April 16, 1935. W. MOELLER 1,997,943

AUTOMATIC TRAFFIC SIGNAL DEVICE

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Fig. 1.

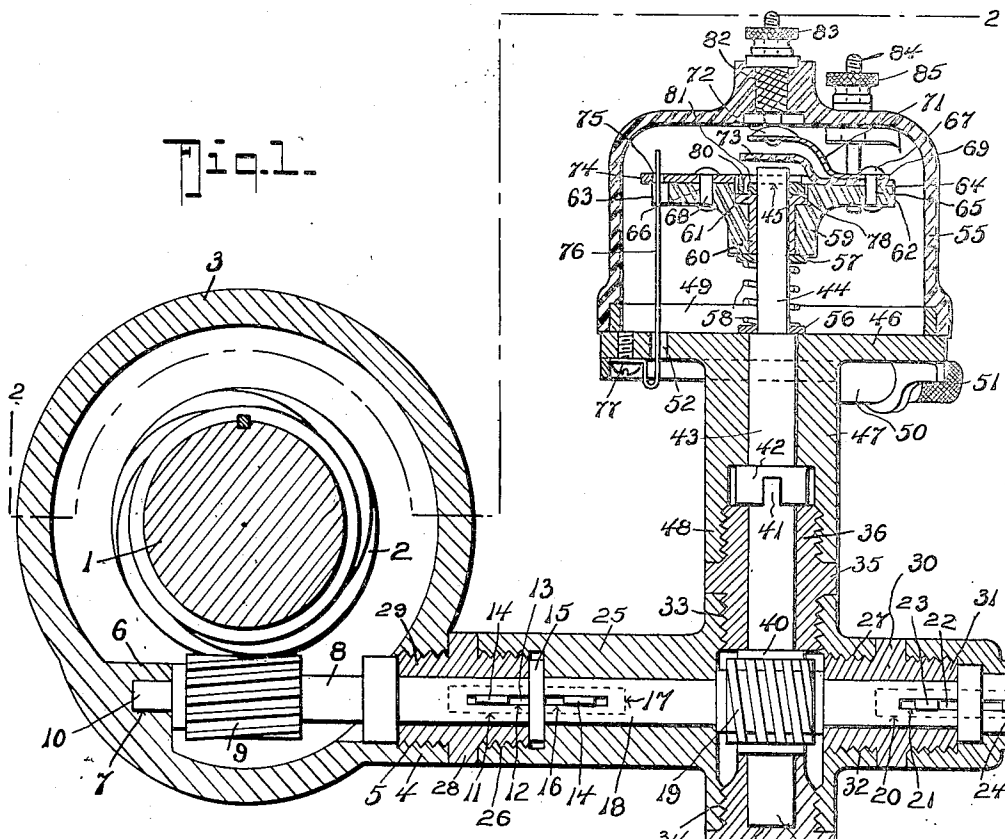
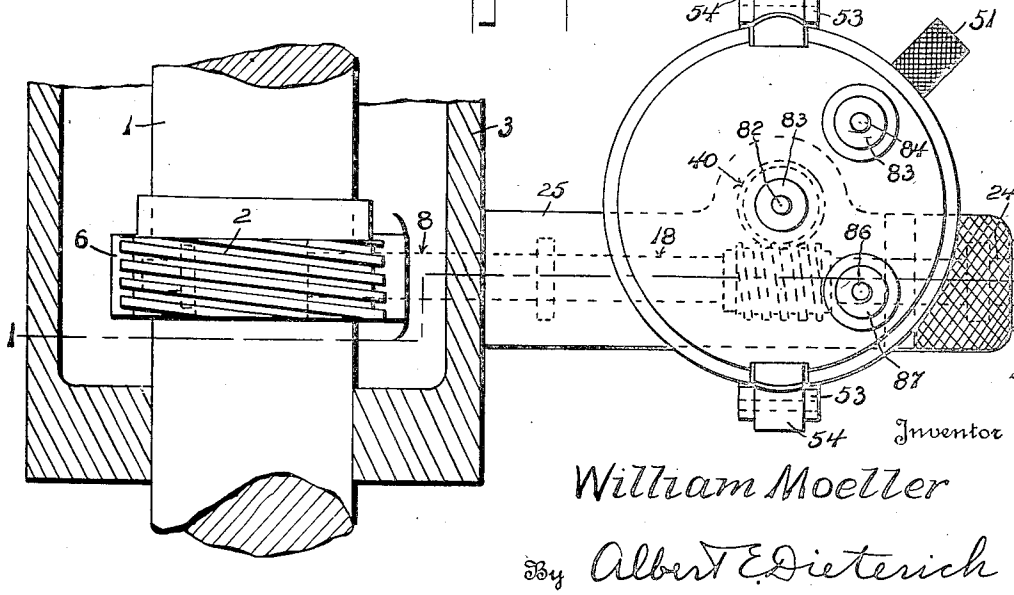


Fig. 2.



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Fig. 3.

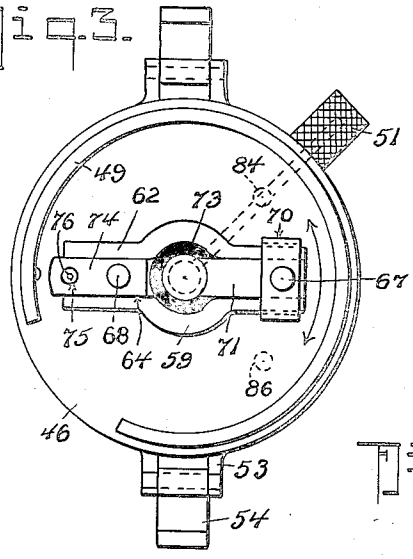



Fig. 4.

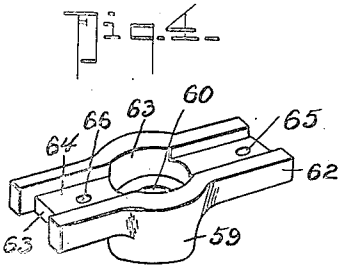



Fig. 6.

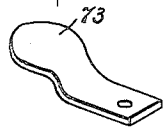



Fig. 7.

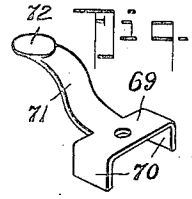



Fig. 5.

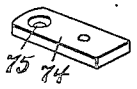



Fig. 8.




Fig. 9.

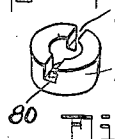



Fig. 11.




Fig. 10.



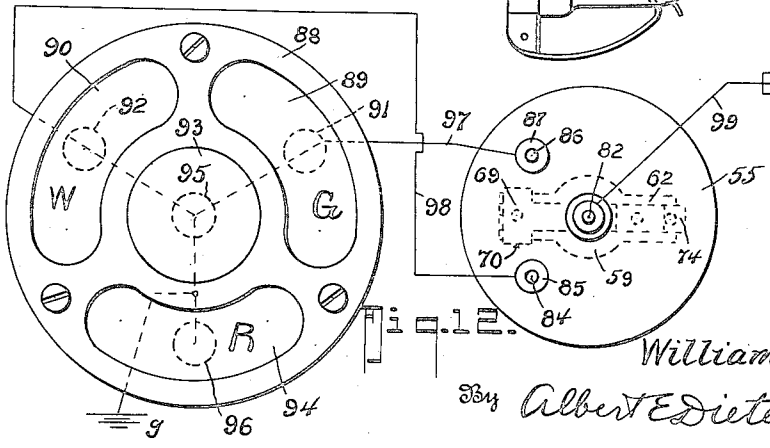




Fig. 12.

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# UNITED STATES PATENT OFFICE

1,997,943

## AUTOMATIC TRAFFIC SIGNAL DEVICE

William Moeller, Kingston, Pa.

Application August 8, 1933, Serial No. 684,263

8 Claims. (Cl. 200—52)

My invention relates to traffic signal devices which are located on automobiles for the purpose of indicating to approaching vehicles whether the particular vehicle is in motion or is at rest and whether it is going forwardly or is backing.

Primarily the invention has for its object to provide a simple, inexpensive device that can be manufactured at low cost, will be rugged in structure, will not easily get out of order, and can be mounted in association with the speedometer drive now commonly used, to be driven by the driving shaft (which is geared to the rear axle through the differential mechanism).

Further it is an object to provide a device of the character stated of a simpler and less expensive design and construction than those disclosed in the prior art, including that of my application Serial No. 619,990, filed June 29, 1932.

Other objects will in part be obvious and in part be pointed out hereinafter.

To the attainment of the aforesaid objects and ends, the invention still further resides in the novel details of construction, combination and arrangement of parts, all of which will be first fully described in the following detailed description, then be particularly pointed out in the appended claims, reference being had to the accompanying drawings, in which:—

Figure 1 is a vertical section on substantially the line 1—1 of Figure 2.

Figure 2 is a part section and part top plan view on approximately the line 2—2 of Figure 1.

Figure 3 is a plan view of the circuit closer with the cap removed.

Figure 4 is a perspective view of the distributor head or contact maker.

Figure 5 is a perspective view of the centering spring plate.

Figure 6 is a perspective view of the insulating finger.

Figure 7 is a perspective view of the central or continuous contact finger.

Figure 8 is a perspective view of the locking pin.

Figure 9 is a perspective view of the collar which cooperates with the pin.

Figure 10 is a perspective view of the distributor shaft.

Figure 11 is a view partly in vertical section and partly in elevation showing a modified form of drive.

Figure 12 is a circuit diagram.

In the drawings in which like numerals and letters of reference designate like parts in all of the figures, 1 represents the driving shaft of an automobile which transmits the power from the transmission gearing to the differential gearing of the vehicle. On the shaft 1 is a worm gear 2 (which is preferably the speedometer driving gear) and 3 indicates the housing which has a boss 4 provided with a threaded bore 5 to receive the coupling member 28 later again referred to.

The housing 3, in the embodiment of the invention shown in Figures 1 and 2, has a bearing lug 6 in the bearing socket 7 of which the end 10 of the worm shaft 8 is journaled. The worm 9 on the shaft 8 meshes with the worm gear 2 to drive the shaft 8 from the shaft 1.

The end of the shaft 8 opposite the end 10 projects through the coupling bushing 28 and is bored as at 11 to receive the connecting key rod 13, a key 14 of which enters the slot 12 in the end of the shaft 8.

The connecting key rod 13 has a collar 15 intermediate its ends.

18 is the driving worm shaft of an adapter, one end of which is slotted as at 16 and bored as at 17 to receive the connecting key rod 13 and another one of its keys 14 whereby the shafts 8 and 18 are lined up and coupled together.

The shaft 18 has a worm 19 intermediate its ends and the other end of the shaft is also bored as at 20 for the reception of the coupling key rod 22 to the speedometer flexible drive shaft 24, there being a key 23 located in the slot 21 in the end of the shaft 18 to which the speedometer drive shaft is connected.

25 is the transmission housing of the adapter and it is provided with threaded ends 26 and 27 to receive, respectively, the coupling members 28 and 30. The coupling member 28 has threaded ends 29 and the coupling member 30 has threaded ends 31.

The housing 25 has a threaded boss 33 into which one end of the coupling member 35 is screwed.

In alignment with the boss 33 the housing 25 has another internally threaded boss 35 into which the bearing plug 37 is screwed, said plug having a bearing socket 38 for the worm shaft 39 that lies at right angles to the shaft 18 and carries a worm 40 to mesh with the worm 19. Thus the movement of the shaft 1 is transmitted to the shaft 39.

The shaft 39 has a coupling wing or key 41 to engage the slotted coupling head 42 on the end of the distributor shaft 43 which is journalled in the bearing neck 47. The bearing neck 47 has one end internally threaded as at 48 to receive

one of the threaded ends 36 of the coupling member 35. The shaft 43 has a reduced portion 44 extended beyond the base 46 of the distributor and at its end the reduced portion 44 is provided with a transverse pin-hole 45, the purpose of which will later appear.

49 is a circular flange upstanding from the base 46 to cooperate with the distributor cap 55. The base is also provided with an oil duct 50 and an oil cup 51 by means of which lubricating fluid may be conveyed to the shaft 43 which has bearing in the neck 47. With the arrangement as shown in Figure 1 the lubricant will gravitate down and lubricate all of the bearing parts and worms within the transmission housing 25.

The base 46 is provided with a hole 52 through which the balancing or neutral spring 76 projects, said spring being anchored at 77 to the base.

The base is also provided with diametrically opposed pairs of lugs 53 between which lugs the cap-securing spring fingers 54 are pivotally secured.

Mounted on the reduced portion 44 of the shaft 43 is a pair of washers 56 and 57 between which a coil spring 58 is located, the washer 56 engaging the base 46 and the washer 57 engaging the distributor head 59.

The distributor head 59 is provided with a bushing 60 to receive the reduced shaft portion 44, the bushing 60 having a flange 61 and being moulded into the distributor head 59 when manufactured, it being understood that the distributor head 59 is composed of vulcanized fiber, "Bakelite", or other suitable insulating material.

The distributor head 59 is provided with arms 62 one of which is cut away as at 63 and the arms are provided with a transverse groove 64 and with suitably located rivet-receiving holes 65 and 66. The distributor head is also provided with a central recessed or countersunk portion 68 to receive the flange 61 and a collar 70 which is fitted on the end of the shaft portion 44 and is held in place by means of an L-shaped pin 81 that is passed through the pin-hole 45 and lies in the slot 79 and pin-hole 80 of the collar 78. In this way the distributor head is rotatably mounted on the reduced portion 44 but is held in frictional engagement therewith so that it may turn with the shaft until one or the other of the fixed contacts 84—86 are engaged.

Mounted in the slot 64 of the distributor head is a finger 73 of insulating material the end of which overlies the end of the shaft portion 44 and the collar 78. Fitted over the finger 73 and the arm 62 is a U-shaped contact member 69. The contact member 69, insulating finger 73 and arm 62 are secured together in any suitable way, as by rivet 67. The contact member 69 includes the side contact elements 70 that are adapted to engage the fixed contact posts 84 and 86 respectively.

The contact member also includes a contact finger 71 that carries a contact button 72 which is located in the axis of the shaft 43 and is adapted to be continuously engaged by the fixed contact terminal post 82. 74 is a metallic plate riveted at 68 in the groove 64 of the arm 62 and overhanging the recess 63. The plate 74 has a hole 75 through which the spring 76 projects.

83 is a thumb nut mounted on the terminal post 82 for securing a conductor wire 99 thereto, and 85 and 87 indicate similar thumb nuts on the posts 84 and 86 respectively.

88 designates a suitable signal case having signal windows 89, 90, 93 and 94. The window 89 is preferably colored green, indicated by G; the window 90 is preferably colored white, indicated by W; the window 94 is preferably colored red, indicated by R; while the window 93 is preferably colored yellow, indicated by Y. The window R is illuminated by a bulb 96 connected in the usual rear red light circuit of the vehicle, while the window 93 has a bulb 95 connected in the usual stop light circuit of the vehicle (the connections of 96 and 95 to their respective circuits being omitted in Figure 12 of the drawing as they constitute no part of the present invention).

The bulb 91 in the window 89 is connected by a wire 97 to the terminal post 86, while the terminal post 84 is connected by a wire 98 with the bulb 92 (on other signal device) for the window 90, it being understood that the several bulbs 91, 92, 95 and 96 are connected to a common ground "g".

The central terminal post 82 of the distributor is connected by a wire 99 via a fuse plug F to one terminal of the battery B, the other terminal of which is grounded as usual.

In operation when the vehicle is moving forward the shaft 43 will be turned in a direction to cause a contact element 70 to engage the fixed post 86 and thereby maintain the signal bulb 91 energized. If, however, the vehicle starts backing, a contact element 70 will engage with fixed contact post 84 and permit the signal 92 to be energized. While I have illustrated the signal 92 as a light bulb, it is obvious that a bell or horn or other audible signal may be substituted therefor or used in addition thereto.

When the shaft 43 stops rotating the spring 76 will overcome the inertia of the distributor head 59 and return the distributor head to the neutral position shown in full lines in Figure 3 and dotted lines in Figure 12.

It will be seen that with my construction by driving the distributor from the speedometer worm a signal is actuated whenever the vehicle moves forwardly or backwardly and regardless of whether or not the vehicle is being driven or is coasting.

In some cases the arrangement of Figure 11 is preferred. By referring to that figure it will be seen that the neck 47*a* is coupled directly through coupling 28*a* to the worm shaft 3*a* and the shaft 43*a* has a splined collar 42*a* to engage the slotted head 101 of the coupling pin 100 which enters one of the bored ends of the shaft 3*a* and is suitably coupled thereto as at 13*a*. In this arrangement those parts which are of similar construction and perform the same function as corresponding parts in Figures 1 and 2 bear the same reference numeral plus the index letter "*a*"; hence a detailed description of the modification of Figure 11 is believed to be unnecessary.

From the foregoing description, taken in connection with the accompanying drawings, it is thought that the construction, advantages and operation of my invention will be clear to those skilled in the art, and while I have disclosed some modifications of the invention, it will be obvious that others may be made by those skilled in the art without departing from the spirit of the invention or the scope of the appended claims.

What I claim is:

1. In a signal device for motor vehicles which have a drive shaft and a worm shaft driven thereby and which is provided with signals to indicate forward and backward movement of the vehicle; a circuit closer for actuating said signals, comprising a support, a shaft rotatable in said

support, means coupling said shaft with said worm shaft, a distributor head on said rotatable shaft, a pair of fixedly located contacts adapted for being electrically connected respectively with the forward and rearward movement signals and located for engagement by said distributor head respectively accordingly as said rotatable shaft turns in one direction or the reverse, said distributor head having a contact element to cooperate with said fixedly located contacts, and a fixed contact terminal engaged with said distributor contact element and adapted for connection with a source of current supply, said distributor head being yieldably mounted on said rotatable shaft.

2. In a signal device for motor vehicles which have a drive shaft and a worm shaft driven thereby and which is provided with signals to indicate forward and backward movement of the vehicle; a circuit closer for actuating said signals, comprising a support, a shaft rotatable in said support, means coupling said shaft with said worm shaft, a distributor head on said rotatable shaft, a pair of fixedly located contacts adapted for being electrically connected respectively with the forward and rearward movement signals and located for engagement by said distributor head respectively accordingly as said rotatable shaft turns in one direction or the reverse, said distributor head having a contact element to cooperate with said fixedly located contacts, and a fixed contact terminal engaged with said distributor contact element and adapted for connection with a source of current supply, said distributor head being mounted on said rotatable shaft for relative rotation therein and means to cause said distributor head to rotate with said rotatable shaft until one or the other of said pair of fixed contacts shall have been engaged.

3. In a signal device for motor vehicles which have a drive shaft and a worm shaft driven thereby and which is provided with signals to indicate forward and backward movement of the vehicle; a circuit closer for actuating said signals, comprising a support, a shaft rotatable in said support, means coupling said shaft with said worm shaft, a distributor head on said rotatable shaft, a pair of fixedly located contacts adapted for being electrically connected respectively with the forward and rearward movement signals and located for engagement by said distributor head respectively accordingly as said rotatable shaft turns in one direction or the reverse, said distributor head having a contact element to cooperate with said fixedly located contact, and a fixed contact terminal engaged with said distributor contact element and adapted for connection with a source of current supply, said distributor head being mounted on said rotatable shaft for relative rotation therein and means to cause said distributor head to rotate with said rotatable shaft until one or the other of said pair of fixed contacts shall have been engaged, and means operative when said rotatable shaft is at rest to hold said distributor head in a neutral position.

4. A circuit closer for automobile traffic signals, comprising a base having a bearing neck, a shaft rotatably mounted in said neck and projecting through said base, a distributor head rotatably mounted on said shaft, a collar secured on said shaft for rotation therewith, resilient means for frictionally engaging said distributor head with said collar, means continuously tending to hold said distributor head in a neutral position, a contact member carried by said distributor head and having a finger with a contact portion in alignment with the axis of said shaft, a cap fitted on said base, a fixed contact terminal carried by said cap to engage said finger's contact portion, a pair of fixed contact terminal posts carried in spaced relation by said cap and positioned to be engaged by said distributor's contact member one at a time accordingly as said shaft is turned in one direction or the reverse.

5. A circuit closer for automobile traffic signals, comprising a base having a bearing neck, a shaft rotatably mounted in said neck and projecting through said base, a distributor head rotatably mounted on said shaft, a collar secured on said shaft for rotation therewith, resilient means for frictionally engaging said distributor head with said collar, means continuously tending to hold said distributor head in a neutral position, a contact member carried by said distributor head and having a finger with a contact portion in alignment with the axis of said shaft, a cap fitted on said base, a fixed contact terminal carried by said cap to engage said finger's contact portion, a pair of fixed contact terminal posts carried in spaced relation by said cap and positioned to be engaged by said distributor's contact member one at a time accordingly as said shaft is turned in one direction or the reverse, said distributor head having a bushed bearing and a central recess, said shaft having a reduced portion passed through said bushing and having a pin-hole, said collar lying in said recess and having a slot and a pin-hole, a pin located in said pin-holes and slot, washers on said reduced portion between said distributor head and a shoulder formed at the juncture of said reduced portion with the remainder of said shaft, and a coil spring on said reduced portion and located between said washers.

6. A circuit closer for automobile traffic signals, comprising a base having a bearing neck, a shaft rotatably mounted in said neck and projecting through said base, a distributor head rotatably mounted on said shaft, a collar secured on said shaft for rotation therewith, resilient means for frictionally engaging said distributor head with said collar, means continuously tending to hold said distributor head in a neutral position, a contact member carried by said distributor head and having a finger with a contact portion in alignment with the axis of said shaft, a cap fitted on said base, a fixed contact terminal carried by said cap to engage said finger's contact portion, a pair of fixed contact terminal posts carried in spaced relation by said cap and positioned to be engaged by said distributor-head's contact member one at a time accordingly as said shaft is turned in one direction or the reverse, said distributor head having a groove, an insulating finger held in said groove and lying between an end of said shaft and said contact member's fingers, said continuously tending means comprising a plate having a hole and secured in said distributor groove, and a spring rod secured to said base and projecting through said hole.

7. A circuit closer for automobile traffic signals, comprising a base having a bearing neck, a shaft rotatably mounted in said neck and projecting through said base, a distributor head rotatably mounted on said shaft, a collar secured on said shaft for rotation therewith, resilient means for frictionally engaging said distributor head with said collar, means continuously tending to hold said distributor head in a neutral

position, a contact member carried by said distributor head and having a finger with a contact portion in alignment with the axis of said shaft, a cap fitted on said base, a fixed contact terminal carried by said cap to engage said finger's contact portion, a pair of fixed contact terminal posts carried in spaced relation by said cap and positioned to be engaged by said distributor-head's contact member one at a time accordingly as said shaft is turned in one direction or the reverse, said distributor head having a bushed bearing and a central recess, said shaft having a reduced portion passed through said bushing and having a pin-hole, said collar lying in said recess and having a slot and a pin-hole, a pin located in said pin-holes and slot, washers on said reduced portion between said distributor head and a shoulder formed at the juncture of said reduced portion with the remainder of said shaft, and a coil spring on said reduced portion and located between said washers, said distributor head having a groove, an insulating finger held in said groove and lying between an end of said shaft and said contact member's fingers, said continuously tending means comprising a plate having a hole and secured in said distributor groove, and a spring rod secured to said base and projecting through said hole.

8. In a signal device for a motor vehicle which has a drive shaft and a worm shaft driven thereby and which is provided with signals to indicate forward and backward movement of the vehicle; a circuit closer for actuating said signals comprising a support, a shaft rotatable in said support; means coupling said shaft with said worm shaft, a distributor head on said rotatable shaft, a pair of fixedly located contacts adapted for being electrically connected respectively with the forward and backward movement signals and located for engagement by said distributor head respectively accordingly as said rotatable shaft turns in one direction or the reverse, said distributor head having a contact element to cooperate with said fixedly located contacts, a fixed contact terminal engaged with said distributor contact element and adapted for connection with a source of current supply, said distributor head being yieldably mounted on said rotatable shaft, and a spring means for moving said distributor head to a position out of engagement with either of said fixedly located contacts when the shaft is at rest.

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