Jan. 9, 1940. M. CORPORA 2,186,098

AUTOMOBILE DIRECTIONAL SIGNAL

Filed March 31, 1939 2 Sheets-Sheet 1

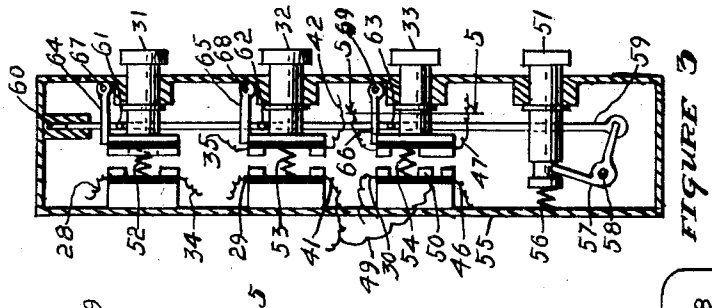


FIGURE 3

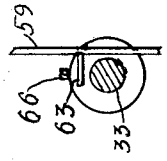


FIGURE 5

FIGURE 2

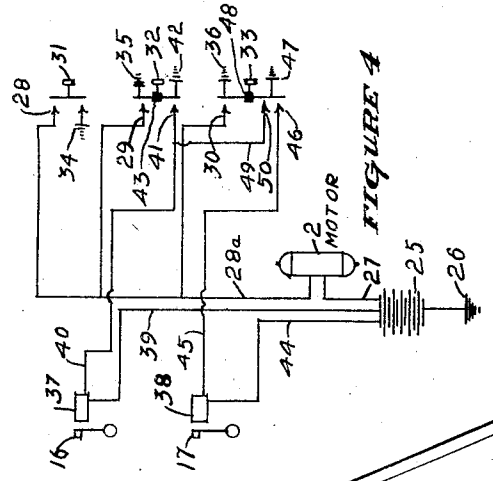


FIGURE 4

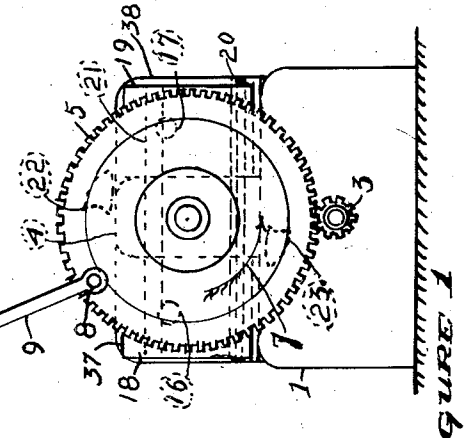
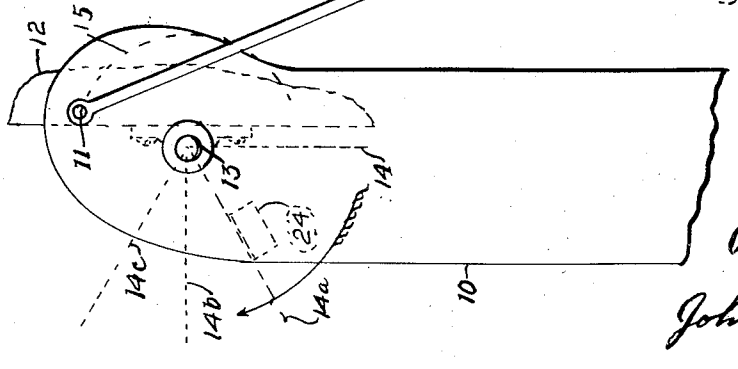


FIGURE 1



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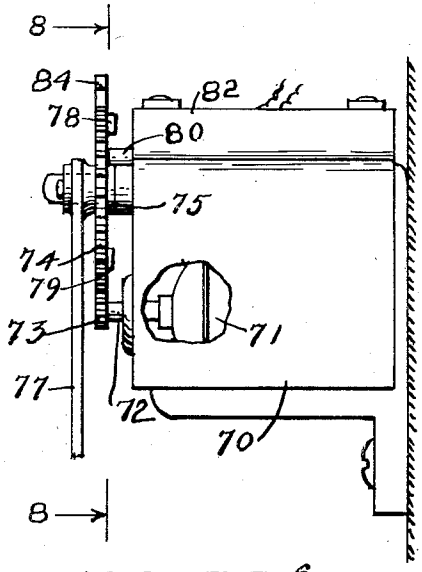


FIGURE 6

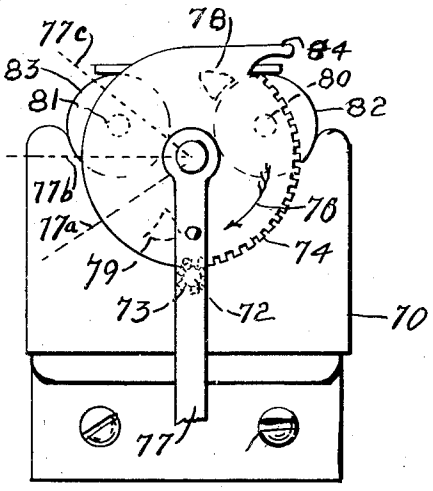


FIGURE 7

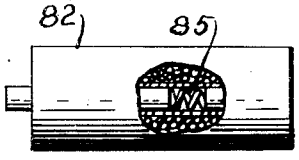


FIGURE 9

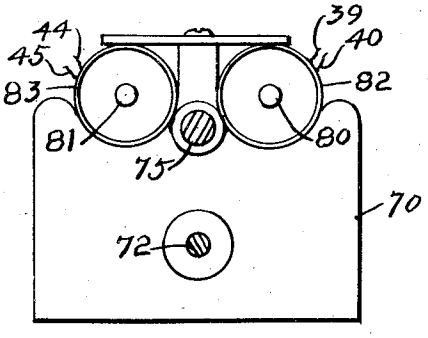


FIGURE 8

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AUTOMOBILE DIRECTIONAL SIGNAL

Michael Corpora, San Jose, Calif.

Application March 31, 1939, Serial No. 265,360

4 Claims. (Cl. 177—327)

This application is a continuation in part of my application bearing Serial No. 169,842, filed Oct. 19, 1937.

The present invention relates particularly to that type of signaling devices mountable upon a motor vehicle and operated by the driver thereof to indicate a proposed action, that is, whether it is going to slow down or stop, or turn to the left, or turn to the right.

It is one object of the invention to provide a device of the character indicated that may be operated by a small amount of electrical current from the battery of the vehicle.

It is another object of the invention to provide a device of the character indicated that will be small and compact in form, economical to manufacture, of few parts, simple in construction, strong, durable, positive in operation, and highly efficient in its practical application.

In the drawings:

Figure 1 is a front elevation of a device embodying my invention, with parts broken away.

Figure 2 is a side elevation of the same, with parts broken away.

Figure 3 is a sectional view through a push-button control box for the device.

Figure 4 is a diagrammatical illustration showing the wiring system embodied in the device.

Figure 5 is a section on line 5—5 of Figure 3.

Figure 6 is a side elevation of another embodiment of the invention.

Figure 7 is a front elevation of the same.

Figure 8 is a view on line 8—8 of Figure 6.

Figure 9 is a side elevation of a solenoid as used in this device, a part being broken away.

Referring now more particularly to the drawings, I show at 1 a housing having a motor 2 mounted therein, the shaft of the motor operating an externally positioned pinion as 3.

Rising above the center of the housing is a supporting block 4 in which is journaled a gear 5 as at 6. The gear 5 meshes with the pinion and is rotated thereby in the direction indicated by the arrow 7.

Pivotally connected to gear 5 as at 8 is a rod 9, the other end of the rod being pivotally connected to the signal arm 10 as at 11. The arm 10 is mounted on the vehicle 12 as at 13, and the connection 11 is eccentric thereto.

Normally the arm 10 hangs in a vertical position as indicated by the dotted line 14, but is moved into the "slow", "left" or "right" positions by the forcible rotation of gear 5, the arm then taking the positions indicated at 14a, 14b, or 14c, and the pivotal mounting 11 travels in the arc shown in dotted line at 15.

The rotation of gear 5 is controlled by means of pins as 16 and 17 on leaves 18 and 19 pivotally mounted on the block 4 as at 20, these pins being urged into sliding engagement with the back of the gear 5 by a light spring 21 passing through the block 4.

Formed upon the back of the gear 5 are two bosses 22 and 23 disposed to engage the pins 16—17 when the gear is rotated. The boss 22 is normally in the position shown in dotted lines in Figure 1, but when the gear 5 is rotated to move the arm 10 into position 14a the boss 22 engages pin 16 when the arm reaches that position and prevents its further movement in that direction. The boss 23 is so positioned relative to boss 22 that when the pin 16 is withdrawn as hereinafter described the gear is permitted to rotate until the boss 23 contacts pin 17, this rotation being sufficient to move the arm 10 into the position 14b.

To permit movement of the arm 10 into position 14c both pins 16—17 are withdrawn, the gear 5 then rotating until the stop 24 on the arm contacts the arm supporting portion of the vehicle 12.

It is obvious that whenever the arm is to be swung into any one of the positions indicated the motor 2 must be set in motion, and either one or both of the pins must be withdrawn. The required selection and operation is accomplished by means of electrical circuits as shown in the diagram.

In this diagram the battery is indicated at 25 and grounded at 26. The motor 2 is connected to the battery at 27, and a wire 28a leading therefrom has three terminals as 28, 29 and 30. Push-button switches 31, 32, 33 grounded at 34, 35, 36, are disposed to close the circuits when desired thereby setting the motor in motion and swinging the arm 10 upwardly as described.

Mounted on either side of the block 4 is a magnet as at 37 and 38, these magnets being disposed adjacent the leaves 18—19 so that when energized they will withdraw the pins 16—17 from the path of travel of the bosses 22—23 and permit the gear 5 to rotate as described.

The magnet 37 is connected to the battery by wire 39, the other wire leading therefrom at 40 having a terminal 41 in operative relation to switch 32. The switch is grounded at 42, the two grounds or contact points of the switch being separated by insulation at 43.

The magnet 38 is connected to the battery by

wire 44, the other wire leading therefrom at 45 having a terminal 46 in operative relation to switch 33. The switch is grounded at 47 and the two sides of the switch are separated by insulation at 48.

A wire 49 connects the wire 40 with the terminal 50, the terminal 50 cooperating with the switch 33 through the ground 47.

By means of this arrangement, when the switch 31 is closed the motor 2 operates to rotate the gear 5 until boss 22 contacts pin 16 and the arm 10 is swung upwardly to the position 14*a*. When switch 32 is closed the magnet 37 is energized to withdraw pin 16 from an operative position and at the same time motor 2 operates to rotate the gear 5 until boss 23 contacts pin 17 and the arm 10 is swung upwardly to the position 14*b*. When switch 33 is closed both magnets are energized to withdraw both pins and at the same time motor 2 operates to rotate the gear 5 until the arm is swung upwardly to a point where the stop 24 contacts the vehicle 12, that is to point or position 14*c*.

The switches 31, 32, 33 are so constructed that they remain closed until released by the operation of another push-button 51 whereupon the circuits are broken and the arm 10 returns to its original position by gravity.

To effect the securing and releasing of the switches 31, 32, 33, the following mechanism is provided, it being understood that the said switches are normally held in an open position by means of springs as at 52, 53, 54 respectively, and that the several switches are mounted in a suitable switch-box 55.

The push-button 51 is urged outwardly by a spring 56 and engages one arm of a bell-crank 57 pivoted at 58. The other arm of the bell-crank is pivotally connected to a rod 59 passing along the sides of the three switches and seated in a guide 60. The rod is provided with three spurs as at 61, 62, 63, extending laterally therefrom adjacent the upper sides of the three horizontally disposed switches. At 64, 65, 66, are three detents pivotally mounted on case 55 as at 67, 68, 69, adjacent their respective switches and arranged to fall in back of the switch heads when the switches are pushed inwardly. When any detent is holding a switch closed it may be released by pressing button 51, which action shoves the detent clear of the switch head.

In the embodiment of the invention shown in Figures 6, 7, 8 and 9, the housing is shown at 70 and the motor at 71, the motor shaft 72 operating a pinion 73. The pinion 73 meshes with a segmental gear 74 journaled on the housing as at 75 to rotate the same in the direction indicated by the arrow 76. The signal arm 77 is mounted as an integral part of the shaft and gear 74 to rotate as a unit therewith.

On the back of gear 74 are stops 78—79 disposed to engage the pins 80—81 of solenoids 82—83 to position the arm 77 at 77*a* or 77*b* as described in connection with the positioning of arm 10 in the first described embodiment. In the present instance, however, the segmental gear 74 has a tangentially directed finger 84 mounted on its edge and one end of the toothed portion of the gear as shown so that when the gear has rotated far enough to swing the signal arm into the uppermost position 77*c* the finger 84 will engage the pinion 73 and prevent further rotation of the gear. The pinion 73 has two functions, one being to drive the gear 74, and the other being to act as a detent to engage the finger 84 and so limit rotation of the gear, being disposed to lie in the path of travel of the finger 84 for that purpose. In this, as in the former case, the dropping of the arm 77 back to its original pendant position will reset the gear 74.

In this embodiment the solenoids 82—83 are operated in the same manner as indicated by the first described embodiment, being connected in the circuits including the wires 39—40 and 44—45. The stop engaging pins 80—81 in the solenoids are urged outwardly in stop engaging position by light springs as 85 in solenoid 82, the pins being withdrawn against the outward urge of the springs by the selective energization of the solenoids in the manner hereinbefore described.

This last described embodiment provides a more compact device, and one that is simpler in form and construction, and more economical to manufacture and maintain than the first described embodiment.

Although certain specific embodiments of the invention have been illustrated and described, it will be understood that various alterations in the details of construction and mode of assembly may be made without departing from the scope of the invention as indicated in the appended claims.

I claim:

1. In combination with a vehicle body, a signal arm pivotally mounted on the body for movement in a vertical plane, supporting means, a gear rotatably mounted thereon, a link eccentrically connecting the gear and arm to swing the arm upon rotation of the gear, an electric motor mounted in the supporting means, a motor operated pinion drivingly connected to the gear, spaced stop means disposed on the face of the gear directed toward the supporting means and on opposite sides of its axis of rotation, a pair of detents resiliently mounted on the supporting means on opposite sides of the axis of rotation of the gear to normally lie in the path of travel of the stops, electro-magnets mounted on the supporting means in operative relationship to said detents to withdraw the same from the path of travel of the stop means when energized, means for simultaneously energizing either one magnet or both magnets, and the motor, or the motor independently of the magnets, and stop means inserted between the arm and vehicle body to limit movement of the arm when the motor and both magnets are energized.

2. In combination with a vehicle body, a signal arm pivotally mounted on the body for movement in a vertical plane, a housing having a bearing block thereon, a gear journaled in the block to rotate in parallel relation to one face thereof, an electric motor disposed in the housing, a motor operated pinion drivingly connected to the gear, spaced stops disposed on the face of the gear adjacent the block and on opposite sides of its axis of rotation, a link eccentrically connecting the gear and signal arm to swing the arm on rotation of the gear, electro-magnets mounted on opposite sides of the block adjacent the gear, detents resiliently mounted on the block between the magnets and the gear and normally disposed to lie in the path of travel of the stops but withdrawable therefrom by the magnets when energized, means for energizing the motor independently of the magnets to move one gear stop into engagement with one detent, means for energizing the motor and one magnet

to withdraw the last named detent from the path of travel of the stops and move the other gear stop into engagement with the other detent, means for energizing the motor and both magnets to withdraw both detents from the path of travel of the stops and rotate the gear, means operative to simultaneously deenergize the motor and magnets, and stop means inserted between the arm and vehicle body to limit movement of the arm when the motor and both magnets are energized.

3. A device of the character indicated comprising, an electric motor, supporting means, a gear rotatably mounted on the support, a motor operated pinion drivingly connected to the gear, signal means operatively associated with the gear to be actuated by rotation thereof, and means for controlling rotation of the gear comprising, spaced stop means disposed on the gear on opposite sides of its axis of rotation, a pair of resiliently supported detents operatively mounted to normally lie in the path of travel of the stops and disposed to cooperate with the stops to effect certain signals, electro-magnets operatively mounted relative to said detents to withdraw the same from the path of travel of the stops when energized, means for energizing the motor independently of the magnets to move one gear stop into engagement with one detent, means for energizing the motor and one magnet to withdraw the last named detent from the path of travel of the stops and move the other gear stop into engagement with the other detent, means for energizing the motor and both magnets to withdraw both detents from the path of travel of the stops and rotate the gear, means operative to simultaneously deenergize the motor and magnets, and means operative to limit rotation of the gear when the motor and both magnets are energized.

4. A device of the character indicated comprising, an electric motor, supporting means, a gear rotatably mounted on the support, a motor operated pinion drivingly connected to the gear, signal means operatively associated with the gear to be actuated by rotation thereof, and gear control means comprising, spaced stop means disposed on the gear on opposite sides of its axis of rotation and a third stop means disposed on the gear, a pair of resiliently supported detents operatively mounted to normally lie in the path of travel of the first mentioned stops and disposed to cooperate with the stops to effect certain signals, electro-magnets mounted on the supporting means in operative relationship to said detents to withdraw the same from the path of travel of the said first-mentioned stop means when energized, means for simultaneously energizing either one magnet or both magnets, and the motor, or the motor independently of the magnets, the third stop means being disposed to engage the motor operated pinion to limit rotation of the gear when the motor and both magnets are energized.

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