set back, the odometer is instantly, and by a simple thrust movement, set back to zero, and the proper station number displayed. Further, the signal index or pointer can be quickly adjusted. To do this, it is not necessary to stop the vehicle, and it can be done so quickly that for practical purposes it is instantaneous.

I have illustrated and described my improvements in the form in which I have embodied them. I am aware, however, that considerable variation in structural details is possible, but I have not attempted to illustrate or describe such variations, as the same will, no doubt, be readily understood by those skilled in the art to which this invention relates.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. The combination of a bearing; a gear having a hub-like bearing member thereon arranged in said bearing, the inner side of said gear being in bearing engagement with the inner end of said bearing; a shaft arranged through said gear, said shaft being provided with a collar and said gear with a seat in its inner end adapted to receive said collar; a nut threaded upon the outer end of said shaft whereby said shaft and gear are clamped together and retained in said bearing; a set back means comprising a cam arranged on said shaft to rest on the inner end of said gear; an index having a chambered hub arranged on said shaft to rest on said cam, said hub and cam being connected to be revolved together on said shaft; a spring arranged within said hub; and a nut threaded on said shaft to engage said spring.

2. The combination of a bearing; a gear having a hub-like bearing member thereon arranged in said bearing, the inner side of said gear being in bearing engagement with the inner end of said bearing; a shaft arranged through said gear, said shaft being provided with a collar and said gear with a seat in its inner end adapted to receive said collar; a nut threaded upon the outer end of said shaft whereby said shaft and gear are clamped together and retained in said bearing; a set back means comprising a cam arranged on said shaft; and an index arranged on said shaft, said index and cam being connected to be revolved together on said shaft and having a frictional driving connection therewith.

3. The combination of a bearing; a gear having a hub-like bearing member thereon arranged in said bearing, the inner side of said gear being in bearing engagement with the inner end of said bearing; a shaft arranged through said gear, said shaft being provided with a collar and said gear with a seat in its inner end adapted to receive said collar; a nut threaded upon the outer end of said shaft whereby said shaft and gear are clamped together and retained in said bearing; an index having a chambered hub arranged on said shaft; a spring arranged within said hub; and a nut threaded on said shaft to engage said spring whereby the tension of said spring is regulated.

4. The combination of a bearing; a gear having a hub-like bearing member thereon arranged in said bearing, the inner side of said gear being in bearing engagement with the inner end of said bearing; a shaft arranged through said gear, said shaft being provided with a collar and said gear with a seat in its inner end adapted to receive said collar; a nut threaded upon the outer end of said shaft whereby said shaft and gear are clamped together and retained in said bearing; and an index arranged on said shaft.

5. The combination of a bearing; a gear having a hub-like bearing member thereon arranged in said bearing, the inner side of said gear being in bearing engagement with the inner end of said bearing; a shaft arranged through said gear; a set back means comprising a cam arranged on said shaft to rest on the inner end of said gear; an index having a chambered hub arranged on said shaft to rest on said cam, said hub and cam being connected to revolve together on said

shaft; and a spring arranged within said hub, whereby said index and cam are frictionally connected to said shaft to be driven thereby.

6. The combination of a shaft; a set back means comprising a cam arranged on said shaft, there being a friction member on said shaft coacting with said cam; an index having a chambered hub arranged on said shaft to rest on said cam, said hub and cam being connected to revolve together on said shaft; and a spring arranged within said hub whereby said index and cam are frictionally connected to said shaft to be driven thereby.

7. The combination of a shaft; a heart-shaped cam arranged on said shaft; an index revolubly mounted on said shaft connected to said cam; said cam and index having friction driving connection with said shaft; a mileage indicia member; a revolubly mounted second indicia member arranged on the inner side of said mileage indicia member, said mileage indicia member being provided with an opening with which the second indicia are adapted to be brought into register as the indicia member is revolved; a ratchet wheel on said second indicia member; a cam actuating plunger; and a pawl on said plunger arranged to coact therewith whereby said second indicia member is actuated by the actuation of said plunger.

8. The combination of a shaft; an index revolubly mounted on said shaft and having friction driving connection therewith; a mileage indicia member; a revolubly mounted second indicia member arranged on the inner side of said mileage indicia member, said mileage indicia member being provided with an opening with which the second indicia are adapted to be brought into register as the second indicia member is revolved; a set back for said index comprising a plunger; a ratchet wheel on said second indicia member; a pawl on said plunger arranged to coact therewith whereby said second indicia member is actuated by the actuation of said plunger; a pointer; a spindle therefor arranged longitudinally through said shaft; a signal; a contact member carried by said shaft; and a coacting contact member on said pointer spindle.

9. The combination of a shaft; an index revolubly mounted on said shaft and having friction driving connection therewith; a mileage indicia member; a revolubly mounted second indicia member arranged on the inner side of said mileage indicia member, said mileage indicia member being provided with an opening with which the second indicia are adapted to be brought into register as the second indicia member is revolved; a set back for said index comprising a plunger; a ratchet wheel on said second indicia member; and a pawl on said plunger arranged to coact therewith whereby said second indicia member is actuated by the actuation of said plunger.

10. The combination of a casing; a shaft; an index revolubly mounted on said shaft and having friction driving connection therewith; a mileage indicia member; a revolubly mounted second indicia member; a set back means for said index comprising a plunger; a ratchet wheel on said second indicia member; a pawl on said plunger arranged to coact therewith whereby said second indicia member is actuated by said plunger; an indicia pointer; a spindle therefor arranged longitudinally through said shaft; a signal; a contact member carried by said shaft; and a coacting contact member on said pointer spindle.

11. The combination of a casing; a shaft; an index revolubly mounted on said shaft and having friction driving connection therewith; a mileage indicia member; a revolubly mounted second indicia member; a set back means for said index comprising a plunger; a ratchet wheel on said second indicia member; and a pawl on said plunger arranged to coact therewith whereby said second indicia member is actuated by said plunger.

12. The combination of a casing; an odometer shaft; an index revolubly mounted thereon and having friction driving engagement therewith; a set-back mechanism for said index; route key indicia adapted to be actuated by said set-back mechanism whereby it is successively displayed; an indicia pointer; a spindle therefor arranged longitudinally through said shaft; a friction member arranged on the lower end of said spindle to project through said casing; a chambered finger piece threaded on said friction member; a spring arranged in said chamber in said finger piece; a signal member carried by said shaft; and a coacting signal member on said friction member for said spindle.

13. The combination of a casing; an odometer shaft; an index revolubly mounted thereon and having friction driving engagement therewith; a set-back mechanism for said index; route key indicia adapted to be actuated by said set-back mechanism whereby it is successively displayed; an indicia pointer; a spindle therefor arranged longitudinally through said shaft; a friction member arranged on the lower end of said spindle to project through said casing; a chambered finger piece threaded on said friction member; and a spring arranged in said chamber in said finger piece.

14. The combination of a casing; an odometer shaft; an index revolubly mount-

ed thereon; a set-back mechanism for said index; a pointer; a spindle therefor arranged longitudinally through said shaft; a friction member arranged on the lower end of said spindle to project through said casing; a chambered finger piece threaded on said friction member; a spring arranged in said chamber in said finger piece; a signal member carried by said shaft; and a coacting signal member on said friction member for said spindle.

15. In an odometer, the combination with a cylindrical cup-like casing; a ring secured within said casing to form a ledge; a disk-like indicia member arranged on said ledge; a ring arranged on said indicia member, said ring being provided with an outwardly-projecting flange at its upper edge, the upper surface of which is flush with the upper edge of said casing; a window arranged to rest on the upper edge of said casing and said flange; and a retaining ring having an inturned window engaging flange at its upper end sleeved upon said casing.

16. In an odometer, the combination with a cylindrical cup-like casing; a disk-like indicia member supported in said casing; a ring arranged on said indicia member, said ring being provided with an outwardly-projecting flange at its upper edge, the upper surface of which is flush with the upper edge of said casing; a window arranged to rest on the upper edge of said casing and said flange; and a retaining ring having an inturned window engaging flange at its upper end sleeved upon said casing.

17. In an odometer, the combination with a casing, a disk like indicia member supported within said casing, a ring arranged on said indicia member with its upper surface flush with the upper edge of said casing, a transparent member arranged to rest on the upper edge of said casing and said ring, and a retaining ring sleeved upon said casing and having an inturned flange at its upper end engaging said transparent member.

18. The combination of a casing, an odometer shaft, an index mounted on said shaft and having frictional driving engagement therewith, a set back mechanism for said index, a pointer associated with said index and an adjusting spindle for said pointer arranged longitudinally through said shaft provided with a finger piece on its lower end whereby said pointer may be manually operated.

19. The combination with an odometer shaft, of a disk-like distance indicia member, a distance indicia index revolubly mounted on and having friction driving engagement with said shaft, and a disk-like route indicia member revolubly mounted on the inner side of said distance indicia member, said distance indicia member being provided with an opening through which the route indicia are displayed.

20. The combination with an odometer shaft of a distance indicia member, a driven indicia index, a manually adjustable pointer, a route key indicia member, a set back for said driven index, comprising a heart-shaped cam, a plunger coacting with said cam, a ratchet for said route key indicia member, and a coacting pawl on said plunger.

21. The combination of an odometer shaft, a driven distance index, a set back means for said index, an indicia member having a series of route key indicia thereon, connections whereby said indicia member is actuated by said set back means to successively display the route key indicia, an adjustable pointer associated with said index, a signal member arranged to be adjusted with said pointer and a coacting signal member actuated by said shaft.

22. In an odometer, the combination of an odometer shaft, a driven distance index, a set back means for said index, an indicia member having a series of route key indicia thereon, connections whereby said indicia member is actuated by said set back means to successively display said route key indicia, a manually adjustable signal member, and a coacting driven signal member actuated by said shaft.

23. An odometer comprising distance indicating means, a set back means therefor, an indicia member having a series of route key indicia thereon, connections whereby said indicia member is actuated by said set back means to successively display route indicia.

24. The combination of an odometer comprising distance indicating means, a manually adjustable pointer associated with said distance indicating means, a route key indicia member having route key indicia thereon, a set back means for said distance indicating means and means for actuating said route key indicia member through said set back means for successively displaying the route indicia.

25. An odometer comprising distance indicating means, a set back means therefor, a series of route key indicia, and means for successively displaying said route key indicia by the operation of said set back means.

26. An odometer comprising a distance indicating means, a set back mechanism adapted to be actuated by a single thrust movement to return the distance indicating means to zero, an indicia member having a series of route key indicia thereon and connections for said indicia member and set back means whereby said indicia member is

actuated by the operation of said set back means to successively display the route key indicia.

27. In an odometer, a set-back mechanism comprising a cam, a plunger adapted to coact with said cam whereby the mechanism is brought to zero by a single actuation of said plunger, station indicia, and connections whereby said station indicia are successively displayed by the actuation of said plunger.

28. An odometer comprising an index, a set-back mechanism adapted to be actuated by a single thrust movement to return the index to zero, a station indicia member, and connections for said station indicia member to said set-back means whereby said station indicia member is actuated.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

JAY B. RHODES. [L. S.]

Witnesses:
LUELLA G. GREENFIELD,
MARGARET GLASGOW.