O. L. BRITTON.

DIRECTION SIGNAL.

APPLICATION FILED APR. 29, 1915.

1,178,128.

Patented Apr. 4, 1916.

2 SHEETS—SHEET 1.

FIG 2.

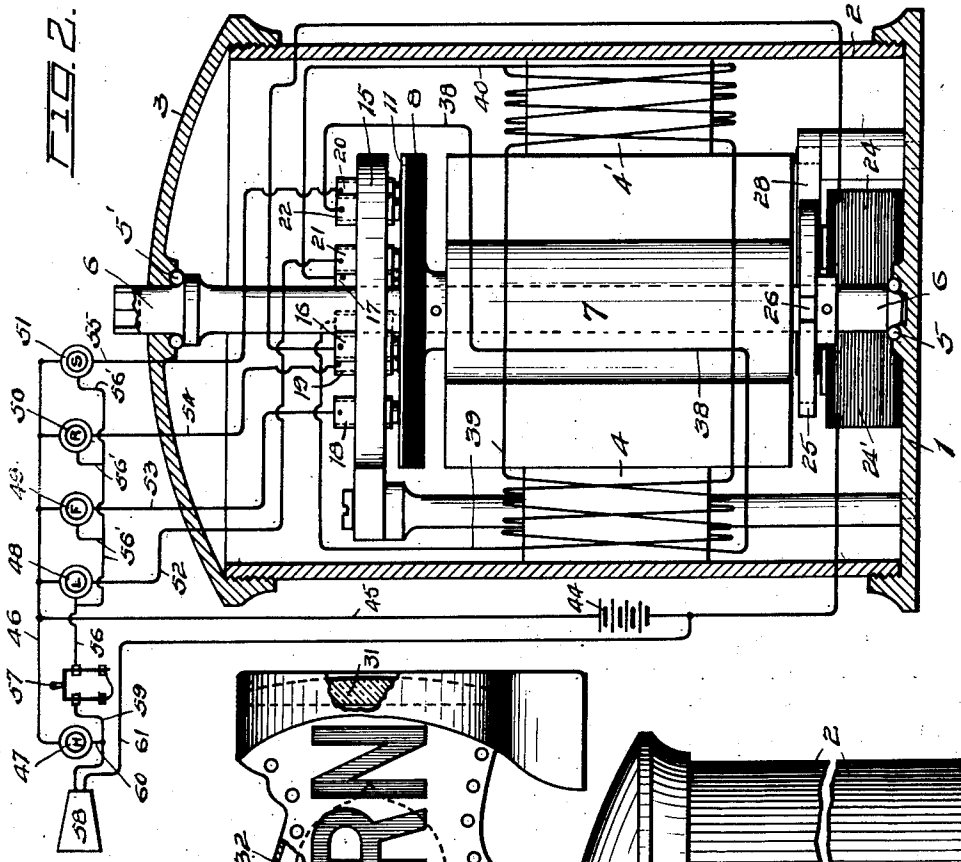
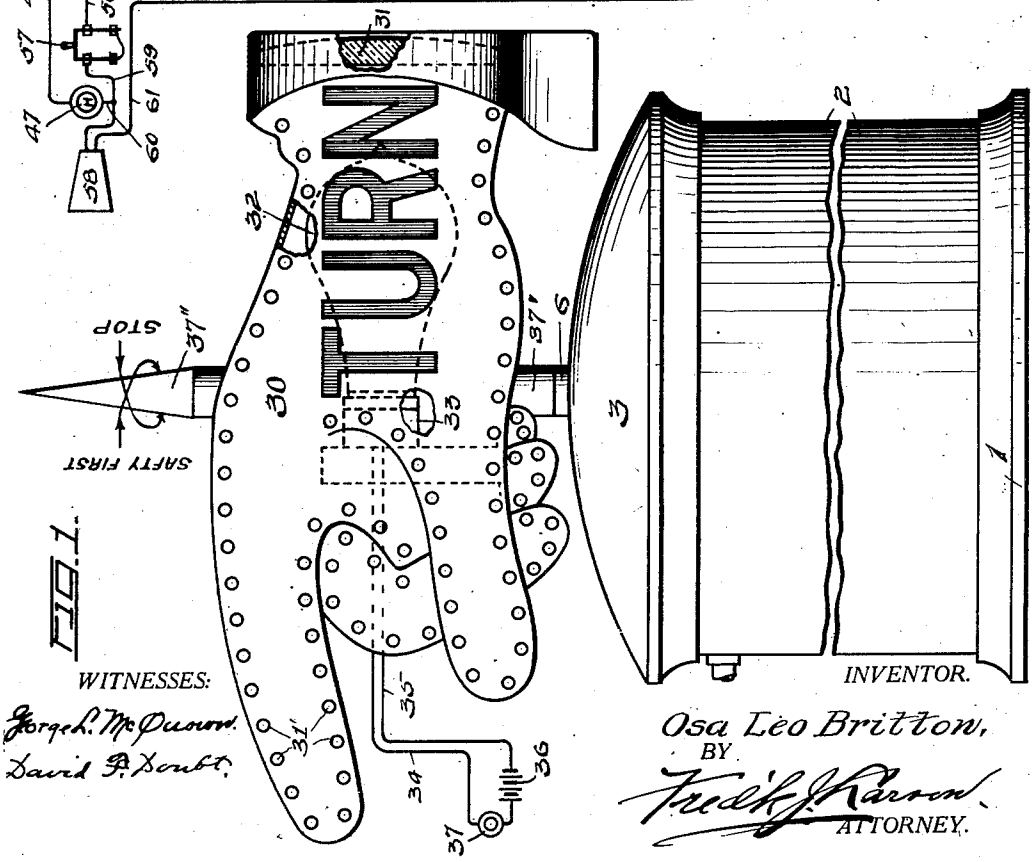


FIG 1.



WITNESSES:

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DIRECTION SIGNAL.

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2 SHEETS—SHEET 2.

FIG. 3.

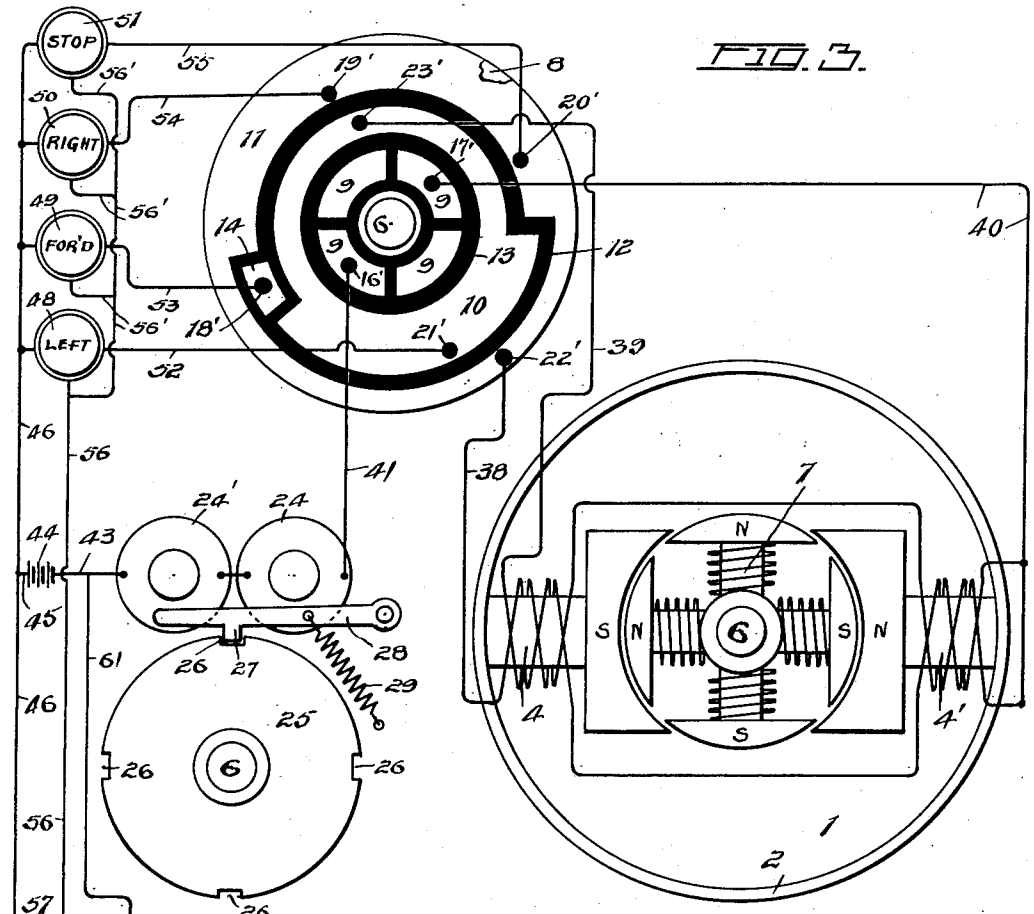
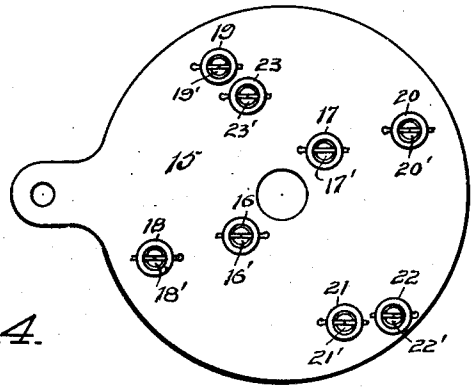


FIG. 4.



WITNESSES:

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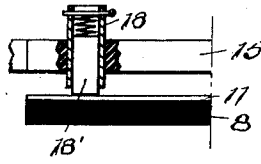


FIG. 5.

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DIRECTION-SIGNAL.

1,178,128. Specification of Letters Patent. Patented Apr. 4, 1916.

Application filed April 29, 1915. Serial No. 24,754.

To all whom it may concern:

Be it known that I, OSA LEO BRITTON, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented a certain new and useful Direction-Signal, of which the following is a specification.

This invention relates to an electric signal and more particularly to a direction signal for automobiles, vehicle or other uses.

The signal is electrically actuated to set a direction-vane or indicator, so that immediately pedestrians or vehicle drivers may be warned of the intended movement of the vehicle provided with the signal.

The invention consists essentially of a suitable electric motor, a direction-vane or indicator, a sounding device, a plurality of push-buttons and suitable wiring.

A further object of the invention is to provide a signal of this character which will be comparatively simple in construction, reliable and efficient in operation, and strictly automatic in operation.

With these and other objects in view, the invention consists in certain new and novel features of construction, combination and arrangements of parts as will be hereinafter more fully described and finally pointed out in the claims hereto appended.

With further reference to the device, the electric motor actuates a direction-vane or indicator at the rear or front of a vehicle or both ends of the vehicle and is applied to tell or warn traffic, either behind or ahead of the vehicle the intended movement thereof and especially at a corner or cross-street. The motor is actuated by a suitable electrical source, such for instance as a battery, magneto or the like when the driver presses a push-button. Thus when he approaches a corner, for instance, and he desires to turn to the right, the driver presses the push-button marked "Right." When the button has been pressed the motor will revolve and the direction indicator will rotate until it points to the right where it will automatically stop and lock. Simultaneously with the pressing of the push-button a sound is produced as a warning. The sounding device may be shut off by means of a switch if desired, so that the sounding device will only operate when a special button is pressed. The new position of the direction-vane or indicator is maintained until a new position thereof is brought about by pressing another push-button, such for instance, as "Forward," "Left" or "Stop." An electric light or lights are preferably employed to illuminate the direction-vane or indicator at night, which vane or indicator is preferably hollow to act as a tail-lamp or signal at night.

Referring to the accompanying drawings forming a part of this specification and wherein like characters of reference denote similar parts throughout the several views: Figure 1, is a side elevation of my improved signal with a portion of the body of the motor broken away. Fig. 2, is a vertical sectional view of the motor and push-button circuits. Fig. 3, is a diagrammatic view of the motor, locking-device, electric push-button circuits and connections. Fig. 4, is a plan view of the brush supporting disk. Fig. 5, is a detail showing one of the brushes and holder.

In carrying out the aim of my invention, I employ a suitable motor, preferably of the vertical or upright type.

The reference numeral 1 indicates the base, 2 the housing and 3 the removable cover or cap. Mounted within the housing 2 are the differentially wound fields 4 and 4′.

Rotatably mounted upon suitable roller-bearings 5 and 5′ is an armature shaft 6 adapted to revolve between the fields 4 and 4′. Suitably secured to the shaft 6 is a suitably wound armature 7.

Located adjacent the upper end of the armature 7 and suitably secured to the shaft 6 is a combined commutator and selector-collector disk or plate comprising an insulated base 8; a plurality of commutator segments 9; the inner selector-collector ring 10 and the outer selector-collector ring 11. The inner and outer selector-collector rings are separated by insulated ring 12. The commutator segments 9 are separated from each other and the inner selector-collector ring 10 by means of the insulated member 13, as clearly shown in Figs. 2 and 3. A

neutral or open circuit plate 14 is located between offsets in the inner and outer selector-collector rings, as clearly shown in Fig. 3.

Suitably secured adjacent the commutator and selector-collector disk and concentric therewith is a suitable brush supporting disk 15. Disk 15 is provided with a plurality of brush-bushings 16, 17, 18, 19, 20, 21, 22 and 23, as clearly shown in Figs. 2 and 4. Adapted to be received under spring pressure in the brush-bushings are the brushes 16′, 17′, 18′, 19′, 20′, 21′, 22′ and 23′ respectively. Brushes 16′ and 17′ are known as commutator brushes, while 18′, 19′, 20′ and 21′ are selector-collector brushes and 22′ and 23′ are field brushes.

The means for holding the motor and indicator in a locked position comprises a pair of electro-magnets 24 and 24′ and a rotatable locking-disk 25 which is suitably secured to the armature shaft 6 so as to rotate therewith. The locking-disk 25 is provided with a plurality of peripheral notches 26 into which is adapted to be drawn the lip 27 of the locking armature 28. The armature 28 is normally held in a locked position by means of a suitable spring 29.

Adapted to be suitably attached to the upper end of the armature shaft 6, is a suitable direction-vane or indicator 30. The indicator 30 is preferably hollow and when hollow in construction, is provided at one end with a glass face or wall 31 to enable the indicator to be used as a tail-lamp as well as an ordinary direction-indicator. Each side of the indicator 30 is provided with the word "Turn," which word is cut therefrom or otherwise formed and is preferably provided with a transparent red covering so that the words "Turn" will be clearly visible and distinct at night as well as by day. The indicator 30 is also preferably outlined with or by a plurality of small openings 31′ when in the form of a hand or other object so as to give a good outline of the indicator at night when illuminated. The indicator 30 is preferably lighted at night by means of an electric-light 32 secured to the socket 33. Leading from the socket 33 is a pair of conducts 34 and 35 which have connection with an electrical source 36 and a push-button 37. The indicator 30 is also provided with a spindle 37′ which is suitably secured to the armature shaft 6 to cause the indicator to turn with the armature shaft 6. The indicator 30 is further provided with a spire like member 37″ to which spire may be fastened, painted or otherwise attached if desired, the words "Safety first" and "Stop."

The wiring and circuits will now be described.

The reference numerals 38 and 39 represent conductors which are differentially wound to produce the fields 4 and having connection with the conductor 40. Conductor 40 has connection with the commutator brush 17′, while conductors 38 and 39 have connection with the field brushes 22′ and 23′ and selector-collector plates or rings 10 and 11, respectively, as clearly shown in Fig. 3. Conductor 41 has connection at one end with armature brush 16′ and with an electro-magnet 24 at its opposite end. Conductor 43 connects a suitable electrical source 44 with the other electro-magnet 24′ and conductor 45 connects the electrical-source or battery with a main 46. Main 46 has connection with a plurality of push-buttons, namely: A two-point push-button 47, designated "Horn," and four three-point push-buttons 48, 49, 50 and 51, which push-buttons are designated "Left," "Forward," "Right" and "Stop," respectively. Having connection at one end with the push-buttons 48, 49, 50 and 51 are the conductors 52, 53, 54 and 55 which have connection at their opposite ends with the brushes 21′, 18′, 19′ and 20′, respectively, as clearly shown in Fig. 3. Having connection with push-button 48 is a conductor 56 which leads to a suitable switch 57 and leading from this switch 57 to a suitable sounding device 58 is a conductor 59. A conductor 60 has connection with push-button 47 and conductor 59. A conductor 61 runs from the sounding device 58 to conductor 43. Conductors 56′ lead from the push-buttons 49, 50 and 51 to conductor 56, as shown in Fig. 3.

By the above system of circuits the sounding device 58 will be actuated each time any of the push-buttons 48, 49, 50 or 51 are pressed, providing the switch 57 is closed. When switch 57 is open, the pressing of any of the latter mentioned push-buttons will not actuate the sounding device 58. However, the sounding device 58 may be actuated or sounded when the switch is open by merely pressing on push-button 47.

In the operation of the signal, assuming that the driver desires to turn to the right, he presses push-button 50 (Right) which will cause the closing of the circuit and energize the magnets 24 and 24′, causing the neutral plate 14 to revolve to a point under selector-collector brush 19′ and simultaneously therewith causing the magnets 24 and 24′ to draw the locking armature 28 out of engagement with the notched periphery 26 of the locking-disk 25. Instantly upon reaching neutral position 14 the circuit is broken and the armature 28 is released by the magnets 24 and 24′ and drawn into engagement with the locking-disk by the spring 29, which spring holds the locking disk in a locked position until another push-button is pressed. The motor after having

revolved 90 degrees stops automatically owing to the fact that the brush 19′ ran upon the neutral plate 14 breaking the circuit, thus stopping the further rotation of the armature shaft and indicator 30 attached thereto. The circuit having been broken, the catch or locking armature 28 is released from the magnets 24 and 24′ to which they had been attached when the push-button 50 was pressed and instantly it is drawn into engagement with the stop or locking disk 25, thus locking the disk in a 90 degrees right position. Similarly when push-button 51 is pressed the motor will turn to the stop position and when push-button 48 is pressed it will cause the motor and indicator to stop at the left position. When the current is complete through selector-collector ring 11 the motor will travel or rotate clockwise and if the current is complete through ring 10 the motor will revolve counter clockwise. Rings 11 and 10 are connected with the push-buttons in such a way that they will always turn to the desired positions in the least possible travel, as the fields are not always the same polarity. At this time I may say however, that it makes no difference where the motor or direction indicator is located or what button is pressed, the motor will revolve to the desired position in the least possible travel owing to the windings of the fields and the locations of the field brush terminals. Push-button 50 having been pressed, stops motor as indicated by position in diagram of Fig. 3, after having revolved from any of the other three positions.

The direction indicator 30, it will be observed, from the foregoing description, is controlled by means of a plurality of push-buttons, the push-buttons being preferably attached to the steering wheel when used in connection with an automobile or to some other convenient place within easy reach of the driver. The indicator 30 has four positions in which it stops and locks automatically. These positions are forward, the natural position; right, left and stop. The latter position indicates that the driver intends to stop or back up.

From the foregoing description, taken in connection with the accompanying drawings, it is thought, the construction and operation of the invention will be fully and readily understood without requiring extended description.

It is of course, understood, that various changes in the form, proportions and minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages thereof as defined in the appended claims.

What I claim is:

1. A direction signal for automobiles comprising an electric-motor having differentially wound fields and an extended armature-shaft, a direction-vane connected with the upper end of said armature-shaft; a source of electrical supply; a selector-collector element fixed to said armature-shaft consisting of a plurality of commutator segments, an inner selector-collector ring, an outer selector-collector ring, and a neutral-plate, a brush supporting plate, a plurality of brush terminals adapted to engage said selector-collector element for controlling the movement of said direction-vane and the neutral position thereof, a plurality of circuits, means of opening and closing said circuits, and an electro-magnetic locking mechanism for normally locking the direction-vane in a predetermined signal position.

2. A direction signal comprising an electric motor having differentially wound fields and a vertically disposed armature-shaft, a detachable direction-vane connected to the upper end of said armature-shaft; a source of electrical supply; a selector-collector element consisting of a plurality of commutator-segments, an inner selector-collector ring, an outer selector-collector ring, and a neutral-plate, a plurality of brushes adapted to engage said selector-collector element; a plurality of circuits; means for closing one of said circuits at a time and causing the neutral-plate to revolve in the direction of the shortest path of travel to the brush in circuit and when in contact therewith opening the circuit, and means for normally locking the selector-collector element against further rotation simultaneously with the opening of said circuit thereby displaying the direction-vane in a predetermined signal position.

3. A direction signal for vehicles comprising an electric-motor having differentially wound fields and having a vertically disposed armature-shaft, a direction-vane mounted upon the upper end of said armature-shaft, a source of electric light for said direction-vane, a selector-collector element consisting of a plurality of commutator-segments, an inner selector-collector ring, an outer selector-collector ring, and a neutral-plate interposed between said inner and outer selector-collector rings, and fixed to rotate with said armature-shaft, a stationary brush supporting plate arranged adjacent said selector-collector element, a plurality of brushes supported by said stationary plate adapted to engage the selector-collector element, a plurality of electric circuits, means of closing a predetermined circuit and causing the selector-collector element and direction-vane to revolve, and means to cause the neutral-plate to stop under the brush in circuit, thereby opening the circuit and simultaneously therewith normally locking the

armature-shaft and direction-vane against further rotation.

4. A direction signal for vehicles comprising an electric-motor having differentially wound fields and an extended armature-shaft; a source of electrical supply; a direction-vane mounted upon one end of said armature-shaft, a selector-collector element having a plurality of commutator-segments, an inner selector-collector ring, an outer selector-collector ring, and a neutral-plate interposed between said inner and outer selector-collector ring and insulated therefrom, a plurality of brushes adapted to engage said selector-collector element, a plurality of circuits, means of closing said circuits one at a time, the closed circuit being automatically opened when the brush in circuit comes in contact with the neutral-plate, a notched-disk fixed to the armature-shaft and adapted to revolve therewith, a spring held locking-armature adapted to engage one of the notches of the fixed disk when the armature-shaft is stationary, and electro-magnets for attracting said armature from said notched-disk prior to the rotation of the armature-shaft and direction-vane to permit the free movement of the armature-shaft.

5. A direction signal for vehicles comprising an electric-motor having differentially wound fields and a vertically disposed armature-shaft, a detachable direction-vane secured to the upper end of said armature-shaft; a source of light for illuminating the direction-vane at night; a source of electrical supply; a selector-collector element having a plurality of commutator-segments, an inner selector-collector ring, an outer selector-collector ring, and a neutral-plate interposed between said inner and outer selector-collector ring, a plurality of brushes adapted to engage said selector-collector element, a plurality of circuits adapted to control the movement of said selector-collector element, and means for normally locking said selector-collector element in its neutral position.

6. In a direction-signal for vehicles, the combination of an electric motor having differentially wound fields, a vertically disposed armature and a vertically disposed armature-shaft, a source of electrical power supply for said motor, a direction-vane in the form of a hand removably connected to the upper end of said armature-shaft and adapted to rotate therewith, a selector-collector element having an inner and outer collector-ring and a neutral-plate, a plurality of brush terminals adapted to engage said collector-rings and neutral-plate for controlling the movement of said direction-vane, a notched-disk fixed to said armature-shaft, a spring held locking-armature adapted to engage one of the notches of the notched-disk when the armature-shaft is stationary, and electro-magnets for attracting and disengaging said armature from said notched-disk prior to the rotation of the armature-shaft and direction-vane.

7. A direction-signal for automobiles comprising a housing, an electric motor having differentially wound fields and a vertically disposed armature disposed between said fields, an armature-shaft extending upwardly through said housing and mounted upon ball-bearings, a direction-vane secured to the upper end thereof, an electro-magnetic armature-shaft locking mechanism arranged adjacent the lower end of said armature, an inner-collector ring, an outer collector-ring, a neutral-plate interposed between said inner and outer collector-ring and each being insulated from the other and adapted to rotate with the armature-shaft, a brush terminal-disk stationarily fixed adjacent the upper face of the selector-collector element, a plurality of brush-terminals carried by said brush terminal-disk adapted to have engagement with the said inner and outer collector-rings and neutral-plate, a source of electrical power supply, a conductor leading from said source of electrical supply through the electro-magnets of the armature-shaft locking mechanism and then to one of the terminals of the armature, a conductor leading from the outer collector-ring to the fields and then to the other terminal of the armature, a conductor leading from the inner collector-ring to the fields and then to the latter terminal of the armature, a plurality of brush-terminals adapted to engage said collector-rings, one of which is adapted to engage the neutral-plate when the armature shaft is held stationary, a plurality of push-buttons, a conductor from each push-button to their respective brush-terminal, and a conductor leading from the source of electrical supply to said push-buttons so that when any push-button is depressed the circuit will be closed causing the selector-collector rings and neutral plate to rotate until the collector-ring in the circuit leaves the brush-terminal in circuit and the neutral-plate stops thereunder thereby stopping the armature-shaft and displaying the direction-vane in the position desired.

8. A direction signal for automobiles comprising a reversible electric-motor having an extended armature-shaft, a direction-vane secured to said armature-shaft, a selector-collector element fixed to rotate with said armature-shaft having a plurality of commutator-segments, a plurality of selector-collector rings, and a neutral-plate; a plurality of brushes; a plurality of electric

circuits; a source of electrical supply for said circuits, means for closing a predetermined circuit to revolve the direction-vane to a predetermined signal position, the brush in circuit when coming in contact with the neutral-plate causes the circuit to be opened stopping the armature-shaft against further rotation, and means adapted to normally lock the armature-shaft against further movement upon the opening of said closed circuit thus displaying the direction-vane in the desired signal position.

In testimony whereof, I have hereunto signed my name to the specification in the presence of two subscribing witnesses.

OSA LEO BRITTON.

Witnesses:
GEORGE L. MCQUOWN,
DAVID F. DOUBT.