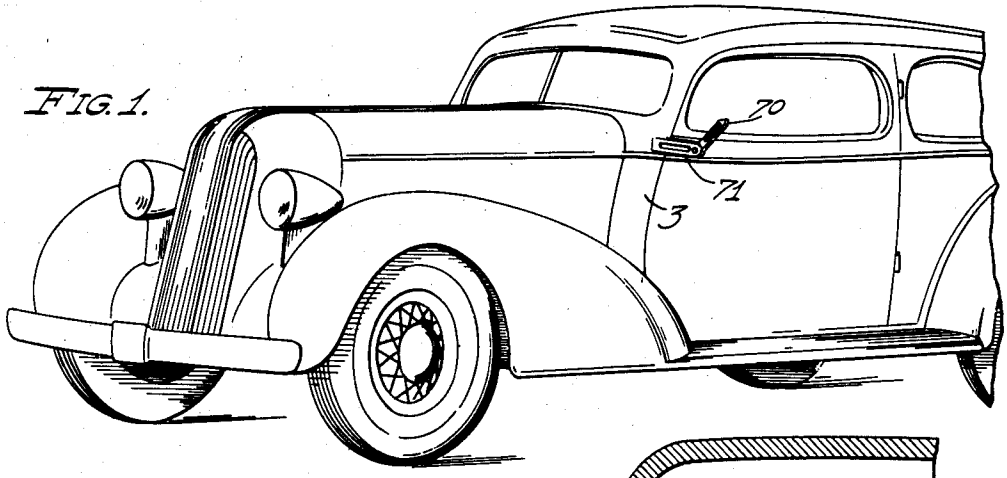
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AUTOMOBILE TRAFFIC SIGNAL

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FIG. 1.



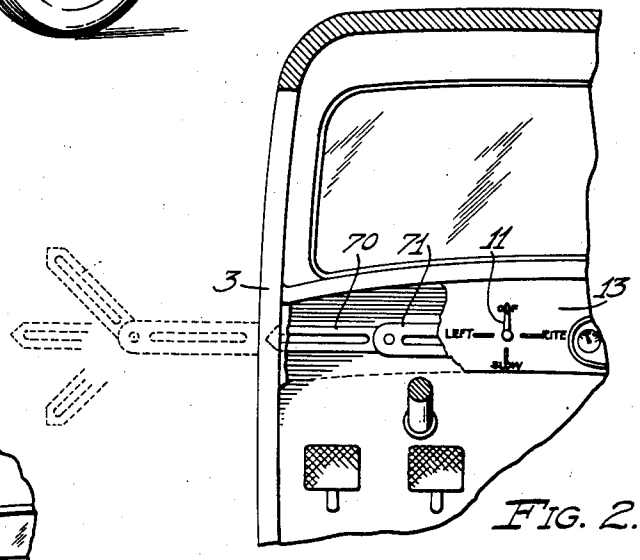


FIG. 2.

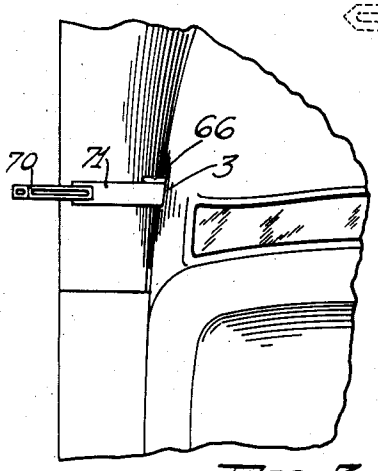


FIG. 3.

INVENTOR.
E. L. WHENHAM
BY William B. Hall.
ATTORNEY

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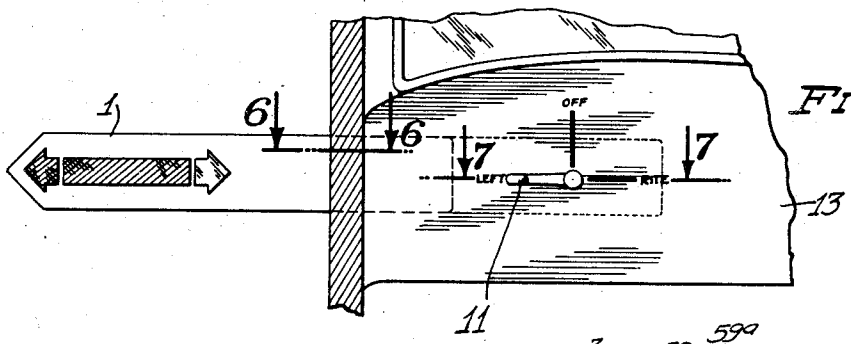


FIG. 4.

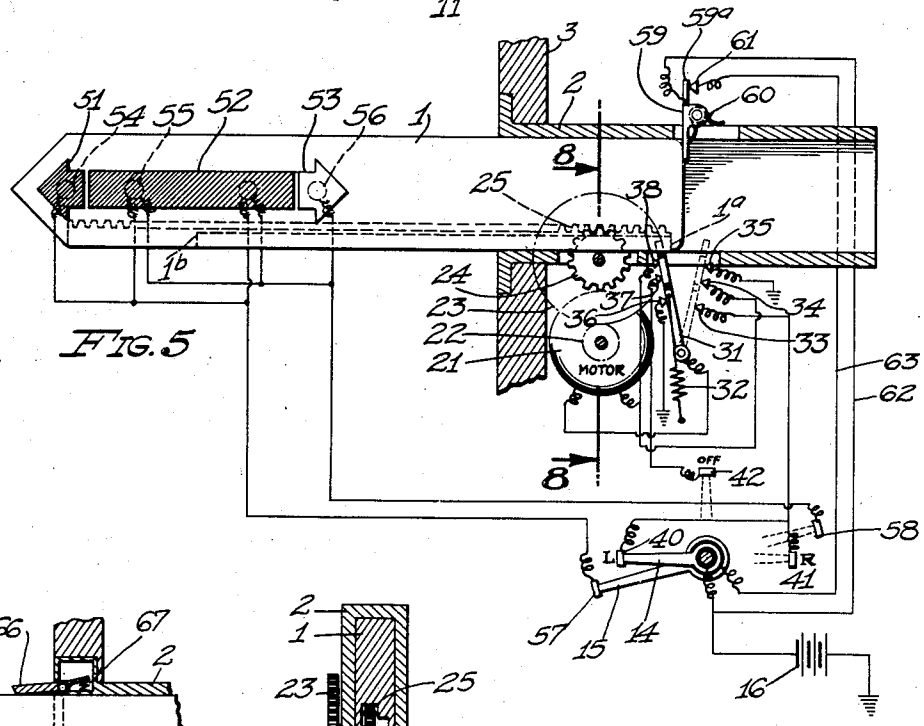


FIG. 5

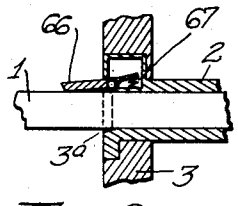


FIG. 6.

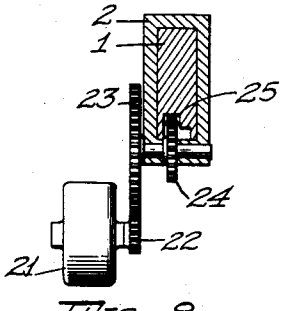


FIG. 8.

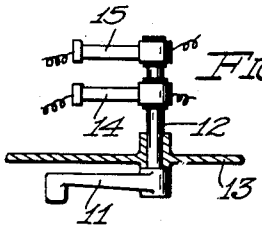


FIG. 7.

INVENTOR.
E. L. WHENHAM
BY William B. Hall
ATTORNEY

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FIG. 9.

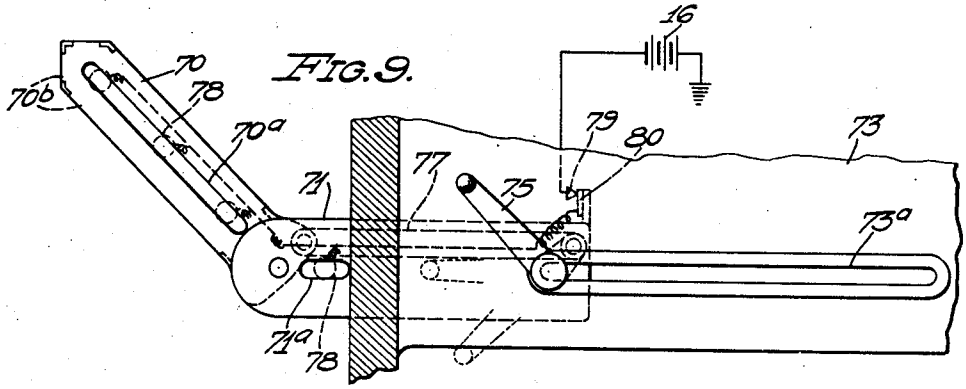


FIG. 10.

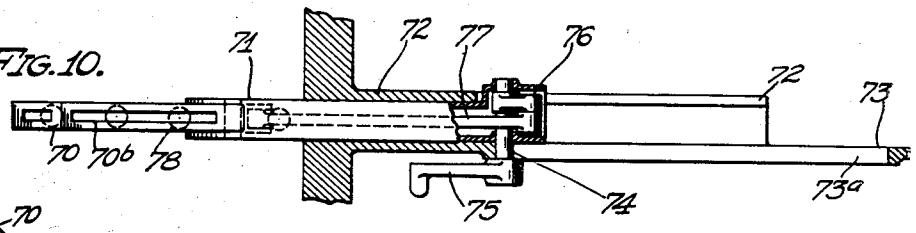


FIG. 11

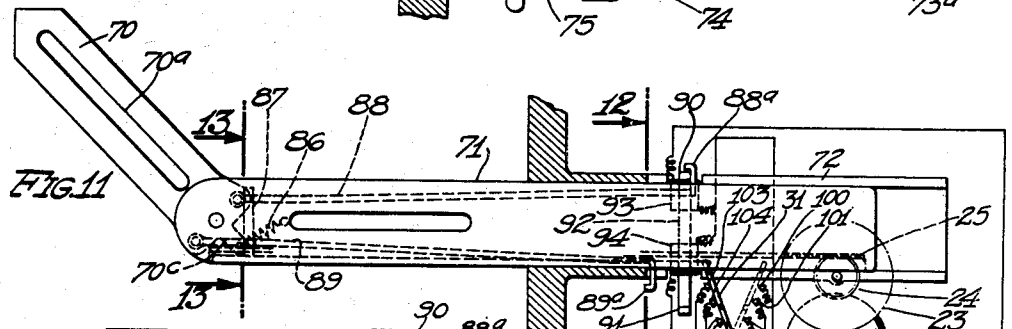


FIG. 13.

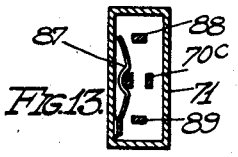


FIG. 12.

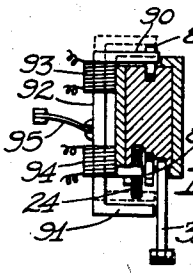


FIG. 14.

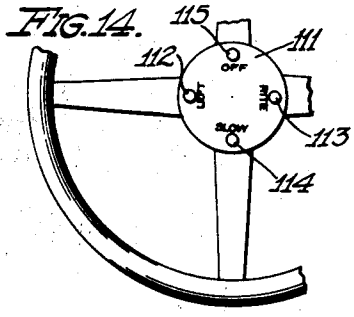
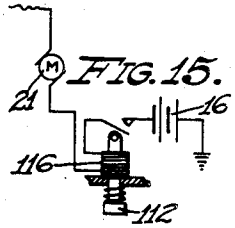


FIG. 15.



INVENTOR.
E. L. WHENHAM.
BY William C. Hall.
ATTORNEY

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FIG. 16.

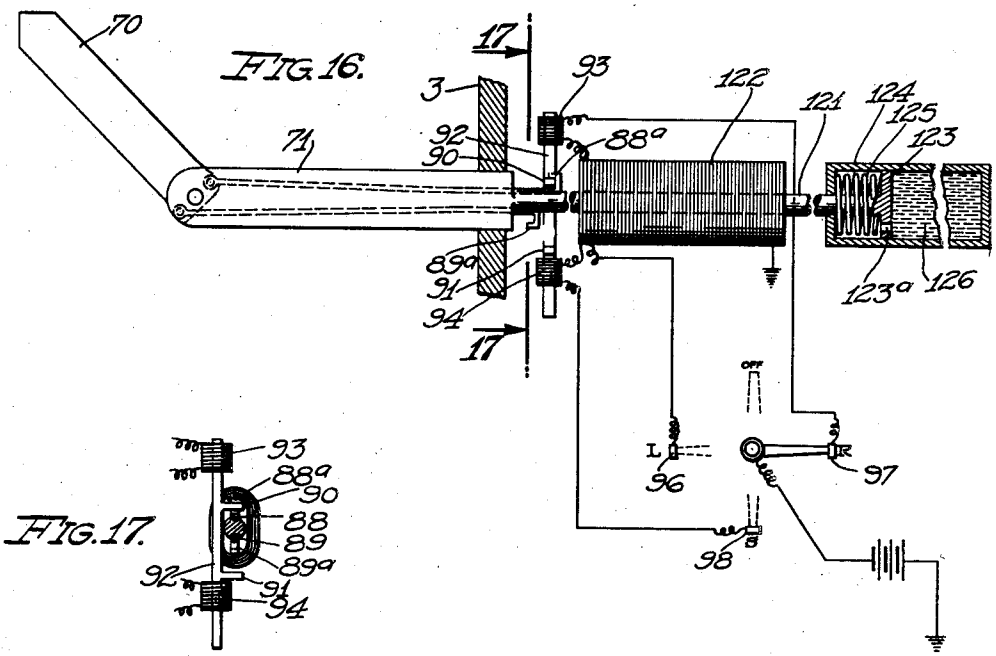
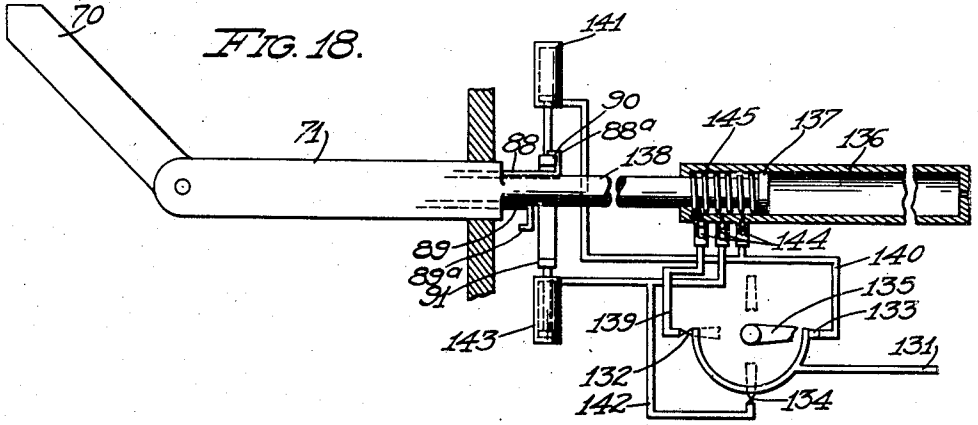


FIG. 17.

FIG. 18.



INVENTOR.
E. L. WHENHAM
BY William B. Hall
ATTORNEY

Patented May 16, 1939 2,158,973

UNITED STATES PATENT OFFICE

2,158,973

AUTOMOBILE TRAFFIC SIGNAL

Everett Lorne Whenham, Los Angeles, Calif.

Application August 16, 1935, Serial No. 36,493

4 Claims. (Cl. 177—327)

My invention relates to automobile traffic signals and particularly applicable to enclosed automobiles.

One of the principal objects of this invention is to provide a traffic signal of this class by which a direction signal may be easily, quickly and clearly made while the vehicle is wholly enclosed, and one which is substantially wholly enclosed within the body of the vehicle, or other enclosure, when not in use so as not to mar in any way the beauty of the vehicle body.

An important object is to provide a traffic signal of this class, which may be extended or thrust to the side a considerable distance before or when signalling so that it may be conspicuously seen by others for whom the signal is intended.

Another important object is to provide a signal of this class which may be applied to any portion of the vehicle.

A further important object is to provide such a signal which may be easily applied to or built into the vehicle without material alteration in the design or construction thereof.

Another object is to provide a signal of this class which may be operated in any desired manner or by any desired means, whether mechanical, electrical, magnetic, vacuum or the like.

Still another object is to provide relatively simple and fool-proof mechanisms for operating the signal by the various methods.

A still further object of my invention is to provide novel illuminating means therefor so that the specific signal may be readily seen at night.

With these and other obpects in view as will appear here and after, I have devised a vehicle traffic signal variously operated and having certain novel features of construction, combination and arrangement, as will be hereinafter described in detail and particularly set forth in the appended claims, reference being had to the accompanying drawings and to the characters of reference thereon, which form a part of this application, in which:

Fig. 1 is a perspective front and side view of an automobile showing my signal device thereon in a signalling position;

Fig. 2 is an enlarged fragmentary view taken thru the driver's compartment showing my signal device in a receded position and, by dotted lines, in various extended positions;

Fig. 3 is a fragmentary plan view thereof;

Fig. 4 is a fragmentary sectional elevation of the instrument board of a vehicle showing the signal arm of my signalling device extended;

Fig. 5 is an enlarged elevational but diagrammatic view thereof;

Figs. 6 and 7 are enlarged fragmentary sections thereof taken thru 6—6 and 7—7 of Fig. 4;

Fig. 8 is a fragmentary section thereof taken thru 8—8 of Fig. 5;

Figs. 9 and 10 are respectively a sectional elevation and sectional plan of a mechanical means of operating my signalling device;

Fig. 11 is a fragmentary and diagrammatic sectional elevation of an electrically operated mechanism of my signalling device;

Figs. 12 and 13 are transverse sections thru 12—12 and 13—13 of Fig. 11;

Fig. 14 is a fragmentary view of a vehicle steering post showing signal operating switches mounted thereon;

Fig. 15 is a diagrammatic view of one of such switches in its relation to the circuit;

Fig. 16 is a fragmentary and diagrammatic section of my signalling device operated magnetically;

Fig. 17 is a section thereof taken thru 17—17 of Fig. 16; and

Fig. 18 is a fragmentary and diagrammatic section of my signalling device operated by vacuum.

The signaling mechanism in Figs. 4 and 5 shows a signaling arm 1 mounted to slide in a guide 2 supported, in this instance, on and in the body 3 of the vehicle. The signaling arm is mounted so as to be ejected or extended laterally beyond the side of the vehicle when signaling. The guide may be mounted, as shown in Figs. 1, 2 and 3, at the side of the vehicle behind the instrument board, that is, forwardly thereof and at the rear portion of or beyond the hood.

In the structures shown in Figs. 4 and 5, the signaling arm 1 is ejected beyond or thru an opening in the body, by a control or operating lever 11 mounted on a spindle 12 which is rotatably mounted in the instrument board 13. On the spindle are mounted two switch or contact arms 14 and 15. In order better to illustrate these arms in Fig. 5, the arm 15 is shown longer than the arm 14. The arm 14 is adapted to control the lateral movement, or ejection and contraction of the signaling arm, while the arm 15 is adapted to control the illumination of the signaling arm. These arms are electrically connected to a battery 16.

In this instance the signaling arm is moved by a motor 21 which is connected thru reduction gears 22 and 23, to a drive pinion 24 which meshes with a gear rack 25 carried, preferably, at the

under side and within the signaling arm 1, as shown in Figs. 5 and 8.

The device is not operated until intended, and by manual operation of the lever 11, but the ejection and the contraction of the signaling arm is automatically checked. Such automatic checking or stopping is effected by a switch lever 31 which is adapted to be tilted in one of two angular positions by shoulders 1a or 1b at the under side of the signaling arm, and is held in either of such positions by a spring 32, thereby providing an over center switch arm. When the switch arm 31 is in the dotted line position, that is, before the device is ejected, the switch arm engages contacts 33, 34 and 35, and when in the opposite position, the switch arm engages contacts 36, 37 and 38, for purposes described hereinafter.

The contact arm 14 is adapted to engage the contacts 40, 41 and 42, which are adapted to indicate respectively left, right, and off positions, the latter position being adapted to indicate the retraction of the signaling arm.

At the outer portion of the signaling arm is a luminous signaling means consisting preferably of three illuminating compartments 51, 52 and 53 covered at their outer sides by colored translucent lenses. The lenses covering the center compartment 52 is long and represents the shank of an arrow. The lenses covering the compartments 51 and 53 are arrow-head shaped and are positioned at the opposite ends of the lens of the compartment 52 and form, with such central lens, arrows pointing in the opposite direction. In the compartments 51, 52 and 53 are lamps 54, 55, and 56 respectively. While the lamps 54 and 55 are illuminated, the lamp 56 is off, and while the lamps 55 and 56 are illuminated the lamp 54 is off. Thus the compartments indicate arrows pointing in two opposite directions. The lamps 54 and 55 are connected to a contact 57 which is contacted by the switch arm 15 simultaneously with the contacting of the switch arm 14 with the contact 40. The bulbs 55 and 56 are connected with a contact 58 which is engaged by the switch arm 15 simultaneously with the engagement of the switch arm 14 with the contact 41. Thus, when the lever 11 is directed to the left to indicate a left turn, as shown in Fig. 4, the signal arm 1 is ejected and simultaneously an outwardly directed arrow is illuminated. If the lever 11 is rotated towards the right, the signal arm is also ejected but the lamps in the signal arm are illuminated to indicate an arrow directed towards the right.

In order more forcefully to call attention to the signal, the arrows are preferably illuminated after the signal arm is substantially fully ejected or extended. To effectuate such action, there is provided a switch 59 which may be pivotally mounted on the guide 2, and resiliently forced, by a spring 60, against the signal arm in such a manner that when the signal arm is ejected beyond a certain point, one end of the lever 59 is forced downwardly by the spring 60 permitting the opposite end 59a to engage a contact 61 and thereby connect the switch arm 15 to the battery 16 through the wires 62 and 63.

The signal arm 1 is preferably so constructed that the end and opposite edges are open so that when the bulbs 54, 55 and 56 are illuminated, the illumination may be seen from the side of the vehicle either thru the end or the opposite edges, as may be seen more specifically in the modification shown in Fig. 1.

The signal arm 1, when mounted within the body of the vehicle, is ejected thru an opening 3a shown most specifically in Fig. 6. This opening is normally closed by a door or shutter 66 which is shown pivotally mounted at the outer end of the guide 2 and is adapted to be forced in a closed position over the opening by a spring 67, shown diagrammatically in Fig. 6. When the signal arm 1 is ejected thru the opening, the shutter 66 is automatically opened against the force of the spring 67 by the engagement of the forward end of the signal arm with the shutter.

In Figs. 9, 11, 16, and 18, I have shown similar signal apparatus, but with a signal arm 70 pivotally mounted at the outer end of a horizontally movable arm or slide 71. These two members, form, in effect, the whole signal arm of my traffic signal apparatus. These views, however, show different means and methods of operation, namely mechanical, electrical, magnetic, and vacuum.

In Figs. 9 and 10, the signal arm member or slide 71 is mounted to slide horizontally in a guide 72 at the back side of the instrument board 73 (with respect the driver's compartment). At the inner end of the slide 71 is rotatably mounted a spindle 74 which extends thru a longitudinal slot 73a in the instrument board and is provided at the front or outer end with an operating lever or crank 75. On the spindle 74, within the slide 71, is mounted an arm 76 which is pivotally secured at its outer end, by means of a rod 77 to the signaling arm 70 at one side of its pivotal and longitudinal axis.

By means of this construction the slide 71 and the signaling arm 70 may be readily enclosed in the guide 72 when the spindle 74 is at the inner end of the slot 73a.

When desiring to signal, the crank arm 75 is directed toward the left and then shifted to the extreme left which ejects the signaling arm 70 and the outer end of the slide 71 thru the opening in the vehicle body. Then, as the crank arm is rotated in one of three positions, shown by solid and dotted line in Fig. 9, the signaling arm 70 is shifted to corresponding position. Any suitable means may be provided to hold the crank arm and signaling arm in such shifted positions. The signaling arm may be provided at its opposite sides with longitudinal slots 70a to emit light from bulbs 78 within the signaling arm. The outer end of the slide 71 may also be provided with slots 71a for a similar purpose. These illumination slots form with each other a means whereby the direction signal may be easily indicated. The opposite edges and the free end of the signaling arm are preferably open, as shown, to permit the lighted signaling arm to be readily seen from the side of the vehicle.

The illuminating bulbs 78 are preferably lighted when the signaling means is ejected from its casing or the vehicle body. For this purpose I have provided a stationary contact 79 which is engaged by a movable contact 80 on the slide when the slide is extended beyond the vehicle body.

In the mechanism shown in Fig. 11, the slide 71 is ejected from the casing or vehicle body by an electric motor in a manner similar to that disclosed in Fig. 5. By this method of operation, the slide 71 may be ejected a considerable distance beyond the vehicle body, which is not desirable in the structure shown in Fig. 9. In this construction the signaling arm is provided with projections 70c which extend inwardly from the

pivotal axis of the arm. These projections are connected by springs 86 to the slide in such a manner that the springs tend to hold the signaling arm in alinement with the slide. These projections ride over a spring or springs 87, as shown in Fig. 14, thus tending further to hold the signaling arms in aligned position with respect to the slide.

The signaling arm is pivotally connected to rods or links 88 and 89, located at the upper and lower sides respectively of the longitudinal axis of the slide. The pivotal connection to the links is also at the opposite sides of the longitudinal and pivotal axes of the signaling arm.

These links are provided at their inner ends with hooks 88a and 89a which are alternately adapted to engage lugs 90 and 91 at the opposite ends of a movable armature 92 of electromagnets 93 and 94. The armature is held in a central position by a spring 95. The signaling arm 70 is shifted upwardly or to the "right-turn" position when the hook 88a engages the lug 90 as the slide is shifted outwardly. The lug 90 is drawn downwardly in the path of the moving hook 88a by the electromagnet 93 which is energized when the contact arm 14 is shifted to the right and in engagement with the contact 97, which also connects the motor 21 to the electric circuit for forcing the signaling arm outwardly. When the contact arm 14 is shifted to the left, for a "left-turn" signal and in engagement with the contact 96, neither of the electromagnets 93 and 94 are energized, but only the motor is operated. When the contact arm is shifted downwardly to engage the contact 98, the electromagnet 94 is energized at the same time the motor is energized, thereby placing the lug 91 into the path of the outwardly moving hook 89a of the link 89, and thereby forcing the signaling arm 70 downwardly at an angle. As the slide 71 is shifted outwardly to the end of its outward stroke, the switch arm 31 is shifted from the dotted line to the solid line position in Fig. 11, breaking the connection between the contact 100 and 101 leading to the motor 21, and also breaking the connection with the contact 102 which connects the motor to the ground thru the switch arm 31. But the shifting of the arm to the solid line position, places the circuit in condition for withdrawing or retracting the signaling arms.

Such retracting is effective by shifting the contact arm 14 to engage the contact 99. The contacts 103 and 104 thus connect the motor to the electric circuit in such a manner that the motor is reversed. When the switch arm 31 is in the solid line position, the other side of the motor is grounded thru the contact 105 and the switch arm 31.

Detailed explanation of the operation of the mechanism in Fig. 11 is thought unnecessary in view of the foregoing.

Instead of an operating or crank arm, as heretofore described, the signals may be effected by depressing suitable switches, arranged in a manner similar to the various shifting positions of the control lever or contact lever 14. In Figs. 14 and 15 I have shown such arrangement of switches on the steering post 111, such switches being designated 112, 113, 114 and 115 and correspond with the various solid and dotted line position of the operating lever shown in Fig. 11. These switches are preferably magnetic switches which are adapted to be depressed and held in such depressed positions by electromagnets 116 located in the various circuits which the switches are intended to close, as shown in Fig. 15.

In Fig. 16 the propelling medium is an electromagnet 122 which is positioned around a core 121 which is connected to and extends inwardly from the slide 71. It will be here noted that if desired, instead of one electromagnet 122 a series of progressive electromagnets may be provided. The electrical connection of such electromagnet is the same as the electrical connection of the electric motor in Fig. 11. In this instance there are also provided electromagnets 93 and 94 which function the same as the electromagnet heretofore described. In this instance, however, the switch arm 31 is eliminated if desired, as shown in Fig. 16, and the electric circuit is held closed as long as it is desired to maintain the signal, thereby simplifying the mechanism.

In order to reduce the rapidity of the outward ejection of the slide 71, there is provided at the inner end of the core or shank 121 a plunger 123 which is located in a cylinder 124. In the cylinder is a suitable fluid 126 which retards the motion of the plunger and thereby of the plunger 123, shank 121 and the signaling arms, there being provided a port 123a in the plunger to permit passage of the fluid 126.

Against the inner side of the plunger and around the shank 121 is a compression spring 125 for conteracting the action of the electromagnet when the current is off, and thereby causing automatic retraction of the signalling arms.

The mechanism shown in Fig. 18 is very similar to that shown in Fig. 16 except that the mechanism is controlled by a vacuum system. This vacuum system consists essentially of a vacuum supply line 131 which is connected to three valves 132, 133 and 134 located similarly to the contacts 96 and 97 and 98 hereinbefore referred to. These valves are adapted to be opened by a control arm 135 when the same is shifted to various signaling positions.

The signaling slide 71 is extended by a cylinder and plunger mechanism which consists of a cylinder 136 in which is mounted a plunger 137 secured at the end of a shank 138 directly connected to the slide 71. The valve 132 is connected with the cylinder thru a tube 139. The valve 133 is connected with the same cylinder thru a tube 140, which tube is also connected with a cylinder 141 which causes the lug 90 to be forced into the path of the outwardly moving hook 88a. The valve 134 is connected to the cylinder 136 by a tube 142 which is also connected with a cylinder 143 and is adapted to force the lug 91 in line with the hook 89a. It will be noted that the connection of the tubes 139, 140 and 142 with the cylinder 136 is thru check valves 144 so that one signal does not interfere with another.

In the cylinder 136 is also mounted a spring 145 which automatically causes the slide 71 to be retracted when the vacuum is disconnected.

A similar mechanism may also be provided for effecting hydraulic and pneumatic operation of the signal.

Though I have shown and described particular constructions, combinations and arrangements of parts and portions, I do not wish to be limited to the same, but desire to include in the scope of my invention the construction, combination and arrangement substantially as set forth in the appended claims.

I claim:

1. A traffic signal in combination with a vehicle body having an opening in its side, comprising a horizontal slide, mounted to move horizontally from the vehicle through the opening, a support on the vehicle body for the slide, a signal arm pivotally mounted at the end of the slide projectable through the opening, means for moving the slide from and into the opening, manual means for actuating the moving means, a pair of dogs in association with and controlled by the manual actuating means, and means in association with the arm for engaging the dogs and positively swinging the arm about its pivotal axis when the slide is moved either out or in.

2. A traffic signal, in combination with a vehicle body having an opening in its side, comprising a horizontal slide mounted to move horizontally from the vehicle through the opening, a support on the vehicle body for the slide, a signal arm pivotally mounted at the outer end of the slide projectable through the opening, means for moving the slide from and into the opening and for pivoting the arm about the end of the slide, said slide and said arm having longitudinal slots, and means for illuminating said slide and said arm behind said slots, for forming various illuminated angles between the slotted portions as the arm is pivotally shifted to different angular positions with respect to the slide.

3. In a traffic signal for vehicles, a vehicle body, a horizontal slide mounted on the body, means for moving the same horizontally outwardly with respect to the body, a signal arm pivotally mounted at the outer end of the slide, means for shifting the arm angularly with respect to the slide, and elongated illuminated means mounted on and extending longitudinally with respect to each of the slide and arm, the illuminated means being angularly shiftable with respect to each other.

4. In a traffic signal for vehicles, a support, a signal arm pivotally mounted on the support, means for shifting the arm angularly with respect to the support, elongated illuminated means positioned horizontally in the support, and other elongated illuminated means mounted on and extending longitudinally with respect to the arm, the latter elongated illuminated means forming various angles with the first elongated illuminated means as the signal arm is rotated.

EVERETT LORNE WHENHAM.