April 5, 1927. 1,623,219

S. TOLMACH

VEHICLE SIGNAL

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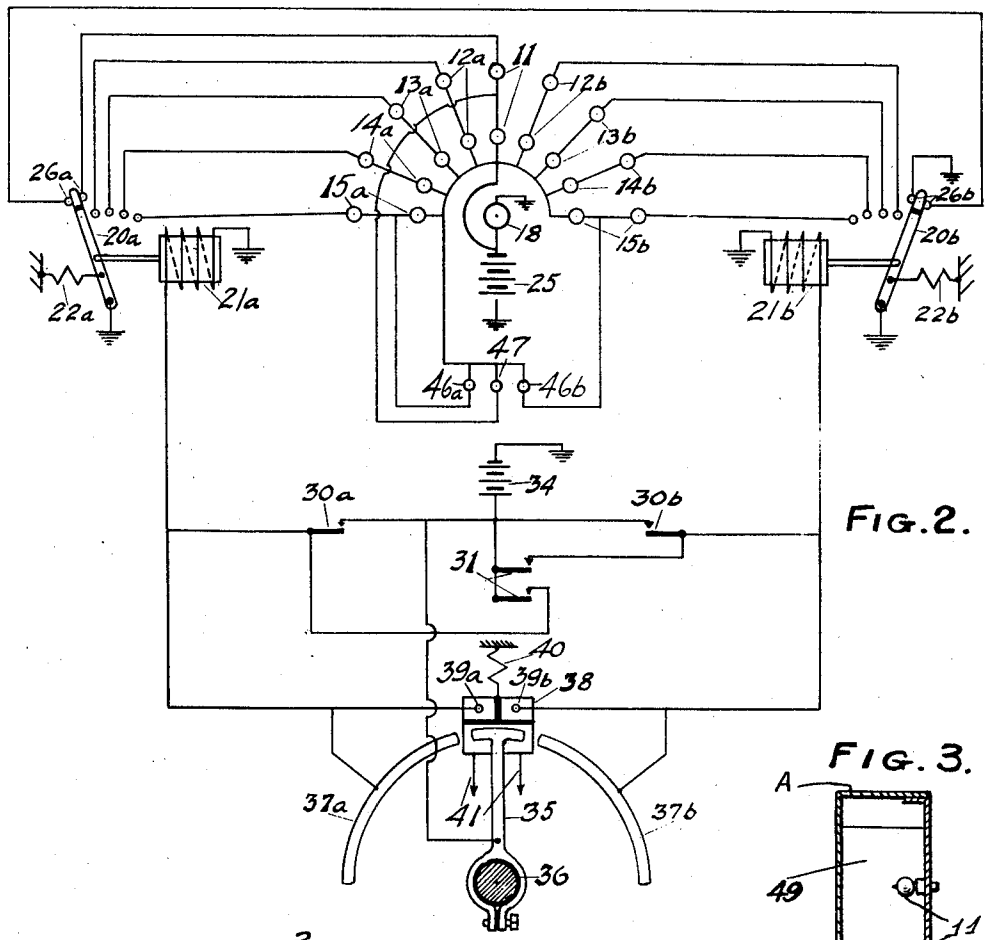


FIG. 2.

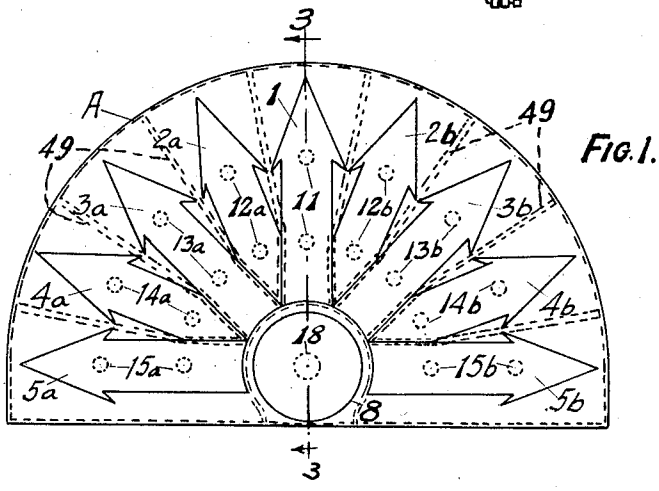
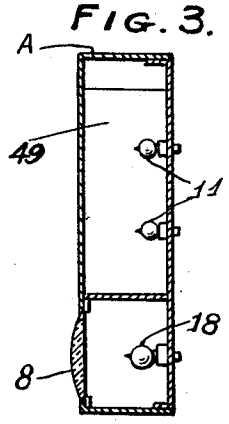


FIG. 1.

FIG. 3.



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UNITED STATES PATENT OFFICE.

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VEHICLE SIGNAL.

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My invention relates to vehicle signals, primarily to signals for use at night when the arm of the driver, extended in accordance with the mode of signaling now in common use, is barely, if at all, visible.

The object of the invention is to provide a signal having no moving parts, but consisting of a number of stationary members, which are illuminated successively when a change of the signal indication is made, thus simulating movement of the signal from one position to the other. For governing the signal I provide an automatic as well as a manual controller either or both of which may be employed, as desired. The indications of the signal are repeated by a device which may be placed on the dashboard of the vehicle, so that the driver may readily ascertain whether the signal is operating properly.

Various other features and objects of the invention will be readily understood from the following description thereof, reference being had to the accompanying drawing in which Fig. 1 is a partly diagrammatic view showing an elevation of one form of embodiment of the invention, and Fig. 2 a diagrammatic view of one form and arrangement of circuits for controlling the signal of Fig. 1. Figure 3 is a view showing cross section of Figure 1. Similar characters of reference refer to similar parts in both of the views.

In Fig. 1 reference character A designates a casing of semi-circular form, the face of which is cut away to show a number of arrow-shaped glass windows, preferably colored green, designated by numerals 1 to 5, the arrows extending to the left being marked by the subscripts *a* and the arrows extending to the right, by the subscripts *b*. Lamps are provided in the casing behind each of the arrows to illuminate the same when current is caused to flow through the lamps, partitions 49 being provided in the casing to prevent the light from the lamps behind one arrow to illuminate the face of another arrow. There are two lamps shown behind each arrow, designated 11 to 15 inclusive; subscripts *a* and *b* being used similarly as for the arrows. At the base of the arrows is provided a red bull's eye lens 8 which may be illuminated by a lamp 18.

The lamps are governed by means of circuit controllers 20^a and 20^b actuated by plunger magnets 21^a and 21^b, springs 22^a and 22^b being provided to bias the controllers into the positions shown in the drawing. The lamps of each arrow are in series with each other and connected at one end to one of the contact points of the controller, and at the other end to a battery 25, so that current flows from the battery through the arrow lamps whose contact is closed, and through the circuit controllers to ground. The lamps 11 of the vertical arrow 1 are connected to contact 26^a and 26^b in series, these contacts being normally held closed by insulated tip portions on the circuit controllers, so that the vertical arrow is normally illuminated. When magnet 21^a is energized, contact 26^a is opened so that the circuit of the lamps of arrow 1 is interrupted. As the controller continues to move to the right it closes and opens consecutively the circuit of each of the arrows, thus simulating the movement of an arrow from the vertical into the left horizontal position, the contact of the lamps 5^a remaining closed as long as magnet 21^a remains energized. When the magnet is de-energized, the contact points are operated in the reverse direction so that the arrow appears to move back into the vetrical position. An energization of the magnet 21^b causes the consecutive illumination of arrows 1 to 5^b, thus simulating the movement of an arrow from the vertical into the right horizontal position. When both magnets 21^a and 21^b are energizel simultaneously two arrows appear to move from the vertical to the left and right positions. When the illuminated arrow is in the vertical position it indicates that the vehicle is proceeding straight ahead at normal speed; when in the left or right horizontal position, that the vehicle is making, or about to make, a left or a right turn respectively; and when both left and right horizontal arrows are illuminated, that the vehicle is slowing down or standing still. It will be noted that the red lens is always illuminated, being directly connected to battery 25, and takes the place of the tail-light now commonly in use.

For the control of the magnets I provide push button actuated switches 30^a, 30^b and 31. Switch 30^a is arranged to cause flow of current from a battery 34 (which may, in fact, be the same battery as 25), through the circuit of magnet 21^a; switch 30^b, through the circuit of magnet 21^b; and switch 31,

through both magnets simultaneously. The driver of the vehicle is thus enabled to cause the display of any signal indication by operating the corresponding push button. These buttons may be of the kind which remain closed only as long as held depressed, or of the type which, once depressed, ramain closed until released by a second operation, such as the ordinary electric light switch.

Besides the above-described manual controller, I provide an automatic switching arrangement, which as herein shown is comprised of a contact arm 35 clamped to a shaft 36, which may be the steering column or another shaft actuated thereby. Contact plates 37^a and 37^b are provided to be engaged by arm 35 when the steering column is turned to the left or right through an angle of greater than a predetermined amount. Plates 37^a and 37^b are connected to magnets 21^a and 21^b respectively and the contact arm 35 is associated with the battery 34, so that when the steering column is turned to the left or right it causes the energization of magnets 21^a or 21^b, respectively. This arrangement thus causes the display of the "left turn" and "right turn" signals automatically in accordance with the turning movements of the vehicle.

For the purpose of causing automatic actuation of the "slowing down" signal I provide an insulating plate 38 provided with contact points 39^a and 39^b connected respectively to magnets 21^a and 21^b. A spring 40 is provided to hold plate 38 normally in the position shown on the diagram and wires 41 associated with the brake mechanism of the vehicle are provided to draw the contact points into engagement with arm 35 when brakes are applied, so that current energizes magnets 21^a and 21^b simultaneously and causes the "slowing-down" indication of the signal.

The operation of the signal is readily understood from the foregoing description thereof. The vertical arrow is normally illuminated and this indication remains unchanged when the steering column is turned through a small angle. When the steering column, however, is turned through more than a predetermined angle, arm 35 engages either plate 37^a or 37^b and causes the arrow to move, apparently, into the "left-turn" or "right-turn" indication. The signal has thus not only the advantages of the moving signal in attracting attention, but also the inherent merits of a stationary device in requiring less operating power and being less liable to get out of order. When the vehicle has made the turn and again begins to travel straight ahead, the arrow appears to return to the normal vertical position. When the vehicle is slowed down or brought to a stop by an application of the brakes the contact points 39^a and 39^b move into engagement with arm 35, thus causing the signal to display its "slowing down" indication. When the brakes are released, the signal is restored to its normal indication.

The slowing down indication, however, is not displayed when the vehicle is making a turn, even though the brakes are applied, for then the arm 35 is not in a position to bridge both contact points 39^a and 39^b. The signal is thus prevented from giving an incorrect indication.

The push-button control may be used supplementary to the automatic control; for example, when it is desired to actuate a turn signal sometime before the turn is made, the button being held depressed only until the steering column is turned. The automatic controller will then cause the turn indication to continue until the vehicle is again proceeding straight ahead. Either control, however, may be used alone, and switches not shown on the drawing may be provided to disconnect the signal apparatus from the battery when not in use, and to render either control apparatus inoperative, as will be readily understood.

For the purpose of repeating the indication of the signal to the driver I provide small signal lamps 46^a, 47, and 46^b which are connected in multiple with lamps 15^a, 11 and 15^b respectively, and mounted on the dash so that the driver may readily ascertain whether or not the signal apparatus is functioning properly.

Although I have shown and described herein only one form and arrangement of apparatus embodying the invention, it is readily understood that various changes and modifications may be made therein within the scope of the following claims without departing from the spirit and scope of the invention.

What I claim is:

1. A vehicle signal consisting of a casing, means whereby said casing is divided into a series of radial compartments, means for providing a separate compartment at the centre of said radial compartments, illuminating means for each of said compartments, and means whereby the illuminating means of the radial compartments may be energized successively to simulate movement about said central compartment to indicate a change in the operation of the vehicle.

2. A vehicle signal consisting of a casing, means whereby said casing is divided into a series of radial compartments, means for providing a separate compartment at the center of said radial compartments, illuminating means for each of said compartments, a series of arrow-shaped windows provided in the face of the said casing, one for each of said compartments, and a lens provided for said central compartment for serving as a tail light of the vehicle.

3. In a vehicle signal, a casing, means for dividing the same into a series of radial compartments, one of said compartments being vertical and two of said compartments being horizontal, means constituting a central compartment at the center of said radial compartments, a cover provided on said casing having arrow-shaped windows for said radial compartments, a lens for the central compartment, said lens being red in color to serve normally as a tail light of the vehicle, illuminating means for each of said compartments, means whereby said illuminating means of the central compartment is continuously energized, means whereby during normal conditions of traffic the illuminating means of the vertical radial compartment is energized, and means whereby the illuminating means of the radial compartments on either side of said vertical compartment may be energized successively to indicate an impending change in the operation of the vehicle.

4. In combination, a vehicle, means thereon for causing changes in speed, and means thereon for causing changes in direction of travel, a first member responsively associated with said first means, a second member responsively associated with said second means, a signal comprising a plurality of separate stationary indicating devices, means responsive to said first member to operate said stationary indicating devices simultaneously to signify retardation, means responsive to said second member to operate said stationary indicating devices selectively to distinctively signal right and left turns, and means for rendering only said second member effective to cause a response of said signaling device when both of said members are simultaneously in operated position.

5. A vehicle signal comprising a central member, a plurality of signal members extending radially therefrom, two of said members being horizontal and one vertical, means for normally causing illumination of said central member and said vertical member, means for interrupting the illumination of said vertical member and causing the illumination of one or the other, or both, of said horizontal members according to the indication which it is desired to display.

6. In a vehicle, in combination, a series of similar signal lights arranged to be lighted momentarily and extinguished one after the other in rapid succession to simulate movement for indicating a change in the operation of the vehicle, contacts in circuit with the respective lights, a contact device movable across said contacts in succession to make and break the circuits to said lights one after another, an electromagnet for moving the contact device completely across the series of contacts, and a controlling member for making and breaking the circuit of the electromagnet at will.

7. In a vehicle, in combination, a series of similar signal lights arranged to be lighted momentarily and extinguished one after the other in rapid succession to simulate movement for indicating a change in the operation of the vehicle, contacts in circuit with the respective lights, a contact device movable across said contacts in succession to make and break the circuits to said lights one after another, operating means arranged to move the contact device across the contacts at a rate such that the successive illumination and extinction of the lights will simulate movement, and a control member effective when held in operated position to cause said operating means to move the contact device across all of said contacts.

8. In a vehicle, in combination, a series of similar signal members arranged to be lighted and extinguished one after the other to simulate movement, the final one of said signal members being constructed to provide a self-explanatory signal indicative of a definite change in the operation of the vehicle, means effective when set into operation to cause all of said signal members to be lighted and extinguished in succession except the final signal member, and to maintain it lighted, and controlling means effective when held in operated position to cause a complete operation of the operating means and thereby actuate the signal members in the manner stated.

9. In a vehicle, in combination, a series of similar signal members arranged to be lighted and extinguished one after the other from left to right to simulate movement toward the right, the extreme right signal member being constructed to provide a self-explanatory signal indicative of a right turn, a series of similar signal members arranged to be lighted and extinguished one after the other from right to left to simulate movement toward the left, the extreme left signal member being constructed to provide a self-explanatory signal indicative of a left turn, operating means for each of said sets of signal members, each operating means being effective to cause all the signal members of the set operated by it to be lighted and extinguished in succession except the last one and to maintain the last one in a lighted condition, and controlling means movable selectively to positions for actuating either operative means and effective when held in either operated position to cause the corresponding operating means to actuate one of the sets of signal members in the manner stated.

Signed at New York, in the county of New York and State of New York, this 22nd day of August, A. D. 1919.

SAMUEL TOLMACH.